

Metaphysics of Substance: the Unknown and Unknowable - A Kant's Critique

Abstract:

Kant's idea of Substance cannot be as simple as earlier philosophers were described. Leibniz once wrote, "I believe that the consideration of substance is one of the most important and fruitful points in philosophy." Kant, for all his disagreement with Leibniz, agrees with him about this. The most important passage for understanding Kant's critical period doctrine of substance is the First Analogy in the Critique of Pure Reason. In this paper I wish to examine the First Analogy, with particular attention to the question of what Kant is proposing as the schema of substance. After setting out what I take to be the twofold goal of the First Analogy and what Kant means by 'substance', I will give an interpretation of the argument of the First Analogy. My starting point for constructing this interpretation will be the deservedly influential interpretation given by Arthur Melnick in Kant's Analogies of Experience. Melnick's interpretation will be subjected to criticism, both exegetical and philosophical, and a new interpretation will be offered, partially based on an argument given by Melnick but which, surprisingly, he does not attribute to Kant. I will then turn to focus on Kant's proposal for the schema of substance, arguing that even if Kant can successfully establish a controversial sub conclusion of the First Analogy, that all change is alteration, his schema of substance is inadequate: either he fails to establish that the schema of substance is satisfied by appearances, or he fails give adequate conditions for the applicability of the category of substance.

Keywords: Substance, Knowable, Unknowable, metaphysics, noumena, Phenomena.

I. The Twofold Goal of each Analogy

Each of Kant's Analogies has a twofold goal. The first part of the goal is to give what Kant calls a schema of one of the categories in division III of the Table of Categories, "Of Relation" (A80/B106). By 'schema', Kant means primarily 'conditions for the applicability of a category to appearances':

Obviously there must be some third thing, which is homogeneous on the one hand with the category, and on the other hand with the appearance, and which thus makes the application of the former to the latter possible. This mediating representation must be pure, that is, void of all empirical content, and yet at the same time, while it must in one respect be intellectual, it must in another be sensible. Such a representation is the transcendental schema. (A138/B177)

In the principle itself [the conclusions of the arguments of the Analogies] we do indeed make use of the category, but in applying it to appearances we substitute for it its schema as the key to its employment, or rather set it alongside the category, as its restricting condition, and as being what may be called its formula. (A181/B224) Thus, in the Second Analogy, Kant gives as the schema of the category of cause and effect the following conditions for the applicability of cause and effect: if state s_2 follows from state s_1 according to a rule, apply the concept of cause to s_1 and the concept of effect to s_2 .

Kant, against the rationalists, holds that the the concepts he calls categories cannot be applied directly to appearances, the objects that we can have empirical knowledge of. In a famous passage of Meditation II, Descartes says that the piece of wax that he is holding is "perceived by the mind alone": "It is of course the same wax which I see, which I touch, which I picture in my imagination, in short the same wax that I thought it to be from the start. And yet, and here is the point, the perception I have of it is a case of not of vision or touch or imagination - nor has it ever been, despite previous appearances - but of purely mental scrutiny. . . ." Although Descartes does not use the term "substance" in the Meditations until Meditation III, it seems clear that one of the things Descartes would claim to know about the piece of wax by this pure mental perception is that the ball of wax is a substance.

Kant's disagreement with Descartes about our knowledge of substance is a paradigm case of Kant's general disagreement with the rationalists. Kant insists that if we are to apply the categories to appearances, we must have some empirical criteria for their application. According to Kant, Descartes cannot know by pure mental perception that the ball of wax is a substance. If Descartes is to know that the ball of wax is a substance, then he must see that the piece of wax meets certain criteria; and these criteria must be such that we can know only through sensible perception that the ball of wax meets them. These criteria are the schema of substance.

The second part of Kant's goal in each of the Analogies is to provide a transcendental argument for the conclusion that the schema of the category under consideration is indeed universally applicable among appearances, and thus, since satisfaction of the schema suffices for application of the category, that the category is itself applicable to appearances. He attempts to do this by showing that if the schema were not universally applicable among appearances, it would not be possible to have the empirical knowledge of temporal matters that we actually have. Thus the general form of the arguments in the Analogies is the following: if P were not the case, we could not have the empirical knowledge of temporal matters that we do have; but we do have this empirical knowledge; therefore, P; but P entails that the schema of category C is universally applicable among appearances; and if the schema of category C is universally applicable among appearances, then category C is universally applicable among appearances. In the Second Analogy, the argument is as follows (minus all the details that make the argument interesting and controversial): If some events did not follow one another in accordance with rules, we could not have knowledge of the order that two given events occurred in time; we do have such knowledge; therefore, all events follow one another in accordance with rules; but if events follow one another in accordance with rules, then the schema of cause and effect is universally applicable to events; and if the schema of cause and effect is universally applicable to events, then the category of cause and effect is universally applicable to events, i.e., every event has a cause and an effect.

