

## *Kant on Sensibility and the Understanding in the 1770s*

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The *Duisburg Nachlaß* is a bundle of Kant's handwritten notes (R4674–4684 in volume 17 of the Academy Edition).<sup>2</sup> These notes almost certainly go back to some time in 1775.<sup>3</sup> Though very obscure, they replay issues in Kant's early metaphysics just as clearly as they anticipate issues in the

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- 1 This paper grew out of my work as a Humboldt fellow in the philosophy department at the Georg-August Universität in Göttingen. I am grateful to the Humboldt Foundation and also to the FCAR of Quebec for their generous financial support. I am very grateful indeed to Wolfgang Carl, who most generously found time to read an earlier version of this and other papers. His comments and criticisms were invaluable. I should also like to extend my thanks to the philosophy department in Göttingen and Konrad Cramer in particular for their hospitality on a subsequent sabbatical. Finally, I would like to thank referees of this journal for very constructive and stimulating critical comments that have helped me rethink and sharpen ideas in this paper.
  - 2 All citations to Kant's works — with the exception of the *Critique of Pure Reason* — refer to *Kants gesammelte Schriften* (the 'Academy Edition') in 29 volumes (Berlin: Walter de Gruyter [and predecessors] 1902- ). Where applicable, I give the volume, page and line number. Following custom, citations from the *Critique of Pure Reason* refer — where applicable — to the pagination of the first edition of 1781 (A) and that of the second edition of 1787 (B). I used the text edited by Benno Erdmann, *Immanuel Kant's Kritik der reinen Vernunft*, fifth edition (Berlin: Georg Reimer 1900). All translations are my own.
  - 3 Kant wrote up the reflections published as R4675 in volume 17 on a letter from a well-wisher of 20 May 1775. R4675 could not have been written before this date. Adickes says it was Kant's practice to use letters and other scraps of paper shortly after receiving them (18.269f). If that's right, R4675 could have been written as early as the summer of 1775. That the rest of the *Duisburg Nachlaß* was written at the same time as R4675 is suggested by the uniformity of ink and handwriting throughout the bundle.

*Critique of Pure Reason*. This makes them an important way-station in Kant's philosophical development — all the more important, because he published nothing in the 1770s and left no other extended writings in his own hand.<sup>4</sup> A proper understanding of the *Duisburg Nachlaß* might therefore explain some of Kant's later ideas: their origins in his earlier thinking and their philosophical motivations. The purpose of this paper is to lay the groundwork for such an explanation — at least a partial one. I shall argue that Kant's efforts in the *Duisburg Nachlaß* to correct certain difficulties in the *Inaugural Dissertation* of 1770 anticipate and naturally lead to the crucial claim in the *Critique of Pure Reason* that the understanding legislates laws to nature (A125-128; B163-165).

Kant himself says in the *Critique of Pure Reason* that 'nothing could be more astonishing' than the claim just enunciated (B164). His reader inevitably concurs. But the more readily he or she does so, the more obvious the gulf between reader and author: Kant somehow got over his astonishment. Indeed, he must have found the claim at some point perfectly natural and compelling. His problem writing the relevant section of the *Critique* — not once, but twice — was to make the claim as natural and compelling to the reader as it had become to him. His strategy in both editions of the *Critique* was to show that the 'astonishing' claim is a natural consequence of the Transcendental Deduction. But it was a failure, because both statements of the Deduction are so murky. I cannot make the persisting astonishment go away altogether: that may well be impossible. But I am going to try to diminish it somewhat. I shall argue that no matter how astonishing the claim may be in itself, there was nothing at all astonishing in Kant's espousal of it. For it naturally fell out of his efforts in the *Duisburg Nachlaß* to resolve problems he had discovered in the account of sensibility put forward in the *Inaugural Dissertation*.

The development in Kant's philosophy at the focus of my paper turned on a question that started out cosmological in the 1750s, namely what conditions are sufficient to form a world out of a collection of creatures.

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4 To be sure, Kant's correspondence from this time is a valuable source of information about his state of thinking during the 'silent decade.' But all too often, the philosophical ideas in these letters are highly abbreviated or too programmatic to tell us much. On the other hand, we also have transcripts of Kant's lectures. These too are valuable sources. However, they are not usually in Kant's own hand, but rather in that of his students. The *Duisburg Nachlaß* is unique, because it shows Kant trying to work out at leisure and to his own satisfaction the best formulation for ideas that obviously strike him as having great philosophical significance. In short, the *Duisburg Nachlaß* is what is left to us of a kind of philosophical laboratory Kant was running in the mid-1770s.

Kant later gave this question an epistemological turn: what conditions are sufficient for us to represent appearances as belonging to one and the same sensible world? The answer in the *Inaugural Dissertation* depended entirely on his new story about the pure intuitions of space and time. In the first part of my paper, I shall argue that, though this story was well motivated and perfectly intelligible in the context of Kant's early metaphysics, all the same it represented a significant overinvestment in the principles of sensibility. In the second part of my paper, I shall argue that Kant himself recognized the problem and tried to correct it. In the *Duisburg Nachlaß*, he denied that the pure intuitions of space and time can serve as the sufficient conditions of the sensible world and argued that such principles are to be sought, if anywhere, in the understanding.<sup>5</sup> This move brought into focus and made plausible a cluster of ideas that are the immediate ancestor of the claim that the understanding legislates laws to nature.

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5 Let me briefly situate my work on the *Duisburg Nachlaß* with respect to previous studies. There is little. The most important study is in Wolfgang Carl's *Der schweigende Kant* (Göttingen: Vandenhoeck & Ruprecht 1989). I owe a great deal to this book — starting with the optimism that sense can be made out of the *Duisburg Nachlaß* and that it can teach us something important about Kant's philosophical development in the 1770s. My specific debts to Carl in this paper I will acknowledge along the way. What distinguishes my work from his is that I take into account the history of Kant's earlier metaphysical commitments: for the purposes of this paper, that means Kant's early cosmology. Thus I tend to read the *Duisburg Nachlaß* in a more backward-looking way; he tends to read it in a more forward looking way. To the extent that I read the *Duisburg Nachlaß* as pointing to the first *Critique*, it is to show that the relevant aspects of the later work should be understood as the result of efforts in the 1770s to give his early cosmology an epistemological turn and to correct underlying difficulties in it. Another full-length treatment of the *Duisburg Nachlaß* in recent years is that of Paul Guyer in *Kant and the Claims of Knowledge* (Cambridge: Cambridge University Press 1987). Like Guyer, I will be insisting in this paper on the significance of temporal determination in the *Duisburg Nachlaß*. But Guyer does not take account take account of the significance of Kant's early cosmology, as I do; and, he seems to think that Kant is trying to show how temporal determination is possible through the so-called 'functions of apperception' in order to secure the unity of the self. I don't see how this can be possible since Kant seems to be taking the unity of the self for granted. In general, Kant treats the thinking self in the *Duisburg Nachlaß* as a rational substance: in short, he had not yet discovered the Paralogisms. Wolfgang Carl has pointed this out; I accept his conclusions. Cf. *Der schweigende Kant*, 88-93.

## I The Principles of Sensibility Cannot Serve as the Sufficient Condition of the Sensible World or an Objective Whole of Appearances

### 1. How the matter stands in the Inaugural Dissertation

The *Inaugural Dissertation* is our point of departure. It sets up our problem, namely to find the principles that make it possible to represent phenomena as belonging to the sensible world or — to put it in the language of the *Duisburg Nachlaß* — as forming an ‘objective whole of appearances.’<sup>6</sup> The significance of the *Dissertation* for our purposes is that it has no resource for solving this problem other than sensibility. Kant characterizes sensibility as a capacity to be affected by objects (2.392.13-14). He also says that it gives us the ‘principles of the form of the sensible world,’ which he characterizes as follows.

The principles of the universe *in general* are ‘that which contains the reason of the universal connection whereby all substances and their states relate to the same whole, namely a *world*.’ But the principles of the form of the *sensible world* in particular are ‘that which contains the reason of the *universal connection* of all things insofar as they are *phenomena*’ (2.398.11-13). We do not merely represent things as phenomena under our principles; we represent them as ‘universally connected’ to one another in a single, sensible whole. This suggests that our principles have a unifying function. In Section One of the *Dissertation*, Kant uses the word ‘coordination’ to designate the state of things universally connected to one another; he says, moreover, that the coordination of parts is precisely what gives the whole its peculiar form (2.390.5-7). By ‘coordinating phenomena,’ our principles universally connect and unify them. This is precisely what qualifies them as principles of the *form* of the sensible world.

A few pages later, Kant makes another remark we must take into account:

But the world considered as phenomenon, i.e., with respect to the sensual side of the human mind, does not admit any other principle of its form save a subjective one, i.e., a certain settled law of the soul through which it is *necessary* that all things

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6 For all intents and purposes, the ‘sensible world’ of the *Inaugural Dissertation* and the ‘objective whole of appearances’ of the *Duisburg Nachlaß* are one and the same. I will more usually speak of ‘objective wholes’ in what follows. Elsewhere I discuss Kant’s efforts in the *Duisburg Nachlaß* to specify the *necessary* condition for representing appearances as forming an ‘objective whole.’ I also discussed the sense in which this whole is ‘objective’ rather than subjective. See my ‘Kant’s Metaphysical Reflections in the *Duisburg Nachlaß*.’

that can be objects of the senses (through the quality of the senses) are seen to pertain to the same whole (2.398.16-21).

The form of the sensible world admits *no other* principle besides a certain subjective law of the soul. At the very end of this paragraph, Kant identifies this law with the two-fold 'schemata and conditions ... of anything sensitive in human cognition,' namely space and time (2.398.27-9). There is only one natural construal of these remarks taken together: space and time, the conditions of sensibility, alone determine the form of the sensible world, which will allow no other principle. The problem, however, is that the language in the *Inaugural Dissertation* oversteps what Kant can rightfully say — at least from the standpoint of his later philosophy. This is plain, as I have argued elsewhere, if we now look ahead to passages in the *Critique of Pure Reason* and the *Prolegomena* where the issue of sensibly conditioned world-wholes comes up once again.<sup>7</sup>

## 2. A symptom of Kant's philosophical overinvestment in sensibility in the *Inaugural Dissertation*

In the passages from the later works I have in mind, Kant uses the word 'nature' instead of 'world,' but allows some overlap in meaning. In the *Critique of Pure Reason*, he says that 'we have two expressions, **world** and **nature**, which sometimes run into each other.' He goes on to introduce a distinction for the sake of clarity. 'World' means 'the mathematical whole of all appearances and the totality of their synthesis'; 'nature' designates that same world now taken to be a 'dynamic whole' exhibiting 'unity in the *existence* of appearances' (A418-19/B446-7).

