

Kant, Causation and Laws of Nature

James Hutton
Pembroke College, Cambridge

[This is the accepted version of the manuscript. Please cite the published version: Hutton, J. (2021) 'Kant, causation and laws of nature', *Studies in History and Philosophy of Science Part A*. 86, pp. 93–102. <https://doi.org/10.1016/j.shpsa.2021.01.003>]

Abstract: In the Second Analogy, Kant argues that every event has a cause. It remains disputed what this conclusion amounts to. Does Kant argue only for the Weak Causal Principle that every event has some cause, or for the Strong Causal Principle that every event is produced according to a universal causal law? Existing interpretations have assumed that, by Kant's lights, there is a substantive difference between the two. I argue that this is false. Kant holds that the concept of cause contains the notion of lawful connection, so it is analytic that causes operate according to universal laws. He is explicit about this commitment, not least in his derivation of the Categorical Imperative in *Groundwork III*. Consequently, Kant's move from causal rules to universal laws is much simpler than previously assumed. Given his commitments, establishing the Strong Causal Principle requires no more argument than establishing the Weak Causal Principle.

Keywords: Kant, causation, laws, laws of nature, Second Analogy, categories

1. Introduction

In the Second Analogy of Experience, Kant argues that every event (in the world of appearances) has a cause. There has been a prolonged debate about what this means. Does Kant seek to establish only the

Weak Causal Principle (WCP): Every event has some cause,

or the apparently stronger

Strong Causal Principle (SCP): Every event belongs to a kind K and has a cause belonging to a kind L, such that necessarily every instance of L causes an event of kind K?

SCP affirms that causal relations are *universal* (relating *all* instances of a *type* of cause to some *type* of effect) and that they are *necessary*. Kant equates the term “law” with “necessary rule”. (He glosses “necessary rules” as “laws” (A216/B263) and claims that to think of “rules” “as laws” is to think of them “as necessary” (KU 5:184).) Therefore, we can state SCP more concisely as:

SCP: Every event is produced according to a causal law.

In contrast, WCP apparently leaves open the possibility of brute causal links between tokens and of contingent causal connections, i.e. causal connections that are not instances of laws. Readers remain divided over which principle Kant aims to establish and how he goes about doing so.

Given the importance of the Second Analogy to Kant’s Critical project, it’s worth pursuing this matter further. I’ll argue that the three interpretations that have dominated this debate are all mistaken: they each face serious textual problems, but more importantly they all rely on the mistaken assumption that, for Kant, there is a substantive difference between WCP and SCP. I’ll argue that, according to Kant, it is analytic that causes operate according to laws, so WCP and SCP are equivalent in meaning. We therefore need to reassess the Second Analogy’s import, its relation to other parts of Kant’s work, and the place of lawfulness in Kant’s philosophy as a whole.

Let me orient my proposal within existing research. On one interpretation (the “INADEQUACY” interpretation), the Second Analogy tries to establish SCP, but is inadequate for this purpose. On a second (the “ELSEWHERE” interpretation), Kant appreciates that the Second

Analogy can establish only WCP and argues for SCP elsewhere. A third interpretation (the “SUBSTANTIVE” interpretation) tries to locate a substantive argument for the transition to SCP within the Second Analogy.

On my “DEFLATIONARY” interpretation, Kant’s move from causal rules to laws of nature is much simpler. Since the concept *<cause>* contains the concept of a lawful (i.e. universal and necessary) connection, to establish WCP is *a fortiori* to establish SCP. Kant has adequate justification for the move from causal rules to universal laws, but this rests neither on arguments outside the Second Analogy nor on a hidden substantive argument. Instead, it is an almost trivial consequence of his understanding of the concept *<cause>*. Moreover, I argue that building lawfulness into the concept *<cause>* is not an *ad hoc* manoeuvre on Kant’s part, but an outgrowth of his fundamental assumptions about what concepts we possess *a priori* and about the nature of necessity.

To what extent is this DEFLATIONARY interpretation new? Allison (2004:258f.) considers it briefly, but quickly dismisses it.¹ He attributes it to Friedman, who indeed cites some of the passages which I argue support the DEFLATIONARY interpretation (1992:162, 192). However, Friedman is equivocal about Kant’s warrant for the move, also suggesting that the lawfulness of causes stems from Kant’s conception of “objective experience”, which Friedman’s Kant equates with scientific theorizing (1992:186, 1994:36).² To my knowledge, the only commentator who

¹ Allison offers one objection in support of this dismissal, but his objection depends on conflating SCP with the epistemic claim that we can discover the particular law under which any event falls. See Section 5 below and Kannisto (2017:498–500).

² Kannisto reads Friedman as giving an ELSEWHERE interpretation, according to which “Kant establishes [SCP] in the *Metaphysical Foundations of Natural Science*” (2017:496). Whether or not this is a cogent reading, it underscores the fact that Friedman doesn’t present a DEFLATIONARY interpretation unequivocally.

has unequivocally proposed a DEFLATIONARY interpretation is Melnick (1973:130–5).³ Perhaps due to the brevity of his discussion and his lack of argument against alternative readings, Melnick’s proposal has sunk without a trace. I am unaware of any later discussions that engage with this part of Melnick’s reading; most work on the Second Analogy overlooks the DEFLATIONARY interpretation entirely (e.g. Kannisto, 2017; Longuenesse, 2005; Watkins, 2005). By reviving this interpretation and by giving what I hope is a compelling argument in its favour, I hope to make a serious contribution to our understanding of Kant on causation.

Before considering the relation between WCP and SCP, one might wonder how Kant establishes any Causal Principle in the first place. I have discussed this argument in detail elsewhere,⁴ and will here focus exclusively on the step from causal rules to laws. However, for context, let me briefly summarize the main argument of the Second Analogy:

- (1) I can only represent an event if the ordering of my perceptions is rendered non-arbitrary.
- (2) The ordering of my perceptions can only be rendered non-arbitrary if I deploy the concept *<cause>*, by presupposing that the event in question has a cause.
- (3) Therefore, all events must be represented as caused.
- (4) Therefore, in the realm of appearances, every event has a cause.⁵

The article proceeds as follows. Section 2 presents objections to each of the three dominant interpretations. Section 3 presents evidence that Kant holds that the concept *<cause>*

³ Some remarks in O’Shea (1997) suggest that the lawfulness of causal rules follows from the concept *<cause>* (e.g. 1997:228). However, other passages suggest that it instead follows from substantive considerations about the counterfactual-supporting nature of causality (e.g. 1997:222).

⁴ Hutton (2019).

⁵ Similar reconstructions are defended by Allison (2004:252) and Longuenesse (2005:241).

contains the concept of lawfulness. Section 4 considers the charge that, on this reading, Kant's move from causal rules to laws is *ad hoc*. I argue that Kant's conception of causality does inherit any arbitrariness inherent in his derivation of the Table of Categories. Nevertheless, it is not *ad hoc*, but a consequence of Kant's fundamental assumptions about our *a priori* concepts and the connection between necessity and universality. Section 5 concludes by discussing wider ramifications for our understanding of Kant's philosophy and his contemporary relevance.