It is this transcendental argument that enables Kant to reject Hume's view that the applicability of the categories (in particular the category of cause and effect) to the appearances can never be known. Hume

maintained that we could never have knowledge of cause and effect through sensible perception, for all we ever can know is that one sort of event has always been followed by another sort of event; but this will not suffice to know that events of the first type cause events of the other, for application of cause and effect to events implies some sort of necessary connection between the two events, and we can never have knowledge of necessity through sensible perception. And since Hume, the arch-empiricist, held that knowledge cannot be had through any means other than through sensible perception, Hume concluded that we can never have knowledge of cause and effect. Kant rejects Hume's skepticism about causation, for Kant holds that there is a schema of the category of cause and effect, and that there is a transcendental proof, from premises that even Hume at his most skeptical would accept, that this schema is universally applicable to events.

II. What Kant Means by 'Substance'

Before examining the argument of the First Analogy and the schema of substance proposed by Kant, we must first ask what Kant means by 'substance'. Officially, Kant declines to give definitions for any of the categories (B108-109), nor does he define 'substance' in the First Analogy, but rough "definitions" of 'substance' can be found at three places in the Critique of Pure Reason. At B149 Kant characterizes substance as "something which can exist as subject and never as mere predicate." At A147/B186, he writes "Substance . . . would mean simply a something which can be thought only as subject, never as a predicate of something else." And at A235/B288 he characterizes substance as "something that can exist as subject only, and not as a mere determination of other things." This definition of 'substance' is somewhat unfortunate in that it involves a use-mention conflation: words and phrases are the only things that can be subjects and predicates, and Kant certainly does not mean that substances are words or phrases. It is even more unfortunate in that it seems to make substantiality relative to a language: I can see no barrier to a language in which statements that are of subject-predicate form in English and other European languages, such as 'This cup is black', are always expressed with what occupies the predicate position in English in the subject position and vice-versa, e.g., 'Blackness is in this cup'. So if we are to take Kant's doctrine of substance with any sort of seriousness, we had better find some other way of formulating the definition of 'substance'.

Many commentators have taken Kant's doctrine about substance to be a doctrine about what it is for a particular to instantiate a property. They see Kant as defining 'substance' as 'thing which can instantiate properties, but which cannot itself be instantiated by anything'. These commentators read Kant's use of the term 'substance' as most commentators read Locke's use of the term. Locke is usually read as meaning 'particular' by 'substance', and as arguing for what some have called the "pincushion theory" about particulars, that particulars somehow "support" the properties that are instantiated in them, as opposed to a

"bundle theory" of particulars, which holds that particulars are "bundles of properties." Whatever the merits of this as an interpretation of Locke's use of the term 'substance' (and I have my reservations), it is prima facie a poor interpretation of Kant's use of the term, for one of the conclusions of the First Analogy is that substances are permanent, existing at all times (A182/B224-5). Now Kant knew perfectly well that shoes and ships and sealing-wax are not permanent entities, and so they interpret Kant as maintaining that these things are not particulars, but properties, which can only exist as instantiated in permanent particulars.

I hesitate to put Kant into such a position and ascribe to him such absurdities, given that an alternative interpretation of his use of the term 'substance' can be found; and one does not have to look far for an alternative interpretation. I will be reading Kant as being within the rationalist tradition in his use of the word 'substance', and interpret Kant as meaning by 'substance' exactly what Descartes and Spinoza meant. Descartes achieves the greatest clarity in his definition of 'substance', in the Principles of Philosophy: "By substance we understand nothing other than that which exists in such a way as to depend on no other thing for its existence." Spinoza, equating as Descartes did conceivability with possibility, defines 'substance' as follows: "By substance I understand that which is in itself and is conceived through itself; in other words, that the conception of which does not need the conception of another thing from which it must be formed." Thus we may read the Cartesian-Spinozist definition of 'substance' as follows: x is a substance if and only if there does not exist a y distinct from x such that x is ontologically dependent on y. Anything that is ontologically dependent on something else we may, following Spinoza, call a "mode". For the rationalists and for Kant, this definition entails that properties are modes, since they all hold a particularist theory of properties: there is no such thing as blackness in general, only particular instances of blackness, e.g., the blackness of this cup and the blackness of this pen. If this cup did not exist, the blackness of this cup would not exist. But this definition of 'mode' covers a lot more than properties, although the rationalists are unfortunately not very explicit about this. A hole, for example, is a mode, an ontologically dependent entity, for a hole cannot exist without its "host": if this block of wood did not exist, the hole in it would not exist. But it would be a serious stretch to say that the hole is a property of the block of wood. Most importantly for our consideration of Kant's First Analogy, events are modes, as they are ontologically dependent on the enduring things that "participate" in them. If Socrates had not existed, Socrates' death, an event, would not have occurred.