This distinction between 'world' and 'nature' seems to coincide with an important distinction in the meaning of 'nature' itself, namely that between nature considered first 'in the material way' (*natura materialiter spectata*) and then 'in the formal way' (*natura formaliter spectata*). Kant draws this distinction most sharply in Part Two of the *Prolegomena*, where he defines 'nature' in the material sense as 'the totality of appearances' (4.318.8) and 'nature' in the formal sense as 'the totality of rules under which appearances must stand, if they are to be thought of as joined in one experience' (4.318.16-18).<sup>8</sup> The interest here is that 'nature'

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7 Kant's *Early Metaphysics*, 132ff.

8 Cf. a footnote to the passage from the first *Critique* I just quoted (A418-19/B446-7) and the second-edition version of the Transcendental Deduction (B163-165).

in the *material* sense has supplanted 'world' as glossed in our first *Critique* passage at A418-19/B446-7, while 'nature' in the *formal* sense has supplanted the unqualified use of the term there. Kant can therefore substitute 'nature' for 'world' so long as he carefully distinguishes between the two senses of the former. Indeed, this substitution can be found throughout the *Critique of Pure Reason* and related writings.

This substitution is important, because it will allow us to compare Kant's remarks about the sensible world in the *Inaugural Dissertation* with his remarks about nature in the later works. At the beginning of *Prolegomena* §36, Kant says that 'the highest point which transcendental philosophy might ever touch and to which it must be led as to its limit and completion is the question how nature is possible' (4.318.3-5). The question has two parts. First we ask how nature is possible in the *material sense*; then we ask how it is possible in the *formal sense*. If we take the perspective of 'the highest point of transcendental philosophy' and look back to 1770, it seems that Kant is asking the same question in the *Inaugural Dissertation*, but without making the relevant distinctions.

The question, to be sure, is how a sensibly conditioned *world* is possible. But assuming that 'world' in the *Inaugural Dissertation* can admit something like the twofold meaning of 'nature' in the *Prolegomena*, we have to wonder which sense of the term is at issue. Remarks at the beginning of Section Three of the *Inaugural Dissertation* strongly implicate the *formal* sense. Kant is asking for the principles of the *form* of the sensible world, i.e., those unifying principles by virtue of which objects of the senses are universally connected or coordinated with one another and are therefore 'seen necessarily to pertain to the same whole' (2.398.19-21). In the language of the *Prolegomena*, he is looking for all those rules under which sensibly given things must stand if we are to represent them as joined in one and the same experience.<sup>9</sup> But though the *question* of the

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9 A note of caution and qualification is in order here. Strictly speaking, the issue for Kant in the *Inaugural Dissertation* is under what condition we can represent sensibly given things as joined in one and the same phenomenally conditioned *world-whole*, whereas the issue he addresses in the *Prolegomena* is under what condition we can represent sensibly given things as joined in one and the same *experience*. Even in the *Inaugural Dissertation* itself, there is some question about whether we may reasonably regard the sensible world as a whole in the strict sense, i.e., as a completed whole. Nevertheless, Kant does sometimes speak of the sensible world in terms directly analogous to those he uses to speak of the intelligible world, and the intelligible world may be regarded as a completed whole. Thus sometimes he speaks of the sensible world as a whole in the general cosmological sense, without any qualification. But by the time of the *Prolegomena*, Kant denies unequivocally that we can convert experience into any kind of completed whole. That idea underlies his discussion of the antinomies. I do not believe, however, that any of this affects the

*Inaugural Dissertation* is apparently raised in the formal sense of ‘world,’ the *answer* is given in the material sense of the term. For it rests on the pure intuitions. Consider, for example, the following remarks about space:

*Space* is thus the absolutely first *formal principle of the sensible world* not just because objects can be phenomena only through the concept of space, but rather above all for this reason: it is by its essence simply unique, encompassing absolutely all externally sensible things, and therefore it constitutes a principle of *allness* [*universitatis*], i.e., of a whole that cannot be a part of anything else (2.405.6-11).

Space constitutes the principle of allness, i.e., it gives us the sum total of all possible outer appearances. To put it in the language of the *Prolegomena*, it is a principle of nature in the material sense; and, this is precisely what qualifies it, according to the passage just quoted, to be a formal principle of the sensible world, i.e., as an answer to the question how nature in the formal sense is possible.

Question and answer are out of step in the *Inaugural Dissertation*. We can see this in light of the *Prolegomena*. For there we learn that the conditions of human sensibility are indeed principles of nature in the material sense: any and all sensible things must appear to us under the conditions of sensibility, which may therefore be understood as giving us the *totality* of appearances (4.318.7-13). But, as Kant goes on to say, an answer to the question how nature is possible in the *material* sense cannot serve as an answer to the question how nature is possible in the *formal* sense.

3. *An answer to the question how nature is possible in the one sense cannot give us the answer to the question how nature is possible in the other*  
— *Prolegomena* §38

This is clear from a point Kant makes at the end of *Prolegomena* §38. One of the issues in §38 is whether the laws that make nature possible in the formal sense can have their source in the pure intuition of space: ‘do these laws of nature lie in space and does the understanding learn of them just by trying to examine the extensive sense which lies in it [sc. in space] ...?’ (4.321.29-31). Kant answers ‘No,’ because ‘space is something so uniform

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main point for now. The main point for now is that both the sensible world, as conceived in the *Inaugural Dissertation*, and experience, as conceived in the later works, are one rather than many, exhibit internal unity, and are such that their parts may be thought by us to stand in universal, reciprocal relations to one another.

and so indeterminate with respect to all particular properties that one will certainly seek no treasure of natural laws in it' (4.321.33-6). He also says that 'the mere universal form of intuition, which is called space, is thus indeed the substratum of all intuitions determinable with respect to particular objects, and there certainly lies in it the condition of possibility and manifold of such intuitions' (4.322.1-5). But because space is so uniform and so indeterminate, 'it cannot supply unity of the objects and hence cannot be the source of the universal order of nature' (4.321.7-8).

We may note first of all that the uniformity and indeterminacy of space are relative to the 'particular properties' of things. Space guarantees in principle that the objects of outer sense can be described in terms of Euclidian geometry. But that guarantee cannot determine all by itself which geometrical properties in particular any of these objects will have. The claim of indeterminacy is closely related to a second claim: space makes possible the 'manifold' of all our intuitions of particular objects of outer sense, but it cannot supply 'unity' of the manifold.

From the first *Critique*, we know that 'every intuition contains a manifold' (A99). The assumption seems to be that intuitions are complex representations. The manifold of an intuition consists in all those elements — whatever they may be — that make up its complexity. Our passage in *Prolegomena* §38 strongly suggests that we cannot have an intuition of a particular object with particular geometrical properties unless its manifold or internal complexity has been unified somehow. But all by itself space cannot give us anything more than the necessary manifold. Unity in the manifold is achieved by a constructive procedure — specified not by sensibility, but by the understanding. 'That which determines space to the figure of a circle, or that of a cone or sphere,' says Kant, 'is the understanding insofar as it contains the ground of the unity of the construction of the same' (4.321.36-322.1). If we rotate the free end of a given line segment 360 degrees around the end we have fixed at the centre, we will no longer have an undifferentiated Euclidian plane; we will have used a constructive procedure to unify a certain area of the plane under our concept of the circle. We will thereby represent this area as having the specific geometrical properties of the relevant figure.<sup>10</sup>

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10 Hence Kant says that the law that determines the properties of a given geometrical figure does not lie in the figure itself as a determination of space, but rather in the understanding, inasmuch as this faculty is the source of the procedure for constructing the figure. Kant's example is the circle and the construction used in the proof of Proposition 35 in Book Three of the *Elements*: if in a circle two straight lines cut one another, the rectangle contained by the segments of the one is equal to the rectangle

Later we will consider the significance of Kant's appeal to the understanding. For now the point is that, in order to represent objects with particular geometrical properties, we must be able to unify a manifold by constructing the relevant figures, and that our constructive procedures — presumably those of Euclid — do not come from space itself. Space is thus the necessary condition for our representation of a given circular figure, but not the sufficient one.

So far we have been trying to make sense of Kant's remarks about the indeterminacy of the pure intuition of space in light of Euclidian geometry. But the stated purpose of §38 is to explain how nature considered in the formal way is possible. As Michael Friedman has observed, Kant apparently wants to deny — reasonably enough — that the answer to this question can be anticipated somehow by geometry — as, for example, by means of an *a priori* derivation of the inverse-square law from nothing more than the geometry of concentric spheres (4.320.22-321.26).<sup>11</sup> These considerations are directly relevant for our purposes.

A purely geometric derivation of the inverse-square law would proceed as follows. If we think of an attractive force diffusing equally in all directions through concentric spheres from a common, central point, then, everywhere at the circumference of a given sphere at a given distance from the centre, the force will have the same intensive magnitude. The force will diminish in strength as the circumference of the spheres increases. Since the circumference of the spheres will increase with the square of the distance, the force will decrease accordingly. Thus the geometry of concentric spheres will give us the inverse-square law. But, of course, it does so, without any appeal to the laws of motion or the observed phenomena. Just for that reason, it does not settle the question how things really work in nature. It certainly gives us no reason all by

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contained by the segments of the other. Kant asks whether 'this law [sc. the proposition from Euclid just stated] lies in the circle or in the understanding?' He answers the question as follows: 'If one goes through the proofs of this law, one soon notices that it [sc. the law] can be derived only from that condition which *the understanding lays at the foundation of the construction of this figure*, namely the equality of the radii' (4.320.34-321.3: the emphasis is mine). Thus the understanding — not the pure intuition of space — is the source of the relevant law inasmuch as it underlies the relevant constructions. The passage from the *Prolegomena* under consideration is highly suggestive of the important distinction in the B version of the Transcendental Deduction between the form of outer intuition and the formal intuition of space. This has been pointed out by Michael Friedman in *Kant and the Exact Sciences*, 197ff.

11 Friedman, 'Space, the Understanding, and the Law of Gravitation: *Prolegomena* §38' in *Kant and the Exact Sciences*.

itself to think that there are forces in nature that behave in the way assumed by the derivation. Why imagine that the force diffuses itself uniformly over the space through which it radiates? Why shouldn't we assume that it radiates out in some rather scatter-shot way, like shrapnel from an exploding grenade?<sup>12</sup> At most, our derivation gives us a purely abstract description of the way intensive magnitudes can fall off in space — and not only the one under consideration here. The same story would show just as unhelpfully that the intensity of light radiating from a central source falls off inversely as the square of the distance. Now we can observe the limitations of our geometrical derivation of the inverse-square law, without calling on anything that Kant says in *Prolegomena* §38. But Kant has at least one more point to add to our considerations.

Kant thinks that recognizing laws at work in nature cognitively determines the relation of one appearance to another with respect to their *existence*.<sup>13</sup> When we perceive the freezing of water upon a sufficient drop in temperature under the law that governs this phenomenon, we apprehend two existing states — that of a fluid and that of a solid. Moreover, we apprehend them as related to each other in time in a certain way, namely such that the latter succeeds the former whenever the conditions are right.<sup>14</sup> Sorting out these relations is equivalent to bringing unity to these different existences, i.e., as recognizing them as parts of a common frame of reference. But, as Michael Friedman points out, though our geometric derivation of the inverse-square law unifies a bunch of spheres in such a way that we can compare the relation of circumference to radius of the one with that of circumference to radius of the other, it does not by itself give us any relations among existing states of motion and rest in bodies — in time as well as space.<sup>15</sup> As a result, it is not the

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12 I am indebted to one of this journal's referees for this example.