2. Objections to Existing Interpretations

In this section, I described the three dominant interpretations of the relation between WCP and SCP. I argue that each has significant weaknesses, warranting the search for an alternative.

2.1 The INADEQUACY Interpretation

According to the INADEQUACY interpretation, Kant is confused about what his arguments show. Lovejoy argues that, in the course of trying to establish SCP, Kant commits "one of the most spectacular examples of the *non-sequitur* which are to be found in the history of philosophy" (1906:402), a remark echoed by Strawson (1966:138).⁶ Other commentators have offered explanations of why Kant might have been misled, but also conclude that he is ultimately confused.⁷ Since this interpretation attributes a mistake to Kant, the principle of charity dictates that we consider alternatives.

⁶ N.b. the alleged "*non-sequitur*" is not a slide from WCP to SCP, but from the necessity of the order of perceptions of an event to the causal necessity of the event itself. Nevertheless, Lovejoy only denounces Kant's pretensions to establish SCP (1906:399f.) and Strawson allows that related considerations support "some kind and degree of [causal] order and regularity" (1966:144). The "*non-sequitur*" objection is therefore directed at the Second Analogy *qua* argument for SCP.

⁷ Watkins shows how aspects of Kant's conception of physics would substantiate the assumption that causation is always lawful. Nevertheless, Watkins concludes that this "does not actually add any argumentative support to

2.2 *The ELSEWHERE Interpretation*

The ELSEWHERE interpretation is more charitable. On this reading, Kant isn't mistaken about what the Second Analogy shows: his aim there is only to establish WCP. The argument for SCP comes only later, either in the Postulates of Empirical Thought⁸ or (*qua* "regulative principle") in the Transcendental Dialectic's Appendix and the *Critique of Judgment's* ("KU") Introduction.⁹

The main problem for the ELSEWHERE interpretation is the strong evidence that Kant aims to establish SCP within the Second Analogy. Consider this passage, in which Kant describes the kind of causal connection that must govern an event for it to be representable:

1. [T]here must [...] lie in that which in general precedes an occurrence the condition for a rule, in accordance with which this occurrence *always and necessarily* follows[.]”

(A193/B238f., emphasis added)

Kant states that prior to an event (i.e. an “occurrence”), there must be a type of state (i.e. “that which in general precedes”) such that there is a “rule” connecting the event to the precursor, i.e. a causal rule. He states that the causal rule must be *universal*—this event “always” follows from this cause—and *necessary*. Right in the heart of the Second Analogy, Kant is committing himself to SCP.

Kant's claim”, “[s]ince his account of physics depends on the metaphysical framework he is developing in the *Critique*” (2005:288–90). Beck also flirts with an INADEQUACY interpretation, pointing to an ambiguity in the meaning of “rule” as an explanation for Kant's confusion (Beck, 1981:27f., 55). Dodge (1982) argues that considerations related to the Second Analogy support a *regulative* principle related to SCP, rather than SCP itself (though this isn't offered as an interpretation of Kant's own thought process).

⁸ Kannisto (2017).

⁹ Buchdahl (1969a:651-6, 1969b:343f., 355-74), Beck (1978:126–9, 1981:46–56), Neiman (1994:51-62), Bayne (1994:409f.) and Allison (2004:259f.).

Nor is this passage unrepresentative. Compare these, also from the Second Analogy:

2. [The order of states in the object] can only acquire its determinate temporal position in this relation through something being presupposed in the preceding state on which it *always follows*, i.e., follows in accordance with a rule [such that] [...] if the state that precedes is posited, then this determinate occurrence *inevitably and necessarily follows*. (A198/B243f., emphasis added)
3. This rule for determining something with respect to its temporal sequence, however, is that in what precedes, the condition is to be encountered under which the occurrence *always (i.e., necessarily) follows*. (A200/B245f., emphasis added)
4. [T]here is therein an order of the successive synthesis that determines an object, in accordance with which something would necessarily have to precede and, if this is posited, the other *would necessarily have to follow*.[.] (A201/B246, emphasis added)
5. [I]f I were to posit that which precedes and the occurrence did not *follow it necessarily*, then I would have to hold it to be only a subjective play of my imaginings.[.] (A201f./B247, emphasis added)

Kannisto (2017:505–7), acknowledging the threat posed by such passages, tries to explain away Kant’s commitment to lawful causation by distinguishing causal relations between tokens and types. Perhaps if Kant is talking about token causal relations, he can invoke a necessary connection without committing himself to a law?¹⁰ Whether or not this reply works on its own terms, it struggles to fit the text. The first, second and third passages say the effect “always” follows its cause, which would be puzzling if these were one off events. Moreover, the first

¹⁰ See also Bayne (1994:408). Neither Kannisto nor Bayne acknowledges the full range of passages cited here.

passage describes the cause as “that which *in general* precedes”, indicating that the cause figures in the relation *qua* instance of a kind. Finally, the first and second passages describe the causal connection as a “rule”.¹¹ For Kant, a “rule” is “the representation of a *general* condition” (A113, emphasis added), i.e. something holding at the level of types rather than tokens. Confirming this, another passage runs:

6. [T]hat which [...] happens must succeed that which was contained in the previous state in accordance with a *general rule*” (A200/B245, emphasis added).

The weight of textual evidence strongly indicates that Kant really is committed to necessary causal relations between types, not just tokens.

A reviewer raises a worry: the term “*jederzeit*” (translated as “always”) is ambiguous between “at all times” and “at any time”. It therefore remains possible to read these passages as stating that the effect follows “any time” the cause is present, but without the implication that the cause is instantiated multiple times. This is an interesting suggestion, but it is outweighed by the other evidence I’ve pointed to: the description of the cause as “that which in general precedes” and the characterization of causal connections as “general rule[s]”. Kant strenuously distinguishes “general [*allgemein*]” from “singular” propositions, emphasizing that the former always pertain to kinds (e.g. A71/B96f., *Log* 9:102). If he meant causal connections to be one-off relations between particulars, he would not have characterized them as “general [*allgemein*]”. If

¹¹ Might the “rule” simply be the Causal Principle, rather than a causal generalization of the form ‘All Xs cause Ys’? It seems likely that the “rule” mentioned in the third passage is indeed the Causal Principle: it is a transcendently necessary “rule for determining [...] temporal sequence”, rather than a relation between some cause and some effect. However, the rules mentioned in the first and second passages govern what event “necessarily follows” from some cause. This indicates specific causal rules (of the form ‘Xs cause Ys’) rather than the Causal Principle itself (which states that all events have causes).

the reader still finds the ELSEWHERE interpretation plausible in the face of this evidence, he or she should look ahead to Section 3.1 where we find Kant explicitly asserting that causal relations, by definition, hold between types. At the very least, the textual problems facing the ELSEWHERE interpretation give us good motivation to pursue alternatives.

