

# KANT'S RESPONSE TO HUME IN THE SECOND ANALOGY: A CRITIQUE OF GERD BUCHDAHL'S AND MICHAEL FRIEDMAN'S ACCOUNTS

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This article presents a critical analysis of two influential readings of Kant's Second Analogy, namely, Gerd Buchdahl's "modest reading" and Michael Friedman's "strong reading." After pointing out the textual and philosophical problems with each, I advance an alternative reading of the Second Analogy argument. On my reading, the Second Analogy argument proves the existence of necessary and strictly universal causal laws. This, however, does not guarantee that Kant has a solution for the problem of induction. After I explain why the empirical lawfulness of nature does not guarantee the empirical uniformity of nature, I examine the modal status of empirical laws in Kant and argue contra Buchdahl and Friedman that empirical laws express two different kinds of necessity that are not reducible to each other.

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While commentators mostly agree that in the Second Analogy Kant responds to the "Humean problem," there is not yet an agreement on which one of the Humean problems the Second Analogy argument solves. Bird (1962), Buchdahl (1965, 1969a, 1969b, 1974, 1992), Beck (1978), and Allison (1996, 2004), among others, argue that the Second Analogy addresses Hume's "problem of causation," which is a problem concerning the justification of the concept of causa-

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tion and the Causal Principle. In this article, I focus on Buchdahl's "modest reading" of the Second Analogy, according to which Kant has a modest goal in the Second Analogy of solving only Hume's problem of causation.<sup>1</sup> In response to Buchdahl's modest reading, Michael Friedman, among others, argues for the "strong reading" of the Second Analogy. According to the strong reading, Kant addresses not only Hume's problem of causation but also the problem of induction. In fact, Friedman, in the *Stanford Encyclopedia of Philosophy* entry he wrote with Graciela De Pierris (De Pierris and Friedman 2013), claims that Kant's main objective in the Second Analogy is to solve Hume's problem of induction, which is a problem about the validity of inductive inferences, and that its solution requires an a priori justification of the principle of the uniformity of nature.<sup>2</sup>

Contra these two popular readings, which view the Second Analogy as addressing one or the other of the Humean problems, I argue that the Second Analogy achieves more than providing an a priori justification for the concept of causation and the general causal principle, and yet it does not have the resources to solve the problem of induction. Moreover, contra Buchdahl and Friedman, whose readings attribute only one kind of necessity to Kant's conception of empirical laws—namely, either regulative or causal necessity, respectively—I argue that these two kinds of necessity are not reducible to each other and that empirical laws can express both at the same time.

The structure of the article is as follows. In section 1, I give a critical analysis of Buchdahl's modest reading and Friedman's strong reading of the Second Analogy and point out the philosophical and textual problems with these accounts. In section 2, I explain Kant's method of argumentation and reconstruct the main argument of the Second Analogy. In section 3, which is the final section of the article, I advance an alternative reading of what the Second Analogy argument establishes and clarify the implications of my reading for the modality of empirical laws. The alternative reading I offer can be summarized in the following three theses: (1) the Second Analogy argument proves both the necessity of the Causal Principle and the existence of its particular determinations, i.e., strictly universal and necessary empirical causal laws; (2) contra Buchdahl and Friedman, empirical laws express two different kinds of necessity that are not reducible to each other; and (3) even though the Second Analogy guarantees the

1. Buchdahl and Allison call this the "weak reading" of the Second Analogy. For their description of the weak and the "strong" readings of the Second Analogy, see Buchdahl (1965, esp. 190–200) and Allison (1996, esp. 81; 2004, esp. 256). Other works and scholars who defend the modest reading include, but are not limited to, Strawson (1966), Buchdahl (1969a, 1969b, 1974, 1992), and Beck (1978).

2. Since Friedman has systematically argued for the strong reading of the Second Analogy in his other works, the main focus of this article will be his particular interpretation of the Second Analogy argument. Others who defend different versions of the strong reading include Melnick (1973), Guyer (1987, esp. chap. 10), Guyer and Walker (1990), and Kitcher (1990).

existence of (necessary and strictly universal) empirical laws, it does not guarantee the empirical uniformity of nature, and consequently the Second Analogy argument falls short of solving Hume's problem of induction.

## 1. Two Popular Readings of the Second Analogy

### 1.1. Buchdahl's Reading of the Second Analogy

For the purposes of this article, I will not offer a detailed account of Buchdahl's reading of Kant's Second Analogy argument. Instead, I will present the general tenets of his position and focus on the underlying reasons for Buchdahl's thesis that the Second Analogy does not prove the existence of empirical laws. Buchdahl views the Second Analogy as Kant's response to the problem of causation. In that respect, he argues that Kant's main disagreement with Hume is over the apriority of the concept of causation and the Causal Principle, which states roughly that every event has some cause. According to Buchdahl, the Second Analogy does not guarantee the "empirical lawlikeness" of nature. As Buchdahl (1965, 200) puts it, "The general [causal] principle cannot be intended to furnish a justification for the assumption even of [empirical] lawlikeness in general, (let alone the existence of special laws)." This, in turn, means that Kant, like Hume, holds that particular causal laws are merely contingent inductive generalizations discovered empirically. On Buchdahl's (1992, 257) reading, therefore, both Hume and Kant agree on the status of empirical laws, such as the universal law of gravitation: "Contrary to what is implied by the majority of commentators, Kant . . . regards the law of gravitation as altogether empirical. This he cites explicitly (MF [Kant 1786/2004], p. 534), emphasizing that we are not entitled 'through a priori conjectures to hazard a law of attractive . . . force, [but that] universal attraction (as a cause of gravity), together with its law, must be inferred from the data of experience'[,] words which almost reproduce those of Newton."

Buchdahl's modest reading primarily draws on Kant's distinction between the faculties of understanding and reason and the respective roles they play in making experience possible. According to Buchdahl, these faculties operate at different levels. Similarly, Kant's arguments for the existence of causality and lawlikeness or conformity to laws (*Gesetzmäßigkeit*) also operate at different levels, namely, the transcendental (or a priori) and the empirical (Buchdahl 1992, 223).

Since Buchdahl maintains that there is a gap between the transcendental and empirical levels of lawlikeness, he claims that Kant's Second Analogy argument for the existence of causality and lawlikeness at the transcendental level does not necessarily entail the existence of causality and lawlikeness at the empirical level (1992, 225). Similarly, because Kant's arguments in the Analogies of Experience operate at the transcendental level, on Buchdahl's (1965, 207)

modest reading, the Analogies do not guarantee that these empirical laws are really “lawlike,” that is, necessary. As Buchdahl puts it, “When Kant says that the analogies give us causality, . . . we must *not* take it that the general causal principle provides a justificational basis for such [particular causal] laws, or for their ‘lawlikeness in general’” (207; emphasis added).

Instead of providing an a priori justification for the existence of particular empirical causal laws, the Second Analogy, on Buchdahl’s account, provides us with a “guide-line” offering some necessary conceptual and linguistic tools to help us discover those empirical laws. As Buchdahl (1965, 197) explains,

We have shown that the statement of the principle of causality can be proved *a priori*, in the sense that the conception of an objective world entails the thought of the members of that world, *regarded as appearances*, being subject to a rule. Let us then use this principle, not considered as a *support* for the specifications of the particular rules which experience may come to discover, but as a guide-line for the search of principles; where having this guide-line does not mean having a guarantee that any putative principle is a law, but rather, that it gives us the *language* in terms of which to carry on our procedure.

In other words, the Second Analogy proves the a priori validity of the Causal Principle by showing that we cannot think of the objects of experience unless we assume that our representations of objects are subject to “a rule.” And this rule, on Buchdahl’s modest reading, is none other than the Causal Principle, which is a transcendental principle of understanding. Owing to the aforementioned gap between the a priori transcendental laws of understanding and their particular empirical determinations, Kant’s Second Analogy argument for the validity of the Causal Principle, on Buchdahl’s reading, guarantees neither that the Causal Principle has particular determinations, that is, particular empirical causal laws, nor that we will be able to discover them. The underlying reason why Buchdahl sees a gap between the transcendental and empirical levels is that Kant, on his account, assigns different and mutually exclusive roles to the faculties of understanding and reason. While understanding (through its a priori transcendental principles) constitutes human experience, reason (through its a priori regulative principles) orders our experience in a systematic way and in so doing helps us search for and hopefully discover particular empirical causal laws. In this respect, reason’s task is to guide our empirical or scientific inquiry through its a priori regulative principles (Buchdahl 1965, 204). Hence, empirical lawfulness, for Buchdahl, is not an a priori contribution of the understanding but rather a self-imposed task of our faculty of reason, that is, it is an objective that reason

strives to achieve (201).<sup>3</sup> On Buchdahl's reading, then, Kant agrees with Hume that particular empirical causal laws are contingent generalizations derived inductively from experience.<sup>4</sup> Like all empirical inductive rules, particular causal laws, according to Buchdahl, are merely empirical contingent generalizations that we come to formulate through the *a priori* regulative principles of reason.

Even though particular empirical laws are contingent from the point of view of the faculty of understanding, Buchdahl argues that these rules can express a kind of necessity when placed in a systematic order by the faculty of reason. That is, when they are subsumed under more general empirical laws, empirical laws express a kind of necessity because of their relationship to more general empirical laws. According to Buchdahl, by putting our empirical judgments in a systematic order, reason with its regulative principles enables us to attribute what he calls "lawlike necessity" to empirical generalizations. Since empirical laws express necessity only in the system of laws, and because such a system is secured only through the regulative employment of reason, Buchdahl (1965, 204) calls this kind of necessity "regulative necessity."