13 Notice that, in the passage we discussed earlier from the first *Critique* at A418-419/B446-447 introducing the distinction between nature and world, Kant says explicitly that we may treat world as nature (i.e., as nature in the formal sense) insofar as it constitutes a dynamic whole with 'unity in the *existence* of appearances.' Hence it is not surprising for Kant to say that the principle of nature in the formal sense is a set of *laws* — just those laws that universally unite the existence of appearances with one another. But precisely because existence is at issue here, these laws will give us a unity of appearances in time as well as space. Space, as pure form of intuition, cannot all by itself handle either existence or time. So we should not expect it, on Kant's account, to do as principle of nature in the formal sense.

14 Cf., for example, *Critique of Pure Reason*, B162-3.

15 This leads Friedman to suggest that Kant's line of thinking in *Prolegomena* §38 is already operating with the distinction between space as form of intuition and the

source of a law of nature. Nor can any purely geometric construction be such for the same reason.

We saw that the pure intuition of space cannot by itself effect unity in the manifold sufficient even for a geometric construction like that of our concentric spheres. *A fortiori*, it cannot effect unity of existences in space and time. Hence we will seek ‘no treasure of natural laws’ in it; ‘it cannot supply unity of the objects,’ as Kant himself puts it, ‘and hence cannot be the source of the universal order of nature.’ This is all the plainer if we consider more concretely what is involved in all thought of nature in the formal sense.

4. *What does thought of appearances as connected in one experience involve? — a space-time cocktail, which the pure intuitions of space and time cannot deliver on their own*

According to Kant’s characterization in *Prolegomena* §36, the totality of rules constitutive of nature in the formal sense make it possible for us to think of appearances as connected in *one experience* (4.318.17-18).<sup>16</sup> Such thought involves at a minimum a capacity to keep track of appearances in space and time; this capacity in turn has to involve some kind of universal coordinate system in which we can plot one body’s position in space and time with respect to any other.<sup>17</sup> Such a system will enable us to represent, say, the skunks observed at a certain time at the corner of Laurier and Querbes in Montreal as standing in some spatio-temporal relation to the cats that patrol that same corner in Montreal at other times, or to the raccoons independently observed at the same time at the far end of the park on Mount Royal. Our thought of these creatures and others will not usually take the form of a list of unrelated items: skunk, alley cat, raccoon, .... Rather, it will specify relations among them against the backdrop of our system of coordinates. Assuming that the coordinate system can be made to accommodate anything that can be given to us, experience will never develop moth holes or unravel at the edges. What might perhaps strike us as pockets of spatio-temporal incoherence could in principle be made intelligible spatio-temporally, with respect to the

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formal intuition of space. The former, to use the language of *Prolegomena* 38, is ‘uniform and indeterminate’ in that it cannot determine the temporal relations of objects of outer sense. The latter, on Friedman’s suggestion, can. See Friedman, *Kant and the Exact Sciences*, 199.

16 The emphasis is mine.

17 One form such a coordinate system might take is described in the third section of the *Inaugural Dissertation* (2.401.28-38). I will discuss this passage below.

rest of experience as we know it, with enough new information. In other words, we must suppose that our coordinate system can be extended as needed, or perhaps amalgamated with others — if it should turn out that we have several, too narrowly local on their own to take account of the spatio-temporal relations of all the things of interest to us. If indeed we are to think of appearances as connected in *one experience*, we must have some way to keep track of them relative to one another in space and time; and, this is what necessitates something like our system of coordinates. The inability to generate such a system would indicate that experience had fallen to pieces on our account.

It follows that thinking appearances as connected in one experience somehow involves *mixing* space and time together. For that is what setting up our coordinate system requires: we do not just plot the position of the skunk relative to the raccoons along x-y-z axes, we also find a way to indicate the time at which the skunk and the raccoons were found at those positions. Now it is easy enough to see that the pure intuition of space all by itself cannot give us a space-time cocktail. For it gives us nothing beyond the spatial. But one might suppose that the pure intuition of *time* can provide us with everything we need, just because it is the pure form of inner sense — the necessary condition of *all* our representations, even those more directly subject to the pure form of outer sense. Anything given to us in outer sense, under the conditions of space, is thereby given to us in inner sense under the conditions of time. Thus as long as objects of outer sense are given to us at all, we will have a representation of something in *both* space and time; and, this would seem to give us the mix we need for representing nature in the formal way. But while the pure form of inner sense might well give us a mix of space and time, we must consider what kind of mix it is, before jumping to any conclusions.

One simple reason for thinking we do not have the right kind of cocktail yet is that time is just as uniform and indeterminate as space. If space cannot specify the procedures for constructing figures in Euclidian geometry, surely time cannot specify the procedures for assigning particular spatio-temporal coordinates to bodies and events in the sensible world. This is all the more plausible, because the pure form of inner sense all by itself cannot even establish the difference between objective time determination and subjective time determination: the actual order of appearances in time and space, on the one hand, and the order of images in a string of subjectively associated ideas, on the other.<sup>18</sup> Though time

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18 This is a fundamental assumption of the Analogies of Experience in the first *Critique*.

is the pure form of inner sense and though all our given representations are subject to it, even those more directly subject to the pure form of outer sense, it is no better suited than space for preparing the sought after space-time mix. This indicates that, though the basic ingredients for our mix come from the conditions of human sensibility, these conditions cannot do the mixing on their own. Hence, as we have seen, they cannot be the immediate source of nature considered in the formal way.

5. *That Kant already knew in the Inaugural Dissertation that a space-time cocktail would be necessary; hence he should not have over-invested in the pure intuitions of space and time*

Let us return to the *Inaugural Dissertation*. It is all the more striking that Kant there calls on 'nature' in the material sense in order to explain how 'nature' in the formal sense is possible. For he already has the idea in the *Inaugural Dissertation* that 'nature' in the formal sense — or, rather, its immediate ancestor, the sensible world as a unified whole — is a mix of space and time. He says in effect that, without such a mix, we cannot give any content to a fundamental notion, namely that of simultaneous coexistence. If somehow it were impossible to determine for two non-successive processes which stage of the first was taking place at the same moment as a given stage in the second, the two processes might just as well take place in two different temporal streams; that is to say, they might just as well belong to two different worlds. In the course of spelling out his thoughts on simultaneous coexistence in the *Inaugural Dissertation*, Kant gives us a way to mix space and time, so far as that is possible. The passage I have in mind reads as follows:

Thus simultaneous things are so, not because they do not succeed one another. For, by withdrawing succession, there is somehow removed a certain conjunction that prevailed through the series of time. But there does not arise *another* true relation, such as the conjunction of all things at the same moment. For simultaneous things are at the same moment of time, just as successive things are joined at different moments of time. Thus, though time be only one dimensional, still the *ubiquity* of time (as Newton would say), through which *all* things known by the senses are *at some time*, adds another dimension to the quantum of actual things, insofar as they depend, so to speak, on the same point of time. For if you represent time as a straight line produced to infinity, and simultaneous things at any point of time by perpendiculars to this line, the surface generated in this way will represent the *phenomenal world*, as much with respect to substance as to accident (2.401.28-38).

The states of two things in different places are not simultaneous just because they do not follow one another in the temporal order of succes-

sion. Just as we must connect successive events in the passage of time, even if they occur at the same place, so we must connect the simultaneous states of different things in different places at one and the same moment. To the extent that all of the relevant connections are made, space will be completely saturated with time. Thus even if we were to suspend the order of succession, by — say — charting the position of bodies or particles in space relative to one another at the same moment so that no before and after made its way into our diagram, we would not have swept away all temporal determinations: insofar as the bodies or particles are properly connected with one another at the same moment, i.e., stand in the relation of simultaneous coexistence, our chart represents a time-slice of the sensible world (or a part thereof), and is thus as completely saturated with time — or, anyway, a given moment thereof — as a chart indicating the order of succession in swing.

The insight that simultaneous coexistence is no less temporal a relation than succession moves Kant to speak of the *ubiquity* of time. Though time has only one dimension and space has no more than three, the result of infusing the one throughout the other is a mixture; and, Kant comes very close to saying that this mixture has four dimensions — at least inasmuch as ‘actual things ... depend, so to speak, on the same point of time.’ For we can represent the phenomenal world as a kind of universal system of spatio-temporal coordinates, i.e., as a sequence of time-slices ordered successively in the direction of the future. We start by representing time on its own as a horizontal straight line produced to infinity. Then we mix time into space by dropping perpendiculars to the straight line. Each of the perpendiculars will represent the things in the sensible world whose states are connected at one and the same moment in the order of simultaneous coexistence. The place in the order of succession of things coexisting simultaneously at a given moment will be indicated by the position on the horizontal straight line of the line’s point of intersection with the relevant perpendicular. The surface as a whole will represent all things in the sensible world. It is a representation of nature in the formal sense.

6. *Diagnosis of Kant's reasons in the Inaugural Dissertation for overinvesting in the pure intuitions: illustration and test of the diagnosis in light of important differences between Kant's treatment of the principles of nature considered in the formal and material ways in the Prolegomena and his treatment of the general cosmological ancestors of these principles in the Beweisgrund*

Now Kant's only resource in the *Inaugural Dissertation* for explaining how any of this is possible is space and time as pure intuitions. But his account is already so close to his critical view of sensibility that one wonders how they alone could yield the spatio-temporal mix we were just considering. Thus Kant apparently puts too heavy a burden on the principles of sensibility in the *Inaugural Dissertation*.

Yet it would have been natural for him to do so in 1770, because his conception of sensibility and the sensible world was apparently informed by his early general cosmology from the 1750s and 1760s (or so I am about to argue). The early Kant had a lot more invested in the general cosmological ancestor of nature considered in the material way than in its formal counterpart. That bias seems to have influenced his expectations of the pure intuitions of space and time in the *Inaugural Dissertation*. As a result, the *Dissertation* stands at a curious moment in Kant's philosophical development. It gave the first statement of his mature account of sensibility. But the new doctrines had yet to be fully extricated from the old metaphysics out of which they had emerged and in response to which they had been formulated. This was one of the tasks that Kant apparently undertook in the years leading to the publication of the first *Critique* and the *Prolegomena*. As I will argue in the second half of this paper, part of the interest of the *Duisburg Nachlaß* is that it represents a first, important step on this path. Passages from this material clearly show Kant lifting the burden from the principles of sensibility in the *Inaugural Dissertation*. By the early or mid-1770s, Kant had come to recognize that he could not treat the pure intuitions of space and time as the sufficient condition for representing appearances as a unified whole.

