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Two Kantian Arguments for the Speculative Basis of Our Science of Nature¹

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ABSTRACT

For Kant, pure reason must be subjected to “critique” in order to keep its natural tendency to exceed its proper limits in check. Human reason exceeds its limits when it ignores the boundary between what we may coherently think and what we can theoretically or scientifically know. A critique of reason provides the required remedy because it insists upon a distinction between objects that are theoretically or scientifically knowable (“appearances”) and objects that are at best objects of practical faith or speculation (“things in themselves”). Remarkably, however, the very project that is intended to constrain reason’s tendency to exceed the bounds of knowledge, ends up justifying that tendency in a certain respect. For as Kant argues, reason’s practical and speculative interests must be satisfied. He most obviously expresses this point when he tells us that an aim of his critical project is to limit knowledge to make room for faith [*Glaube*]. Less obviously, however, Kant furthermore asserts that the speculative interests of reason have to be satisfied in order to save not just faith and freedom but also *nature*. Without the restriction of our knowledge to appearances, without the distinction between appearances and things in themselves, he writes, “neither nature nor freedom would remain”. My focus in this essay is this second argument for limiting knowledge. Why is Kant convinced that *nature* needs saving? How does he argue that a reliance on the resources of speculation offers the means for doing so?

¹ This paper profited from the comments of audiences at Boston University (2017), Georgetown University (2018) and the *North American Kant Society* meeting in Vancouver (2018).

Kant famously argues that human reason must be subjected to “critique” as a means of keeping in check its natural tendency to exceed its proper limits. Human reason exceeds its limits when it ignores the boundary that separates what it is possible for us to coherently think from what it is possible for us to theoretically or scientifically know.² Critique provides the required check on the excesses of reason insofar as it persuades us that objects best considered from the standpoint of faith or speculation are fundamentally different in nature from objects of theoretical or scientific investigation. To put the point differently, critique reins in the excesses of reason insofar as it prevents us from conflating the claims of knowledge with those of faith.³

But although Kant alerts us to the excesses of reason, he curiously also *justifies* those excesses in a certain respect. Although he repeatedly warns us of the dangers of reason’s efforts to transcend the proper bounds of knowledge, he insists that those efforts can be legitimate in some way. Indeed, it is a central tenet of his Critical project that reason’s speculative and practical interests *must be satisfied*.

Kant is explicit about this point in his 1787 Preface to the *Critique of Pure Reason* where he writes that his task in that text of limiting knowledge serves the interests of ‘making room’ for “faith [*Glaube*]” (CPR B xxx). In this and many other discussions, he draws

² Kant defines scientific or “theoretical” cognition [*Erkenntnis*] as “that through which I cognize *what exists* [*was da ist*]” (CPR A 633/B 661). In this same passage, he distinguishes theoretical from “practical” cognition which is “that through which I represent *what ought to exist* [*was da sein soll*]”. (See also CPR B x for this distinction.)

³ By “ideas of faith”, in this paper, I refer not just to ideas of religious faith but to ideas of speculative reason more broadly. Reason becomes “speculative”, according to Kant, when its object is “not any object of a possible experience” (CPR A 636/B 664). Objects of speculation are not limited to objects of religious faith (e.g. God). Another object of speculative reason, for example, is free will, the supreme object of practical (moral) cognition. We will be preoccupied in this essay with further ideas of speculative reason.

attention to the speculative and practical interests of reason -- interests that are neither optional nor trivial. He argues, for instance, that although we can never *know* that we are free, we must nonetheless *think* of ourselves as free. We must think of ourselves as more than mere cogs in nature's machine, moved about by laws over which we have no control. As a condition of the possibility of moral imputation, we have no option but to think of ourselves as capable of a special and extra-temporal form of *self-causation*. We 'make room for' or 'save' freedom by properly limiting our knowledge, that is, by distinguishing what is theoretically or scientifically knowable from what is merely thinkable (CPR A 536/B 564).

Again, a central claim of the *Critique of Pure Reason* is that the speculative and practical interests of reason must be satisfied. Unless we save freedom, Kant argues, we have no way to ground our necessary conception of ourselves as creatures capable of genuine agency. Saving freedom requires us to grant that it is not a possible object of theoretical or scientific knowledge. The strategy for saving religious faith is much the same. The idea of a divine and all-powerful architect, of a first cause of nature or unmoved mover, satisfies a necessary interest of reason, in Kant's view. We can save this idea, too, but doing so once again requires us to accept that it refers to an object we cannot scientifically know.

These are particularly obvious examples of Kant's commitment to the principle that the speculative and practical interests of human reason have to be satisfied. Far less obviously, however, he in addition insists upon the necessity of satisfying reason's interests as a condition of saving -- not faith or freedom, but -- *nature*. He most explicitly expresses this point when he tells us that without his Critical philosophy's unique prescription for drawing the proper limits to theoretical knowledge, "neither nature nor freedom would remain" (CPR A 543/B 571).