Note that this kind of necessity is not grounded in the understanding, and consequently it is not established in the Analogies of Experience (Buchdahl 1965, 204). As Buchdahl writes, "The ground of this necessity can therefore not be involved in the argument of the analogies of experience," in which Kant is concerned with the understanding's role in experience (204). On Buchdahl's reading, then, not only the existence but also the necessity (or lawlikeness) of empirical laws depends on the activity of reason: "Without the activity of reason there would be no systematic connection, and hence no sense in ascribing to the special contingent rules of nature any lawlike necessity" (202).<sup>5</sup>

Note also that because on the modest reading the Second Analogy addresses only the Humean problem of causation, on Buchdahl's account there is neither any reason nor any need for the Second Analogy argument to also establish the

3. Following Buchdahl, Allison argues that the Analogies of Experience fall short of guaranteeing the empirical lawfulness of nature. According to Allison, the Causal Principle allows us to experience contingent events, and this relatively modest claim "constitutes the heart of Kant's answer to Hume, does not entail any further claims about the empirical lawlikeness of nature" (1996, 90). As Allison puts it, "The Analogies . . . perform (and are intended to perform) only the minimal transcendental function of securing an objective temporal order of contingent occurrences, while the actual projection of an empirically lawlike order of nature is seen as the work of reason or reflective judgment" (80).

4. Bird (1962, 149–67) and Beck (1978, 119) agree with Buchdahl that while Kant disagrees with Hume's account of the Causal Principle, he agrees with Hume on the contingency of the particular empirical laws.

5. Allison agrees with Buchdahl that understanding has nothing to do with the necessity of empirical laws. As Allison (1996, 90) puts it, "The necessity of empirical laws is entirely a function of their place in a systematic structure of such laws, while this structure, in turn, is seen as a regulative demand of reflective judgment rather than a constitutive requirement of the understanding."

existence of strictly universal and necessary particular causal laws. By arguing that all appearances must be subject to the Causal Principle, Kant achieves the modest goal of demonstrating its a priori validity. On the modest reading, therefore, the Second Analogy argument is mute about the existence of such laws. Yet this silence does not constitute a problem or weaken Kant's response to Hume.

## 1.2. Friedman's Reading of the Second Analogy

In response to Buchdahl's modest reading, Friedman offers the strong reading of the Second Analogy, according to which Kant's main argument in the Second Analogy has a more ambitious goal than that of merely providing an a priori justification of the Causal Principle. In their entry for the *Stanford Encyclopedia of Philosophy*, De Pierris and Friedman (2013) argue that the Humean problem that awoke Kant from his "dogmatic slumber" is the problem of induction as presented in the first *Enquiry*, which Kant supposedly read (in translation) during the late 1750s to mid-1760s.<sup>6</sup> According to De Pierris and Friedman, while Kant attempts to address the problem of induction in his earlier works, he finally presents a solution to it in the Second Analogy by proving the empirical lawfulness of nature. In this section, I examine the main arguments for Friedman's strong reading of the Second Analogy. First, I explicate why Friedman maintains that the Second Analogy argument proves the existence of strictly universal and necessary empirical laws. Then, I elaborate why Friedman thinks that the existence of strictly universal and necessary empirical laws guarantees the empirical uniformity of nature and thereby addresses Hume's problem of induction.

Before focusing on Friedman's arguments for the strong reading, however, it is important to get a clear picture of Hume's problem of induction and to identify what one needs to establish in order to solve that problem. Since the strong reading views the Second Analogy as a response to the problem of induction as presented in the *Enquiry*, let us focus on Hume's exposition of the problem in that text.

In the *Enquiry*, Hume's search for the foundation of causal inferences leads him to question the foundation of our inferences from experience. Hume (1748/1999, sec. 4, pt. 2, p. 113) distinguishes causal inferences from inferences from experience. While the former involve reasoning from observed instances (objects/events) to unobserved instances, the latter is a form of reasoning that involves making generalizations based on particular instances of past experience. As Hume points out, in order to make a valid inference from objects of past experience to all cases, we need a "connecting proposition" or an "intermediate

6. For a detailed account of how much of Hume's texts Kant read, see Kuehn (1983).

step” connecting our judgment about an object of past experience to a universal judgment about all objects of the same kind, including similar objects of future experience (115).

This intermediate step, as Hume (1748/1999, sec. 4, pt. 2, p. 115) reveals, is the assumption that the course of nature is uniform, that is, the future will conform to the past. Hume argues that unless we assume that the course of nature will remain the same and that the future will resemble the past, all experience becomes useless and cannot give rise to valid inferences from experience (114–17). In other words, only if one knows that the course of nature is uniform, that is, that the future will conform to the past, one can justifiably infer from past experience of similar cases. Hume argues that neither deductive nor inductive reasoning can prove the uniformity of nature. Hence, both inductive inferences and causal inferences, which rely on inductive inferences, are unjustified.

Having pointed out the problem with causal inferences, Hume presents his account of causation, according to which causal inferences are based on customs and habits we acquire owing to observation of constant conjunction or regularities in nature (1748/1999, sec. 4, pt. 2, p. 121). As Hume argues, what we take to be the necessary connection among objects is merely a subjective feeling of determination resulting from the experience of regularities. In that respect, Hume adopts a regularity model of causation, according to which the concept of causation is grounded in the observation of regularly or constantly conjoined successive events.<sup>7</sup> On the regularity model of causation, we acquire the idea of causation (in particular, the idea of necessary connection) based on countless experiences of regularities, that is, constantly conjoined events. On this model, then, causes and effects are distinct types of events that are constantly connected to each other. The reason we think that they are necessarily connected is that the experience of constantly conjoined events produces the subjective feeling of determination and the expectation that similar effects will have similar causes and vice versa.<sup>8</sup>

7. Falkenstein (1998) clarifies the main tenets of the regularity and the power models of causation. As he explains, in the regularity model, causes are always followed by their effects in accordance with constant rules, and why causes are necessarily connected to their effects is not explained (332). In the power model, causes necessitate their effects owing to some property they have, such as certain forces or causal powers. According to Falkenstein, Kant rejects the power model of causation because Kant denies the possibility of any knowledge concerning the fundamental forces or secret powers underlying the necessary connections between events (335–36).

8. As Falkenstein (1998, 334) puts it, in the regularity model of causation, “a sequence of events that only occurs once, without conforming to any pattern, cannot be a causal sequence. . . . For the power model and excretion models of causality and necessary connection, in contrast, this is not the case. These models take a cause to be the thing that makes its effect happen, and this is a property that the cause possesses independently of whether there is anything else like it, or anything else like its effect, in the universe.”

Since the experience of a single succession of events cannot give us the idea of necessary connection, we must acquire the idea of necessary connection from the experience of countless many successions of similar event types. This in turn explains why Hume's regularity model of causation, in which the idea of necessary connection is based on the experience of the repeated succession of similar event types, does not allow for the possibility of causal connections between singular event tokens.

The immediate question, therefore, is whether Kant also adopts a version of the regularity model of causation. If the answer is yes, then in order to give an objective account of causation, Kant has to show that we are justified in thinking that there are regularities in nature. In other words, in order to address the problem of causation, Kant first needs to address the problem of induction.<sup>9</sup> That is, if Kant adopts the regularity account of causation, then in order to demonstrate the validity of causal reasoning, he would first need to show that there are in fact regularities in nature. If he adopts a different model of causation, however, he might be able to solve the problem of causation without addressing the problem of induction.

Even though Kant disagrees with Hume's assumption that causal reasoning ultimately rests on inductive reasoning and instead offers an a priori argument for the validity of causal reasoning, the strong reading views the Second Analogy argument as targeting the problem of induction. In fact, Kant, it is argued, manages to solve Hume's problem of induction by presenting an argument for the unity of experience, which supposedly corresponds to the "missing step" in Hume's causal reasoning, that is, the principle of the uniformity of nature. More precisely, on the strong reading, the a priori principles of the understanding can guarantee the empirical lawfulness of nature, and the empirical lawfulness of nature in turn guarantees the unity of experience or the uniformity of nature.

Friedman seems to attribute a version of the regularity model of causation to Kant. According to Friedman, a cause is nothing more than an event that is always followed by a certain type of effect in accordance with constant laws governing these causal relations. Friedman does not seem to think that singular causal relations between unique events that are not similar to any other event

9. On Falkenstein's reading, both Hume and Kant are committed to the regularity model of causation, and yet they disagree about the justification for our belief in the necessity of the connection between causes and effects. While for Hume causal necessity is ultimately grounded on experience, Kant believes that we have an a priori justification for the belief in causal necessity (Falkenstein 1998, 336). I disagree with Falkenstein's thesis that Kant adopts the regularity model of causation, because, as Falkenstein points out, the regularity model of causation denies the possibility of singular causal relations (and similarly instantaneous causal laws), and yet nothing Kant says about causation conflicts with the possibility of singular causal relations (334).



in the world would be possible. As Friedman (1992a, 192; 1992b, 97) writes, “Clearly, only types or kinds of events can follow one another *always*—that is, universally.”

Moreover, Friedman holds that causation, for Kant, signifies the law-governed succession of different types of events. Hence, the very concept of causation, according to Friedman (1992a, 162–63), entails the existence of necessary and strictly universal empirical laws and of regularities governed by these empirical laws. More precisely, the concept of causation, as Friedman argues, entails the existence of necessary connections between different event types, and those necessary connections must occur in accordance with strictly universal rules, namely, particular causal laws (162–63). In support of this point, Friedman refers to the following passage from section 13 of the first *Critique*: “For this concept [of causation] positively requires that something *A* be of such a kind that something else *B* follow from it *necessarily* and *in accordance with an absolutely universal rule*. . . . The strict universality of the rule is therefore not any property of empirical rules, which cannot acquire anything more through induction than comparative universality, i.e., widespread usefulness” (Kant 1781–87/1998, A91–92/B123–24). Contra Buchdahl, Friedman holds that this strictly universal rule between events *A* and *B* is not the Causal Principle itself but rather a particular empirical causal law. For Friedman (1992a, 163–64), causal relations entail the existence of strictly universal causal laws, which are characterized as necessary. As he writes, “To say that event *A* causes event *B* is to say, first, that there is a universal rule or law of the form: Events of type *A* are followed by events of type *B*” (163). As is clear, the very conception of causation, according to Friedman, entails the existence of necessary and strictly universal causal laws. Hence, Kant’s task, in this picture, is to prove that this conception is applicable to experience by demonstrating that there are such necessary and strictly universal causal laws (164). Note that causal laws necessarily govern causal relations between different types of events, and the possibility of singular causal relations (and instantaneous causal laws) is not recognized.