Why does Kant formulate his definition of substance as he does? I think this can be explained by the fact that the examples of modes, or "determinations" as he calls them, that Kant has in mind are properties and events, and the expressions which seem to refer to properties and events generally occur in the predicates of sentences. If we were not careful about the use-mention distinction, we might say that properties are predicated of particulars, e.g., 'This cup is black', and that events are predicated of enduring entities, e.g.,

'Socrates died in 399 BCE'. It might not even be too much of a stretch to say that holes are predicated of their hosts, e.g., 'This block of wood has a hole'.

III. Initial Statement of the Argument of the First Analogy

Now we are prepared to examine the argument of the First Analogy and the place of the schema of substance within it. In a somewhat compressed form, the argument runs as follows:

- (1) Every change is empirically knowable.
- (2) If there were a change that were not an alteration, then that change would not be empirically knowable.
- (3) Therefore, every change is an alteration.
- (4) If every change is an alteration, then the schema of substance is universally applicable to appearances.
- (5) If the schema of substance is universally applicable to appearances, then the category of substance is universally applicable to appearances.
- (6) Therefore, the category of substance is universally applicable to appearances.
- (7) If every change is an alteration, then there are permanent things.
- (8) Therefore, there are permanent things.

The first thing to note is Kant's technical use of the terms 'change' and 'alteration'. Kant gives an explanation of these terms at A187/B230: "Coming to be and ceasing to be are not alterations of that which comes to be or ceases to be. Alteration is a way of existing which follows upon another way of existing of the same object. All that alters persists, and only its state changes." A change is an event in which something comes to be or ceases to be. If a chair were suddenly to come into existence, or suddenly go out of existence, the event of its coming into existence or going out of existence would be a change. But 'change' does not only apply to the comings to be and ceasings to be of particulars; it also applies to the comings to be or ceasings to be of properties. When an apple ripens, ceasing to be green and coming to be red, this event is a change, for the greenness of the apple ceases to exist and the redness of the apple comes to exist. An alteration is a change that has a participant that persists through, or "survives," the event. Thus the event of the apple's ripening is both a change, for the greenness ceases to be and the redness comes to be, but it is also an alteration, for the apple survives the change. If a chair suddenly came into existence ex nihilo, this event would be a change, but it would not be an alteration, for there would be no participant in the event that exists before and after the event.

IV. Melnick's Version of the Argument

Arthur Melnick's interpretation of the argument of the First Analogy differs from mine in the first two premises. Instead of my premises (1) and (2), Melnick gives the following as the first two premises of the argument:

- (1*) Every temporal interval between events is empirically determinable (measurable).

(2*) If every temporal interval between events is empirically determinable, then every change is an alteration.

Melnick thus construes the argument as proceeding from premises concerning the measurability of duration. There is some textual support for this interpretation. Kant says the following in the Introduction to the Analogies (A177/B219):

The three modes of time are duration, succession, and co-existence. There will, therefore, be three rules of all relations of appearances in time, and these rules will be prior to all experience, and indeed make it possible.

Kant seems to be suggesting in this passage that each of the Analogies will deal with one of these "modes of time," giving arguments that empirical knowledge of these modes is possible only if the schema of one of the categories in division III of the Table of Categories is satisfied. Furthermore, the Second Analogy deals with succession in this manner, and the Third Analogy seems to deal with co-existence in this manner. So it seems plausible that the First Analogy should be read as giving an argument that empirical knowledge of duration, i.e., measurement of time intervals between successive events, is possible only if the schema of substance is universally satisfied among appearances; and this is how Melnick interprets the argument.

But there are reasons, both textual and philosophical, to think that the argument of the First Analogy does not fit so nicely into this mold. The first textual reason is that in the text of the First Analogy itself, Kant uses the word 'duration' only once, at A183/B226: "Only through the permanent does existence in different parts of the time-series acquire a magnitude which can be entitled duration." Particularly notable is the fact that Kant does not use the word 'duration' anywhere in the synopsis of the argument added in the second edition of the Critique, at B224-225: in that synopsis, Kant only mentions succession and co-existence. Thus it seems probable to me that the passage in the introduction is a red herring, and that in it Kant was merely trying to justify the fact that there are three Analogies, perhaps because he realized that the Metaphysical Deduction of division III of the Table of Categories is less than satisfactory.