In my final paragraphs, I expand on Kant's distinction between the speculative and

My task in this essay is to explore this second Kantian motivation for limiting our knowledge, that is, for sharply separating the claims of knowledge from those of speculation or faith. Why, and in what respect, is Kant convinced that *nature* needs saving? Why, furthermore, does he argue that an appeal to the resources of faith or speculation offers us the means for doing so? Kant holds, very roughly, that we save nature by demonstrating that our science of nature needs to rest on assumptions about objects *outside* nature – in his terminology, objects considered as “things in themselves”. Our science of nature must rely on such assumptions, he claims, as a condition of its very possibility. Kant labels concepts that refer to objects outside nature “ideas of reason”.⁴ Our science of nature must rely on ideas of reason, then, to secure its own basis.⁵ In relying on such ideas, our science of nature thus invariably rests on assumptions about objects it can never know. It rests on a foundation of speculation or faith.

Kant offers a number of arguments in support of this general thesis, but in the interest of brevity I am going to confine my attention to just two of them.⁶ I draw the first argument from his discussion of the Third Antinomy in the first *Critique* where he aims to convince us that our efforts to discover the ultimate causes of natural events are necessarily accompanied

practical interests of reason.

⁴ As Kant defines them, ideas of reason (or as he sometimes refers to them, speculative ideas) go “far beyond what experience or observation could verify” (CPR A 668/B 696). We can have no warrant for supposing that they are “concepts of real [*wirklichen*] things” (CPR A 643/B 671).

⁵ Kant does not argue that *any* thought of a non-empirical object (e.g. the thought of a mermaid) is a necessary condition of our experience and science of nature. “Ideas of reason”, as he defines them, “relate *necessarily* to the entire use of the understanding” (emphasis added). Such ideas “consider all experiential cognition as determined through an absolute totality of conditions” (CPR A 327/B 384).

⁶ Kant divides ideas of reason into three classes, and the two I will discuss belong to the class he labels “cosmological” (versus “psychological” or “theological”) (CPR A 334/B 391).

by assumptions about objects outside the realm of natural events. We rely on ideas of reason insofar as we presuppose either that the series of natural causes originates in an absolutely *first* or *uncaused* cause, or that the series as a whole is an infinite regression of causes. In both cases, we rely on concepts that are necessary for our science of nature, but whose objects are nowhere to be discovered within the realm of nature.

The second argument appears both in Kant's Appendix to the Transcendental Dialectic section of the first *Critique* and in his *Critique of Judgment*. Once again, he considers the natural causal law and its role as a condition of experience. He wants us to appreciate that although the law governs everything that happens in nature, it is by no means a *sufficient* condition of our experience or science of nature. Neither our experience nor science of nature would be possible, Kant insists, without an assumption that our investigations into nature can never supply. The assumption is that objects of nature are as if *purposively* connected and arranged. As in the case of the first argument, Kant's larger message is that our experience and science of nature must rely on ideas of reason as a condition of their possibility.⁷ In this respect, our science of nature rests on a foundation of speculation or faith.

I

Before examining the first of the two arguments for how nature must be saved, I want to review some basic features of Kant's conception of nature and its objects. Kant holds that objects of nature (that is, "appearances") have a matter as well as a form. Their matter is their

⁷ I will usually abbreviate "our experience and science of nature" with the less cumbersome phrase "our science of nature". It should not be overlooked, however, that the two arguments we are about to consider concern not just the conditions of scientific investigation (narrowly considered), but also the conditions of our ordinary experience or perception of nature.

sensible content, a content given to us *a posteriori*, that is, in sensation.⁸ The form of appearances, however, is *a priori*. There are *a priori* constraints, first, on how the *a posteriori* content of appearances is given to us: that content is given through our *a priori* forms of receptivity or intuition, space and time. Second, there are *a priori* concepts without which the *a posteriori* content could not be for us a *thinkable* content, that is, a content unified in such a way to yield possible objects of perceptual awareness. For example, Kant argues that we can only experience a sensible content as an object if it is subject to the *a priori* rule or concept of substance. We experience empirical objects as subject to alteration in response to causal forces. We would be incapable of experiencing alteration – and hence, incapable of experiencing empirical objects at all -- did we not presuppose that, in all change of appearances, something persists, namely a permanent or substance (CPR A 182/B 224). The *a priori* rule of permanence or substance is therefore a necessary condition of our experience. To cite a further example: we could not unify the *a posteriori* given sensible content into possible objects of perception without ordering that content according to the *a priori* concepts of quantity or magnitude. The perception of objects would not be possible for us, for instance, did we not intuit the given appearances as *extensive* magnitudes, that is, as spread out in space and time rather than as extensionless points. As a condition of its very possibility, then, our form of experience must be subject to the *a priori* rule that objects are, as Kant puts it, “multitudes of antecedently given parts” (CPR A 163/B 204).

In the argument with which we will be concerned in this section, Kant asks us to consider a further *a priori* rule or concept, namely that of causality. Applied to appearances, this concept may be formulated as the law or principle that everything that happens in nature,

⁸ See CPR A20/B 34, A 50/B 74.

every “alteration” or “event [*Veränderung*]”, is caused.⁹ Kant draws our attention to a problem with this law, a problem that becomes apparent, he believes, when we draw out its implications. Upon careful consideration, we discover that unless we take the law to rest in some way on ideas of reason, it is self-contradictory.