According to Allison (1996, 86), Friedman holds an “epistemological thesis,” according to which the “cognitive function supposedly performed by the causal principle can be accomplished only by means of an explicit appeal to such [particular empirical causal] laws.” In other words, the existence of particular empirical causal laws, on Friedman’s account, seems to be a necessary precondition for the possibility of experiencing objective succession. More specifically, judgments of objective succession, for Friedman, require knowledge of the specific causal laws governing events. On Friedman’s account, we must be able to know the particular causal laws governing events before we are able to assert their objectivity. Allison argues that Friedman’s reading cannot be right because it im-

plies the apparently implausible view that we cannot have an experience of events unless we know their particular causes (87).<sup>10</sup>

As Allison points out, Friedman is also committed to the “conceptual thesis,” according to which the concept of causality entails the existence of particular causal laws.<sup>11</sup> In fact, Friedman (1992b, 77) criticizes Buchdahl’s modest reading of the Second Analogy for failing to recognize precisely this conceptual relationship between the concepts of causation and causal laws. Claiming that events are causally connected is equivalent to claiming that they are subject to particular causal laws, according to Friedman. On Friedman’s strong reading, therefore, even if one attributes to the Second Analogy argument the modest objective of proving the a priori validity of the Causal Principle, the argument, if sound, guarantees the existence of particular causal laws as well (Friedman 1992a, 171).

In response to Buchdahl’s thesis that understanding and reason operate at different levels and play mutually exclusive roles in making experience possible, Friedman in his influential article “Regulative and Constitutive Principles” (1992b) argues that understanding plays a role in the realization of empirical concepts and empirical causal laws (90). In fact, the most general empirical concept and empirical law, namely, the concept of matter and the empirical law of universal gravitation, are, according to Friedman, mutual products of the faculties of understanding and reason (87).<sup>12</sup>

On Friedman’s (1992a, 187) account, while understanding guarantees the existence of empirical laws, reason (or the reflective judgment) secures the sys-

10. As Allison (1996, 87) points out, the reason why Friedman argues for the epistemological thesis is because Friedman has a different reading of what Kant means by “objective succession” and how the concept of causation and Causal Principle allows us to distinguish subjective succession from objective succession. For the present purposes, it suffices to note simply that Friedman reads the “objective succession” as a succession of different events, i.e., event A and event B, rather than the succession of perceptions A and B constituting a single event AB. Also, as Allison rightly points out, Friedman reads the application of the Causal Principle and the concept of causation as a precondition for the possibility of transforming appearances (*Erscheinung*) into experience (*Erfahrung*), which for Friedman corresponds to the distinction between the experience of apparent motions and true motions (87–88). For a more detailed account of Allison’s critique of Friedman’s version of the epistemological thesis, see Allison (1996, 86–87; 2004, 258–59). While Friedman does not claim that we can know the nature of particular empirical laws a priori, he certainly holds that the objectivity of an objective succession of events depends on discovering the empirical laws governing that succession. Guyer maintains a different version of the epistemological thesis. According to Guyer (1987, 246), the very possibility of recognizing events presupposes that we know the particular causal laws to which those events are subject. Allison (2004, 256–57) also criticizes Guyer’s version of the epistemological thesis.

11. Here, I adopt Allison’s terminology while naming these views as “conceptual” and “epistemological” theses.

12. For the present purposes, I will not present Friedman’s reconstruction of how Kant derives the law of universal gravitation from the application of the a priori rules of understanding to the empirical rules of Kepler’s laws of planetary motion. For a detailed account of Friedman’s reconstruction, see Friedman (1992a).

tematicity of these laws. As Friedman puts it, "The problem left unsettled by the understanding is not that empirical laws may not exist at all, as it were, but only that they may fail to constitute a system" (187). Reason, through its regulative ideas and principles, puts empirical laws in a systematic order. In such a system of empirical laws, all laws and concepts are put into relation with more general laws and ultimately with the a priori laws of understanding. This is how, Friedman claims, the system of empirical laws receives transcendental grounding (191). Hence, understanding (with its a priori transcendental contributions) does play a role in the empirical lawfulness of nature, as empirical laws get their lawfulness (or necessity) through their connection to the a priori laws of the understanding.

To further support the thesis that the faculty of understanding is indeed capable of guaranteeing the existence of particular empirical laws, De Pierris and Friedman (2013) point out that Kant, in the Second Analogy, repeatedly makes reference to "a rule." On their reading, by "a rule" Kant means "a particular empirical causal law," as opposed to the Causal Principle itself. As they put it,

Kant maintains that, when one event follows another in virtue of a causal relation, it must always follow "in accordance with a rule" ([1781–87/1998,] A193/B238). Moreover, the "rule" to which Kant is here referring is not the general causal principle, but rather a particular law connecting a given cause to a given effect which is itself strictly universal and necessary (A193/B238–239): "In accordance with such a rule there must thus lie in that which precedes an event as such the condition for a rule according to which this event follows always and necessarily." Kant insists on this point throughout the Second Analogy.

Since the Causal Principle makes reference to particular causal laws, if Kant's Second Analogy argument is successful, it would also demonstrate the existence of its particular determinations.<sup>13</sup>

So far, we have examined three different points supporting Friedman's thesis that the Second Analogy establishes the existence of particular empirical causal laws: (1) the conceptual relationship between the concepts of causation and particular causal laws, (2) the role of the faculty of understanding in guaranteeing the empirical lawfulness of nature, and (3) Kant's reference to "a rule" in the formulation of the Second Analogy principle and throughout the Second Analogy. According to Friedman's (1992a, 171) reading, the Second Analogy argument establishes not only the existence but also the necessity of the particular

13. See also Friedman (1992a, 171), where Friedman interprets Kant's use of "a rule" as "a particular causal law."

determinations of the Causal Principle. By arguing that individual particular causal laws are necessary, Friedman situates Kant in opposition to Hume with regard to the modal status of both the Causal Principle and the particular causal laws. On Friedman's account, the particular causal laws are grounded in the a priori transcendental laws of understanding, which is a proof that they cannot be obtained or derived solely empirically through induction (172). In this regard, empirical causal laws, on the strong reading, express a kind of necessity (and strict universality) that mere inductive generalizations lack.<sup>14</sup> As De Pierris and Friedman (2013) write, "The Second Analogy is . . . committed to the necessity and strict universality of particular causal laws. If the general causal principle . . . is true, then, according to Kant, there must also be particular causal laws . . . , which are themselves strictly universal and necessary."

Since Kant takes necessity to be a secure indication of apriority, Friedman (1992a, 174) concedes that empirical laws are also a priori in a derivative sense. Empirical laws, Friedman claims, are the products of the synthesis of the a priori categories of the understanding and inductive empirical rules. Therefore, they have a kind of "mixed status."<sup>15</sup> According to Friedman, Kant explains the nature of this kind of necessity in the Postulates of Empirical Thought, in particular in his discussion of the third postulate (179–80). The necessity of particular causal laws, which Friedman refers to as "empirical necessity," is not a function of reason, as Buchdahl claims, but rather derives from the understanding. This necessity, furthermore, is merely an approximation of the kind of necessity that a priori laws of understanding possess: "Empirical necessity can derive from nowhere else than *a priori* grounding in the principles of understanding. . . . The task of reflective judgment is not somehow to provide a kind of necessity that the understanding itself cannot provide, but rather to systematize the potentially infinite multiplicity of empirical laws under more and more general empirical laws so as to approximate to the *a priori* necessity issuing from the understanding and from the understanding alone" (190). Note that according to Friedman, empirical laws can express only one kind of necessity, which he calls

14. Friedman is not alone in attributing a kind of necessity to individual particular causal laws. Hanna (2006, 183–84) agrees with Friedman that individual empirical laws carry what he calls "material necessity" or "dynamic necessity." Hanna, like Friedman, argues that this kind of necessity is most clear in the third postulate of empirical thought of the first *Critique*. On Hanna's reading, empirical laws carry material necessity because they are true in every possible world whose material conditions are sufficiently similar to our own world.

15. As Friedman (1992a, 174) writes, "Particular causal laws, for Kant, have a peculiar kind of mixed status: They result from a combination of inductively observed regularities or uniformities with the *a priori* concepts (and principle) of causality. Insofar as particular causal laws merely record observed regularities they are contingent and *a posteriori*; insofar as they subsume such regularities under the *a priori* principle of causality, however, they are necessary—and even, in a sense, *a priori*."

“empirical necessity,” and the sole origin of this necessity is the faculty of understanding.<sup>16</sup>

The thesis that the Second Analogy proves both the existence and the necessity of particular empirical causal laws is important for the strong reading, because only by demonstrating the existence of necessary (and strictly universal) empirical laws would Kant sufficiently demonstrate the “unity of experience,” which corresponds to Hume’s principle of the uniformity of nature: “The Analogies of Experience provide an *a priori* conception of the unity and uniformity of experience playing the role, for Kant, of Hume’s principle of the uniformity of nature. According to the Analogies we know *a priori* that nature in general must consist of interacting substances in space and time governed by universally valid and necessary causal laws . . . , and this articulated *a priori* conception of nature in general amounts to the knowledge that nature is, in fact, sufficiently uniform” (De Pierris and Friedman 2013). In other words, by showing that all events are subject to necessary (and strictly universal) particular empirical causal laws, Kant’s arguments in the Analogies present an *a priori* demonstration of the unity of experience, which is equivalent to Hume’s principle of the uniformity of nature. This, in turn, means that the Second Analogy argument, on the strong reading, addresses the problem of induction.