2.3 The SUBSTANTIVE Interpretation

The SUBSTANTIVE interpretation accepts that Kant tries to establish SCP in the Second Analogy. To explain this, it tries to identify an argument for SCP, which other commentators have overlooked. The Second Analogy chapter presents several expositions of an argument for the Causal Principle. It is commonly agreed that these expositions are identical in substance, with one exception. Numerous commentators, beginning with Adickes (1889), claim that a distinctive argument is presented at A199–201/B244–6, an alleged “argument from the nature of time” (Paton, 1936:253).¹² This (allegedly) runs as follows:

- (1) Time cannot be perceived directly.
- (2) Perception must exhibit all formal properties of time.
- (3) Therefore, appearances must contain empirical corollaries of the formal properties of time.
- (4) Time has the formal property that each moment is “determined” by the previous moment.
- (5) Therefore, appearances must contain an empirical corollary of the determination of each moment by a prior moment.

¹² Kemp Smith (1918:375f.), Paton (1936:253–5), Wolff (1963:272f.) and Thöle (1991:205–11). Others deny that there is a distinctive argument in these pages, with Guyer claiming that they contain “nothing but a somewhat elaborate way in which Kant states the conclusion” of his argument (1987:241f.); see also Allison (1983:227) and Longuenesse (1998:364), though Longuenesse’s later work reverses this position.

- (6) The only empirical feature that could serve as a corollary of the determination of each moment by a prior moment is that every alteration be determined by some prior state in accordance with a rule.
- (7) Therefore, every alteration in the world of appearances must be determined by some prior state in accordance with a rule.

In short, “just as a prior time always determines the following time, in the world of appearances what has just happened fixes how things will happen next, according to a rule” (Adickes, 1889:219).

Of the interpreters who recognize a distinctive “argument from the nature of time”, most hold that it aims at the same conclusion as the other arguments in the Second Analogy. However, on Longuenesse’s SUBSTANTIVE interpretation the argument is distinctive not only in its mode of proof but in its conclusion: whereas the other expositions only support WCP, the “argument from the nature of time” supports SCP. Longuenesse argues that the unity of time and the determinate position of each moment within the whole series require an empirical correlate and that this can only be the “preservation through time of any correlation that actually obtains” (2005:250–2). If I understand it correctly, her argument is that not only must the empirical world reflect the pure structure of time according to which each moment is determinately located after the preceding moment; the empirical features which allow for establishing the order of events (*viz.* the causal rules) must also be universal and invariant across the whole of time. Since *<existence at all times>* is the schema of necessity (A145/B184), this would also entail that the causal rules must be necessary, *i.e.* that they are laws.

While Longuenesse’s reconstruction is ingenious and certainly Kantian in spirit, I don’t find it ultimately plausible. If we accept the logical possibility of causal rules that are less than universal in scope, it’s unclear why invariant rules would be needed for “appearances” to “determine their positions in time for each other”. So long as each event is bound down to a

specific moment in time by a causal relation to a “previous state”, the world of appearances is guaranteed to comprise a determinate ordering of moments, thus mirroring the structure of time itself. *Pace* Longuenesse, if there is a gap between causal rules and causal laws, then the “argument from the nature of time” lacks the resources to bridge it.

Furthermore, Longuenesse’s reading lacks textual support. In the relevant passage, Kant emphasizes that each event must stand in a causal relation to some “previous state” from which the event follows “in accordance with a general rule” (A200/B245). However, he makes no special mention here of the invariability or necessity of these rules. Another problem is that, if SCP were only established by the “argument from the nature of time”, we would expect Kant to assert SCP only in connection with that argument. However, this is not what we find. Four of the six passages cited in Section 2.2 are presented as following from other arguments, with the first two occurring before the “argument from the nature of time” has even been presented. Therefore, it is implausible that Kant intends the latter to be distinctively capable of establishing SCP.

One other interpretation which I set aside is Guyer’s (1987:237–66), according to which one must know the specific causal law under which an event falls in order to confirm the belief that the event occurs. This purely epistemic reading of Kant’s conclusion represents an implausible weakening of his stated aims. Kant claims that the Causal Principle established in the Second Analogy is a “formal condition of all perception” (A199/B244), rather than a condition for the confirmation of beliefs.¹³

¹³ I therefore also set aside Kitcher’s discussion, which adopts Guyer’s reading (1990:174–7). For related criticisms of Guyer see Allison (2004:256f.), Longuenesse (2005:232f.) and Watkins (2005:198).

3. The DEFLATIONARY Interpretation of Kant's Move

I have argued that none of the existing interpretations of Kant's move from causal rules to laws is satisfactory. I'll now present and defend the DEFLATIONARY interpretation.

3.1 Textual Evidence

The crux of the DEFLATIONARY interpretation is the claim that, for Kant, the concept *<cause>* requires that causal connections are universal and necessary, i.e. that they are laws. This makes it analytic that causes operate according to laws. If this is Kant's view, then SCP follows analytically from WCP. The move from causal rules to laws is achieved by substitution of synonymous terms.

What evidence is there that the concept *<cause>* analytically entails that causal connections are universal and necessary? Here are four telling remarks from *KrV*:

[T]he very concept of a cause so obviously contains the concept of a *necessity of connection* with an effect and a *strict universality* of rule[.] (B5, emphasis added)

[T]his concept [i.e. "the concept of cause"] always requires that something A be of such a kind that something else B follows from it *necessarily* and in accordance with *an absolutely universal rule*. (A91/B124, Kant's emphasis)

[T]he concept of cause, which asserts the *necessity* of a consequent under a presupposed condition (B168, emphasis added)

[E]very effective cause must have a character, i.e., a *law* of its causality, without which it would not be a cause at all (A539/B567, emphasis added)

The first and second passages mentions both universality and necessity: effects follow their causes "necessarily"; the rule governing this is "strict[ly]" or "absolutely universal". The second

passage states that the cause is related to the effect *qua* instance of a “kind”. (Note also the use of the term “rule”; see Section 2.2.) Furthermore, Kant is explicit that the necessity and universality of causal connections is a consequence of the concept <cause>. The third passage reaffirms that the necessity of causal connections is part of the very concept <cause>. The fourth passage puts the point straightforwardly in terms of laws.¹⁴

Additional evidence is found in the *Prolegomena*. To illustrate what content is added when we deploy the concept <cause>, Kant contrasts causal judgments with judgments about constantly conjoined perceptions:

It is [...] possible that in perception a rule of relation will be found, which says this: that a certain appearance is constantly followed by another (though not the reverse)[.] [...] Here there is of course *not yet a necessity of connection, hence not yet the concept of cause*. But I continue on, and say: if the above proposition, which is merely a subjective connection of perceptions, is to be a proposition of experience, then it must be regarded as necessarily and universally valid. But a proposition of this sort would be: The sun through its light is the cause of the warmth. *The foregoing empirical rule is now regarded as a law, [...] which requires universally and therefore necessarily valid rules.* (Prol 4:312, emphasis added)

Let’s set aside the controversial distinction between judgments of perception and judgments of experience and focus on what this passage tells us about the concept <cause>. In the first italicized phrase, Kant states that we have “not yet” deployed “the concept of cause” unless we posit a “necessity of connection”: by definition, causal connections are necessary connections.