Kant alerts us to the self-contradictory nature of the causal law in the following passage from the Proof for the Thesis of the Third Antinomy:¹⁰

the law of nature consists just in this, that nothing happens without a cause sufficiently [*hinreichend*] determined *a priori*. Thus the proposition that all causality is possible only in accordance with laws of nature, when taken in its unlimited universality [*unbeschränkten Allgemeinheit*], contradicts itself, and therefore this causality cannot be assumed to be the only one (CPR A 446/B 474).

The “law of nature” (in this case, the causal law) “contradicts itself”, Kant tells us here, when “taken in its unlimited universality”. He then asserts that, from this self-contradiction, we are warranted in concluding that the causality of nature may not be the only form of causality there is. To express Kant’s reasoning in another way: as long as we rely solely on the natural causal principle, we land in self-contradiction and thereby undermine our science of nature. Our science of nature thus requires, as a condition of its possibility, an idea of reason, namely the idea of a *non-natural* or *extra-temporal* form of causality.

⁹ Kant gives us numerous versions of this law or principle in the first *Critique*. It is the principle of the Second Analogy, expressed in the B-edition as, “All alterations [*Veränderungen*] occur in accordance with the law of the connection of cause and effect” (CPR B 232). The principle appears as a premise in the Proof for the Thesis of the Third Antinomy as well: “everything that happens presupposes a previous state, upon which it follows without exception [*unausbleiblich*] according to a rule” (CPR A 444/B 472). It is more succinctly stated there as “nothing happens without a cause sufficiently determined *a priori*” (CPR A 446/B 474).

To clarify Kant's reasoning, it will be useful to first examine the assumptions underlying his characterization of the law that he claims to be self-contradictory. Again, the law in question is the causal law, the law he formulates in the above passage as, "nothing happens without a cause sufficiently determined *a priori*". We might wonder, first, why Kant classifies this law as *a priori*. The answer, very briefly, is that he takes himself to have established its a priority back in the Transcendental Analytic section of the *Critique* (in his discussion of the Second Analogy). He believes he has demonstrated there that the law is a necessary and therefore *a priori* condition of experience.

But what about Kant's mention of "sufficient [*hinreichend*]" determination in the above-quoted passage? Again, the "law of nature" with which he is concerned asserts that "nothing happens without a cause sufficiently determined *a priori*". The law thus implies not merely that, for any event, *y*, there are *necessary* conditions, *x*, such that we can infer from *y* the presence of conditions *x*. The causal law implies, in addition, that for any event or happening in nature, *y*, there must be some condition or set of conditions, *x*, such that, given *x*, *y* *had* to happen. Minimally, then, the insistence upon sufficient determination implies a commitment to the principle that nothing can come into being in nature without some antecedent causal condition or set of conditions. Nothing in nature can come into being out of nothing, that is, spontaneously.¹¹

¹⁰ The proof sets out to establish the necessity of the assumption of a causality of freedom, an "absolute causal spontaneity" (CPR A 446/B 474).

¹¹ As Kant writes in his discussion of the second Analogy, if my perception is to contain the cognition of something that "actually happens [*wirklich geschieht*]", "then it must be an empirical judgment in which one thinks that the sequence is determined, i.e., that it presupposes another appearance in time which it follows necessarily". Kant concludes from this that the principle of sufficient reason is "the ground [*Grund*] of possible experience" (CPR A 201/B 246).

There is more to say, however, about Kant's reference to sufficient determination in the above-quoted passage. Elsewhere, he draws our attention to the fact that the demand for a sufficient condition for everything that happens in nature is an application to nature of the following more general law of reason:

If the conditioned is given, then through it a regress in the series of all conditions for it is given to us *as a task* [*uns . . . aufgegeben sei*] (CPR A 497/B 525).

Kant describes this general law as a “logical postulate” of reason that commands us to “follow that connection of a concept with its conditions through the understanding, and to continue as far as possible” (CPR A 498/B 526). The general law is “undoubtedly certain [*ungezweifelt gewiss*]” and “analytic”, he says, because the concept of a sufficient condition is conceptually or analytically contained in that of the conditioned (CPR A 498/B 526).¹² As we just noted, Kant claims that the causal law, too, implies a demand for sufficient determination. But he is also convinced that the causal law is somehow self-contradictory. The contradiction arises, he says, when we take the law in its “unlimited universality”.

Clearly, we can only shed light on the self-contradictory nature of the causal law if we understand what Kant has in mind in referring to its “unlimited universality”. One interpretation suggests itself immediately: the law applies with unlimited universality in that it