Before going on to other textual reasons, and philosophical ones as well, to think that Melnick's interpretation of the argument is inadequate, it is necessary to unpack premise (2*), and see what argument Melnick attributes to Kant in support of this crucial premise. Melnick claims that Kant is arguing as follows:

- (i) If a temporal interval between events is empirically determinable (measurable), then there must be a "substratum" for that interval, i.e., an appearance which functions as a clock for the measurement of that interval.
- (ii) If an appearance functions as is a substratum for an interval, then that appearance must persist throughout that interval.
- (iii) If an appearance persists throughout an interval, then all change in that interval is an alteration.
- (iv) Therefore, if every temporal interval is empirically determinable, then all change is alteration.

Now we may see some further textual problems with attributing this argument to Kant. First, this interpretation requires reading Kant's use of 'substratum' in a peculiar way for premisses (i) and (ii). Melnick says the following about Kant's use of the word 'substratum': "That in appearances in terms of which we determine the magnitude of a time interval is, by definition, the substratum of the determination of that interval." But the term 'substratum', in its usual philosophical uses, has nothing to do with measurement. Berkeley's Philonous states that the term refers to something that is "spread under" something else. Its philosophical use is obviously metaphorical in some way, but it is hard to see the appropriateness of such a metaphor as applied to a timekeeping device. Furthermore, Kant often says in the First Analogy that determination(s) of time are "in" this substratum:

All appearances are in time; and in it alone, as substratum (as permanent form of inner intuition), can either coexistence or succession be represented (B224);

. . . All change or coexistence must, in being apprehended, be perceived in this substratum (B225);

. . . The permanent is the substratum of the empirical representation of time itself; in it alone is any determination of time possible. (A183/B226)

If we read 'substratum' as Melnick does, we shall have to read 'in' in each of these cases as 'by means of', an unusual reading of the term, and again one without philosophical precedent.

The degree to which this reading of 'substratum' is strained becomes more apparent when we ask what Kant means by 'determination', in passages such as the following: "Substances, in the [field of] appearance, are the substrata of all determinations of time" (A188/B231). Melnick's reading of the First Analogy requires that we read 'determination' in such passages as 'the act of measuring an interval'. Kant does seem to use 'determination' in such a way, referring to human actions, in one place in the First Analogy:

Our apprehension of the manifold of appearance is always successive, and therefore always changing. Through it alone we can never determine whether this manifold as object of experience, is coexistent or in sequence. For such determination we require an underlying ground which exists at all times. . . . (A182/B225)

But if this is Kant's meaning in this passage, he is not univocal in his use of the word 'determination'. The principle of the First Analogy is stated in A as follows: "All appearances contain the permanent (substance) as the object itself, and the transitory as its mere determination, that is, as a way in which the object exists" (A182). And in the synopsis added in B, Kant writes: "But the substratum of all that is real . . . is substance; and all that belongs to existence can be thought only as a determination of substance" (B225). It seems clear that in these passages Kant is using 'determination' as Spinoza and Descartes used the word 'mode'.

If we read 'determination' in this way (except perhaps for the passage at A182/B225, previously noted), we get a much nicer picture of what Kant means when he says things like All appearances are in time; and in it

alone, as substratum (as permanent form of inner intuition), can either coexistence or succession be represented (B224);

. . . All change or coexistence must, in being apprehended, be perceived in this substratum (B225);

. . . The permanent is the substratum of the empirical representation of time itself; in it alone is any determination of time possible (A183/B226);

Now time cannot be perceived in itself; the permanent in the appearances is therefore the substratum of all determination of time (A183/B226);

. . . Everything, on the other hand, which changes or can change belongs only to the way in which substance or substances exist, and therefore to their determinations (A183-4/B227); and

. . . We ought first to have proved that in all appearances there is something permanent, and that the transitory is nothing but determination of its existence. (A184/B227)

I propose that in these passages, and for the most part throughout the First Analogy, we should read 'determination' as 'mode' (i.e., 'ontologically dependent entity'); we should read 'substratum' as 'that on which a mode is ontologically dependent'; and finally, we should read 'in', whenever something is said to be 'in' a substratum, not as 'by means of', but as Spinoza used the word, meaning 'ontologically dependent on'.