¹⁴ This passage makes no reference to the *concept* <cause>; however, here Kant is discussing what can be said about causation in general, whether in the phenomenal or noumenal realm. Since the only restriction on thoughts about noumena is the law of contradiction, the assertion quoted must be intended to be analytic.

The second italicized phrase makes the point in terms of laws: making a causal judgment requires “regard[ing]” the rule connecting antecedent and consequent as a “law”. He explicitly mentions both distinguishing characteristics of causal *laws*, viz. that these rules hold “universally” and “necessarily”.

As an aside, let’s consider what it means to “regard” this “empirical rule” as a “law”. Elucidation is found in a handwritten note, *Refll 5414* (18:176).¹⁵ There, Kant writes that “One can very well produce rules empirically, but not laws”: at most, the empirical evidence can warrant an inductive generalization, admitting of “comparative” but not “strict universality” (cf. A91f./B123f.). In order to think of the world as causally structured, one must “assum[e] of the rules of nature that they are necessary” and hence “call” them “laws”: one formulates the hypothesis that the observed regularity is a manifestation of a law. Kant indicates that this hypothesis can usually only be made “*anticipando*”. This corresponds to what Kant elsewhere calls a “preliminary [*vorläufig*] judgment” or “anticipation”, i.e. a judgment that is rendered probable though not certain by the grounds supporting it (*Log* 9:74).¹⁶ In terms of content, this judgment “*anticipando*” represents the observed regularity as falling under a law, i.e. a necessary rule. However, in terms of epistemic status, it is combined with an awareness that the judgment has not been established beyond doubt. Indeed Kant holds that we can only move beyond “*anticipando*” judgments about empirical laws when we manage to subsume them under the *a priori* principles of natural science, as in the case of deriving Kepler’s laws of planetary motion from Newton’s law of gravitation and the latter from the *a priori* “principle of community” (*MAN* 4:554–65).

¹⁵ Thanks to an anonymous reviewer for pressing me to discuss this Reflection.

¹⁶ Kant explicitly characterizes “empirical cognitions: in physics, psychology, etc.” as preliminary judgments (*Log* 9:67).

KANT, CAUSATION & LAWS OF NATURE

Returning to our main thread of argument, two further passages from this part of the *Prolegomena* confirm that “the concept of cause” entails the “necessity” and “universality” of the linkage:

That this heating *necessarily* results from the illumination by the sun is in fact contained in the judgment of experience (in virtue of the concept of cause) (*Prolog* 4:305n.)

The concept of cause contains a *rule*, according to which from one state of affairs another follows with *necessity*; but experience can only show us that from one state of things another state often, or, at best, commonly, follows, and it can therefore furnish *neither strict universality nor necessity*[.] (*Prolog* 4:315, emphasis added)

We even find evidence for these views outside Kant’s theoretical philosophy. Perhaps the clearest remark comes from the *Groundwork*:

[T]he concept of causality brings with it that of laws in accordance with which, by something that we call a cause, something else, namely an effect, must be posited (4:446)

Again, this means that it is a conceptual truth that all causes operate according to laws, which govern what effects they produce. We find the same view in the *Religion*:

To think of oneself as a freely acting being, yet as exempted from the one law commensurate to such a being [...], would amount to the thought of a cause operating without any law at all [...]: and this is a contradiction. (6:35)

If a judgment’s negation is contradictory, then the judgment is analytic (B16f). By asserting that the judgment *<there exists a cause that operates without a law>* is contradictory, Kant implies that the judgment *<all causes operate according to laws>* is analytic.

Let me emphasize the import of all this. A wealth of evidence shows that, by definition, all instances of causation fall under laws. Hence, there is no difference between WCP and SCP. But since the INADEQUACY, ELSEWHERE and SUBSTANTIVE interpretations presupposed a substantive difference between WCP and SCP, this means they must be rejected in favour of the DEFLATIONARY interpretation.

3.2 Causality and Lawfulness in the Groundwork

In the face of this evidence, one might wonder whether Kant would really be willing to place serious argumentative weight on its being analytic that causes are lawful, as the DEFLATIONARY interpretation requires. To remove this doubt, let's consider the argument of *Groundwork*, Section III. There, Kant's argument for the Formula of Universal Law depends on it being analytic that causes operate according to universal laws. The argument in question seeks to derive the Formula of Universal Law from the concept <free will>. Following this, Kant argues that rational beings "cannot act otherwise than under the idea of freedom" (G 4:448) and hence that we must take ourselves to be normatively bound by the Formula of Universal Law. We needn't assess the cogency of the broader argument; what matters is that Kant's whole enterprise in *Groundwork III* depends on the claim that "the concept of causality brings with it that of laws" (G 4:446).¹⁷ I quote the relevant passage at length.

THE CONCEPT OF FREEDOM IS THE KEY TO THE CLARIFICATION
[ERKLÄRUNG] OF THE AUTONOMY OF THE WILL

¹⁷ O'Neill (1989:53) and Korsgaard (1996:163) highlight Kant's reliance on the premise that causes by definition operate according to laws.

[1]¹⁸ *Will* is a kind of causality of living beings insofar as they are rational, and [2] *freedom* would be that property of such causality that it can be efficient independently of alien causes *determining* it, just as *natural necessity* is the property of the causality of all nonrational beings to be determined to activity by the influence of alien causes.

The preceding clarification [*Erklärung*] of freedom is *negative* and therefore unfruitful for insight into its essence; but there flows from it a *positive* concept of freedom, which is so much the richer and more fruitful. Since [3] the concept of causality brings with it that of *laws* in accordance with which, by something that we call a cause, something else, namely an effect, must be posited, so freedom, although it is not a property of the will in accordance with natural laws, is not for that reason lawless but [C1] must instead be a causality in accordance with immutable [*unwandelbaren*] laws but of a special kind; for otherwise a free will would be an absurdity [*Unding*]. [2, stated negatively] Natural necessity was a heteronomy of efficient causes, since every effect was possible only in accordance with the law that something else determines the efficient cause to causality; [C2] what, then, can freedom of the will be other than autonomy, that is, the will's property of being a law to itself? [4] But the proposition, the will is in all its actions a law to itself, indicates only the principle, to act on no other maxim than that which can also have as object itself as a universal law. This, however, is precisely the formula of the categorical imperative and is the principle of morality; hence [C3] a free will and a will under moral laws are one and the same [*einerlei*].

If, therefore, freedom of the will is presupposed, morality together with its principle follows from it by mere analysis [*Zergliederung*] of its concept. (G 4:446f., Kant's emphasis)

¹⁸ Bracketed numbers refer to the reconstruction given below.

KANT, CAUSATION & LAWS OF NATURE

The argument here can be reconstructed as follows:

- [1] A free will is a kind of causality.
- [2] A free will cannot operate according to laws imposed by external causes.
- [3] All causes operate according to immutable laws.
- [C1] Therefore, a free will is a causality that operates according to immutable laws.
- [C2] A free will imposes a law on itself.
- [4] If x imposes a law on itself, then it operates according to the Formula of Universal Law.
- [C3] A free will operates according to the Formula of Universal Law.