According to the strong reading, the problem of induction is a problem about the justification of making strictly universal and necessary laws from merely comparatively universal empirical rules. By demonstrating that the concept of causation is an *a priori* concept of the understanding, Kant shows precisely that we are justified in making strictly universal generalizations from merely comparatively universal generalizations:

For Kant, however, the concepts of both causality and necessity arise from precisely the operations of our understanding—and, indeed, they arise entirely *a priori* as pure concepts or categories of the understanding. *It is in precisely this way that Kant thinks that he has an answer to Hume’s skeptical problem of induction: the problem, in Kant’s terms, of grounding the transition from merely “comparative” to “strict universality”* ([Kant 1781–87/1998,] A91–92/B123–124). Thus in §29 of the *Prolegomena*, as we have seen, Kant begins from a merely subjective “empirical rule” of constant conjunction or association among our perceptions (of heat follow-

16. Although in this article I focus merely on Buchdahl’s and Friedman’s opposing positions on the necessity of particular empirical laws, there is an intermediate position defended by Guyer. Guyer agrees with the strong reading that the Second Analogy argument proves the existence of particular empirical laws. Contra the strong reading, however, he denies that the Second Analogy argument also establishes their necessity (Guyer 1987, 240).

ing illumination by the sun), which is then transformed into a “necessary and universally valid law” by adding the a priori concept of cause. (De Pierris and Friedman 2013; emphasis added)

According to the strong reading, then, the application of the concept of cause to experience justifies the transition from comparatively universal rules to strictly universal laws. Therefore, in the Second Analogy, Kant not only justifies the a priori validity of the concept of causation but also solves the problem of induction.

So far, we have seen that Buchdahl’s modest and Friedman’s strong readings of the Second Analogy disagree on the questions of whether the Second Analogy guarantees the existence of particular causal laws and whether empirical laws express merely regulative necessity, which is a function of the faculty of reason, or merely empirical necessity originating from the faculty of understanding alone. We also saw that the disagreement between the modest and the strong readings with regard to what exactly the Second Analogy establishes stems from a deeper disagreement on the particular Humean problem Kant addresses in the Second Analogy. While the modest reading describes the Second Analogy as Kant’s response to Hume’s problem of causation, the strong reading views it as a response to Hume’s problem of induction. Having summarized the main points of disagreement between these two influential readings, we can now reconstruct the main argument of the Second Analogy.

## 2. Reconstruction of the Second Analogy Argument

### 2.1. Kant’s Method of Argumentation: Analysis of Experience

Before we reconstruct the main argument of the Second Analogy, some preliminary clarification of Kant’s method of argumentation is in order. Having been convinced that neither mere experience nor purely conceptual analysis can provide us with synthetic a priori truths, Kant devises a third kind of method, to which he refers as the “synthetic method” (1781–87/1998, A14/B28). Like chemists who identify certain components of compound materials through their distinguishing properties and isolate the desired component among the other elements, Kant aims to identify and isolate the a priori components of experience by appealing to two secure marks of apriority, namely, necessity and strict universality (B3–6).<sup>17</sup> In contrast with the analytic or regressive method adopted by

17. In the *Transcendental Aesthetic*, Kant (1781–87/1998, A22/B36) explains how he uses this synthetic method to identify and isolate the a priori form of our faculty of sensibility.

the so-called dogmatic philosophers, who, according to Kant, assume the validity of certain metaphysical principles (1783/1950, 4:277–78) and build their whole philosophical systems based on these supposedly self-evident principles (1781–87/1998, A763/B791), Kant's novel method of argumentation does not presuppose the validity of any particular metaphysical principle or concept. Kant is aware that such an attempt would be an easy target for a skeptic like Hume, who would be critical of any such foundational principle.<sup>18</sup>

Rather than analyzing certain metaphysical principles, that is, the particular products of our faculties—as dogmatists (Kant 1781–87/1998, Bxxxv) and skeptics (A760/B788) have done—Kant analyzes the respective roles and the a priori contributions of our cognitive faculties in the construction of experience.<sup>19</sup> In this respect, Kant analyzes the conditions under which human experience is possible. Similarly, in the Second Analogy, Kant analyzes our experience of events and shows the specific role that the concept of causation plays in the constitution of such experience.<sup>20</sup> By doing so, he not only provides an a priori justification for its employment but also determines the limits of its proper use, that is, within the realm of objects of possible experience.

In the Second Analogy, Kant argues that when we experience an event (or an alteration in the object), we judge that one state precedes the other in a determinate way. For instance, when we experience an event, such as the freezing of water, we judge that perceptual states constituting that event, namely, the liquid state of water and the solid state of water, are ordered in a necessary manner or irreversible order (Kant 1781–87/1998, B234), as the reverse of that order would constitute a different event, namely, the melting of ice. In the Second Analogy, Kant illustrates this point with another example, a ship moving down-

18. In fact, Kant thinks that all skeptical arguments are directed toward dogmatic philosophers. As he writes, "All skeptical polemizing is properly directed only against the dogmatist, who continues gravely along his path without any mistrust of his original objective principles, i.e., without critique, in order to unhide his concept and bring him to self-knowledge" (1781–87/1998, A763/B791).

19. Paton (1936, 195–96) employs the phrase "analysis of experience" to refer to Kant's method of discovering the a priori elements of human knowledge by analyzing "ordinary human experience." Following Paton, I shall argue that (what scholars usually call) Kant's "transcendental argument" is based on the assumption that through analysis of our ordinary human experience we can discover necessary conditions for such experience, which are, according to Kant, identical to the a priori elements of knowledge about the world.

20. Kant (1781–87/1998, A20/B34) defines sensation (*Empfindung*) as "the effect of an object on the capacity for representation, insofar as we are affected by it." In this regard, sensation concerns the change in the subject. Kant describes sensation as the "matter" of appearances, which is given to us a posteriori. The "form" of appearances, however, must lie in the mind a priori (A20/B34). In contrast with sensation (*Empfindung*), perception (*Wahrnehmung*) is combined with consciousness (A120). Unlike experience or cognition of objects, perceptions are representations that are not yet subject to understanding's determination.

stream (A192/B237). When we experience the downstream motion of a ship, our experience contains a determinate order of perceptions constituting that event: the perception of the ship downstream follows the perception of it upstream. If we call these perceptions *A* and *B* respectively, we can see that *B* necessarily follows *A*. As Kant writes, “In the case of an appearance that contains a happening I call the preceding state of perception *A* and the following one *B*, then *B* can only follow *A* in apprehension, but the perception *A* cannot follow but only precede *B*. e.g., I see a ship driven downstream” (A192/B237). As Kant points out, when we experience an event, perceptions do not merely follow each other; we judge the perceptual states to be connected to each other in a fixed and irreversible way. In other words, we judge the temporal order of perceptions to be determinate and necessary. Hence, Kant’s analysis of our experience of an event leads to the idea of the determinate or necessary temporal order of perceptions.

In order to show that this necessary order of states is a feature of our experience of events only, Kant compares this experience with the experience of persisting objects. As he argues, when we experience a persisting object, such as a house, the order of perceptions is not determined (Kant 1781–87/1998, A192–93/B237–38). Even though the representations of the house are put in a successive order by imagination, the order is not necessary or fixed but rather completely arbitrary. For instance, we could perceive the rooftop of the house first and the bottom of it later or vice versa. In either case, we would experience the same object, namely, the house. In contrast with the experience of events, then, when we experience persisting objects, we judge that the temporal order of perceptual states is indeterminate and arbitrary.

What distinguishes the experience of an event from the experience of a persisting object, according to Kant, is that the former is subject to a rule determining the order of perceptions in a necessary manner. As Kant writes, “This rule is always to be found in the perception of that which happens, and it makes the order of perceptions that follow one another (in the apprehension of this appearance) necessary” (1781–87/1998, A193/B238). Since they are necessarily connected to each other, representations indicate some change in the objects of experience. Arbitrary successions of representations, however, do not designate any succession in the object and therefore are judged as mere “subjective succession.” But the succession of perceptual states ordered in a necessary manner is judged to correspond to succession in the object and thereby to signify “objective succession” (A193/B238).

According to Kant, only by assuming the existence of some cause or determinant, which determines the order of perceptions in accordance with a particular rule, and thereby constituting objective succession can we account for the



experience of events. What is significant here is that when we judge our experience to be an experience of an event (as opposed to a persisting object), we think that there must be “some” condition, that is, a cause determining the order of representations or putting them in a necessary order in accordance with a rule. Note that it is not the irreversible sequences of representations qua mental states that are caused or subject to a rule. It is rather the objective successions or events, which are formed by determinate or necessarily ordered representations and regarded as having an irreversible order, that have some cause.<sup>21</sup>

Kant does not think that we can have a priori knowledge of the determining conditions or specific causes of the events we are experiencing. What we can know a priori is that there must be a condition or a cause “in general” (Kant 1781–87/1998, A194/B239). Notice that neither the Second Analogy principle nor Kant’s argument for that principle establishes the existence of a type of cause for the events we experience. Rather, the argument aims to show that every determinant must have a determining condition, and consequently every event (or determinately ordered succession) must have some cause from which it follows in accordance with a rule. What justifies our inferences from the experience of a particular event to the existence of some other event (or condition) from which it follows is that without such a presupposition, we would not be able to distinguish the subjective succession of perceptions from the objective succession (or alteration in the object) and thereby experience events as events.

Having described the distinction between subjective and objective succession and the way Kant argues for the a priori preconditions for the possibility of experiencing objective succession, we can now reconstruct the Second Analogy argument in the following formal manner:

- P1. We experience events (or an objective succession of representations).
  
- P2. We are able to experience an event as an event and distinguish it from the experience of a persisting object because when we experience an event, that is, an objective succession, we become aware that the order of the perceptions constituting the succession is fixed (or necessitated) by some cause from which this event follows in accordance with a rule.

21. As others have pointed out, Kant does not claim that we can infer from the irreversibility of our representations (qua mental states) that we are experiencing an event. Neither does he infer from the irreversibility of the order of our representations that this order must be caused by some objective succession or an event (Longuenesse 2000, 367–68 n. 75; Allison 2004, 255–56). As explained previously, instead of making inferences about objects based on subjective phenomena or particular mental states, Kant’s method of argumentation involves analyzing the experience of possible objects and identifying the a priori preconditions for the possibility of experience.

CONCLUSION. Therefore, experiencing an event as an event presupposes something (some cause) from which the event follows in accordance with a rule.<sup>22</sup>

Notice that the argument does not merely establish that every event has some cause. It establishes the stronger claim that every event has some cause and that causal relation is rule-governed (Kant 1781–87/1998, A195/B240). As is clear, the existence of a rule is a transcendental presupposition that makes the experience of an event possible. Having reconstructed the main argument of the Second Analogy, let us now examine whether the argument has the resources to address the problem of induction.