I propose now to review briefly the relevant aspects of Kant's early general cosmology. This will help us see how much closer the account of sensibility in the *Inaugural Dissertation* is to Kant's early metaphysics than to the Transcendental Aesthetic in the *Critique of Pure Reason*. Let us start with the general cosmological ancestor of nature considered in the formal way.

Kant says in the *Prolegomena* that nature considered in the formal way is the complete set of rules that must govern appearances if we are to conceive them as 'joined in *one experience*' (4.318.18). The analogue from Kant's early cosmology is the complete set of laws that must govern created substances if they are to belong to *one and the same world*. From

Kant's statement and discussion of the 'principle of coexistence' in the *Nova dilucidatio* (1755), it is obvious that the ancestral principle of nature formally considered is just a piece of divine legislation. Created substances will not belong to one and the same world unless at a minimum they externally relate to one another somehow. No external relations obtain among created substances unless they really interact. The principle of coexistence says that no real interaction will occur unless this is mandated by the 'schema of the divine intellect,' i.e., God's rational plan for the world (1.413.15-20).<sup>19</sup>

As Kant is thinking of the matter in 1755, and through the 1760s, a piece of divine legislation is an act of choice. Every such act is a choice from a set of possibilities (2.100.24-26). God too must deliberate before he chooses anything. Hence, Kant must give an account of the possibilities that offer themselves up for God's consideration. It is in the telling of this story that Kant spells out what he has to say about the general cosmological ancestor of nature considered in the *material* way. That the early Kant should invest heavily in the proto-principle of nature considered in the material way, but lightly in the proto-principle of nature considered in the formal way can be explained by the fact that he analyzed these principles in terms of (divine) choice — or so I shall argue in due course.

Kant says in the *Prolegomena* that nature considered in the material way is the totality of appearances (4.318.8). The ancestral analogue to this from Kant's early cosmology is the totality of created substances. The underlying principle of the same must be the condition of all that is really possible in creation. Short of that, we would have no guarantee that our principle is the necessary condition of *all* created substances. In just the same way, the later descendent of our principle in the *Prolegomena*, the pure forms of sensibility, is the necessary condition of all that can possibly appear to us in space and time. Now it is pretty clear that the early Kant identified the ancestral principle of nature so considered with God himself under a certain description: no longer that of a being who *chooses* among the possibles, but rather that of the being whose very existence, as the 'highest reality,' is the ultimate *source* of the possible in the first place.<sup>20</sup>

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19 For a much fuller discussion of the principle of coexistence in the *Nova dilucidatio*, see Chapter Two of my *Kant's Early Metaphysics and the Origins of the Critical Philosophy* (Atascadero: Ridgeview 1995).

20 I will spell out what this is supposed to mean in due course. This much should be plain for now, however: the proto-principle of nature considered in the formal way (God's choice of law in the governance of the world) and the proto-principle of nature considered in the material way (God's being under the description indicated above) are two different aspects of the divine being.

The best statement of the early Kant's conception of God as the highest reality is in *Der einzig mögliche Beweisgrund zu einer Demonstration des Daseins Gottes* of 1763.<sup>21</sup> Kant arrives at this statement from modal considerations. The question to start out with is how anything is possible in the first place. The issue is *not* what Kant calls 'formal possibility,' that of predicating one thing of another in a judgment without contradiction. Rather the issue is what Kant calls 'real possibility,' i.e., the possibility that a thing, structure or state of affairs might really obtain somehow. Kant is not interested in whether, for example, we can consistently predicate 'geometrical figure enclosed on three sides' of 'triangle.' He is interested in the fact that triangles are really possible, i.e., constructible on a Euclidian plane. Kant goes on now to argue — obscurely, it must be said — that something is possible in the relevant sense, if something real exists. A triangle is really possible, for example, because something real exists, namely a Euclidian plane on which such figures can be constructed. If we had no Euclidian plane, we could not construct a triangle. Kant also argues — just as obscurely — that *all* that is real must exist united in one being — God — whose nature therefore consists in the highest reality; and, he concludes that this highest reality is the necessary condition of all real possibility. If the highest reality united in the divine being did not exist, nothing at all would be really possible (2.77-78). Since Kant says it is impossible to conceive that nothing is possible, he concludes that the highest reality exists united in God with absolute necessity. Thus God is the being that exists with necessity as the highest possible reality.

Just to the extent that the highest reality in God is the source of all that is really possible, it can and does play the role of proto-principle of nature considered in the material way. It is to the totality of created substances what the pure forms of sensibility will be in the *Prolegomena* to the totality of appearances.<sup>22</sup> But now that we have identified the general cosmological ancestors for Kant's principles of nature considered in the formal and

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21 Parallel passages can be found in other works, e.g., the *Nova dilucidatio* of 1755 (1.395.4-396.7) and the *Preisschrift* of 1764 (2.296.32-297.30).

22 Another reason for thinking that Kant's early natural theological reflections might be regarded as the ancestor of his later treatment of the principles of nature considered in the material way is that the specific things Kant says in the *Beweisgrund* about God under the relevant description seem to correspond neatly to the specific things he says about the pure intuitions of space and time in the *Inaugural Dissertation*. Indeed, we can imagine Kant trying initially to work out his account of the pure intuitions of space and time by wondering what result he would get by refitting his natural theological considerations to suit those conditions of human knowledge under which things can appear to us. I discuss the parallels in detail in my *Kant's Early Metaphysics*, 112-115.

material ways respectively, we must now try to understand how they relate to each other. The best way to proceed is to examine very briefly one more point from the *Beweisgrund*.

Kant spells out his idea that God is the source of all real possibility in the following terms.<sup>23</sup> He says that the highest reality in God is absolutely perfect and hence unlimited, but that it can be expressed under different limitations. Each of these limitations corresponds to something really possible. Under one of these limitations, for example, God's reality expresses itself as a Euclidian plane on which we have constructed a certain triangle. Because the construction of the triangle depends ultimately on God, Kant claims that the triangle itself — as well as the Euclidian plane — is capable of exhibiting a certain 'order, structure or law-bound harmony.' He illustrates the idea as follows. He reminds us that we can construct a circle by planting one foot of a compass on a Euclidian plane and revolving the other 360 degrees. From Proposition 35, Book Three of Euclid's *Elements*, Kant says we know that some kind of 'structure, order or law-bound harmony' is present in the space enclosed by the circumference of the circle. For given any two line segments AB and CD, intersecting at a point P inside the circle, the rectangle contained by AP and PB will always be equal to the rectangle contained by CP and PD. There can be no exception to this rule. Kant understands the rule itself, or the structure described by the rule, as expressing God's reality under the limitation of a circle constructed on a Euclidian plane (2.95.19-96.5). And so it goes for any other real possibility: they are one and all — *including* the laws or harmonies that might govern them — limited expressions of the sum-total of all that is real united in God's being.

We can now begin to see more clearly the relationship between the ancestral principles of nature considered in the formal and the material ways respectively. As Kant explains in the *Beweisgrund*, 'The will makes nothing possible; rather it resolves only on that which is already given as possible' (2.100.24-26). This is supposed to hold not only for the human will, but also for the divine. Not even God can make something possible by an act of will. Hence, we may understand the proto-principle of nature considered in the formal way to range over its material counterpart; that is, God's legislative will deliberates over the possibles revealed to it by scrutiny of God's own being. The act of legislating laws of interaction, which will convert creation into a single world unified in

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23 The reason for looking at what follows in detail is that it will allow me to call attention to some very striking differences between Kant's treatment of the principles of nature considered in the formal and material ways in the *Prolegomena* and his treatment of the general cosmological ancestors of the same in the *Beweisgrund*.

space and time, is that by which God elects one expression of his own being under a certain limitation over all the others.

Now if we are to appreciate more fully what Kant is up to, we must learn why he insists on making God's being the source of all deliberative possibility. Why not say that the possibles God deliberates over are independent of the divine being? The short answer to our question is this. God's choice is supposed to show perfect wisdom, and wisdom is supposed to consist in choosing possibles that exhibit the greatest unity or harmony. If the possibles were independent of God's being, they would not exhibit unity or harmony; and thus God could not exercise his will with perfect wisdom.

God does not elect to bring a given possible into existence, if, in order to keep his creation running well, he has to bring other possibles into existence, *by separate and distinct acts of will*. God's preference is always for economy of willing with abundance of fruit. This is the mark of his wisdom. Hence, his choice will always be for those possibles that are not merely compatible, but already related to one another by nature — possibles that somehow (metaphysically) entail other possibles as their effect and thereby exhibit what Kant calls 'unity' or 'harmony.' The unity or harmony of Newton's law of gravitation consists in the great abundance of subsidiary phenomena it produces: the planets and comets orbit the sun according to this law; Galileo's law of falling bodies is another one of its consequences, along with the motion of the tides, the flattening of the earth's surface at the poles, and many others. Kant claims that this remarkable abundance of effects would already have been a feature of the inner possibility of matter itself — even before God decided to create anything (2.106.32-107.9). As he himself puts it, 'The inner possibility of things presents to him who decides on their existence materials that contain an uncommon fitness for agreement and an intrinsic suitability for a diversely ordered and beautiful whole' (2.100.29-32). A little further along, he puts it in these terms: 'That any given existing thing should contain such extensive suitability for manifold agreement through simple grounds, and that a remarkable unity in the whole could thereby be preserved, lies in the very possibility of the things ...' (2.103.14-17). How can the inner possibility of things already show such great unity and harmony? It is precisely because the possibles depend on, and express, God's own being under certain limitations. If the possibles did not depend on God's being, he would have to exercise his will less efficiently, i.e., by passing as many separate decrees as he wished to produce effects in the world. The world would run entirely on miracles. Kant puts it as follows:

If I entertained the usual concept of the things of nature, according to which their inner possibility is for themselves independent and without a foreign ground [sc.

in God], ... I would find it strange and incomprehensible how, without a continuous series of miracles, anything fit was supposed to be able to be brought about in it [sc. the world] through a great, natural linking of one thing with another. For it would have to be an astonishing coincidence if the essences of things, which would each have their own isolated necessity unto themselves, should so agree with one another that even the highest wisdom could unite a great whole out of them in which, with such manifold dependences, perfect harmony and beauty shine through according to universal laws. By contrast, since I am apprised that only because there is a God can anything else be possible, I expect an agreement from the very possibilities of things — an agreement in accordance with their great principle [sc. God's being] and a suitability for collectively adapting through universal ordinances to a whole that properly harmonises with the wisdom of the very being from which they derive their ground ... (2.112.5-23).

We can wonder, of course, how Kant can clarify and justify his claim that the possibles exhibit inner unity by virtue of their dependence on the divine being. We can also wonder about the nature of this unity and God's knowledge of it. But the main thing for our purposes is just that God's being is supposed to guarantee the sought after unity among the possibles and that this allows God to exercise his choice in the wisest manner. As Kant himself puts it a little further along:

Wisdom presupposes that agreement and unity are possible in the relations. That being of absolutely independent nature can be wise only to the extent that it itself contains the grounds of such *possible* harmony and perfections that present themselves for it to carry out. Were there no such relation to order and perfection in the possibility of things, wisdom would be a chimera. But were this possibility not grounded in the wise being itself, this wisdom could never be independent in every respect (2.125.33-126.35).