¹² “[T]he concept of the conditioned already entails that something is related to a condition, and if this condition is once again conditioned, to a more remote condition, and so through all the members of the series” (CPR A 498/B 526). Kant goes on to argue that, applied to appearances, we *cannot* however justify the “synthetic” principle that, “if the conditioned is given, then all the conditions (as appearances) are also given” (CPR A 499/B 527). Kant explicitly identifies this latter principle as synthetic at CPR A 308/B 364. The synthetic nature of this principle is tied to its limitation to “appearances”. As we will see, Kant argues that the absolute totality of the series of conditions is not for us a possible appearance. For an excellent discussion of the status of these various principles, see Michelle Grier's *Kant's Doctrine of Transcendental Illusion* (Cambridge, UK: 2001),

legislates over *everything* that happens in nature. The law asserts, in other words, that *no* event occurs in nature without a sufficient antecedent condition. If we take the causal law to allow no exceptions in this respect, we are forced to conclude, Kant remarks, that in the series of natural causes there is no “first beginning”, and that what we have on the side of conditions is an infinitely regressive series (CPR A 446/B 474). As Kant puts it, if we take the causal law in its “unlimited universality”, there can be “no completeness of the series on the side of the causes descending one from another” (CPR A 446/B 474).¹³ His point seems to be, then, that the existence of an infinite series on the side of conditions contradicts the law of nature. His reasons for this conclusion become apparent when explore more closely his thoughts on the implications of the demand for sufficient determination.

Kant characterizes the demand for a truly sufficient cause or condition as a demand for a cause or condition that itself requires no cause or condition. It is a demand for what he in one passage refers to as “a resting place [*Ruhe*]” for the understanding (CPR A 447/B 475). He tells us that this demand is implicit in the law that states that, “nothing happens without a cause sufficiently determined *a priori*”. As we have seen, however, he also suggests that this demand cannot be satisfied if we take the law of nature in its “unlimited universality”. If we take the law in its “unlimited universality”, what results is not an unconditioned or uncaused condition (“a resting place” for the understanding); rather, what results is an infinitely regressive series of conditions. When taken in its “unlimited universality”, then, the law of nature is self-contradictory.

esp. pp. 268ff. Grier’s book is an outstanding in-depth treatment of many of the issues I consider here.

¹³ As Kant writes in another passage, an infinite regress does not allow for a “starting point that would serve absolutely as the foundation” (CPR A 474/B 502).

We might suppose that there is an obvious way to avoid this contradiction, namely by dropping the demand for a sufficient condition. Kant is aware of this strategy; he identifies it as the strategy of the “dogmatic” empiricist or “defender of the omnipotence of nature” who steadfastly affirms the validity of the natural causal law and its implied infinite regress of causes (CPR A 471/B 499, A 449/B 477). The defender of nature denies that we can demonstrate that there is an “absolutely first” in the series of appearances. She therefore also denies the law of reason that commands us to seek an absolute beginning. To put this point differently: the defender of nature tries to *drop* the application to nature of the law of reason which says that,

If the conditioned is given, then the whole series of all conditions for it is also given (CPR A 498/B 526).

Kant insists, however, that the demand for a genuinely sufficient condition *cannot* be dropped. As we saw, he asserts that the demand that we seek a sufficient condition is an “undoubtedly certain [*ungezweifelt gewiss*]” “logical postulate” of reason. The fact that the demand cannot be dropped is evident, he thinks, in the futile effort of the defender of nature to prove otherwise.

The defender of nature claims that the causality of nature is valid when taken in its “unlimited universality”. As we noted a moment ago, this requirement is most obviously interpreted as implying that the causal law is valid without exception for everything that happens in nature. But Kant wants us to appreciate that the defender of nature understands something further by the condition of “unlimited universality”. The defender of nature insists that the causal law has “unlimited universality”, but not merely because she takes the law to hold without exception for everything that happens in nature. She understands the law to have

unlimited universality in a further respect, since she in addition presupposes that the causality of nature is *the only form of causality there is*. Kant expresses the point as follows: The defender of nature assumes, he writes, that “everything in the world happens solely in accordance with laws of nature” (CPR A 445/B 473). According to this position, laws of nature have unlimited universality in that they govern not just every event in nature but everything that happens “in the world”. In effect, then, the defender of nature presupposes that there is nothing outside the realm of appearances; she in other words assumes that the boundaries of nature and of the world coincide. In making this assumption, she supposes she is capable of knowing the series of appearances as a *totality*.¹⁴ According to Kant, however, the whole of nature is not a possible object of perception for beings like us. The whole or totality of nature is no more a possible object of our form of perception than an absolutely first or uncaused cause (CPR A 484/B 512).¹⁵

As we have seen, the defender of nature or dogmatic empiricist aims to be faithful to the law of nature. She is skeptical of the very idea of a first or uncaused cause (that is, of a causality outside nature). She is willing to accept the implications of taking the law in its “unlimited universality”; she accepts, then, that the series of appearances is infinitely regressive. But despite her effort to be true to the law of nature, she ends up contradicting the law of nature. The defender of nature assumes that the causality of nature is the only causality there is. On Kant’s account, however, this is not an assumption any appeal to nature or

¹⁴ Kant defines “world [*Welt*]” at CPR A 419/B 447. “World” “signifies the absolute totality of the sum total of existing things”. The idea of the “absolute totality” of the series of existing things (appearances), moreover, refers to an object that “transcends all possible experience”.

¹⁵ As Kant remarks a few pages later, we cannot infer from the fact that the conditioned (in appearance) is given, that the “absolutely totality of the series” is also given, because

experience could justify. For precisely this reason, he concludes that the defender of nature contradicts the law of nature.