## 2.2. Does the Second Analogy Argument Prove the Existence of Regular Causal Relations?

As we saw in the previous section, in the Second Analogy, Kant presents an a priori justification for the objective validity of the Causal Principle. After presenting his argument, Kant compares his a priori argument for causality with an a posteriori derivation one can provide for the concept of causation and the Causal Principle:

To be sure, it seems as if this [the Second Analogy argument] contradicts everything that has always been said about the course of the use of our understanding, according to which it is only through the perception and comparison of sequences of many occurrences on preceding appearances that we are led to discover a rule. . . . On such a footing this concept would be merely empirical, and the rule that it supplies, that *everything that happens has a cause*, would be just as contingent as the experience itself: its universality and necessity would then be merely feigned, and would have no true universal validity, since they would not be grounded *a priori* but only on induction. (1781–87/1998, A195–96/B240–41; emphasis added)

This passage is significant for two reasons. First, it is clear that the concept Kant aims to justify a priori is the concept of causation, and the corresponding rule it supplies is the general causal principle, according to which “everything that happens has a cause” or every event has some cause. While Kant does not explicitly mention Hume, we can infer that Kant contrasts the Second Analogy argument

22. Stern (2000, 6) describes the general structure of transcendental arguments as follows: P1.—A certain supposedly indisputable fact: Y (Categorical Premise). P2.—For Y to be possible, X must be the case (Hypothetical/Transcendental Premise). Conclusion.—Therefore, X.

with Hume's empirical derivation of the concept of causation and the Causal Principle.<sup>23</sup> In this respect, the passage above seems to support Buchdahl's thesis that the Second Analogy is designed to solve the Humean problem of causation. Contra Hume, who argues that we derive the concept of causation and the Causal Principle through inductive reasoning after we repeatedly experience regularities (or constantly conjoined events), Kant argues that in order to be able to experience events as events, we already need to presuppose the existence of rule-governed causal relations. Besides, as Kant points out, Hume's empirical derivation of the concept of causation and the Causal Principle from past experience of regularities undermines the necessity and universal validity of this principle. This is because the idea of necessary connection, according to Hume, does not ultimately derive from reason, that is, from some kind of reasoning process either deductive or inductive. It rather originates from imagination, and its rules of association are based on custom and habit (Hume 1739/2000, bk. 1, pt. 3, sec. 8).

As we have seen, if one wants to justify the concept of causation through inductive reasoning from past experience of regularities, one needs to solve the problem of induction first. Given that Kant is not interested in providing an empirical derivation of the ideas of necessary connection and causation, we can conclude that he does not need to demonstrate that there are in fact regularities in order to justify the existence of causal connections in nature. In order to justify our belief in causality and show the validity of causal inferences, all Kant needs to show is that we are justified in holding that every event has some cause. And as we saw above, Kant shows precisely this by arguing that for the experience of events to be possible in the first place, we need to presuppose the existence of causal connections.

23. In the B introduction, Kant makes the same point and argues that Hume's empirical derivation of the Causal Principle undermines the strict universality and the necessity of this principle (1781–87/1998, B4–5). Here, Kant must have Hume's *Treatise* account of causation in mind, because in the *Enquiry*, Hume focuses on the justification for particular causal inferences. In the *Treatise*, Hume investigates the origin of the idea of causation and the justification for the general causal principle, and after arguing that the Causal Principle cannot have an a priori origin, he gives an empirical derivation of the concept of causation and the Causal Principle. While Kant might not have direct access to Hume's arguments in the *Treatise*, we know that he could learn about Hume's treatment of causation in the *Treatise* through various ways. For instance, Kant must have read the concluding section of bk. 1 of the *Treatise*, which contains a summary of Hume's skepticism because it was translated into German by Johann Georg Hamann and published in a local newspaper, the *Königsberger Zeitung*, in July 1771. The most important source for Kant, however, seems to be the German translation of James Beattie's *Essay on Nature and Immutability of Truth*, which was originally published in 1770 and translated into German in 1772. While Beattie criticizes Hume's skepticism, he provides extensive quotes from bk. 1 of the *Treatise*. We know that Kant was aware of Beattie's work because in the *Prolegomena* he mentions Beattie by name twice, and in both cases he argues that Beattie, like many others, failed to understand Hume and the Humean problem accurately (1783/1950, 4:258–59). For a detailed account of how much Kant learned about Hume's *Treatise* account of causation through Beattie, see Wolff (1960) and Kuehn (1983).

One might argue that even if Kant does not need to prove the existence of regularities in nature in order to solve the problem of causation, he nonetheless aims to solve the problem of induction for its own sake. While there are many passages explicitly demonstrating Kant's interest in the problem of causation (i.e., the problem of the origin and justification of the concept of causation and the Causal Principle), Kant does not seem to find inductive inferences or their underlying principle of the uniformity of nature problematic issues that need to be addressed. What Kant states in the *Prolegomena* and the first *Critique* suggests that he is interested in proving the validity of the concept of cause (1781–87/1998, A760/B788; 1783/1950, 4:258–60) and its corresponding principle, namely, the Causal Principle (1781–87/1998, B20; 1783/1950, 4:259), as opposed to the principle of the uniformity of nature.

Moreover, in the *Prolegomena*, Kant (1783/1950, 4:261) contrasts the Humean problem he aims to solve with “the problem of pure reason” and argues that the latter is “the elaboration of the Humean problem in its most general amplification.” The general problem Kant aims to solve in the first *Critique* is the problem concerning the possibility of synthetic a priori judgments. Hence, the Humean problem Kant is interested in must be a problem about a specific synthetic a priori principle. Since the Causal Principle, as Kant explicitly states in various texts, is a synthetic principle that needs a priori justification, the Humean problem Kant addresses in the Second Analogy must be the problem of causation, as opposed to the problem of induction.

Even if Kant aims to solve the problem of induction in the Second Analogy, as I argue in section 3, the argument he offers falls short of achieving this aim. More specifically, the Second Analogy argument does not offer any reason to think that causal connections are in fact regular and repeatable. For all we know, every event might have a singular cause that has no similarity to any other cause or condition. In such a world, the concept of causation and the general causal principle would be justified even if we could not observe any regularity or uniformity in nature. That is, the Causal Principle alone only guarantees that there are causal relations, and those causal relations are governed by some empirical laws. It does not guarantee that those empirical laws are repeated and therefore that the causal relations between events are regular and uniform in a way that the future would conform to the past. It is possible that in a world in which there are rule-governed causal relations, there is no regularity or uniformity in the Humean sense.

Kant's arguments in the Analogies are designed to prove that nature, as we can experience it, is governed by a set of a priori (formal) laws of understanding, which makes our experience first possible by giving our perceptions a lawful form. While the a priori principles of understanding provide a formal unity

of experience, they fall short of guaranteeing the systematic unity or empirical uniformity of nature. Providing the systematic empirical unity, as we shall see in the next section, is the function of the faculty of reason. While the a priori rules (and concepts) of the understanding constitute our experience of objects, the a priori principles (and ideas) of reason systematically organize the objects of experience and help us formulate empirical laws and form a system of empirical laws (Kant 1781–87/1998, A671/B699).

In this part of the article, I have examined Kant's method of argumentation and his main argument in the Second Analogy, in which he offers an a priori justification for the concept of causation and the Causal Principle. I have argued that since Kant does not argue that we acquire the idea of causation through inductive reasoning from past experience of regularities, he does not need to demonstrate that there are in fact regularities in nature.

Similarly, Kant does not need to address the problem of induction, that is, the problem of our justification for thinking that there are regularities and uniformities in nature, in order to solve the problem of causation. As his assertions in the Second Analogy imply, Kant's main disagreement with Hume has to do with the origin and the justification of causal reasoning, and he clearly criticizes any empirical account of causation that relies on observation of regularities. Kant simply admits that any account of causation that relies on experience would undermine the objective validity and strict universality of judgments.

Despite Kant's lack of interest in and intention to address the problem of induction, however, it is possible that the Second Analogy argument has the resources to prove the empirical uniformity of nature and thereby addresses the problem of induction. In the next section, I argue that even though the Second Analogy argument proves the existence of necessary and strictly universal particular causal laws, it nonetheless lacks the resources to solve the problem of induction. In this respect, my interpretation differs both from Buchdahl's modest reading, according to which the Second Analogy has no bearing on the empirical lawfulness of nature, and from Friedman's strong reading, which views the Second Analogy as Kant's response to Hume's problem of induction.

### 3. An Alternative Reading of the Second Analogy Argument

#### 3.1. Does the Second Analogy Guarantee the Existence of Particular Causal Laws?

In order to answer the question of whether the Second Analogy argument guarantees the existence of particular causal laws, we need to get clear on two points. First, we need to determine whether the Second Analogy principle makes refer-

ence to particular causal laws. As we have seen, Buchdahl and Friedman disagree on to how to interpret Kant's reference to "a rule" in the Second Analogy principle. Consequently, they disagree on the implications of the argument with respect to the existence of particular causal laws. Second, we need to know whether the faculty of understanding is capable of guaranteeing the existence of empirical laws. While Friedman answers this positively, Buchdahl holds that only reason can guarantee the existence of empirical laws. Hence, in order to give a definite answer to the question raised in this section, we also need to know the respective roles of the faculties of understanding and reason with regard to the existence of particular causal laws.

Let us first examine whether the Second Analogy principle, which states roughly that every event must have a cause from which it follows in accordance with a rule, should be read as making reference to particular causal laws. The Second Analogy principle is similar to Hume's formulation of the Causal Principle, that is, "whatever begins to exist, must have a cause of existence," or, to put it simply, "every event must have a cause" (Hume 1739/2000, bk. 1, pt. 3, sec. 3, p. 78). Despite the similarity between Kant's and Hume's formulations of the Causal Principle, there is one important difference noted in Buchdahl's and Friedman's readings, namely, that Kant's formulation in the first edition makes reference to "a rule."<sup>24</sup> By "a rule," Kant might be referring to the Causal Principle itself, as Buchdahl argues, or he might be referring to a particular causal law, as De Pierris and Friedman (2013) claim.<sup>25</sup>

If by "a rule" Kant means the Second Analogy principle itself, then the Second Analogy argument aims to demonstrate that every event must have a cause from which it follows in accordance with this causal principle. While it is possible to read the Second Analogy principle as having a self-referential character, it is not clear why Kant would emphasize it throughout the text even though it does not seem to add any new content to the argument. Given that throughout the text Kant repeatedly refers to "a rule," he clearly thinks that it adds some-

24. This is how Kant formulates the Second Analogy principle in the first and second editions of the first *Critique*, respectively: "Everything that happens (begins to be) presupposes something which it follows in accordance with a rule" (1781–87/1998, A189), and "all alterations occur in accordance with the law of the connection of cause and effect" (B232). Note that the second-edition formulation of the Second Analogy principle does not refer to "a rule" but rather to "the law of the connection of cause and effect." In that respect, the second-edition formulation seems to support Buchdahl's reading, according to which the Second Analogy does not make any reference to particular empirical laws.