Precisely because the possibles are grounded in God's being, they include laws of interaction and connection which would unite things into a single world-whole, if God decided to bring them into existence. Thus God can choose wisely, because all he has to do is elect the laws of interaction, grounded as they are in his very being, that hold out the prospect of the greatest unity or harmony.

Before going any further, we do well to consider Kant's motivations in the *Beweisgrund* for advancing these ideas. His concern is to correct errors in what he takes to be the prevailing method of 'physico-theology.' It seems that the so-called 'physico-theologians' have been treating the unity and harmony in nature as thoroughly contingent, i.e., not merely as existing by the choice of him who created them,<sup>24</sup> but as being in

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24 On this account, Kant himself has to admit that the world is contingent: 'All things of nature are contingent in their existence' (2.106.5).

themselves the fruit of jiggering: it is not that the unity and harmony of nature are anchored in the inner possibility of matter, so that God had only to create matter, by a single act of will, in accordance with his idea of the law of its nature, disclosed to him by scrutiny of his own being expressed under certain limitations; rather, God had to fit together all the different natural phenomena, otherwise unconnected in their inner possibility, by a multitude of different decrees — one special decree to keep Mars in its orbit, another for bodies falling at the earth's surface, yet another to flatten earth at the poles, etc. If God had not multiplied his decrees, on Kant's representation of what he takes to be the mainstream view, anything he created would have been disordered.

This view is supposed to be bad on at least two counts. First, Kant says it is predicated on the false assumption that, if we discovered the world as a whole were governed by just a few simple, universal laws with a tremendous wealth of trickle-down effects, we could not infer the existence of a wise creator (2.118.14-21). For, on this view, a wise creator produces the world as a whole by juggling a vast number of special decrees; and, his choice is determined by a host of different final causes. Second of all, the view is not only false, but even injurious to reason, because it takes away any incentive to search for simple, universal laws of nature. If we are convinced that God issues a special decree for any given natural phenomenon for the sake of some special final cause, we will have sufficiently explained the phenomenon on our terms if we say that God's will was to make it thus (2.119.21-ff.). It is to correct these errors that Kant offers his alternative physico-theology in the *Beweisgrund*. This is why he says that God's wisdom consists in legislating simple, universal laws with an abundance of fruit. He grounds the possibility of passing such legislation in God's being, characterized as the source of all real possibility and hence all unity and harmony, to leave as little margin for special decrees as he can.

An important consequence of Kant's efforts to correct physico-theology is that the simple, universal laws of nature, along with the truths of mathematics, are already included as possible in the proto-principle of nature considered in the material way. This makes for a number of very striking contrasts with the story that Kant later tells in *Prolegomena* §36. For one thing, Kant explicitly denies in the later work that the principle of nature considered in the material way contains any natural law or mathematical truth. This contrast can be seen plainly in light of the way that Kant takes up and revises in *Prolegomena* §38 examples from the *Beweisgrund*.

Kant calls on Proposition 35, Book Three of Euclid's *Elements* in both works, revising his remarks on its significance in the later one. In the *Beweisgrund*, he invokes Euclid's proposition as an example of universal order or harmony in diversity. In spite of the great diversity among

possible circles, the same truth holds for all of them: for any circle, and any two line segments intersecting at a point inside the circle, the rectangle contained by the parts of the one are equal to the rectangle contained by the parts of the other. The interest of the example is that Kant says explicitly and unequivocally in the *Beweisgrund* that the harmony expressed by Euclid's proposition lies, or is contained, in the circle itself, and thus in space, and so ultimately in the sum-total of all that is real contained in God's being, the proto-principle of nature considered in the material way.

Speaking of Euclid's proposition and examples related to it, Kant says, 'It may be inferred herefrom what immensity of such harmonious relations otherwise *lies in the properties of space*' (2.95.23-7). A little bit further along, Kant says that '*there lie in the properties of space beautiful relations and in the immense manifold of its determinations a remarkable unity*' (2.101.29-31).<sup>25</sup> In *Prolegomena* §38, just after having stated Euclid III.35 once again (4.320.25-28), Kant raises the question we just found him addressing in the *Beweisgrund*, except translated now in the terms of his mature philosophy: 'Now I ask, *Does this law lie in the circle, or does it lie in the understanding?, i.e., does this figure [sc. the circle] contain the ground of this law in itself, independently of the understanding...*' (4.320.29-31).<sup>26</sup> One important difference in Kant's treatment of Euclid III.35 in the *Prolegomena* is that it invokes the critical distinction between sensibility and the understanding. But the more significant difference for us is that Kant denies in the *Prolegomena* what he affirmed in the *Beweisgrund*, namely that the harmony, law or universal truth expressed by Euclid's proposition is contained in the circle and thus in space. In the terms of the *Prolegomena*, Euclid's proposition springs not from the circle or space itself (now taken to be a pure intuition), but rather from the understanding. Thus Kant says, 'One observes, as soon as one investigates the proofs of this law [Euclid III.35], that it [the law] can be derived only from that condition which the understanding lays at the basis of the construction of this figure, namely the equality of the radii' (4.320.34-321.3). This is to deny that the universal truth expressed by Euclid's proposition has its immediate source in the principle of nature considered in the material way, however that principle be construed.

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25 The emphasis is mine. See too 2.95.3-6; 2.133.12-13 where Kant speaks of the great unity in the manifold relations of space; and 2.94.21-23, where he speaks of Galileo's law of chords as being given by the figure of the circle itself.

26 Again, the emphasis is mine.

There is another important difference between the *Beweisgrund* and the *Prolegomena*. As we saw earlier, Kant can be understood to say in §38 of the later work that, if geometrical truths such as Euclid III.35 cannot have their immediate source in the pure intuition of space, *a fortiori* the laws of nature cannot either. But precisely because the concern of the *Beweisgrund* is to maximize the wisdom of God's choice, the early Kant treats the laws of nature as the inner possibility of created things. This is supposed to mean that they and the laws of mathematics *both* have their immediate source in God's own being as the highest reality, the cosmological ancestor of the principle of nature considered in the material way. Thus according to the *Beweisgrund*, God's being is the immediate source of the laws of motion and the Newtonian law of gravitation (2.103.12-20; 2.106-107). This has an interesting and important implication. As we saw earlier, God's being is supposed to be the source of all unity or harmony in creation: that the Newtonian law of gravitation can have so many interrelated side-effects is supposedly due to the fact that the inner possibility of matter is a limited expression of the highest reality. But now since Kant denies in the *Prolegomena* that the laws of nature have their source in the principle of nature considered in the material way, unity or harmony in creation has to find its source elsewhere. On the view of the later Kant, it will turn out that such unity or harmony is best understood not as something given to, or contained in, any given faculty, but as a problem set by pure reason — the problem being to see how much harmony we can find in nature.<sup>27</sup> However, this is not the place to take up these considerations.

The contrast between the *Beweisgrund* and the *Prolegomena* shows us how much the early Kant had invested in the proto-principle of nature considered in the material way — almost as much as he would later invest in the principle of nature considered in the formal way. From the standpoint of the *Beweisgrund*, the proto-principle of nature considered in the formal way makes no further contribution except to confer reality on the most harmonious possibilities contained in the divine being. This is significant, as we now return to the *Inaugural Dissertation*, because the pure intuitions of space and time come to play for the sensible world the role once played in Kant's earlier writings for all creation by the highest reality united in God's being, namely that of a principle of nature considered in the material way. Given that Kant's conception of such a principle in 1770 was so heavily informed by his earlier theological reflections, he apparently over-invested in the pure intuitions of space

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27 See my 'Problems and Postulates: Kant on Reason and the Understanding' in the *Journal for the History of Philosophy* 36 (1998).

and time in the *Inaugural Dissertation*. This may well explain why he sometimes speaks of them in terms more appropriate, from the standpoint of his later self, to a principle of nature considered in the formal way — for example, as that which contains the reason of the *universal connection* of all things insofar as they are *phenomena* (2.398.19-21).

## II How Kant Tries to Lift the Philosophical Burden Off of the Pure Intuitions of Space and Time

### 1. Textual evidence that Kant is trying to lift this burden in the *Duisburg Nachlaß*

The interest of the *Duisburg Nachlaß* is, among other things, that Kant reconsiders how much should be invested in the pure intuitions of space and time. He says that something other than pure intuition is necessary for ordering appearances and converting them into a whole. ‘The order of appearances according to relation of space and time requires a rule,’ he says, ‘just as appearance itself requires a form’ (R4680 - 17.665.18-19). Not much can be inferred about the relevant rule from this passage except that it is not already included in the form under which appearances are given to us. For Kant is drawing a parallel between the form of appearances and the rule for establishing order among them; such a parallel presupposes that the two are not one and the same thing. Elsewhere Kant spells out the idea in terms of temporal ordering. He draws a contrast between appearances as merely given in the intuition of time and as temporally ordered by certain ‘rules of perception’;<sup>28</sup> he then observes that the order of appearances in time, as determined by these rules, is different from that in which appearances are merely given to us in the relevant intuition (17.666.15-18). Finally, in the last of the best passages in this vein, he says that converting appearances into some kind of whole is not the work of sensibility, but some special, not yet identified ‘representation of the inner action of the mind’: ‘Concatenation [*die Verkettung*] is not grounded on mere appearance, rather it is a representation of the inner action of the mind, whereby the mind joins

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28 In another passage along this line, Kant says this: ‘when I determine something coming into being specifically in time, i.e., when I determine a reality in the sequence of time, time [sc. the pure intuition thereof] is, to be sure, the condition *in which*, but the rule [whereby I effect this determination] is the condition *through which*’ (17.662.20-3).

representations, not just positioning them next to one another in intuition, but rather by making a whole according to the matter ...' (R4674 - 17.643.12-17).

These remarks raise important, related questions. How will Kant correct his earlier, over-investment in pure intuition? How in general does he understand the relationship between the principles of the immediate ancestors to nature considered in the formal and material ways respectively? The first step in an answer to these questions lies in his specific remarks in the *Duisburg Nachlaß* about succession, coexistence and spatio-temporal ordering in general. Our problem will be to determine which principle Kant invokes, other than pure intuition, to explain how these things are possible. His remarks on this subject are scattered and fragmentary throughout the *Duisburg Nachlaß*, but the ones in R4681 are both continuous and helpful. They begin with alternative statements of a rule for succession, time assignment and simultaneous coexistence respectively. The difference between the statements in each case will help us make out the details of Kant's relief plan for pure intuition.