What the defender of nature needs to acknowledge, on Kant's diagnosis, is that human reason is *necessarily* governed by the "logical postulate" that demands the discovery of sufficient conditions. The defender of nature needs to reconcile herself to the fact that this demand cannot be dropped; it is a demand necessarily imposed by reason itself. The defender of nature must come to terms with her own dogmatism and acknowledge that, despite her efforts to remain true to nature, she cannot avoid relying on assumptions that nature or experience can never justify.¹⁶ She is, in this respect, in precisely the same position as her rationalist opponent. Like her opponent who embraces the thesis that the series of appearances must originate in a first or uncaused cause, the defender of nature rests her case on a dogmatic assumption. Her case is just as dogmatic as that of her opponent, because in claiming to know the series of appearances as a totality, she, too, rests her argument on an idea of reason, that is, on a concept whose object cannot be theoretically or scientifically known.

This brings us back to the larger moral of our story. Kant aims to convince us that when human reason investigates the causes of natural phenomena and undertakes its search for sufficient conditions, it invariably relies on ideas, that is, on concepts whose objects transcend the limits of our experience. Without such ideas – without the resources of faith or speculation – we land in self-contradiction. We leave ourselves no means of saving our science or experience of nature.

the totality of the series is not itself a possible object of our experience (CPR A 499/B 527).

¹⁶ The defender of nature must recognize that the "solution to these problems can never occur in experience" (CPR A 484/B 512). If the defender of nature is to avoid self-

II

I now turn my attention to a second Kantian effort to enlist ideas of reason in saving nature. In the case we just considered, human reason saves nature with the help of ideas without which we are unable to satisfy the demand for a sufficient cause or condition. We satisfy reason's demand for a sufficient cause either by positing (with the dogmatic rationalist) an absolute beginning of the series of appearances (that is, an unconditioned or uncaused cause), or by assuming (with the dogmatic empiricist) that we can know the infinitely regressing series of appearances as a whole.

In the argument we are about to review, Kant is once again preoccupied with the task of identifying conditions of the possibility of our experience or science of nature. His aim in this case is to demonstrate that human experience requires the assumption that objects of nature are somehow *purposively* connected and arranged. The concept of purpose is another instance, for Kant, of an idea of reason. As such, its object is nowhere to be discovered within the bounds of our experience.

As was the case with the argument we just reviewed, the starting point of this second argument is the general causal law and its role as a condition of experience. Simply put, the law states that every event is caused. As we know, the law is for Kant an *a priori* condition of experience. It is "constitutive" of nature, on his description, because no object can properly *count* as an object of nature without conforming to it (CJ Second Intro. V [184]). Any possible object of our experience or science of nature is in other words necessarily governed by, and therefore subsumed under, this general law.

contradiction, she must grant that the causality of nature "cannot be assumed to be the

Kant in addition asserts, however, that although the general causal law is constitutive of objects of nature, it is by no means *sufficient* for our science or experience of nature (CJ Second Intro. V [183], §61 [359]).¹⁷ One easy way to appreciate the law's insufficiency is to consider the fact that it cannot by itself yield particular empirical regularities. We cannot in other words discover the particular behaviors of objects in specific circumstances simply by reflecting on the general causal law.¹⁸ Although the assumption of causal connection is necessary for the generation of particular laws, the generation of particular laws relies on additional conditions – most obviously, on the resources of observational evidence and inductive reasoning.

Kant wants us to recognize, however, that the general causal law is insufficient for our experience or science of nature in less obvious respects as well. The argument we are about to consider draws attention to what, in his view, are further conditions of causal explanation. In essence, the argument highlights the role of ideas of reason in causal explanation. Ideas of reason, remember, are concepts that refer to objects that are nowhere to be discovered within the limits of our experience – objects of speculation rather than knowledge.

Kant's argument begins with the observation that, in our investigations into the workings of nature, we look for causes. We seek grounds for concluding more than simply that event *y* was *preceded* by event *x*; we seek grounds for asserting, in addition, that event *y* was *caused* by event *x*. We seek justification for inferring that the sequence '*x* then *y*' is *repeatable*. That is, we look for grounds for predicting that under similar circumstances, *x* (or

only one" (CPR A 446/B 474).

¹⁷ Kant characterizes conditions governing our *investigations* into nature as subjective, and contrasts these conditions with "objective" conditions or principles which specify the conditions *constituting objects* of nature (CJ Second Intro. V [185f.]).

causes like *x*) will produce *y* (or effects like *y*) in the future. The effort to satisfy this demand is precisely what is involved in our search for *explanations* for the behaviors and interactions of objects. We can only satisfy this demand by discovering empirical regularities or laws (CJ [185]).

Kant insists that we cannot explain the workings of nature with the help of the general causal law alone. He sets out to persuade us of this point by asking us to appreciate that the general causal law is consistent with an assumption that *undercuts* the very possibility of scientific explanation. The principle that every event is caused is consistent, in particular, with the assumption that every event has a *unique* cause. Kant points out that were we to assume the latter – namely that there are “nearly as many different powers as there are different effects” -- we would have no means of *finding* regularities or patterns in nature (CPR A 648/B 676). We would lack any basis for claims such as, “this kind of cause tends to produce this kind of effect”. We would thus be unable to discover empirical regularities or laws (CPR A 648/B 676).¹⁹ From these considerations, Kant infers that natural causal explanation requires as a condition of its possibility more than the principle that every event is caused (CJ Second Introduction V [183], §61 [359]).