Each premise and conclusion is supposed to be analytic: the whole passage is a “clarification [*Erklärung*]” which gives a “mere analysis [*Zergliederung*]” of the concept of <freedom of the will>; [1] results from a “clarification” of “freedom”; our key thesis [3] is “brought with” “the concept of causality”; a free will contradicting [C1] is an “absurdity [*Unding*]”;¹⁹ [C3] concerns two terms being “equivalent [*einerlei*]” and is contrasted with the “synthetic proposition” that “an absolutely good will is that whose maxim can always contain itself regarded as a universal law”.

Furthermore, Kant would be unable to affirm the lawfulness of causes in this context if it depended on any substantive transcendental arguments concerning the nature of experience (as the ELSEWHERE and SUBSTANTIVE interpretations would have it). The argument focuses on a kind of causality distinct from the “natural necessity” of the world of appearances, so it is crucial that the “concept of causality brings with it that of laws”.²⁰ Therefore, the claim that the concept

¹⁹ Kant defines an “absurdity [*Unding*]” as “the object of a concept that contradicts itself” (A291f./B348).

²⁰ While natural causes are discussed here only to make a negative point, it is noteworthy that Kant insists that they “operate in accordance with natural laws”. This makes it clear that lawfulness is a characteristic of the whole genus of causality, not a feature specific to either natural or autonomous causation.

<cause> contains the notion of lawfulness has great systematic importance. Without it, Kant could not claim in this context that every cause operates according to “immutable laws” and *Groundwork III*'s argument for the Categorical Imperative would falter at the first step.²¹ As far as *Groundwork III* goes, Kant relies on the premise that it is analytic that causes operate according to laws in order to reach the conclusion that we are bound by a moral *law* (rather than a directive that is contingent or restricted in scope).

In this section, I've shown that Kant holds “x causes y” to be synonymous with “x produces y in accordance with a causal law”. This means that WCP is synonymous with SCP. Kant's move from causal rules to universal laws requires nothing more than the substitution of equivalent terms, or as Kant might say, the “clarification” of what is “already thought [...] (though confusedly)” in the “component concepts” of the former (cf. A7/B10f.). Any reading of the Second Analogy which finds a coherent argument for WCP ought to credit Kant with warrant for asserting SCP on the same basis.

To be clear, while it is analytic that <if WCP, then SCP>, this does not mean that either causal principle is itself analytic. A substantive transcendental argument is still needed to establish that every event has a cause, namely the main argument of the Second Analogy

²¹ What is the relation between SCP and the Formula of Universal Law? SCP does not entail the content of any specific causal laws, and only places a formal constraint on causes' rules of operation: whatever these rules are, they must be (universal and necessary) laws. Similarly, the Formula of Universal Law imposes a merely formal constraint on wills' rules of operation: whatever rule a will adopts, it must have “the form of a law” (cf. Korsgaard, 1996:166). However, the analogy is not perfect: Kant holds that, in combination with the empirical observation that not all events are explained by the laws of *a priori* natural science, SCP entails that there exist some empirical causal laws (*KU* 5:184). In contrast, Kant does not hold that there are any empirical moral laws; the laws of morality are exhausted by those that can be discovered *a priori*. Thanks to an anonymous reviewer for pressing me to clarify this.

(summarized in the Introduction). My DEFLATIONARY interpretation is deflationary *only* about Kant's move from WCP to SCP, not about SCP itself. My reading does not entail that Kant's argument for the Causal Principle (or his alleged 'reply to Hume') rests on mere conceptual considerations.

4. Cause, Shmause

I've argued that anyone willing to credit Kant with a cogent argument for WCP ought to accept that, at least on his own terms, he is justified in asserting SCP. The move from causal rules to causal laws is seamless given Kant's conception of causation. This section considers an objection to Kant's argument so construed. The objection is this: even if the move from WCP to SCP is warranted given Kant's way of setting up the debate, it does not follow that Kant is beyond reproach. What warrant does Kant have for setting up the debate in this way, i.e. in building the notion of lawfulness into the concept <cause>? Isn't this an *ad hoc* manoeuvre, an attempt to solve a substantive philosophical problem by stipulation?

To put a sharper point on the objection, let's adapt an argument by Enoch (2006) against "constitutivist" theories in metaethics (which try to derive normative facts from the concept of agency). Enoch concedes for argument's sake that the concept <agent> entails that agents have certain normative commitments. However, he proposes to think of himself not as an agent, but as a "shmagent": something very like an agent, but without those normative commitments. Substantive conclusions about the norms we are bound by can't come from analysing a concept; if you pack that content into some concept, I can always propose another concept without the extra baggage. Analogously, we could concede for argument's sake that the concept of cause entails universally lawful connections. In that case, we can simply coin a new concept, <shmause>, with the same content as <cause> minus the implication of lawfulness. If, as the DEFLATIONARY interpretation contends, Kant's move from WCP to SCP turns on the content

of the concept *<cause>*, then here is a new challenge: the DEFLATIONARY interpretation concedes that the Second Analogy's arguments give no special reason to think that events must be produced in a lawful manner, other than that the concept *<cause>* is defined so as to have this consequence. It therefore seems that those arguments are compatible with a claim exactly like WCP, minus the implication of lawfulness:

Shmausal Principle: Every event has a shmause.

And from the Shmausal Principle, there can be no seamless transition to SCP. Consequently, so the objection goes, Kant's argument for SCP has no pull on us unless we restrict ourselves to his arbitrarily defined concept *<cause>*.²²

This line of objection seems right as far as it goes. However, it treats the argument of the Second Analogy as if it floated free from its broader context within *KrV*, and when we pay attention to this context, Kant's move no longer seems *ad hoc*. Consider again my summary of the Second Analogy's main argument:

- (1) I can only represent an event if the ordering of my perceptions is rendered non-arbitrary.
- (2) The ordering of my perceptions can only be rendered non-arbitrary if I deploy the concept *<cause>* (by presupposing that the event in question has a cause).
- (3) Therefore, all events must be represented as caused;
- (4) Therefore, in the realm of appearances, every event has a cause.

²² This reveals another parallel between the place of lawfulness in Kant's metaphysics and in his practical philosophy—Enoch's objection is targeted at Korsgaard's Kantian constitutivism *inter alia* (cf. Enoch, 2006:179).

(2) asserts that the concept *<cause>* is the only tool we have that could perform the required function. In Kant's words, "[t]he concept [...] that carries a necessity of synthetic unity with it can only be a pure concept of the understanding [...] and that is here the concept of the *relation of cause and effect*, the former of which determines the latter in time" (B234, Kant's emphasis). This is the step that warrants Kant in affirming that every event has a cause in his specific sense of the term "cause"—in affirming WCP and its immediate consequence SCP, rather than the Shmausal Principle.