In the case of succession, Kant distinguishes between: 1. 'something must always come before an occurrence (condition of perception),' and, 2. 'all manner of things can come before an occurrence, but there is one among these things that the occurrence always follows' (R4681 - 17.665.22-25). The first statement says merely that one state always follows another. The second is more demanding. It says that a state of a certain kind always follows a state of another kind. Imagine a sequence: ... J, K, L, M, .... If, for example, *anything* precedes J, the sequence at that juncture will satisfy the first statement of our rule. It will satisfy the second, if *something of a certain kind*, call it I, precedes J such that neither J, nor anything of its kind, will arise unless I, or something of its kind, has arisen before it. The difference in these two statements apparently corresponds to that between the objective order of succession in time and the subjective succession of representations as immediately given to inner sense.<sup>29</sup> The first, more lenient statement of the rule is enough only for subjective succession. The second, more demanding one is required for objective succession. The appearances J, K, L, M will follow one another in time just in case a necessary connection obtains between J and K, K and L, L and M; under that condition, the order of our repre-

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29 This interpretation of what Kant is saying here is further suggested by the fact that at the end of these considerations Kant pretty explicitly distinguishes between the order of appearances as merely given in intuition and as established according to rules of perception (17.666.15-18).

sentations of appearances will correspond to that of the appearances themselves.<sup>30</sup>

Kant now distinguishes alternative statements for a second rule of temporal determination: 1. 'a reality always inheres in that which accompanies it and which thereby determines its [sc. the reality's] point in time (condition of perception),' and, 2. 'there is all manner of accompanying things, but, among these things, there is something that is always present' (17.665.26-30). The first statement says that a reality must inhere in, and be accompanied by, something: its 'point in time' is determined by the companion it inheres in. The second statement is again more demanding: among the things that accompany a reality, one must persist. So far, this is very obscure, but Kant adds a helpful comment a few lines later: 'if something were not always present, something permanent, *stabile*, there would be no fixed point or determination of point in time, hence no perception, i.e., no determination of something in time' (17.666.8-10). This remark indicates that the more demanding statement of our rule is supposed to offer a counterpoint to succession: if nothing persisted, we could not assign things to their place in time, i.e., say when a given occurrence had taken place. 'Before' and 'after' would be meaningless; the order of succession would collapse. How exactly Kant intended to spell this out is not clear. The talk of realities 'inhering' in that which 'accompanies' them suggests that qualities such as color, texture, shape, etc. inhere in some kind of underlying substrate. If that is right, Kant is claiming that time assignment is possible only if some such substrate persists through change. Whatever that ultimately comes down to, the main thing seems to be that time assignment can be secured only by the more demanding statement of our rule: because something must be stable or permanent for the purpose of time assignment, it is not a matter of indifference which of the 'accompanying things' determines a reality's 'point of time,' since many of these things will also undergo change.<sup>31</sup>

Finally, Kant turns to simultaneous coexistence:

[*stricken*: An aggregate is many in reciprocal relation, but among these must]

[*added*: In respect of that which is simultaneous, there is always a gathering up [*Zusammennehmung*] (condition of perception)]

All manner of things can be gathered up; but [*stricken*: since this connection (*diese Verbindung*) is objective, wherever the many reciprocally determine one another]

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30 See too R4675 - 17.648.9-17.

31 The implications of this are not clear.

wherever something should be regarded as objectively connected, there is a reciprocal determination of the manifold amongst one another (17.666.1-7)

This passage is remarkably messy, even for the *Duisburg Nachlaß*. But at least this much is clear: Kant begins by stating what he calls a 'condition of perception' (*Bedingung der Wahrnehmung*). This is the term he had consistently applied to the less demanding statements of the two previous rules. Hence we may infer that here too he wants to contrast alternative statements of the rule for coexistence. The less demanding statement of the rule — the condition of perception — is that, if things coexist, they must have been 'gathered up.' It is not clear what this is supposed to mean. But at least Kant goes on to state the more demanding version of the rule, being explicit for the first time that the stringency is supposed to establish objectivity in temporal determination. The new version of the rule says that, while all sorts of things might be 'gathered up,' we may regard as objectively coexisting at the same moment only those things that reciprocally determine one another.

This idea is familiar to us from the *Inaugural Dissertation*: we cannot represent two things as coexisting at the same moment, just because the one does not succeed the other. Some relation must connect them. Just as we cannot objectively represent A as following B in the order of succession unless we can represent a necessary connection between them, so too in the case of simultaneous coexistence. The difference is just that the necessary connection required for coexistence must be two-way. The things we represent objectively as coexisting at the same moment determine each other *reciprocally*: A exercises its influence on B at the same time that B influences A. In the absence of such a relation, the connection between the relevant appearances will be subjective, i.e., a mere 'gathering up.'

Immediately after having laid out the alternative statements for the three rules of time determination, Kant makes an important remark: 'objects of the senses are determinable in time through the rules of perception, whereas in intuition they are merely given as appearances. According to the rules of perception a quite different series is uncovered as that in which the object was given' (17.666.15-18). As merely given in intuition, objects of the senses have no other order than that which is subjectively determined by the three 'conditions of perception.' But so long as they conform to what Kant here calls 'the rules of perception,' we can supposedly clock them objectively and situate them with respect to one another in the orders of succession and coexistence. We know from the *Prolegomena inter alia* that Kant will later treat nature formally considered as the whole collection of rules that must govern appearances if we are to think of them as joined in one experience. In §I.4 of this paper, I argued that we cannot think of appearances as joined in one experience

unless it is possible to keep track of them relative to one another in space and time. The 'rules of perception' are clearly intended to allow us to do just that. They are therefore an essential part of Kant's conception in the *Duisburg Nachlaß* of the immediate ancestor of nature considered in the formal way. The question is what he can say now about the ancestral principle of nature so considered, i.e., the origin of the rules of perception. An answer to this question will help us determine how, and to what extent, Kant has lifted the burden weighing down the pure intuitions of space and time in the *Inaugural Dissertation*. For whatever else he has to say, his distinction between *rules* of perception and *conditions* of perception indicates that the former do not have their source in appearances as merely given in pure intuition.

There are scattered remarks of interest to us in the second part of R4681. These remarks come back to an idea already suggestive of §36 in the *Prolegomena*, namely that the understanding is the source of objective time determination and hence source of the immediate ancestor of nature considered in the formal way. A general remark to this effect towards the end of R4681 reads as follows: 'All connections are effected through the mind; and, the mind connects nothing objectively except that which is determined necessarily from its correlato. Otherwise representations are indeed set together [*zusammengestellt*], but not joined [*verknüpft*], or indeed [they are joined] in perception, but not in the concept' (17.668.7-11). Kant does not explicitly mention the rules of perception here. But the talk of the mind 'connecting' representations according to its 'correlato' is at least suggestive of them. If this passage is indeed drawing on the part of R4681 we were just considering, it indicates that applying the rules of perception essentially involves concepts. This in turn implies a role for the understanding. Similar ideas come through in the following remark from the same stretch of R4681: 'One can indeed see many things, but understand nothing of that which appears, unless it is brought under a concept of the understanding and by means of such a concept into relation with a rule: this is the assumption of the understanding' (17.667.10-13). The contrast between seeing and understanding appearances is suggestive of the contrast we just saw in the previously cited passage, and elsewhere in R4681, namely that between things as they are merely given in intuition and things as they are objectively determined in time. This suggests in turn that we may construe the 'assumption of the understanding' in the present passage as follows: the understanding can objectively connect representations and thereby establish an objective temporal order in experience, only if it takes up appearances under certain special concepts in its possession; that is how it subjects appearances to the rules of perception.

These remarks naturally raise the question *which* concepts of the understanding are involved in all this and how. A passage from R4682 provides part of the answer:

The analogies of appearances mean just this: if I did not determine every relation in time through a universal condition of relation in time, I would assign no position to any appearance. Hence the concepts substance, ground and whole serve this purpose alone: to assign every reality<sup>32</sup> in appearance its position, by having each [concept?] represent a function or [*stricken*: potence] dimension of time in which the perceived object is supposed to be determined, and from appearance comes experience (17.669.3-10).

The interest of this remark is that it singles out the concepts of substance, ground and whole, and explicitly associates them with the task of time determination in general. It seems reasonable to associate the concept of ground with the rule for succession stated in R4681, because of an important, early precedent: Kant had explicitly treated succession in the *Nova dilucidatio* in terms of causal influence. Likewise, the precedent of Kant's early treatment of coexistence in terms of worlds makes it reasonable to associate the concept of whole with the rule for coexistence stated in R4681. If we may rely on these precedents, the concept of substance has to go with the rule for time assignment in general. The quoted passage raises numerous questions about how these pairings would work concretely. But it also suggests that we can make interpretative progress by tracking Kant's remarks about the three concepts: substance, ground and whole.

One clue comes at the end of our passage quoted from R4682. Kant says that the three concepts make it the case that 'from appearance comes experience.' The idea of converting appearance into experience is familiar to us from Kant's later works<sup>33</sup> which claim that this operation is

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32 A few lines earlier in R4682, Kant glosses 'reality' as that whereby something is an object of perception (17.668.28).

33 Note, however, that the idea was already announced in the *Inaugural Dissertation*. Kant writes: 'But in sensitive things and phenomena, what comes before the logical use of the intellect is called *appearance*, while the reflective cognition that comes about, manifold appearances being compared through the intellect, is called *experience*. Thus there is no way from appearance to experience except through reflection according to the logical use of the intellect' (2.394.2-7). The passage is interesting, because, as in parallel passages in the *Duisburg Nachlaß* and even in later works, the transition from appearance to experience goes by way of the understanding or intellect and its use of concepts. One important, obvious difference is that the use of concepts Kant has in mind in the *Inaugural Dissertation* is merely logical, i.e., the use of concepts for the purpose of classification. Already in the

possible only through the pure concepts of the understanding. As we have just seen, the idea already finds expression in the *Duisburg Nachlaß*. The surrounding context of the passages we have been considering suggests, moreover, that the distinction between appearance and experience corresponds to that between seeing and understanding manifold things, or to that between things as they are merely given in intuition and things as they are objectively ordered in time. One would therefore expect to find discussion of concepts and the use of the understanding in the *Duisburg Nachlaß* whenever Kant addresses the problem of converting appearances into experience or 'making appearances objective,' as he sometimes puts it. Passages from R4679 confirm this hunch.