¹⁸ To put the point differently, we cannot analytically or conceptually deduce individual empirical laws from the general causal law.

¹⁹ Kant expresses the point somewhat differently in CJ. Were we to attribute to objects of nature an “infinite diversity” of causes, he says, nature for us would contain an “endless diversity of empirical laws” (CJ Second Intro. V [183]). For Kant, an “endless diversity of empirical laws” is equivalent to no empirical laws at all. We must “presuppose” that there is “unity” in this “endless diversity”, “since otherwise our empirical cognition could not thoroughly cohere to [form] a whole of experience”. To presuppose unity, Kant suggests here, is in effect to treat nature as *purposively* arranged. He furthermore points out that we need to assume that nature admits to being divided into species and genera

Kant then proceeds to highlight additional assumptions that must be brought into play. Included among them is the following: We need a basis for *denying* that there are, in his words, “as many different kinds of causality as there are special differences among natural effects” (CJ Second Introduction V [185]). Put positively, we need grounds for inferences such as, “plants of this variety are poisonous” or “creatures of this species can fly”. That is, we need justification for asserting that certain kinds of objects have properties which, under specific conditions, tend to produce certain kinds of effects.

The next step of Kant’s argument is crucial. He points out that we give ourselves the required justification only if we presuppose that nature *admits* of division into kinds. Only if we in other words assume that there exists behind the “infinite variety” of things a “unity of fundamental properties”, do we give ourselves grounds for asserting that it is not a mere accident that winged creatures can fly (CPR A 649/B 677, A 652/B 680). Only by means of such a division, that is, do we give ourselves reason to suppose that if a creature possesses wings, that creature will most likely possess the capacity for flight. In assuming that the connection between wings and flight is not a mere accident, we effectively commit ourselves to the thesis that wings are the kind of thing that enable and are suitable for flight. Expressed differently, we assume that wings are somehow *designed* for that purpose.²⁰

even if we are to form empirical *concepts* (CPR A 653f./B 681f.). I discuss these matters in *Hegel’s Critique of Kant*, Chapter One, sections 1.2 and 1.3.

²⁰ In CJ, Kant assigns the role of finding unity in the given diversity to “reflective” judgment (CJ Second Intro. V [185]). “[I]f . . . the particular is given and judgment has to find the universal for it, then this power is merely reflective [*reflektierend*]” (CJ, Second Intro. IV [179]). He contrasts reflective with “determinative [*bestimmende*]” judgment which begins with some universal (some *a priori* rule) and subsumes the particular under it (CJ, Second Intro. IV [179]).

Kant wants us to understand that in presupposing that nature admits of division into kinds, we imply that its parts stand in a special kind of relation to each other and to nature as a whole. In effect, we imply that nature is not a “blind mechanism” or “contingent aggregate” of accidently connected parts, but should rather be understood as a “systematic unity” or ordered whole (CPR A 645/B 674; CJ § 61 [360]).²¹ An obvious example of an ordered whole is an artefact. We think of artefacts as assembled purposively, that is, as assembled according to a conscious plan. We assume, for instance, that parts of a computer are not arbitrarily or randomly connected. If the computer happens to be well-designed, we judge that its parts are assembled in a way that efficiently serves the purpose of the machine as a whole.²²

Kant argues that when we think of nature not as blind mechanism but as a whole whose parts are purposively or teleologically arranged, we think of nature on the model of an artefact. He warns us, however, against supposing that we can theoretically or scientifically know that nature is an artefact, and that it has thus been arranged according to the “wise intentions” of a “supreme intelligence” or “world author” (CPR A 687/B 715). The most we are entitled to infer, as a condition of the possibility of treating nature

²¹ Nature should in other words be understood as a “cognizable order” in terms of empirical laws (CJ Second Intro. V [185]). See also CPR A 686/B 714, A 697/B 725. If we assume that everything that happens in nature is an accident, we in effect treat nature as a “mere mechanism”, according to Kant. We assume that nature, “could have structured itself differently in a thousand ways without hitting on precisely the unity in terms of a principle of purposes” (CJ § 61 [360]).

²² In a passage in the third *Critique*, Kant asks us to consider the assumptions we would likely make, were we to happen upon a figure of a hexagon traced in the sand. We would probably suppose that its parts were not combined by chance; we would suppose, instead, that its parts had been *purposively* combined (CJ § 64 [370]). We would infer that its creator began with the aim of drawing a hexagon and then set out to draw the figure with that aim in mind, carefully positioning the individual lines in order to produce the figure

as a systematic unity rather than as a “contingent aggregate”, is that its parts are combined “*as if*” designed by a supreme intelligence or architect. In presupposing that nature is teleologically arranged (that is, arranged according to a causality of purposes or final causes), we do not give ourselves license, he says, either for positing an “intelligent being above nature as its architect” or for turning nature itself into an “intelligent being” capable of generating its own purposes (CJ §68 [383]).²³

The main point deserving emphasis here is that Kant takes it to be a necessary condition of the possibility of scientific explanation that we think of nature as an *as if* purposively arranged whole. Unless we treat nature in this way, he says, we leave ourselves no basis for supposing that its parts are related to each other and to all of nature – not merely accidentally or contingently -- but purposively or with “necessity”, as he says (CJ § 64 [370]). And unless we give ourselves grounds for asserting that parts of nature are related to each other purposively or with necessity, we have no means of discovering the regularities or empirical laws that furnish the very basis of scientific explanation. We lack a condition that needs to be in place if the causal law is to have any application for us at all.²⁴

as a whole. To consider nature as an artefact is likewise to suppose that it is a unity whose parts are *purposively* fashioned (presumably by God) (CJ § 61).