Kant's text contains little explicit argument for the claim that only the concept *<cause>* could render an ordering of perceptions non-arbitrary. Nevertheless, the context makes clear why he thinks this. No other options are available. Firstly, no empirical concept could do the job: the arbitrariness of the order of perceptions must be removed for experience to become possible, but empirical concepts can only be acquired through experience; therefore, it would be viciously circular to claim that empirical concepts remove the arbitrariness of the order of perceptions. Secondly, no mathematical concept could do the job. Kant gives no explicit argument for this, but here is a line of thought based on the footnote at B201f.: since mathematical concepts concern only "compositions" rather than "connections" between appearances, they could not render a particular connection between perceptions of two different states necessary. The only remaining candidates are the categories and their schemata (and the "predicables" falling under them, A82/B108). Of the list of categories derived in the Metaphysical Deduction and their restrictions to the spatio-temporal realm in the Schematism, the only one that could plausibly render a temporal order of perceptions necessary is the ("schematized") concept of cause, which represents "the succession of the manifold insofar as it is subject to a rule" (A144/B183).

From this final step, we can see that a key part of Kant's argument is that we possess only a limited stock of non-mathematical *a priori* representations. The claim that only the concept

<cause> can fulfil the required function is based on exhausting all available alternatives. This reveals why it would be unfair to accuse Kant of simply stipulating that we deploy the concept <cause>, laden with the implication of lawfulness, rather than the concept of <shmause>. Kant does not stipulate the use of the concept <cause> but argues against a background in which it has already been established to his satisfaction that we possess an *a priori* concept of <cause> and no other *a priori* concept that could play an analogous role.

In one sense, this shows that the ‘shmause’ objection is ill-conceived. Kant does not reach SCP through terminological stipulation, but by applying his background theory of the mind’s *a priori* representations. However, in another sense this simply pushes the question back one step. Why does Kant claim that the concept <cause> has this special status of being one of our small stock of (non-mathematical) *a priori* concepts? On what grounds does he assert that causal connections are lawful by definition?

Kant’s views about our stock of non-mathematical *a priori* concepts are presented in the Metaphysical Deduction (A66–83/B91–116), where he enumerates the basic logical functions of judgment and derives the Table of Categories from these. It is an old accusation that these lists seem arbitrary, if not outright suspect (see Longuenesse, 1998:3–5). If Kant’s justification for endorsing SCP ultimately depends on the Metaphysical Deduction, it inherits all the dissatisfactions associated with that section. We might also consider the possibility that Kant simply found it intuitively obvious that we possess an *a priori* concept of <cause>.²³ If so, then the purpose of the Metaphysical Deduction is to explain how we possess such concepts, rather than to convince the reader that we do possess them. In that case, the claim that we possess an *a priori*

²³ This is supported by the sketches of Kant’s philosophical development given by Longuenesse (1998:347–58) and Watkins (2005:166–70), which present Kant’s belief in an *a priori* concept of non-logical necessary connection (i.e. “real ground”) as one of the main driving forces behind his pre-Critical innovations and the genesis of the Critical project.

concept of *<cause>* would rank among the fundamental unargued assumptions of the Critical project.

But why does Kant hold that our *a priori* concept of *<cause>* contains the notions of necessary and universal connection? He presents this conceptual claim as “obviously” true (B5). He claims that if we leave out “necessity of the connection [...] and strict universality of the rule”, e.g. by accepting Hume’s reduction to constant conjunction and subjective expectation, then the concept *<cause>* “would be entirely lost” (B5).²⁴ Kant doesn’t argue for this claim, so it too ranks among his fundamental assumptions. We might not agree with Kant that the Humean reduction of causation is tantamount to banishing genuine causal connections; nevertheless, we should admit that this has some degree of intuitive appeal. Despite being unargued, this assumption seems philosophically respectable rather than *ad hoc*.²⁵ Kant also holds that “Necessity and strict universality [...] belong together inseparably” (B4). Given this commitment, Kant cannot allow necessary connections that are less than universal. He offers no argument for this claim either, so once again we are at the level of fundamental assumptions.

²⁴ Note that Hume himself agrees that it is part of the “idea of cause and effect” that there is a “necessary connexion” between the two (1738:77), but holds that constant conjunction and subjective expectation are sufficient for necessary connection. (I here follow Millican (2009) and others in rejecting the “New Hume” interpretation.) Kant’s disagreement with Hume on this point concerns whether inductively discovered constant conjunction plus subjective expectation is sufficient for the necessity characteristic of causal relations. It’s plausible that *KrV*’s immediate audience would have sided with Kant rather than Hume on this (cp. Watkins (2005:364–73) on Hume’s reception in 18th c. Germany).

²⁵ Admittedly, this assumption limits the Second Analogy’s dialectical effectiveness, if construed as a ‘reply to Hume’. But arguably this simply provides further support for the recently prevalent idea that Kant’s argument is not intended as a direct reply to Hume (see esp. Watkins, 2005). Instead of starting from empiricist assumptions, Kant translates Hume’s problem into one that applies even if we possess *a priori* concepts of necessary connection.

(Arguably, this is also a fairly attractive assumption. It seems plausible that particular and parochial necessary truths are always derivable from general necessary truths that can be expressed without reference to particulars or spatio-temporal restrictions.)

It would be erroneous to claim that Kant's move from WCP to SCP is *ad hoc*. In the Second Analogy, Kant draws on background conclusions about the mind's stock of *a priori* concepts. These conclusions in turn rest on Kant's fundamental assumptions about the nature of causation and the connection between necessity and universality. We might not share Kant's starting points, but we cannot fault him for having these basic commitments. All philosophical argumentation bottoms out in unargued premises at some point.

5. Conclusion & Ramifications

Kant holds that the concept *<cause>* contains the notion of lawful causal connection. Therefore, for Kant, it is analytic that causes operate according to laws; his move from WCP to SCP requires no substantive argument. This reading is mandated by the many passages in which Kant states that the concept *<cause>* entails a universal and necessary connection between cause and effect. Moreover, unlike competing interpretations, this reading fits with Kant's stated conclusions in the Second Analogy and the absence of any substantive argument for the move from WCP to SCP.

Let me clarify what the conclusion of the Second Analogy amounts to on the DEFLATIONARY interpretation. If Kant has a cogent argument for WCP then, given his background assumptions, he is also warranted in asserting SCP. SCP states that every event belongs to a kind K and has a cause belonging to a kind L, such that necessarily every instance of L causes an event of kind K. This is incompatible with there being brute causal relations between particulars or brute causal rules localized to certain spatio-temporal regions. *Pace* those

interpreters who claim that it establishes only WCP, the Second Analogy guarantees that the world of appearances consists of natural kinds related by causal laws with universal scope.

Some commentators have assumed that, if the Second Analogy establishes SCP, it must tell us something about what the particular causal laws are. This, however, would be a mistake.²⁶ The proposition <*the world is governed by a set of causal laws*> does not tell us what any of those laws are. Kant holds that we can know *a priori* that there is some set of natural kinds related by causal laws, but it takes experience to discover the content of these laws: “Experience must be added in order to come to know particular laws *at all*” (B165, Kant’s emphasis; cf. A127, A159/B198, A216/B263).²⁷ Establishing SCP does not even provide us with a method for discovering particular empirical laws. SCP states that nature is “uniform” in the sense of being structured by universal laws. But it does not give us reason to prefer simpler explanations of our observations rather than more complex ones. Nor does it give us a way of determining how general the laws are that govern what we observe. Similarly, SCP is insufficient to ground inductive reasoning: it tells us that the same causes will always have the same effects, but it doesn’t tell us which kinds figure in the causal laws and are hence projectable.