Thus Kant writes: 'Every perception<sup>34</sup> must be brought under a title of the understanding, because otherwise it gives no concept and nothing is thought thereby. By means of these concepts we avail ourselves of appearances, or rather the concepts indicate the way we avail ourselves of appearances, as of matter for thought' (17.664.2-6). Immediately thereafter, Kant gives a series of example judgments in which he apparently claims the concepts of magnitude, substance, cause and effect, and things gathered together into a connected whole come into play. His comment on these examples reads as follows: 'Without such concepts, appearances would be altogether separated and would not belong to one another. If they have identical relations in space and time with respect to one another, they are certainly not determined from the objects of appearances, but are merely set next to one another' (17.664.13-17). This remark leads Kant to speak of experience as that which comes about when concepts of the understanding are applied:

Experience is a perception that has been understood [*eine verstandene Wahrnehmung*]. But it has been understood, if we represent it under titles of the understanding. Experience is a specification of the concepts of the understanding through given appearances. Appearances are the matter or the substrate. Thus experiences are possible only inasmuch as it be presupposed that all appearances belong under titles of the understanding, i.e., in all mere intuition there is magnitude, in all appearance substance and *accidens*. In the alteration thereof [*in dem Wechsel derselben*], cause and

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*Duisburg Nachlaß*, it seems that such use of concepts would be inadequate, since it is hard to see how any classifying could yield time determination. It is certainly plain in the later works that the logical use of concepts will not give us experience. Nevertheless, the passage from the *Inaugural Dissertation* is interesting, as one of the first landmarks in the path of a developing idea.

34 It should be noted that Kant has just characterized perception as 'appearance of which one is conscious' (R4679 17.664.1).

effect; in the whole thereof, reciprocal interaction. Thus these propositions [*diese Sätze*] are valid of all objects of experience (17.664.18-27).

By looking for passages parallel to this one, we might hope to find alternative characterizations of the concepts of the understanding that will fill out our picture of Kant's thinking about the matter.

An interesting parallel passage in R4677 reads as follows:

Appearance is made objective [sc. converted into experience] by being brought as contained under a title of self-perception, and thus the original relations of apprehension are the condition of the perception [*stricken*: as well] of the [*added*: real] relations in appearance; and, appearance is determined from the universal and represented objectively, i.e., thought, precisely by saying: an appearance belongs thereunder [sc. under a title of self-perception]. Appearance is called mere sensation [*bloße Empfindung*], if one does not represent it as belonging [*stricken*: to] under the functions of self-sensation [*Selbstempfindung*], but rather [*stricken*: as] by means of individual perception [*vermitteltst einzelner Wahrnehmung*]. Even so can we determine it [sc. appearance?] *a priori* from the functions of perception in respect of the objective, i.e., of the conditions [*stricken*: of], which are [*seyn*] independent of the individual relations of the senses [*von den einzelnen Verhältnissen*], as in respect of the relations of space and time. The mind must have a faculty for apprehending and whose functions are just as necessary for perception as receptivity is for appearances (17.658.4-18).

The interest here is that where we would expect discussion of concepts or titles of the understanding, we find talk of 'self-perception' and 'self-sensation.' But with the exception of that oddity, this passage is a faithful echo of the one from R4679 we were just considering. Thus Kant seems to regard the concepts or titles of the understanding, and hence application of the rules of perception, as some kind of self apprehension whose task is to make appearances objective. That is, of course, a strange and interesting idea in need of clarification. A couple more passages in the *Duisburg Nachlaß* help fill out the picture.

A passage from R4674 can shed light on the relationship between 'self-perception' and the concepts of the understanding:<sup>35</sup> 'Apperception is the consciousness of thought, i.e., of representations as they are set in the mind. Thus there are three exponents: 1. that of the relation to the subject, 2. that of the relation of consequence among one another, 3. that of gathering up' (17.647.16-19). Kant characterizes apperception not merely as 'consciousness of thought,' as though it were some kind of immediate, unstructured self-awareness, but as 'consciousness of repre-

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35 I discuss this relationship at much greater length elsewhere, in 'Kant on the Self as Model of Experience' (forthcoming in *Kantian Review*).

sentations *as they are set in the mind.*' This detail indicates that apperception fundamentally involves relations, namely among the representations themselves and between representations and the mind that has them. This has been pointed out and stressed by Wolfgang Carl, whose conclusions I accept here.<sup>36</sup> The relational detail is just the thing Kant emphasizes when he enumerates the three 'exponents.' The first exponent is the relation of a mind's representations to itself as that of accidents to their underlying subject. The second is the relation of ground and consequence among the mind's representations: as perhaps when one recognizes that the premisses of a syllogism are the ground of its conclusion. The third exponent is the relation of 'gathering up.' It is harder to imagine what this might be. Perhaps Kant is thinking of the relation we observe in complicated ideas, i.e., in ideas that seem to be composed of lots of simpler elements. One might think of the simpler elements as having been 'gathered up' in the larger whole.

A line or so beyond the passage under consideration, Kant characterizes the three exponents or relations as 'universal actions of thinking' (*diese allgemeinen Handlungen des Denkens*), under which — he says — we bring all our thoughts and through which all our thoughts are 'subject to a rule' (17.647.19-24). It is not clear what this means concretely, but by the end of the passage, we learn that the 'universal actions of thinking' give us a certain principle, namely that of 'knowledge of appearance through the understanding, through which appearance is regarded as something objective' (17.647.25-26). Now Kant could be understood to say in the passages from R4679 and R4682 we were considering earlier that a 'principle of knowledge of appearance through the understanding' is given by the three concepts of substance, ground and whole. By implication, the understanding forms these three concepts in the same acts of apperception that yield the three 'exponents' or fundamental relations in our representations. If that's the case, the first exponent is the source of our concept of substance; the second, that of ground and consequence; the third that of composite whole.

The details of all this remain unclear. But we saw earlier that objective time determination and converting appearances into an objective whole of experience depends on applying the rules of perception, which depends in turn on the three concepts of the understanding. It follows that all of this ultimately depends on apperception, which proves that Kant has indeed lifted the burden from the pure intuitions in the *Inaugural Dissertation*, and quite considerably so. The principles of human sensi-

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36 Carl, *Der schweigende Kant* (Göttingen: Vandenhoeck & Ruprecht 1989), 91-2

bility do not give us the rules for order, unity and harmony in the sensible world; this is the task of apperception, which is fundamentally intellectual, as we can see from its intimate relation with the understanding. These inferences come nicely into focus two paragraphs before the passage we were just considering from R4674. Kant writes as follows:

There are three functions of apperception that are met with in [*stricken*: all] thought of our state as such and under which all appearance must conform for the following reason: because no synthesis in itself lies in it [sc. appearance], unless the mind adds such [sc. synthesis] or makes it out of the *data* of the same. The mind is itself thus the model [*das Urbild*] of [*stricken*: the possibility] such a synthesis through original and not derived thought (R4674 - 17.646.29-647.5).

The three 'functions of apperception' here are almost certainly the three 'universal actions of thinking' familiar to us from the continuation of the passage.<sup>37</sup> By 'synthesis' in this context, Kant apparently means just those relations that obtain among appearances when they have been made objective. Alternatively, he could mean the rules of perception that somehow bring about such relations. The important point, one way or the other, is that the relevant syntheses are not already given with appearances themselves. As Kant says, 'No synthesis in itself lies in [appearance].' But this means that the relevant syntheses cannot come from the pure intuitions of space and time. Kant goes on to say that the source of all synthesis is the mind; and, this leads him to conclude that 'the mind is itself the model of such a synthesis through original and not derived thought.' The word 'mind' is, of course, general enough that it could mean lots of things in other contexts. But Kant explicitly contrasts it with sensibility, on the one hand, and associates it with apperception on the other. This strongly suggests that 'mind' is just another word for 'understanding' here. The understanding is thus the 'model' of all synthesis. It conceptualizes the three relations essentially involved in apperception. This yields the three concepts of the understanding, which it then applies to appearances as the rules of perception. The effect of this operation is to use 'original thought' of relations that obtain among representations 'as they are set in the mind' as a way to structure thought

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37 It should be noted that immediately preceding mention of the three functions of apperception, Kant had enumerated the three concepts that 'concern objects as appearances' [*gehen auf Gegenstände als Erscheinungen*] (17.646.23-24): that of substance, cause and effect, and whole. He says, of these concepts, that 'they give us the threefold dimension of synthesis.' The proximity of these remarks to the remarks about the three functions of apperception and so forth is suggestive, once again, of a very intimate relation between the three stated concepts of the understanding and the different expressions of the self's self-reflection.

of appearances.<sup>38</sup> Kant's claim in the *Duisburg Nachlaß* is that, insofar as the understanding carries out this operation, it converts appearances into a single experience.

Kant does not use the words 'principles of nature considered in the formal and material way' in the *Duisburg Nachlaß* — any more than he does in the earlier writings we have been discussing. But if we use these terms to think through the shift of conception having taken place since the *Inaugural Dissertation*, it is plain that Kant's position in the *Duisburg Nachlaß* is much closer to his later, considered view than to the one he held in 1770. We saw above that Kant treats the pure intuitions of space and time in the *Inaugural Dissertation* as principles of nature considered in the material way, while apparently expecting them to do all the work of principles of nature considered in the formal way. They are supposed to be the principles of the *form* of the sensible world, i.e., those principles by virtue of which 'all things that can be objects of the senses ... are seen necessarily to pertain to the same whole' (2.398.19-21). Kant apparently reasoned as follows in 1770. We can represent objects of the senses as pertaining to the same whole just in case we can represent them as standing in certain relations to one another. Unless the pure intuitions of space and time are the source of all such relations, they cannot serve as principles of the form of the sensible world. But if they are the source of all such relations, they must be regarded as principles of nature considered in the formal way. But this story stands in sharp contrast with the passages from the *Duisburg Nachlaß* we have been considering. By 1775, the ultimate source of the relations needed to represent sensible things as pertaining to the same objective whole is apperception. One way or the other, apperception is essentially involved in the use of our understanding, since it is the source of the three, fundamental intellectual concepts: substance, ground and consequence, and whole. Thus Kant seems to have switched things around in the *Duisburg Nachlaß*. Instead of the pure intuitions, he has made the thinking self, together with the understanding, the principles of nature considered in the formal way.

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38 See too R4674 - 17.646.10-13. I discuss this idea at greater length in 'Kant on the Self as Model for Experience' (forthcoming in *Kantian Review*).

## 2. How the Duisburg Nachlaß anticipates the 'astonishing' claim of the first Critique

If we consider a certain limitation of the *Duisburg Nachlaß*, we can easily see how Kant came to the 'astonishing' claim of the first *Critique*: the understanding legislates laws to nature. The *Duisburg Nachlaß* cannot specify the sufficient conditions for representing sensible things as belonging to an objective whole. The passages we have seen suggest that this is so; it is all the more apparent from the general cosmological story in the *Beweisgrund* we were considering earlier. Having argued, in effect, that the highest reality united in God's being is the source of all possibility, including all possible laws of nature, Kant had only to invoke the choice of God's will in order to specify the sufficient conditions for a world-whole. But that is no longer an option in the *Duisburg Nachlaß*; and, nothing in these idea-sketches can play a role analogous to that played by God's choice in the early general cosmology. The understanding does not convert appearances into an objective whole by an act of will. Deliberation had informed the relation in the *Beweisgrund* between the proto-principles of nature considered in the formal and material ways respectively. Since deliberation is no longer relevant, the picture in the *Duisburg Nachlaß* has changed accordingly. What may now be regarded as the principle of nature considered in the formal way — apperception — is the source of the fundamental relations needed to convert appearances into an objective whole; the principles of nature considered in the material way — the pure intuitions of space and time — are just the medium in which these relations get articulated by operations of the understanding — a spontaneous synthesizing of a manifold having nothing at all to do with deliberation. The consequence of all this is that Kant has lost the degree of specificity he will need for establishing sufficient conditions.