²³ If we turn nature into an intelligent being capable of generating its own purposes, we in effect treat nature as a *self*-organized whole – as what Kant refers to in the third *Critique* as a “natural purpose” (CJ § 65). In this case, we assume that nature’s organization or systematic unity is self-produced rather than imposed from without. Nature, on this model, is “both cause and effect of itself” (CJ § 64 [370]).

²⁴ The principle that nature is teleologically arranged or purposive, although necessary for explanation, is not *itself* explanatory, according to Kant. It cannot itself be explanatory, because it does not admit of empirical demonstration. Such a “transcendental hypothesis” does not ‘advance’ the “use of the understanding” but serves “only for the satisfaction of reason” in regulating the employment of the understanding (CPR A 772/B

III

My main objective in this essay has been to draw attention to Kant's claim that our science and experience of nature necessarily depend on the special concepts he calls "ideas" ("ideas of reason" or of "speculation").²⁵ Our investigations into nature rest, for instance, on the idea that events of nature are as if purposively connected. As ideas, these special concepts refer to objects that are nowhere to be discovered within the realm of our experience.²⁶ Precisely because speculative ideas and judgments refer to objects that transcend our experience, they cannot be tested by the tools and methods of natural science.²⁷ Nonetheless, they are in Kant's view indispensable conditions of scientific investigation as well as ordinary perception.

Given Kant's repeated insistence upon the necessity of confining theoretical knowledge within its proper limits and upon sharply separating its claims from those of

800). In general, ideas of reason, such as the idea of purpose, "ground [*gründen*] regulative principles of the systematic use of the understanding" (CPR A 771/B 799).

²⁵ Kant sometimes also refers to these special concepts as "transcendental ideas", for example, at CPR A 321f./B 377f.

²⁶ When theoretical reason makes judgments about objects that cannot be given in experience, it becomes "speculative" (CPR A 636/B 664). Kant typically uses the term "speculative" to refer either to objects that are nowhere to be discovered in experience or to human reason's effort to know such objects. A main objective of a "critique", he says, is to demonstrate that "we cannot in fact know anything at all in [reason's] speculative use" (CPR A 769/B 797). Occasionally, however, Kant uses "speculative" in a broader sense. He writes at CPR A 471/B 499, for example, that "real speculative knowledge [*eigentliche spekulative Wissen*] can encounter no object except an object of experience". In this passage "real speculative knowledge" would seem to refer to what he usually refers to as theoretical knowledge. Kant uses "speculative" in the broader sense at CPR A 841/B 869 as well, where he divides metaphysics into the "speculative" and "practical" uses of reason, and includes "theoretical cognition" under the former heading.

²⁷ This is what Kant has in mind when he tells us that, from the standpoint of scientific or theoretical knowledge, our judgments about such ideas – judgments of speculative reason -- have no "correct" or "immanent use" (CPR A 796/B 824, A 799/B 827).

speculation and faith, we might have supposed that ideas of speculative reason have no place whatsoever in our cognitions of nature, on his account. But as I hope to have shown, this is far from the case. Kant awards speculative ideas a *necessary* role in making our experience and science of nature possible. He thus effectively endorses the thesis that we can only save our experience and science of nature by going *outside* nature.²⁸ His Critical philosophy thus requires us to perform what might be described as a delicate balancing act. It requires us to ensure, on the one hand, that speculation never encroaches upon the proper sphere of science. But it demands, on the other, that we acknowledge that science needs speculation as a condition of its very possibility.²⁹

There is a further issue I wish to address in these final pages having to do with the status Kant awards ideas of reason or speculation. From his insistence upon the role of those ideas in saving our science of nature, we can reasonably conclude that he awards them, and the faculty responsible for them, a certain *primacy*. Speculative reason supplies ideas that are indispensable for theoretical cognition. At least on this basis, then,

²⁸ As a condition of the possibility of our experience and science of nature, we must seek unity in nature; but we can only expect to find that unity “*beyond* the concept of nature rather than in it” (CJ § 61 [360]; my emphasis).