Furthermore, we may note, Melnick's version of the argument for premise (2*) contains not just one, but two, "non sequiturs of numbing grossness," to use Strawson's phrase. Premise (ii) is clearly false. There is no need for there to be one single entity functioning as a clock and persisting throughout an interval in order to measure that interval. An interval could be measured by a series of clocks that come into and go out of existence during that interval, as long as two conditions are met: (a) at least one of the entities functioning as clocks must exist at any given time interval, and (b) if one of those entities comes into existence during the interval, there must be some temporal overlap between it and some entity that came into existence earlier, to provide for the possibility of "synchronization of the clocks." And premise (iii) is even more obviously false. Why should it follow from the fact that some object *x* persists through interval *I* that every event in interval *I* is an alteration? Every event during *I* in which *x* participates, no doubt, is an alteration, but we have no reason to suppose that *x* participates in every event during *I*.

If a better interpretation of the beginning of the argument of the First Analogy is to be had, one perhaps not entirely free of non sequitur, but at least from non sequitur of numbing grossness, and one that reads 'determination' as 'mode', 'substratum' as 'thing on which a mode is ontologically dependent', and 'in' as 'ontologically dependent on', we should adopt such an interpretation. Fortunately there is such an interpretation, similar to an argument given by Melnick himself but not attributed to Kant.

V. Premises (1) and (2): A Different Interpretation

I will return now to my original formulation of the argument, an adaptation of an argument given by Melnick but surprisingly not attributed to Kant. Premise (1), 'Every change is empirically knowable', is to be

understood as saying that whenever there is a change, i.e., an event that is a coming into existence or a going out of existence, we may know that something has come into or gone out of existence. Premise (2), "If there were some change that was not an alteration, then that change would not be empirically knowable" may then be argued for as follows, by *reductio ad absurdum*.

- (i) Every change is empirically knowable. (Denial of the consequent of (2).)
- (ii) There is an event e that is a coming into existence of x , and e is not an alteration. (Affirmation of the antecedent of (2).)
- (iii) It is knowable that x comes into existence at time t_2 only if it is knowable that x did not exist at time t_1 , a time prior to t_2 .
- (iv) It is knowable that x did not exist at time t_1 only if it is knowable that if x had existed at t_1 , it would have existed at place P .
- (v) It is knowable that if x had existed at t_1 , it would have existed at place P , only if x is an ontologically dependent entity, dependent on y , which was at P at t_1 .
- (vi) Therefore, x is an ontologically dependent entity, dependent on y , which was at P at t_1 .
- (vii) e , the coming into existence of x at time t_2 , is ontologically dependent on x .
- (viii) Therefore, e is ontologically dependent on y .
- (ix) Therefore, y is a participant in e .
- (x) y exists before and after the occurrence of e .
- (xi) Therefore, e is an alteration in y . Conclusion (xi) contradicts premise (ii), completing our *reductio*.

Premise (iii) seems to be obviously true. And premise (iv) seems correct as well; if we did not know where x would have been had it existed at t_1 , we would have to examine all of infinite space at t_1 to determine that it did not exist. Premise (vii) is supported by a certain plausible principle about the ontological dependence of events, (ODE): an event e is dependent on an entity x if and only if x is a participant in e . Subconclusion (viii) follows from subconclusion (vi), premise (vii), and the transitivity of ontological dependence. Sub Conclusion (ix) follows from (ODE) and sub conclusion (viii). Premise (x) is true; for by premise (v) we know that y existed at t_1 , and since x exists after t_2 (when it comes into existence), y must exist after (t_2), since x is ontologically dependent on y .

Premise (v) seems to be the questionable one then. It seems that if we pick a time t_1 close enough to t_2 , we may know that x would have been in the nearby vicinity of wherever x was at t_2 , even if x is not an ontologically dependent entity, provided that we know that there is some upper limit to the speed at which x could have traveled. There is no need then to examine all of infinite space at t_1 to know that x did not exist then. We now know, of course, know that there is such a speed, viz. , the speed of light in a vacuum, 3×10^8 meters per second. Kant, of course, was not aware of this. We might, however, be able to know that x came into existence at t_2 even without knowing that it had some maximum speed: if we examined some finite region of space around the place where x was at t_2 during some interval I having t_2 as its final instant, and

we know that at no point during I was x in that region, and we know that x cannot jump from place to place instantaneously, we would know that x came into existence at t₂, and that it did not exist anywhere at t₁, a time during interval I.