Kant’s argument for how we ought to frame and revise causal hypotheses (and hence his justification of induction) comes only later, with the “regulative principles” given in the Transcendental Dialectic’s Appendix and *KU*’s Introduction. Consider this passage from the latter:

²⁶ Cf. Kannisto (2017:498–500).

²⁷ It is beyond the scope of this article to discuss how to reconcile Kant’s claim that particular causal laws can be discovered only through experience with his claim that necessary truths can only be known *a priori* (e.g. B3). For relevant discussion see Friedman (1992) and Allison (1994).

[T]he understanding says: All alteration has its cause [...]. Now, however, the objects of empirical cognition are still [...], as far as one can judge *a priori*, determinable in so many ways apart from that formal time-condition that specifically distinct natures [...] can still be causes in infinitely many ways; and each of these ways must (in accordance with the concept of a cause in general) have its rule, which is a law [...]. Thus we must think of there being in nature, with regard to its merely empirical laws, a possibility of infinitely manifold empirical laws[.] (*KU* 5:183)

Here, Kant describes what follows from the Causal Principle derived in *KrV*. He affirms that each cause must operate according to a law of nature, but that there is no limit to how fine-grained the kinds figuring in these laws might be. This presents a problem for our attempts to find out what the laws are, a problem which can only be overcome if we assume certain additional regulative principles for judgment. If we conflated SCP with an epistemic principle about how particular causal laws are known, we might think that this passage poses a problem. But having distinguished what does and what does not follow from SCP, we can see that these remarks fit perfectly well with the DEFLATIONARY interpretation.²⁸

²⁸ On the present interpretation, does the conclusion of the Second Analogy rule out there being one-off causal connections, instantiated only once throughout space and time? Allison (1994:298) argues that, if it does not, then this supports the ELSEWHERE interpretation, because a law connecting single instances is not really a law. As explained, SCP is incompatible with brute causal relations between particulars: all particular causal connections must be instances of universal laws relating kinds of cause and effect. However, if it is metaphysically possible for there to be natural kinds which are instantiated only once in the actual world, then a sort of one-off causal connection would be possible. I am unaware of any passages in which Kant discusses this matter (though I suspect that the idea of a natural kind being instantiated only once requires us to think of the universe as a fixed totality and hence is incompatible with transcendental idealism). If one-off connections of

My conclusion about the Second Analogy has ramifications for our understanding of other parts of Kant's project. Proponents of the ELSEWHERE interpretation have argued that the lawfulness of causes is established in the Transcendental Dialectic's Appendix and *KU*'s Introduction, or else in the Postulates of Empirical Thought. The DEFLATIONARY interpretation requires that we reject these accounts of those sections.

Firstly, we must reject the Buchdahl-Beck-Allison-Neiman reading of the Dialectic's Appendix and *KU*'s Introduction. On that reading, the understanding (through activities detailed in the Transcendental Analytic) yields experience of objects, without representing them as lawfully connected. The systematizing activities of reason and/or reflecting judgment take these experiences and produce a picture of a world governed by laws.²⁹ On the reading I have defended, this cannot be right: any subject who has experience of events must already construe nature as operating according to causal laws. This suggests two possibilities about the relation between the understanding and reason/reflecting judgment. The first possibility is that the understanding operates alone to produce representations of lawfully connected phenomena, and that reason/reflecting judgment takes these representations and revises them with the aim of producing a more parsimonious and unified theory. The second possibility is that the activities of reason/reflecting judgment are responsible for guiding the framing of hypotheses about the laws of nature, but that this is coeval with and necessary for the understanding's production of experience. On this latter view (briefly defended in Hutton (2019)), understanding and reason/reflecting judgment do not form two steps in a serial process, but rather two parallel and inextricably linked sub-processes which underlie our ongoing experience of the world.

this peculiar kind don't count as laws, then SCP rules them out; if they do count as laws, then they are compatible with SCP. Either way, this doesn't support the ELSEWHERE interpretation.

²⁹ I leave aside the issue of the relation between reason and reflecting judgment.

Similarly, my conclusion entails rejecting Kannisto's (2017) reading of the Postulates of Empirical Thought. Kannisto holds that, among other things, the section on the 'Postulate of Necessity' contains Kant's argument for SCP. My argument for the DEFLATIONARY interpretation indicates that we should instead follow Friedman's reading of the third postulate as detailing "a procedure by which empirical causal laws are themselves related to the *a priori* principles of the understanding so as to confer on them both necessity and intelligibility" (1992:180).

The DEFLATIONARY interpretation also has ramifications for two broader issues in Kant's Critical system. The first concerns his reconciliation of freedom and determinism. Some have attempted to reconcile these commitments by softening the latter. For example, Allais (n.d.) suggests that Kant may not be committed to "global" causal laws, instead allowing that causal laws hold only for "open subsystems of the world". If the present interpretation is correct then, *pace* this proposal, Kant holds that all events in the realm of appearances fall under strictly universal laws, and we should pursue other accounts of Kant's reconciliation of freedom and determinism. Nonetheless, the DEFLATIONARY interpretation leaves room for two well-known approaches.³⁰ The first works by drawing an epistemic distinction between appearances and things in themselves and highlighting the availability of a standpoint from which things are not causally determined (e.g. Allison, 1990, 2004; Korsgaard, 1996). Nothing in this approach requires denying that phenomenal events are causally determined in the strict sense of SCP or denying that all causes including free wills operate in a lawful manner; consequently, nothing I have argued tells against it. The second approach to reconciling freedom and determinism posits that the causal laws which govern appearances are partly grounded in the choices or characters

³⁰ Perhaps it is also compatible with Allais's proposal that there may be no "determinate totality of laws" (2015:307)

of noumenal agents (e.g. Watkins, 2005:ch. 5; Wood, 1984). This means that an agent's choices or character are antecedent to, rather than determined by, the deterministic laws of nature. Again, this reading is perfectly compatible with appearances being subject to SCP, and with every free will having a (self-imposed) law of operation.

The second issue concerns how to reconcile Kant's determinism with his qualified endorsement of teleological explanation. Allison (1990:ch. 4) argues that the apparent conflict can be dissolved because Kant is only committed to the *regulative* principle that we should look for laws of efficient causation, not the *constitutive* principle that nature exhibits such laws. The DEFLATIONARY interpretation shows that, *pace* Allison, Kant is committed to the *constitutive* principle that every event is produced according to a causal law, and we need to pursue other accounts of the relation between causal and teleological judgments. (In this case, a 'two standpoints' view along the lines of Breitenbach (2008) may be the most promising avenue.)