²⁹ It might seem that my point here is that Kant’s position on the relation of theoretical cognition to speculation is *self-contradictory*. It is as if theoretical cognition, on his account, is like the lover who says to her beloved (speculative reason): “I want nothing to do with you, but I cannot live without you”. Kant discovers no self-contradiction in this relation, however, and I do not mean to suggest that he should have. In his view, our ordinary as well as scientific judgments refer to possible objects of experience (“appearances”); our speculative judgments do not. The respective claims of science and speculation must be kept separate for precisely this reason. But keeping the judgments of science and speculation separate is consistent with granting that speculative ideas have a necessary role to play at the *foundation* of scientific (as well as ordinary) inquiry. As Kant puts it, speculative, or what he sometimes calls “transcendental” ideas, can have a “good and consequently immanent use”, namely as

we might conclude that speculative reason is primary to theoretical cognition. Those familiar especially with the *Critique of Practical Reason* might wonder how this point about the primacy of speculative reason can be compatible with Kant's repeated insistence, in that text and elsewhere, upon the primacy of *practical* reason. Which of these two employments of reason really has primacy, in his view?

It is tempting to suppose that the answer to this question is indicated in the title Kant chooses for a section of the second *Critique*: "On the Primacy of Practical Reason in its Association with Speculative Reason" [CPrR 119]. We might take this title to imply that, for Kant, we have not reached rock bottom with speculative reason. That is, we might assume that his message is that, in its role in providing necessary conditions of our experience and investigations into nature, speculative reason depends upon the resources of practical reason in some way. This line of reasoning seems to me mistaken. What I will suggest, in these final paragraphs, is that the mistake results from overlooking the fact that, on Kant's account, one faculty or set of ideas can have primacy over another in different respects.

In his second *Critique*, Kant writes that, "every interest is ultimately practical, even that of speculative reason being only conditional and reaching perfection only in practical use" [CPrR 121]. Narrowly defined, the proper object of practical reason, for Kant, is freedom of the will. The interest of reason in its "practical" employment, he tells us, lies in the "determination of the will" [CPrR 120]. From these assumptions, we might seem justified in inferring that Kant's view of the primacy of practical over speculative reason is connected to the fact that the idea of freedom provides a foundation or basis for

conditions of the possibility of our science of nature. We must take care, however, never to

speculative ideas such as the idea of nature as a purposive order or as an infinitely regressive series of causes.³⁰

But as I just suggested, this reasoning rests on a mistake. The primacy of the ideas of speculative reason with which I have been concerned in this essay is tied to their necessity as conditions of our experience and science of nature. Ideas of speculative reason have primacy over the concepts and judgments of theoretical knowledge in just this respect. When Kant insists upon the primacy of practical over speculative reason, he has something else in mind. He is not comparing the two faculties on the basis of their respective roles as conditions of experience or theoretical knowledge. Instead, the primacy of practical reason, in his view, reflects its ranking among the various interests of reason. The specific interest of scientific or theoretical cognition, as Kant defines it, is to cognize “*what exists*” (CPR A 633/B 661). As we have seen, scientific or theoretical cognition as well as ordinary experience depend for their possibility upon ideas of speculative reason. But Kant in addition argues that ideas of speculative reason in turn serve a “*more remote aim*” (CPR A 800/B 828; my emphasis). The *ultimate* significance of these ideas, he says, is *practical* (CPR A 800/B 828). This is because, in the end, *all*

take them to refer to or be valid of appearances (CPR A 643/B 671).

³⁰ Kant sometimes uses “practical” to refer more broadly to all the ideas of speculative reason. He does so, for example, when he writes in the B-Preface of the CPR that critique has the positive function of convincing us that there is an “absolutely necessary practical use of pure reason . . . in which reason unavoidably extends itself beyond the boundaries of sensibility” (CPR B xxv). He refers in this discussion not just to freedom, but also to the ideas of God and the immortal soul. It is worth mentioning, in addition, that since freedom of the will is not for Kant a possible object of our experience, it belongs under the heading of “speculative” objects. Kant classifies this particular speculative object as an object of practical reason, however, in order to distinguish the interest of practical reason from that of its theoretical counterpart. In contrast to theoretical reason, practical reason concerns itself not with what exists but with “*what ought to exist [was da sein soll]*” (CPR A 633/B 661).

the interests of human reason – including its interest in the ideas that make our experience and science of nature possible – are subordinate to its aim to determine “what is to be done if the will is free, if there is a God, and if there is a future world” (CPR A 800/B 828). All the interests of reason in other words ultimately serve the ends of human conduct and are thus, in Kant’s words, “properly directed only to what is moral” (CPR A 800/B 828).

This is the point Kant aims to convey in the *Critique of Practical Reason* when he refers to the “Primacy of Practical Reason in its Association with Speculative Reason”. He does not mean to suggest that we would have no experience or science of nature without practical reason and its idea of freedom.³¹ Kant’s message, instead, is that if we survey the various interests of reason and measure primacy with respect to those interests, what we discover is that human reason’s ultimate vocation is not to cognize what exists but to identify and achieve the good.

³¹ My point here needs qualification. The Thesis of the third Antinomy states that the series of appearances must have a first (that is, uncaused or spontaneous) cause, and Kant identifies the Thesis as the thesis of freedom (e.g. at CPR A 449/B 477). The Thesis of the third Antinomy, however, is just *one* way in which reason discovers a sufficient condition in the appearances. It would therefore be a mistake to interpret Kant as committed to the view that the idea of freedom is an indispensable condition of our experience or science of nature. As we have seen, the dogmatic empiricist *rejects* the idea of a first or free cause and instead discovers the sufficient condition of appearances in the infinitely regressive series of appearances as a whole.

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