But even if premise (v) in the argument is false, and hence premise (2) in the argument of the First Analogy remains unsupported, we do not have any non sequitur of numbing grossness that we had in Melnick's formulation of the argument. But now we must show that this defense of premise (2) is supported in the text of the First Analogy. (As should be clear, my formulation of the argument as a reductio was merely a matter of convenience. One could clearly argue from premises (i), (iii), (iv), (v), and (ODE) to the conclusion that e is an alteration for any event e.)

Premise (1), which is identical with premise (i), the antecedent of (2), may be taken as implicit in the text. Later, in the Refutation of Material Idealism, and according to some commentators, earlier in the Transcendental Deduction, Kant explicitly argues that all knowledge, even that knowledge of one's own mental states that even Descartes at his most skeptical (the end of Meditation II) and Hume admit, is possible only if we have certain sorts of other knowledge about the external world, including that temporal knowledge that Kant assumes in giving the proofs of the Analogies. Premises (iii), (iv), and (v) are strongly suggested in the following passage toward the end of the First Analogy, where Kant gives his clearest statement of the argument that all change is alteration (A188/B231, comments in brackets added):

If we assume that something absolutely begins to be, we must have a point of time at which it was not [premise (iii)]. But to what are we to attach this point, if not to that which already exists [premise (iv), albeit without mentioning place]? For a preceding empty time is not an object of perception. But if we connect the coming to be with things which previously existed, and which persist up to the moment of this coming to be, this latter must be simply a determination [ontologically dependent entity] of what is permanent in that which proceeds it [premise (v)]. Similarly also with ceasing to be; it presupposes the empirical representation of a time in which an appearance no longer exists [see footnote 22].

I submit then, that this formulation of part of the argument of the First Analogy is well supported by the text.

VI. From Alteration to Permanence: Premise (7)

Before moving to the question of the adequacy of the schema of substance and whether Kant has indeed established that it is universally applicable among appearances (premises (4) and (5)), I wish to take a very brief look at premise (7), which asserts that if every change is an alteration, then there are permanent things.

Premise (7) may be easily established with the help of the following two plausible principles:

Grounding of Ontological Dependence (GOD): Every ontologically independent entity is dependent on something which is ontologically independent.

Alteration and Dependence (AD): If e , the event of x 's coming to exist or ceasing to exist, is an alteration in y , then x is ontologically dependent on y .

Suppose that all change is alteration. Then everything that changes (comes to exist or ceases to exist) is an ontologically dependent entity, by (AD). But then everything which is ontologically independent does not change, and therefore is permanent. But since there are ontologically dependent things, there are ontologically independent things, by (GOD). Therefore, there are permanent things.

Since we can argue from 'All change is alteration' to 'There are permanent things', it follows that premise (7), 'If all change is alteration, then there are permanent things', is true, provided that (GOD) and (AD) are true.

Kant does not give any argument of this sort in the First Analogy, but it is somewhat suggested in a passage in the Second Analogy where Kant again takes up the question of the permanence of substance. "Since, now, every effect consists in that which happens, and therefore in the transitory, which signifies time in its character of succession, its ultimate subject, as the substratum of everything that changes, is the permanent, that is, substance" (B250). But whether this is the sort of argument Kant had in mind or not, we have seen that Kant's move from every change being an alteration to there being permanent entities is indeed a legitimate one.

VII. The Universal Applicability of the Schema of Substance.

I now wish to look at premise (4), 'If every change is an alteration, then the schema of substance is universally applicable to appearances', and premise (5), 'If the schema of substance is universally applicable to appearances, then the category of substance is universally applicable to appearances'. I will consider two possibilities for what Kant is proposing as the schema of substance. The first proposal I will consider will turn out to be an adequate schema of substance, providing sufficient conditions for the applicability of the category of substance, i.e., making premise (5) necessarily true. As we shall see though, this proposal leaves open the possibility that premise (4) is false, i.e., it is possible that all change be alteration and nevertheless this proposed schema is not satisfied. The second proposed schema will have the opposite problem: it will be necessarily true that if all change is alteration, then this schema will be satisfied; but it will not be the case that this second proposed schema provides sufficient conditions for the applicability of the category of substance, i.e., the proposed schema is not in fact a schema, and premise (5) is not necessarily true.