One final ramification concerns Kant's contemporary relevance. In Section 4, we saw how the Second Analogy depends crucially on its position within Kant's broader project and on several fundamental, unargued assumptions. From a contemporary perspective, it is somewhat disappointing to find Kant's move to SCP relying above all on the specifics of his definition of causality, specifics for which he provides no argument. The disappointment is intensified for anyone sympathetic to Kant's own insistence that "in philosophy the definition [...] must conclude rather than begin the work" (A730f./B758f.). On the other hand, it would be unfair to criticize Kant for relying on a set of basic philosophical commitments; argumentation always bottoms out in unargued starting assumptions. In this article, I hope to have given us a clearer picture of what Kant's starting assumptions are and how they support his bold conclusions.³¹

³¹ This research was generously funded by the Leverhulme Trust (grant number: SAS-2017-086) and the AHRC. Thanks also to Senthuran Bhuvanendra, Angela Breitenbach, John Filling, Anil Gomes, Rae Langton, Rachel Robertson, Paulina Sliwa and two anonymous referees.

Bibliography

Kant's works

References to *KrV* follow the A/B pagination, to other works the pagination of *Kant's Gesammelte Schriften*, vols. 1–29 (Berlin: de Gruyter, 1902–). Abbreviations follow the Kant-Gesellschaft's conventions (http://www.kant-gesellschaft.de/en/ks/e_HinweiseAutorenSiglen_neu.pdf). Translations are based on the Cambridge editions, though sometimes tacitly amended. Translations of German-language secondary literature are my own.

Other References

- Adickes, E. (1889). *Immanuel Kant's Kritik der reinen Vernunft. Mit einer Einleitung und Anmerkungen*. Berlin: Mayer & Müller.
- Allais, L. (n.d.). Kantian Determinism and Contemporary Determinism. (*Manuscript*).
- Allais, L. (2015). *Manifest Reality*. Oxford: Oxford University Press.
- Allison, H. E. (1983). *Kant's Transcendental Idealism* (1st ed.). New Haven: Yale University Press.
- Allison, H. E. (1990). *Kant's Theory of Freedom*. Cambridge: Cambridge University Press.
- Allison, H. E. (1994). Causality and Causal Laws in Kant: A Critique of Michael Friedman. In Paulo Parrini (Ed.), *Kant and Contemporary Epistemology* (pp. 291–307). Dordrecht: Kluwer.
- Allison, H. E. (2004). *Kant's Transcendental Idealism* (2nd ed.). New Haven: Yale University Press.
- Bayne, S. M. (1994). Objects of Representations and Kant's Second Analogy. *Journal of the History of Philosophy*, 32(3), 381–410.
- Beck, L. W. (1978). A Prussian Hume and a Scottish Kant. In *Essays on Kant and Hume* (pp. 111–129). New Haven: Yale University Press.
- Beck, L. W. (1981). Über die Regelmäßigkeit der Natur bei Kant. *Dialectica*, 35(1), 43–56.
- Breitenbach, A. (2008). Two views on nature: A solution to Kant's antinomy of mechanism and teleology. *British Journal for the History of Philosophy*, 16(2), 351–369. <https://doi.org/10.1080/09608780801969167>
- Buchdahl, G. (1969a). *Metaphysics and the Philosophy of Science*. Oxford: Blackwell.
- Buchdahl, G. (1969b). The Kantian "Dynamic of Reason" with Special Reference to the Place of Causality in Kant's System. In L. W. Beck (Ed.), *Kant Studies Today* (pp. 341–374). LaSalle, IL: Open Court.
- Dodge, J. R. (1982). Uniformity of Empirical Cause-Effect Relations in the Second Analogy. *Kant-Studien*, 73(1–4), 47–54.
- Enoch, D. (2006). Agency, Shmagency: Why Normativity Won't Come from What Is Constitutive of Action. *Philosophical Review*, 115(2), 169–198.
- Friedman, M. (1992). Causal Laws and the Foundation of Natural Science. In P. Guyer (Ed.), *The Cambridge Companion To Kant* (pp. 161–199). Cambridge: Cambridge University Press.
- Friedman, M. (1994). Kant and the Twentieth Century. In Paulo Parrini (Ed.), *Kant and Contemporary Epistemology* (pp. 27–46). Dordrecht: Kluwer.
- Guyer, P. (1987). *Kant and the Claims of Knowledge*. Cambridge: Cambridge University Press.
- Hume, D. (1738). *A Treatise of Human Nature*. (L. A. Selby-Bigge & P. H. Nidditch, Eds.). Oxford: Clarendon Press.
- Hutton, J. (2019). Epistemic normativity in Kant's "Second Analogy." *European Journal of Philosophy*, 27(3). <https://doi.org/10.1111/ejop.12424>
- Kannisto, T. (2017). Kant on the Necessity of Causal Relations. *Kant-Studien*, 108(4), 495–516.
- Kemp Smith, N. (1918). *A Commentary to Kant's Critique of Pure Reason*. London: Macmillan.
- Kitcher, P. (1990). *Kant's Transcendental Psychology*. Oxford: Oxford University Press.
- Korsgaard, C. (1996). *Creating the Kingdom of Ends*. Cambridge: Cambridge University Press.

KANT, CAUSATION & LAWS OF NATURE

- Longuenesse, B. (1998). *Kant and the Capacity to Judge*. Princeton: Princeton University Press.
- Longuenesse, B. (2005). Kant on Causality: What Was He Trying to Prove? In C. Mercer & E. O'Neill (Eds.), *Early Modern Philosophy: Mind, Matter and Metaphysics* (pp. 231–258). Oxford: Oxford University Press.
- Lovejoy, A. (1906). On Kant's Reply to Hume. *Archiv Für Geschichte Der Philosophie*, 19(3), 380–408.
- Melnick, A. (1973). *Kant's Analogies of Experience*. Chicago: Chicago University Press.
- Millican, P. (2009). Hume, Causal Realism, and Causal Science. *Mind*, 118, 647–712.
<https://doi.org/10.1093/mind/fzp095>
- Neiman, S. (1994). *The Unity of Reason*. Oxford: Oxford University Press.
- O'Neill, O. (1989). *Constructions of Reason*. Cambridge: Cambridge University Press.
- O'Shea, J. R. (1997). The needs of understanding: Kant on empirical laws and regulative ideals. *International Journal of Philosophical Studies*, 5(2), 216–254.
<https://doi.org/10.1080/09672559708570855>
- Paton, H. J. (1936). *Kant's Metaphysic of Experience* (Vol. 2). London: Allen & Unwin.
- Strawson, P. F. (1966). *The Bounds of Sense*. London: Methuen.
- Thöle, B. (1991). *Kant und das Problem der Gesetzmäßigkeit der Natur*. Berlin: De Gruyter.
- Watkins, E. (2005). *Kant and the Metaphysics of Causality*. Cambridge: Cambridge University Press.
- Wolff, R. P. (1963). *Kant's Theory of Mental Activity*. Cambridge, MA: Harvard University Press.
- Wood, A. (1984). Kant's Compatibilism. In A. Wood (Ed.), *Self and Nature in Kant's Philosophy* (pp. 73–101). Ithaca, NY: Cornell University Press.