25. Longuenesse (2000, 368) argues that there are three (not two) possible senses of "rule." By "a rule," Kant might be referring to (1) the Second Analogy principle, (2) a particular empirical causal law, or (3) the rule of sensible synthesis. Like Friedman, she favors sense 2 and argues that the Second Analogy argument, if sound, proves the existence of empirical causal laws.

thing important to his argument, which in turn suggests that when referring to a rule Kant has a particular empirical law in mind.

Besides, whenever Kant writes about causality, he emphasizes that it is a rule-governed necessary connection, and in various passages in the first *Critique* Kant mentions “causality in accordance with laws of nature” or “causality in accordance with a constant law,” which again suggests that causal relations take place in accordance with particular causal laws. For instance, while criticizing Hume’s account of causation, Kant writes, “Thus if wax that was previously firm melts, I can cognize *a priori* that something must have preceded (e.g., the warmth of the sun), on which this has followed *in accordance with a constant law*, though without experience, to be sure, I could *determinately* cognize neither the cause from the effect nor the effect from the cause *a priori* and without instruction from experience” (1781–87/1998, A766/B794; first emphasis added).

Similarly, in the *Prolegomena*, Kant refers to the Second Analogy principle when he writes that “everything that happens always previously is determined by a cause according to constant laws” (1783/1950, 4:295). Here, the principle explicitly makes reference to “constant laws” as opposed to a single general causal law, which suggests that the Second Analogy principle refers to particular causal laws as opposed to the general causal principle itself.

For Kant, we can know *a priori* both that when a particular event happens, there must be a cause for that event, and that the causality must be governed by a particular constant law. Even though we cannot know *a priori* what that constant law is (as we cannot infer the particular cause from the effect), Kant claims that we can nonetheless infer its existence *a priori*. Thus, De Pierris and Friedman seem to be justified in insisting that the Second Analogy argument, if successful, guarantees the existence of empirical laws because the Second Analogy principles makes reference to particular causal laws.

The next question, then, is whether understanding is capable of guaranteeing the existence of empirical laws. As we saw in the first part of the article, Buchdahl claims that understanding and its *a priori* principles operate at the transcendental level, and arguments for the causality and lawfulness at the transcendental level do not have any implication for the causality and lawfulness at the empirical level.

It is clear that empirical lawfulness is made possible by transcendental lawfulness because empirical laws are nothing more than the mere particular determinations of the *a priori* transcendental laws of understanding (Kant 1781–87/1998, A127–28). Understanding, by structuring the data given through sensibility, makes experience and empirical laws possible. What is not clear, however, is whether Kant makes the stronger claim, that is, the understanding guarantees the existence of empirical laws of nature.

There are passages supporting this stronger claim. The faculty of understanding, Kant writes, connects the “manifold of appearances” through concepts and brings them under empirical laws, while reason provides the systematic unity of those laws: “The understanding constitutes an object for reason, just as sensibility does for the understanding. To make systematic the unity of all possible empirical actions of the understanding is a business of reason, just as the understanding connects the manifold of appearances through concepts and brings it under empirical laws” (1781–87/1998, A664/B692). Notice that the understanding brings the manifold of appearances under empirical laws, which are then ordered in a systematic manner by reason. Laws of nature, according to Kant, do not only stand under the a priori laws of understanding; they also result from the application of those higher laws to experience. That is why Kant writes that “there can really be no danger that one will regard merely empirical principles as principles of the pure understanding, or vice versa” (A159/B198). As is clear, Kant maintains that both empirical laws and the a priori transcendental laws are principles of the pure understanding. The main difference between these two kinds of principles, according to Kant, is not that they stem from different faculties but rather that while the former lack necessity, the latter carry necessity (A159/B198). To put it differently, understanding by imposing its own laws on what is given through the faculty of sensibility guarantees the existence of the particular empirical instantiations of those formal laws, namely, the empirical lawfulness of nature. That is why, contra Hume, who thought that we discover empirical laws through experience, Kant asserts that “as exaggerated and contradictory as it may sound to say . . . the understanding is itself the source of the laws of nature” (A127).

Going back to the ship example from the Second Analogy, we can now see that the a priori laws of understanding allow us to identify the motion of the ship as an event (as opposed to a persisting object) that has some cause from which it follows in accordance with some rule. Thus, the understanding already guarantees that there is an empirical law governing this particular event. The a priori principles of reason, however, allow us to identify the particular cause of the ship’s motion downstream, say, the wind in that direction. Thus, contra what Buchdahl argues, Friedman is right to hold that understanding (when applied to empirical intuition) can guarantee that nature is subject to empirical laws precisely by guaranteeing that every event is causally determined and governed by a rule.

In this section, I have argued that both the role of the understanding in the construction of experience and Kant’s reference to “a rule” and “constant laws” in the formulation of the Causal Principle in various texts suggest that the Second Analogy argument entails the existence of particular causal laws. The next



question is whether empirical causal laws are necessary or merely contingent generalizations; and if they are necessary, what kind of necessity do they express?<sup>26</sup>

### 3.2. The Modal Status of Particular Causal Laws: Do They Express Regulative Necessity or Causal Necessity?

In order to determine whether Kant agrees with Hume about the necessity of empirical laws, we need to understand how the apparently contradictory features of empirical laws, namely, their lawfulness and empirical origin, affect the modal status of these laws. To get a clear picture of their lawfulness, let me first focus on how Kant distinguishes empirical laws from other kinds of laws, such as the a priori laws of understanding. To grasp their empirical origin, we need to know the exact role experience plays in our knowledge of empirical laws.

Kant explicitly argues that even though empirical laws are particular determinations or specifications of the a priori laws of understanding and thereby stand under those a priori laws (1781–87/1998, A127–28), we cannot derive empirical laws merely from those a priori laws (B165) but rather discover them through experience (A216/B263). Similarly, even though particular causal laws are simply particular determinations of the Causal Principle, they cannot be deduced a priori from the Causal Principle, as we need the help of experience.

The fact that we discover particular causal laws empirically (as opposed to deriving them from a priori principles alone) suggests that empirical laws fall under the category of empirical judgments and consequently lack strict universality and necessity. According to Kant, “Experience never gives its judgments true or strict but only assumed and comparative universality (through induction), so properly it must be said: as far as we have yet perceived, there is no exception to this or that rule” (1781–87/1998, B3–4). In other words, empirical rules, for Kant, can be at most comparatively universal inductive generalizations.<sup>27</sup> Yet empirical laws qua laws should carry some kind of necessity. In the *Jäsche* logic lectures, for instance, Kant distinguishes two kinds of rules: necessary rules, which he calls “laws,” and contingent rules (1800/1992, L J, 9:12). Again in the first *Critique*, Kant writes that “rules, so far as they are objective (and thus necessarily

26. According to Guyer (1987, 240), e.g., while the Second Analogy argument guarantees that there are particular empirical causal laws, it does not guarantee that they are necessary.

27. Kant writes as follows: “First, then, if a proposition is thought along with its necessity, it is an *a priori* judgment; if it is, moreover, also not derived from any proposition except one that in turn is valid as a necessary proposition, then it is absolutely *a priori*” (1781–87/1998, B4).

pertain to the cognition of objects) are called laws” (1781–87/1998, A126). Thus, Kant considers necessity to be a distinguishing feature of laws.

Given this apparent tension with regard to the empirical origin and lawfulness of empirical laws, it is understandable that Kant commentators are divided with regard to the modal status of empirical laws. Unfortunately, Kant’s seemingly incoherent assertions in different texts further complicate the issue. For instance, Kant’s description of the necessity of the particular causal laws in the first *Critique* supports Friedman’s reading. There, Kant claims that empirical laws carry a kind of necessity that derives from the a priori principles of the understanding: “Even laws of nature, if they are considered as principles of the empirical use of the understanding, at the same time carry with them an expression of necessity, thus at least the presumption of determination by grounds that are *a priori* and valid prior to all experience” (1781–87/1998, A159/B189). It is clear that particular causal laws, for Kant, express a kind of necessity that has an a priori grounding in the faculty of understanding.

Understanding, according to Kant, can provide us with different kinds of necessity, such as the conceptual necessity of analytic truths, the transcendental necessity of a priori principles, and the material or causal necessity of empirical laws. The necessity of the empirical laws is clearly different from the “transcendental necessity” of the a priori principles of understanding (Kant 1781–87/1998, A226–27/B279–80). Material necessity, according to Kant, expresses the relation between causes and their effects. This is why Kant uses “material” and “causal” necessity interchangeably. Kant explicitly states that this is the only kind of necessity we can cognize (or know about) with regard to existing objects. As we saw in the Second Analogy, the existence of causal necessity is a necessary presupposition for our experience of events. In this respect, material necessity is constitutive of objects of experience and thereby signifies the necessary relations among objects.

While there are passages in the first *Critique* supporting Friedman’s reading, in the same text Kant also argues that particular empirical causal laws are contingent. For instance, Kant writes that Hume “falsely inferred from the contingency of our determination in accordance with the law the contingency of the law itself” (1781–87/1998, A766/B794). It is clear that Kant criticizes Hume for falsely inferring the contingency of the Causal Principle from the contingency of its particular determinations, namely, empirical laws.