The first proposal for a schema of substance I wish to look at is suggested in the following two passages:

. . . There must be found in the objects of perception, that is, in the appearances, the substratum which represents time in general, and all change or coexistence must, in being apprehended, be perceived in this substratum, and through relation of the appearances to it. But the substratum of all that is real, that is, of all

that belongs to existence, is substance; and all that belongs to existence can be thought only as a determination of substance. (B225)

For if that in the [field of] appearance which we name substance is to be the substratum proper of all time-determination, it must follow that all existence, whether in past or in future time, can be determined solely in and by it. (A185/B228)

Kant seems to be suggesting in these passages that the key to the schema of substance is the fact that all changes occur in (i.e., have as a participant and are ontologically dependent on) some substance. Now this would enable the schema of substance to be easily stated, if Kant were to adopt Spinoza's thesis that there is only one substance. We could then give the schema of substance, stating sufficient conditions for the applicability of the category, as follows: If every change is an alteration in x , then x is a substance. This would entail that there is at most one substance. But Kant clearly does not wish to be committed to Spinozism, for elsewhere he implies that there are many substances, such as in the principle of the Third Analogy: "All substances, in so far as they can be perceived to coexist in space, are in thoroughgoing reciprocity" (B256).

What Kant needs to say, then, if indeed this is his proposal for the schema of substance, is something like 'If x is one of those things that all change are alterations in, then x is a substance'. Making anachronistic use of set theory, we might try to state the schema of substance as follows: If x is a member of some set S such that every change is an alteration in some member of S , then x is a substance. But this will not do either, for it admits too many things as substances. Suppose there is indeed some set S such that every change is an alteration of some member of S . It might indeed be the case that every member of S is a substance, i.e., an ontologically independent entity. But then consider the set S^* , which is the union of S and the singleton of some non-substance, such as the redness of this apple. Since S is a subset of S^* , and S is such that every change is an alteration in some member of it, it follows that S^* is such that every change is an alteration of some member of it. And the redness of this apple is a member of S^* , and thus the proposed schema claims that this redness is a substance. But of course the redness of the apple is not a substance; this proposed schema is inadequate.

To remedy this, we may use the trick Frege used to define 'ancestor' and state the schema thus: If x is a member of every set S such that every change is an alteration in S , then x is a substance. (Provided there is such a set; for otherwise the schema will turn out to be vacuously true of everything.) By using this as a schema of substance, we rule out those things that aren't substances, such as the redness of this apple, that fit the previous proposed schema of substance, for the redness of this apple is not a member of every set S such that every change is an alteration in some member of S . Furthermore, we may give the following proof that if something satisfies the schema ' x is a member of every set S such that every change is an alteration in some member of S ', then x is indeed ontologically independent, i.e., a substance.

(i) Assume that there is a set S such that every change is an alteration in some member of S , and that x is a member of every such set, and is therefore a member of S .

(ii) Assume, for reductio, that x is not ontologically independent.

(iii) There is a y , not identical to x , such that x is ontologically dependent on y . [from (ii)]

(iv) There is an change e that is an alteration in x . [from (i)]

(v) e is ontologically dependent on x . [from (iv) and (ODE)]

(vi) e is ontologically dependent on y . [from (iii) and (v), by the transitivity of ontological dependence]

(vii) e is an alteration in y . [By (vi) and (ODE), it follows that y is a participant in e ; x survives, i.e., exists before and after e , since e is an alteration in x ; since x ontologically dependent on y , y also survives e , and therefore e is an alteration in y .]

Now let S^* be the union of $S - \{x\}$ with $\{y\}$, that is, the set that is just like S , except that it does not have x as a member, and does have y as a member. (S itself may or may not have y as a member.)

(viii) S^* is such that every change is an alteration in some member of S^* . [Every change that is an alteration in x is an alteration in y , since we could repeat steps (iv)-(vii) for any change that is an alteration in x ; and S^* does not contain x and does contain y , but otherwise is just like S .]

(ix) Therefore, there is a set, viz., S^* , that is such that every change is an alteration in some member of it, and x is not a member of S^* . The conclusion of this argument contradicts premise (i), completing the reductio.

Thus anything that satisfies the proposed schema, ' x is a member of every set S such that every change is an alteration in S ', is indeed an ontologically independent entity. Furthermore, since we proved in section VI of this paper, in the course of proving premise (7) of Kant's argument, that all ontologically independent entities are permanent, we know that anything satisfying the proposed schema is also permanent. This is a pleasing result, since Kant makes frequent claims in the First Analogy that substances are permanent, even claiming that this is "tautological" (A184/B227).

But all is not well with this proposed schema of substance. For even if we can establish that all alteration is change, we have not thereby established that there is anything satisfying the proposed schema of substance. It is plausible to think that if all change is alteration, then there is at least one set of things such that every change is an alteration of some member of that set. But we have not established that there is anything that is a member of every such set, that is to say, we have not established that the intersection of all such sets is non-empty. To see that we have not established this, consider the following example.