Though the early Kant thinks that God does not issue more decrees than he has to, he also thinks that the content of God's decrees has to be pretty specific. They must certainly respect the highest principles of reason, as Kant understands them at this time. But they also have to include provisions for the different kinds of creatures in the world: for material beings, at a minimum. Thus God's decrees must take the form of natural laws. As Kant had already tried to argue in the *Universal Theory and Natural History of the Heavens* in 1755, they must include the laws of motion. Granted that original forces of universal attraction and repulsion are part of the very essence of matter, the claim was that God had only to bring matter into existence and to subject it to these laws for the world to come into being. By exercising attractive and repulsive forces on one another under the laws of motion, the particles of matter God had randomly scattered throughout space evolved into a vast network of

galaxies and planetary systems. To be sure, not every phenomenon in the world is the immediate consequence of the laws of motion. But, for one thing, the early Kant argued that many — perhaps most of them — will turn out to be the effect of subsidiary laws, themselves the natural consequence of the laws of motion, together with the law of universal gravitation, operating under different conditions.<sup>39</sup> For another thing, he was prepared to allow that God would have issued any supplemental decrees needed to complete the production of the world — as needed, perhaps, for the appearance of living beings. It is a mistake, on the early Kant's view, to ascribe everything in creation directly to God's will, as though God had to issue a special decree for every particular occurrence. But so long as we recognize that divine providence usually operates by universal laws of nature, and so long as we do everything possible to make a proper study of these laws, the early Kant would not hesitate to make God's wise decrees the sufficient conditions in his system of general cosmology. For they can in principle account for the structure of the physical world and all of the phenomena we observe in it.

By contrast, there is nothing in the *Duisburg Nachlaß* that will give Kant rules for the sensible world more specific than the very general rules of perception and time determination we were considering earlier. These rules lay the foundation of the sensible world (all thought and knowledge thereof); they stipulate the most fundamental relations among appearances converted into an objective whole. But these are relations that the mind discovers between itself and its representations: inherence, ground and whole-part relations. While such relations are no doubt necessary for converting appearances into an objective whole, they are almost certainly not sufficient. An objective whole will surely include sensible things standing in very many different kinds of each of these three relations (and perhaps others).

This is all the plainer if we reconsider Kant's statement in R4680 of the rule for succession. Remember that this rule does not merely require a necessary connection between a given state or occurrence and some earlier one, whatever it might have been, but rather between states or occurrences of type A and previous states or occurrences of type B. It

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39 Thus, given the presence of great bodies of water on the earth's surface, the law governing the motion of the tides would be a natural consequence of the laws of motion, together with the law of universal gravitation, as Newton argued in Book Three of the *Principia*. Another example would be the law that governs the slowing of the earth's axial rotation, as Kant himself had argued in a paper of 1754, 'Investigation of the Question whether the Earth's Daily Axial Rotation Has Undergone any Change.'

does not merely stipulate that a necessary connection must obtain between the freezing of water and something else: perhaps, say, the crowing of a rooster on one occasion and the waxing of the moon on another; rather it stipulates that a necessary connection always obtains between the freezing of water and a sufficient drop in temperature. While the connection between a sufficient drop in temperature and the freezing of water will be just as necessary as that between the lighting of a fire and the combustion of its fuel, the connections will be established in different ways, according to the different natural laws that come into play. Depending on how many different natural laws are at work in the sensible world, there will be that many different causal relations among appearances. But it is plain that apperception cannot be the source of these causal relations, or anyway, their specific differences, because we cannot learn about the relevant natural laws from the mere 'consciousness of representations as they are set in the mind.' Knowledge of these natural laws can be acquired only through experience. The most that might be expected from apperception is that it can somehow produce the general form involved in all thought of causal relations. Kant himself explicitly makes this point in R4679: 'The intellectual functions constitute thus the beginning with apprehension, but the specification gives us the rule of application of this concept; hence determinate rules of synthesis can be given only through experience, but the universal norm of the same is given *a priori*' (17.663.27-30).<sup>40</sup> Though no amount of apperception will enable me to anticipate the natural law that governs the freezing of water, I cannot think of the necessary connection between freezing water and a sufficient drop of temperature except *a priori* by means of the concept of cause and effect — a concept of the understanding that informs my thought of any such connection. Likewise, experience reveals all sorts of inherence relations and relations of part to whole. Apperception cannot give us knowledge of these relations in advance of experience, but it does give us concepts of the understanding, without which no thought of such relations would be possible.<sup>41</sup>

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40 The paragraph that immediately precedes this passage is also relevant. See R4679 - 17.663.19-26.

41 A passage from R4679 is relevant here. It reads as follows: 'Every perception must be brought under a title of the understanding, because otherwise it [sc. any perception] will give no concept and nothing will be thought thereby. By means of these concepts we avail ourselves of appearances, or rather the concepts specify the way in which we avail ourselves of appearances as of matter for thought.... We say: the stone has weight; the wood falls; (*added* the body moves); i.e., something acts, hence it is substance. The field has been readied; the meadow has been dried out; the glass

The view emerging from the *Duisburg Nachlaß* is now fast approaching the one associated with Kant's strange claim in the *Critique of Pure Reason* that the understanding prescribes laws for nature. In the relevant passages of both the A and the B versions of the Transcendental Deduction, Kant makes it clear that this claim must not be taken to say that particular, empirical laws can be derived *a priori* from the understanding. Everything we know about such laws has to come from experience (A127/B165). Nevertheless, the point is supposed to be that the understanding somehow provides the legislative form assumed by these laws and without which no experience would be possible. In the A version, Kant makes the point in the following terms: 'But all empirical laws are only particular determinations of the pure laws of the understanding under which, and according to whose norm, these laws are possible in the first place and appearances assume a lawlike form' (A128).<sup>42</sup> A page earlier he elaborates a little more fully: 'Although we learn many laws through experience, still these laws are only special determinations of yet higher laws, among which the highest of all — under which all others stand — proceed *a priori* from the understanding itself, and are not borrowed from experience, but rather must secure for appearances their lawfulness [*ihre Gesetzmäßigkeit*] and make experience possible precisely by this means' (A126). That experience discloses laws governing such particulars as the freezing and evaporation of water will depend in the first instance on what is given to sensibility, but that these laws should

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has been broken: these are effects that refer to a cause. The wall is sturdy; the wax is soft; the gold is dense: these are connections in the composite. Without such concepts [sc. substance, cause and effect, and composite], appearances would be altogether separated and would not belong to one another' (17.664.2-14). Kant cannot plausibly be taken to say that the understanding somehow derives thought or knowledge of stones, meadows, gold and their properties or behavior *a priori*, by reflecting on its own operations. The concepts used as subject or predicate in all of his example judgments are based on what we perceive, i.e., they are empirical. The only thing that the understanding contributes *a priori* are the concepts without which could not think of these things as substance, as standing in relations of cause and effect or as composites. As Kant says a line or two after the quoted passage, 'Experience is a specification of the concepts of the understanding through given appearances. Appearances are the matter or the substrate' (17.664.19-21).

42 It is curious to note that both here in this passage from the *Critique* and in the passage from R4679 I quoted in the previous passage, Kant uses the same word to characterize more precisely what the understanding or apperception secures for experience in general and empirical laws in particular: he calls it the 'norm' for appearances and the particular laws that govern them. The German in both passages is 'Norm.' It is — in context — a peculiar word. Its peculiarity heightens the sympathetic harmony of the two passages.

exhibit necessity and thus count as laws at all is due to something contributed *a priori* by the understanding: the understanding imparts the requisite form to appearances. It is to that extent the source of all natural laws.<sup>43</sup>

All that the understanding can give us — whether we turn now to the *Duisburg Nachlaß* or to the relevant passages of the first *Critique* — is a set of necessary conditions for representing sensible things as part of a single, unified experience. This set of necessary conditions is distinct from that afforded by sensibility, but still it remains a set of necessary, rather than sufficient conditions. Now precisely given the way the ideas first announced in the *Duisburg Nachlaß* originally took shape, it should come as no surprise that this is the best that Kant can do.

I have been arguing that these ideas were in part the result of Kant's efforts after 1770 to round out and solidify his conception of the sensible world by appropriating certain elements of his early general cosmology. One significant problem left in the wake of the *Inaugural Dissertation* was to explain how it is possible for us to represent sensible things as belonging to the same, unified whole of appearances. In the early cosmology, as I argued from the text of the *Nova dilucidatio*, the principle by virtue of which finite things hang together to form a single, unified whole or world was a certain act of God's will — that act by which God subjected his creatures to laws of universal interaction. But the free choice of God's will could not — all by itself — help solve the problem left over from the *Inaugural Dissertation*. For even if Kant persisted in thinking that God is the ultimate source of the things underlying the sensible world, he could not appeal to God's will to say anything useful about the conditions under which we have *representations* of things in this world.<sup>44</sup> Having recognized by the time of writing the *Duisburg Nachlaß* in the mid-to-late 1770s that he could not expect the pure intuitions of space and time to solve the problem either, the only thing left was to turn to apperception as associated with understanding. But the effect of that move was to set up the understanding in a position with

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43 Compare R5552, which reads as follows: 'The understanding lays down the law for nature, but a law reaching no further than that of the form of appearances, which grounds the possibility of experience as such. For nature, as the object of empirical knowledge, must conform to this [sc. the form of appearances], because otherwise it would not be nature for us, as it would be impossible to find a connection [*einen Zusammenhang*] in it that would conform to our capacity to bring the manifold of appearances into a connected conscience [*in ein zusammenhängendes Bewußtsein*], hence it would not be knowable' (18.219.31-220.6).

44 I argued for this point in detail in *Kant's Early Metaphysics*, in the concluding chapter.

respect to the sensible world something like that which God had formerly occupied with respect to the world in general in Kant's early cosmology. For in the same act whereby the understanding permits us to entertain thoughts about appearances, its self-reflection provides such structure to these thoughts that we represent appearances as belonging to a single, unified whole — to something which would qualify as a world, albeit sensible, in the terms of the early cosmology. The appeal to the understanding in the *Duisburg Nachlaß* thus gives Kant a way of solving the problem left over from the *Inaugural Dissertation*. But the understanding is the cognitive faculty of *finite* beings. Its finitude cannot help but affect its capacity to do the work of pulling the sensible world together. Thus Kant will ultimately be prepared to say of the understanding in the first *Critique* what he had said about God in his early cosmological writings, namely that it is the source of the laws of nature. But precisely because the understanding is finite, the catch phrase 'source of the laws of nature' means something new. The understanding can do no more than provide the form that the laws of nature must assume in order to count as laws.

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