Kant’s assertions in the *Critique of the Power of Judgment* (henceforth the third *Critique*) also support Buchdahl’s reading. While in the first *Critique* Kant claims that we can cognize the causal (or material) necessity from which effects follow their causes in accordance with empirical laws and that the understand-

ing is responsible for this kind of necessity (1781–87/1998, A226–27/B279–80), in the third *Critique* he argues that the understanding may not be able to gain insight into the necessity of empirical causal laws. In fact, Kant (1790/2000, 5:179–80) asserts that from the point of view of the understanding, empirical laws seem to be contingent.

Kant either contradicts himself when he denies that the understanding can have insight into the very kind of necessity for which it is responsible, or he changes his views about the necessity of empirical laws between the first *Critique* (first edition published in 1781) and the third *Critique* (published in 1790).<sup>28</sup> As will be clear, the reason why there seems to be a conflict between Kant's different texts is a lack of clarity about the different kinds of necessity that empirical laws can express.

What is more, in the third *Critique*, Kant argues that even though we do not have insight into the necessity of particular causal laws, they must be considered necessary owing to “a principle of the unity of the manifold,” which, as he explains later, is the principle responsible for the systematic subordination of particular causal laws under one another. Kant identifies this principle as an a priori principle of reflective judgment, namely, the “principle of purposiveness of nature” (1790/2000, 5:181). In this regard, he recognizes that particular empirical causal laws have a kind of necessity that does not derive from the understanding. Instead, the kind of necessity Kant introduces in the third *Critique* derives from the a priori principle of reflective judgment, which is the faculty that orders empirical laws in a systematic way under more general empirical laws (5:179–80).

Hence, the apparent conflict between the different texts can be resolved by conceding that Kant identifies two different kinds of necessity, causal (or material) necessity and regulative necessity. As we shall see, causal (or material) necessity is a different kind of necessity than the regulative necessity because (1) the two derive from different faculties, (2) they are not reducible to each other, and (3) they are independent of each other, meaning that it is possible for some empirical laws to express only causal necessity and others to express only regulative necessity.

Before explaining the nature of these necessities, however, we must explain why Kant thinks that empirical laws might appear contingent from the perspective of the understanding even though these laws express material necessity that

28. According to some commentators, Kant does not have a unified view of empirical laws. According to Paton (1951, 276), e.g., it was not until the third *Critique* that Kant recognized this problem regarding the gap between the general and particular causal principles, which eventually led him to offer a more sophisticated account of empirical laws. Guyer and Walker (1990) agree with Paton that Kant changes his account of empirical laws by the time he writes the third *Critique*.

is grounded in the very same faculty. One way in which empirical laws could be thought of as contingent is that we think (or imagine) that they could have been otherwise. In fact, Hume argues that all causal laws (including the general causal law) are contingent precisely because they are not logically (or analytically) necessary. Unlike Hume, who recognizes only one kind of necessity, however, Kant thinks that analytic necessity is not the only kind of necessity we can grasp. In fact, Kant's main project in the first *Critique* is to show precisely how judgments that are both synthetic and necessary are possible (1781–87/1998, B19). Thus, when Kant claims that empirical laws “may seem to be contingent” from the point of view of the understanding, he means that even if they are necessary for the possibility of experiencing events, as we saw in the Second Analogy argument, we could think that they could have been false.

In order to make sense of Kant's claims, we also need to pay attention to the distinction between knowing that a judgment is necessary and having insight into its necessity. According to Kant, we can know that some judgments hold necessarily even if we cannot have insight into their necessity. The reason why we may not be able to grasp the necessity of empirical laws from the point of view of the understanding is that those laws are left undetermined by the a priori laws of understanding. As Kant admits in the third *Critique*, the fact that all objects of experience are governed by a priori principles of understanding leaves nature undetermined empirically, meaning that there might be infinitely many empirical forms that do not have anything in common with one another, except that they are all subject to the a priori formal principles of the understanding (1790/2000, 5:183). Given the multitude of empirical forms and the corresponding empirical laws governing them, we may lack insight into the necessity of individual empirical laws, even if they hold necessarily. That is, particular causal laws might seem contingent when considered individually, as we are able to imagine that they could be otherwise, and thereby we lack consciousness of their necessity. For instance, we cannot grasp the necessity of the individual particular causal law stating that “the sun causes warmth in the stone,” because there seems to be no reason why the sun should not have the opposite effect on the stone tomorrow.

Not having insight into the necessity of empirical laws does not necessarily mean that they are contingent in the way that accidental regularities are contingent. We can illustrate this point with an analogy. Assume that we are presented with an a priori argument demonstrating that all mathematical truths are necessary. This argument might not give us insight into the necessity of any individual mathematical truth, as we might have to comprehend the proofs of particular mathematical truths in order to grasp their necessity. Nonetheless, with the aforementioned argument we can know a priori that if an individual

mathematical proposition is true, it must be necessarily true. That is, we can know a priori that all mathematical truths are necessary, even though we might not be able to grasp the necessity of particular mathematical truths.

Similarly, if Kant's argument in the Second Analogy is sound, it proves the existence of particular empirical causal laws, which express causal necessity. The fact that they express causal necessity, however, does not mean that we will be able to grasp the necessity of individual particular causal laws. Hence, Kant does not contradict himself when he admits that particular empirical causal laws express a material or causal necessity that originates in the understanding, even though, when taken individually, they appear to be contingent from the point of view of the understanding. In that respect, Friedman is right to argue that empirical laws are necessary and that Kant and Hume disagree on the modal status of particular empirical causal laws as well as the modality of the general causal principle.<sup>29</sup> However, Friedman falsely thinks that empirical laws express only one kind of necessity, one that is grounded in the faculty of understanding.

Kant's assertions in the published introduction to the third *Critique* suggest that empirical laws must be regarded as necessary even if they are not ultimately connected to the a priori principles of understanding. That is, even in a system of empirical laws in which the most general law is another empirical law (as opposed to an a priori law of understanding), empirical laws would still express the kind of necessity they express because of their place in a system. According to Kant, then, empirical laws possess a kind of necessity due to an a priori regulative principle of reason (or reflective judgment), which orders empirical laws and unifies them in a systematic way: "There must nevertheless also be laws . . . which, as empirical, may seem to be contingent in accordance with the insight of our understanding, but which, if they are to be called laws (as is also required

29. Kreines (2009) also criticizes Buchdahl's account. Since on Buchdahl's reading empirical laws express necessity only in a system of empirical laws, Kreines calls it the "best system interpretation." Kreines defends a version of what he calls "necessitation account," according to which empirical laws describe the necessary causal relations between different kinds of objects in nature. In that respect, Kreines and I agree on the modal status of empirical laws. More specifically, we agree that empirical laws, taken individually, involve necessitation. Kreines disagrees with Friedman about the source of this necessity. Contra Friedman, who argues that empirical laws are necessary because of their relationship to the a priori laws of understanding, Kreines argues that empirical laws involve necessity because they describe not only regularities but also the underlying reason for these regularities, namely, the necessary relations or "objective dependencies" between different kinds of things in nature. On my reading, however, empirical laws express a kind of necessity not because of the nature or the kind of things that they govern but rather because this necessity is an a priori contribution of the faculty of understanding that makes the experience of events possible.

by the concept of a nature), must be regarded as necessary on a principle of the unity of the manifold, even if that principle is unknown to us" (1790/2000, 5:179–80). In this passage, Kant argues that even though we do not have insight into the necessity of particular causal laws, they must be considered necessary owing to "a principle of the unity of the manifold," which, as he explains later, is the principle responsible for the systematic subordination of particular causal laws to one another. Kant identifies this principle as an a priori principle of reflective judgment, namely, the "principle of purposiveness of nature" (5:181). In this regard, Kant recognizes that particular empirical causal laws have a kind of necessity that does not originate from the understanding (5:179–80).

As we saw in the first part of the article, Buchdahl calls this kind of necessity "regulative necessity" because it derives from the regulative principles and ideas of reason (or reflective judgment). For Friedman, the kind of necessity that Kant talks about in the third *Critique* is merely an approximation of the causal necessity that is grounded in the understanding. However, Kant clearly traces the origin of this necessity to the a priori regulative principle of reason. Even if individual empirical laws were merely inductive generalizations, they would, when placed in a system of empirical laws, express necessity simply because of their relationship to other more general empirical laws. For instance, assume that the most general empirical laws are A and B. Let C be a particular empirical law that necessarily follows from A and B. While A, B, and C are all contingent empirical laws, we can say that C is necessarily true in this system of laws. The reason why we would consider C to be necessary is not because it involves causal (or material) necessity but simply because it necessarily follows from other more general empirical laws. Hence, regulative necessity, which is a function of the a priori regulative principles of reason, is a different kind of necessity from the material (or causal) necessity that the individual empirical laws can express. In that respect, regulative necessity is not reducible to material (or causal) necessity.

As is clear, material necessity and regulative necessity originate from different faculties. While the material necessity that Friedman attributes to empirical laws originates from the faculty of understanding, the "regulative necessity" that Buchdahl attributes to empirical laws derives from the faculty of reason (or reflective judgment) and results from the systematic order of empirical laws, that is, it could be grasped only when empirical laws are ordered by the a priori principles of reason (or reflective judgment).

Despite their many disagreements, both Buchdahl and Friedman argue that empirical laws express only one kind of necessity. They argue that empirical laws express either material (or causal) necessity, which is a function of the understanding, or regulative necessity deriving from the regulative employment of reason (or reflective judgment). Instead of focusing on either the first or the

third *Critique*, I propose the alternative strategy of admitting that Kant attributes two different kinds of necessity to empirical laws, which (as we shall see) are not reducible to each other.

Acknowledging the existence of these two kinds of necessity in Kant's account of empirical laws suggests that Kant has changed his mind about the modal status of empirical laws while writing the third *Critique* and consequently lacks a univocal account of empirical laws. However, we can also read Kant's discussions of different kinds of necessities in the first and the third *Critiques* as complementary. In the first *Critique*, Kant aims to demonstrate that, contra Hume, we can know a priori that there are rule-governed necessary connections in nature. In particular, his Second Analogy argument is designed to show that we are a priori justified in believing in causal necessity and the existence of particular causal laws. In the third *Critique*, however, Kant shifts his attention to the system of empirical causal laws and explains how empirical laws can constitute a unified system despite the diversity and multiplicity of empirical forms in nature. There, Kant argues that even if all the laws when taken individually appear to be contingent generalizations, were they to be ordered in a systematic manner, in which particular laws can be derived from the general laws, they would express regulative necessity.