Consider a possible world that consists of nothing more than some masses of matter, where each of these masses has one or more holes in it. Suppose further that these masses of matter are all permanent, and that the holes in them are permanent as well. The only changes that ever occur in this world are changes of shape of the holes. In this world, all change is alteration, and there is at least one set, S , such that every change is an alteration of some member of S , viz. , the set of all the masses of matter. But there is another set, S^* ,

such that all changes in this world are alterations in some member of S^* , viz. , the set of all the holes. S and S^* are disjoint, having no members in common, so there is nothing which satisfies the proposed schema of substance: nothing is a member of every set such that all changes are alterations in some member of that set. Or, relating this case to the argument, this shows that premise (4) may well be false. Even if all change is alteration, it does not follow that this proposed schema of substance is satisfied.

One might think now that the trouble is in the interpretation, not in the text to be interpreted. It is in the chapter on schematism where we find the Kant's actual proposal for the schema of substance. There Kant says, "The schema of substance is the permanence of the real in time. . ." (A143/B183). Furthermore, in the First Analogy Kant says, "We can therefore give an appearance the title 'substance' just for the reason that we presuppose its existence throughout all time. . ." (A185/B228). This then, is perhaps the correct formulation of the schema of substance: If x is permanent, then x is a substance. This proposal does not fall prey to the problem that the previous proposal did, for we established in section VII that if all change is alteration, then there are some permanent things. So if 'x is permanent' is the schema of substance, then premise (4) will be true: if all change is alteration, then the schema of substance is satisfied.

But this proposed schema falls prey to a different problem. For it does not seem to be an adequate schema, in that we have no guarantee that an entity that is permanent will be ontologically independent. Thus it may well be the case that premise (5) of the argument is false: x may be permanent, but nevertheless be ontologically dependent. To see that this may well be the case, consider again the possible world in which there are permanent hunks of matter having permanent, albeit changing, holes. Each of the holes is permanent, ex hypothesi; but holes are ontologically dependent entities, dependent on their hosts, and hence not substances. If the major problem with Spinoza's doctrine of substance is the apparent impossibility of there being finite modes, the major problem with Kant's doctrine of substance, if we take permanence as the schema of substance, is that it is impossible for there to be infinite, i.e., permanent, modes.

If events were the only modes that a theory of substance needed to classify correctly, then we might think that Kant had succeeded in his task, given that permanence is his proposal for the schema of substance. For it seems reasonable to doubt that there are such things as permanent events or processes, having no beginning and no end, even if every event is participated in by some permanent entity. And the example concerning permanent holes might well be dismissed as arising from an error; holes are not ontologically dependent entities as I have suggested, but parts of material objects, as is argued by David and Stephanie Lewis's Argle. But other cases remain of potentially permanent ontologically dependent entities: colors, shapes, and other intrinsic properties. As long as one does not go so far as to deny that there are such things as colors and shapes, one's theory of substance is required to correctly classify these things as modes. And this cannot be done by Kant's proposal that all and only permanent things are substances.

I have argued herein that the argument of the First Analogy is, although perhaps not sound, at least free from the non sequiturs of numbing grossness that appear in Melnick's interpretation of the argument. But I

have also argued that Kant has failed to give an adequate schema of substance, one that meets the following two criteria: (a) that the schema gives sufficient conditions for the applicability of the category of substance, and (b) that it can be established a priori that the schema is satisfied.

References:

Bennett, Jonathan. *Kant's Analytic*. New York: Cambridge University Press, 1966.

Berkeley, George. *Three Dialogues Between Hylas and Philonous*.

Descartes, René. *Selected Philosophical Writings*, trans. John Cottingham, Robert Stoothoff, and Dugald Murdoch. New York: Cambridge University Press, 1988.

Kant, Immanuel. *Critique of Pure Reason*, trans. Norman Kemp Smith. New York: St. Martin's Press, 1965.

Leibniz, G. W. *Philosophical Essays*, trans. Roger Ariew and Daniel Garber. Indianapolis: Hackett, 1989.

Lewis, David. *Philosophical Papers, Volume I*. New York: Oxford University Press, 1983.

Melnick, Arthur. *Kant's Analogies of Experience*. Chicago: University of Chicago Press, 1973.

Russell, Bertrand. *A Critical Exposition of the Philosophy of Leibniz*. London: George Allen and Unwin, Ltd., 1937.

Spinoza, Benedict De. *Ethics*, trans. James Guttman. New York: Hafner Press, 1949.