To clarify the nature of these two kinds of necessities further, we can appeal to a parallel and more familiar distinction, namely, the distinction between *de re* and *de dicto* necessity. Material necessity is a kind of *de re* necessity, that is, a necessity describing the relations among objects in the world. Regulative necessity is a kind of *de dicto* necessity, in which necessity is a property of the proposition. To put it differently, the proposition with *de dicto* necessity, if true, is necessarily true. While some propositions express both *de re* and *de dicto* necessity, there can also be propositions that express only *de re* or only *de dicto* necessity. For example, "the sun warms the stone" expresses material (or *de re*) necessity as it posits the existence of a necessary connection between two distinct objects, the sun and the stone. However, this proposition, when considered individually, does not have to express *de dicto* necessity because it might not follow from another theory or be part of a system of empirical rules.

We have, so far, established that if the Second Analogy is successful at demonstrating the validity of the Causal Principle, it also proves the existence of particular causal laws, which, qua laws, must carry some kind of necessity. In contrast with both Buchdahl's and Friedman's readings, I have argued that Kant attributes two different kinds of necessity to empirical laws, material (or causal) and regulative necessity. Having argued that the Second Analogy entails the existence of particular empirical causal laws that can express two different kinds of necessity, the next question is whether proving the empirical lawfulness is suf-

ficient to justify our belief in the uniformity of nature and consequently solves the problem of induction, as the strong reading suggests.

### 3.3. Does the Second Analogy Argument Solve the Problem of Induction?

As explained before, the problem of induction is a problem about the validity of inductive reasoning, and a successful solution to this problem requires an a priori proof of the principle of the uniformity of nature. Hence, for the Second Analogy argument to successfully solve the problem of induction, it should demonstrate that the course of nature will not change and the future will conform to the past. The strong reading of the Second Analogy maintains both that Kant intends to solve the problem of induction and that he solves it by proving the a priori validity of the uniformity of nature. In section 2 of the article, I argued that Kant does not need to solve the problem of induction in order to solve the problem of causation. Besides, there is not strong textual evidence showing that he is interested in solving the problem of induction for its own sake. In this section, I argue that even if Kant wanted it to, the Second Analogy argument does not have the resources to solve the problem of induction.

Recall that Friedman maintains the conceptual thesis, according to which the very concept of causation entails the existence of particular causal laws. The underlying reason for maintaining this conceptual thesis is that causal relations, according to Friedman, are necessary connections between different types of events. In other words, for Friedman causation is not just any kind of necessary connection between events. Rather, causation is a rule-governed necessary connection between different types of events and entails the existence of regular causal relations. Similarly, particular causal laws, if they are strictly necessary and universally valid, would make reference to types of events and take the form of “all A-type events cause B-type events.” Friedman thinks that type-type causal relations entail regularities, and that is why he uses the concepts of “particular causal laws” and “uniformities” interchangeably. In fact, Friedman criticizes Buchdahl for holding that singular causal relations can occur between individual events, as opposed to between sequences of event types. Since causation occurs among different event types, Friedman (1992b, 76–77) maintains that the existence of causal relations also ensures the regularity of those relations. For Friedman, then, in a world in which there are causal relations, there would also be uniform patterns or regularities among those relations. Furthermore, if we are justified in holding that there are uniform causal patterns, we would also be justified in making predictions about future causal relations based on our past experience. Consequently, the Causal Principle (or the every-event-some-cause principle), on



Friedman's reading, justifies the principle of the uniformity of nature (or the same-cause-same-effect principle).<sup>30</sup>

Since the Second Analogy presents an a priori justification for the existence of particular causal laws, it seems that Friedman is right to think that it also provides an a priori justification for the uniformity of nature, which in turn allows Kant to solve the problem of induction. Despite the initial appeal of Friedman's reading, there is a problem with the aforementioned inference from the existence of particular causal laws to the existence of causal regularities and the uniformity of nature. As Paton (1951, 276) points out, the Second Analogy argument for the Causal Principle does not necessarily guarantee the existence of similarities and regularities. More specifically, even if the Causal Principle entails the existence of particular empirical causal laws, it does not guarantee the existence of regular causal relations. While the existence of particular causal laws in principle guarantees the existence of causal relations between different event types, it does not guarantee that there are multiple event tokens under those event types. It is possible that there is only one event token under each event type. And if no two event tokens fall under the same event type, it means that there are no similarities and no regularities in nature.

Allison (1996) appeals to Paton's argument in order to undermine Friedman's conceptual thesis, according to which the concept of causality entails the existence of particular empirical causal laws. Allison first points out that Kant's argument does not rule out the possibility that all empirical causal laws are what Allison calls "instantaneous laws," that is, laws that are instantiated only once. According to Allison, genuine laws express regularities. Since the Second Analogy argument falls short of excluding the possibility of a causally governed world in which all the laws are instantaneous laws, Allison infers that the argument fails to prove the existence of genuine empirical causal laws (86). In other words, the Second Analogy fails to demonstrate the existence of particular causal laws, for Allison, because it does not guarantee that the particular causal laws are instantiated more than once, which, Allison claims, is an essential feature of laws.

30. In his influential essay "A Prussian Hume and a Scottish Kant," Beck (1978) introduces the distinction between the two metaphysical principles Hume attacks, namely, the every-event-some-cause principle and the same-cause-same-effect principle. According to Beck, Kant responds to Hume's critique of the every-event-some-cause principle by offering an a priori justification for it. On his reading, both Kant and Hume agree that the same-cause-same-effect principle is an empirical inductive generalization (126). Contra Friedman and Beck, Watkins (2004, 484) argues that Kant's model of causality, which involves causal powers and unchanging grounds, leads him to think that he is justified in switching back and forth between these principles. Despite Kant's intentions, however, Watkins thinks that the Second Analogy does not have compelling arguments that would establish the same-cause-same-effect principle (484 n. 56).

Unfortunately, Allison does not present any arguments for the assumption that singularly instantiated laws are not genuine laws. His assumption that genuine laws cannot be singularly instantiated is not obviously a Kantian assumption. Kant describes laws as necessary rules. Since the necessity of rules does not depend on the number of times they are instantiated, there is no reason to deny that instantaneous laws are genuine laws. Contra Allison, I do not think that Paton's point undermines the empirical lawfulness of nature. The possibility of a world governed by instantaneous laws alone undermines the existence of regularities and the empirical uniformity of nature.

On my view, then, the Second Analogy argument guarantees the existence of particular causal laws governing causal relations. The fact that every event is governed by some particular empirical causal law, however, does not mean that these laws govern regular causal relations. This is precisely where Friedman's interpretation goes wrong. From the existence of particular causal laws, Friedman infers the existence of regularities and consequently the uniformity of nature. In order for us to be justified in believing that nature is uniform, we need to know more than just the existence of empirical laws; we need to know that at least some of those empirical laws are not singularly instantiated.<sup>31</sup>

In a world in which there are only singularly instantiated causal relations and consequently one governed by instantaneous empirical laws, there would be no uniformity of nature in the Humean sense because in such a world we would not be able to say that the future would conform to the past. That is why if Kant aims to respond to the problem of induction, he needs to prove more than just the existence of empirical laws. Since Kant does not offer any argument to that effect in the Second Analogy, we can conclude that the Second Analogy does not solve Hume's problem of induction. I hope it is now clear why the Second Analogy does not provide an a priori justification for the principle of the uniformity of nature and therefore does not have the resources to address the problem of induction. Although I do not think that Kant is interested in solving the problem of induction, if he has a response to it, we can now conclude that his solution draws on resources outside of the Second Analogy.

31. One way we can know that empirical laws are repeated is that particular causal laws are subsumed under more general empirical laws, which in turn would guarantee that the general empirical laws are instantiated more than once. According to Guyer (2008), e.g., Kant's idea of the "systematicity of nature" aims to address Hume's problem of induction, yet it ultimately fails. As he claims, "Kant here, with the idea that the idea of the systematicity of the laws of nature is an idea that we prescribe only to ourselves and not to nature, an idea that we use to guide our investigation of nature as it really is, seems instead to give up on the task of answering what he had identified as the most serious problem on Hume's account" (119–20).

#### 4. Conclusion

In this article, I have closely examined two popular readings of the Second Analogy and argued that the disagreement about what Kant establishes partly arises from a disagreement about the nature of the Humean problem addressed therein. Since Buchdahl's modest reading views the Second Analogy as Kant's response to the Humean problem of causation, the argument of the Second Analogy does not prove the existence or the necessity of empirical laws. But because the strong reading defended by De Pierris and Friedman views the Second Analogy as Kant's response to the problem of induction, it is important for this reading that the Second Analogy establishes the a priori validity of the principle of the uniformity of nature as well as the a priori validity of the Causal Principle.

After pointing out the weaknesses of the influential readings of the Second Analogy, I have advanced a middle way between Buchdahl's and Friedman's readings and offered an alternative interpretation of what the Second Analogy establishes that avoids the weaknesses of each. As I have argued, if we admit that the Second Analogy establishes the a priori validity of the Causal Principle, we must also accept that it proves the existence of empirical laws, which express both material (or causal) and regulative necessity. In this regard, I agree with Friedman that the Second Analogy establishes the existence of empirical causal laws, which (despite their empirical origin) have a different status than the Humean empirical laws. I disagree with both Buchdahl's and Friedman's readings, however, on the modal status of empirical laws. Empirical laws, as I have argued, express more than one kind of necessity, that is, they express both causal necessity that is grounded in the understanding and regulative necessity that results from the function of the faculty of reason. Finally, I have argued that the existence of necessary empirical causal laws does not guarantee the uniformity of nature. In order to prove the empirical uniformity of nature in a way that would solve the problem of induction, Kant needs to demonstrate not only that there are empirical laws but also that they are instantiated more than once. Since Kant's Second Analogy argument does not establish the latter, it falls short of demonstrating the existence of real causal uniformities in nature and consequently fails to solve the Humean problem of induction. On my interpretation, then, while the Second Analogy does more than simply addressing the problem of causation, it does not go as far as solving the problem of induction.

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