



Journal Homepage: - www.journalijar.com
**INTERNATIONAL JOURNAL OF
 ADVANCED RESEARCH (IJAR)**

Article DOI: 10.21474/IJAR01/3977
 DOI URL: <http://dx.doi.org/10.21474/IJAR01/3977>



RESEARCH ARTICLE

KANT ON SUBSTANCE AND ACCIDENTS

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Manuscript Info

Abstract

Manuscript History

Received: 06 February 2017
 Final Accepted: 02 March 2017
 Published: April 2017

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Introduction:-

At one point in the *Critique of Pure Reason*, Kant characterizes his job as that of trying to steer a safe course between two illustrious empiricists—Locke and Hume. Locke attempted to discuss *a priori* concepts from experience and yet obtain knowledge which transcends all limits of experience” (Kant, B127). Realizing that the concept of substance cannot be derived solely from sensation, he attempted to derive it from reflection or the internal sense, that is, the operations of the understanding “employed about the ideas it has got” received from sensation (Locke, pp. 123-24). Locke consequently opened the door to enthusiasm, allowing reason to transcend the moderate bounds of experience.

Hume recognized that this is only possible if our concepts have an *a priori* origin, but since he found that these cannot be derived from experience—from a subjective necessity or custom—he “gave himself over entirely to skepticism” (Kant, B127). Hume concluded that since substance is not to be derived from the impressions of sensation or of reflection—since it cannot, like colors, sounds, and tastes, be perceived by the senses; and since it is not a passion or emotion, we can have “no idea of substance distinct from that of a collection of particular qualities. . . . The idea of substance . . . is nothing but a collection of simple ideas, that are united by the imagination, and have a particular name assigned to them (Hume, 16).

Such an empirical derivation of substance, and of the other *a priori* concepts that provide the twin features of universality and necessity for a “general science of nature,” are not adequate to the job of providing a rational foundation for a science that will explain our knowledge of the laws of nature through *a priori* concepts. The solution is to bring our empirical sensations under the category of substance, which, as a synthetic *a priori* judgment or principle of the understanding, can account for the universality and necessity of our knowledge of objects as substances.

At the same time Kant’s intentions must to be carelessly confined to the narrow task that we have delineated here. He was asking different questions than Hume and Locke, was influenced as well by other philosophers, and was reacting to the climate of opinion manifested in the Enlightenment. However, we may focus on his discussion of substance as a reconciliation of previous philosophical doctrines, bearing in mind that his remarks on substance had many other purposes.

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The traditional causal theory of perception, sometimes called the representative theory of perception, has been attributed to Locke, and might be briefly stated as follows. There are objects in the world that are external to our bodies. When light rays hit these objects, they are deflected into the mechanism of the eye. The optic nerve becomes stimulated and begins an electrical impulse that travels through neural tissues to appropriate parts of the brain. The process terminates in the marvelous experience of “seeing the object,” or if not the object, then a putatively visual percept. Upon reflection, we notice that this appearance is the sensible effect of a cause, which remains unobservable in principle.

The objects that cause our being appeared to then become construed as something like articulate things-in-themselves (articulate because we want to say things about them). We want to say that a unique type of object is a cause correlated with a unique sensible effect. When this kind of analysis is pushed far enough, our ‘seeing an X’ becomes analyzed as a completely subjective entity that can be called an ‘X-like patch in my visual field.’ Thus we are led to believe certain other types of sensations of taste, sound, or smell may follow. (For a cruder version of the theory, see Kant, A372-374.)

Using this analysis, we are then left with (1) an unnamable cause of our present percept, a ‘something we know not what’ that can only be referred to intentionally. For example, ‘there exists an X such that it is the cause of this particular percept’ (where X is a variable and not a name. Kant says in reference to what can be said about these non-sensible causes of our percepts that “it must remain doubtful whether the cause in question be in us or outside us (A372); (2) a purely subjective apprehension called ‘the X-shaped patch of color,’ and (3) a set of beliefs grounded in this subjective entity and in associative bonds accumulated from previous experience.

Thus, the results of physics and physiological psychology have, by means of such an analysis, landed us in an epistemological dualism that includes a sea of noumenal entities. The unobserved objective order of objects as causes of perception (which Locke calls real essences as opposed to nominal essences) *prima facie* has to be correlated with the subjective order of percepts to make the subjective order intelligible.

Against this theory of epistemological dualism Kant proposes his ‘transcendental idealism’ that is at once a plausible alternative to such a view and a proposal that is free from the defects of the representative dualism while retaining its most important distinction.

Transcendental idealism retains the distinction between the objective and subjective orders; it requires causes or grounds that render the subjective intelligible. But it differs with the above form of epistemological dualism systematically in the analysis of the nature and relation of these two orders.

For Kant, the causal relation obtains, not between objects out of all direct relation to the senses and their sensible effects, but, in all cases, between objects and events that are part of the phenomenal system. These events are—and must be—experienceable if they are to qualify as members of the phenomenal order. Kant denies that we make any *inference* from appearances to noumenal objects. This seems to be a point worth elaborating.

Locke, it will be remembered, held that our involuntary percepts were caused by external objects that must be inferred to distinguish illusion from reality. But when I say ‘I see a table,’ I am not making any metaphysical or scientific claim, nor am I implying that any sort of scientific theory is true. Upon analysis, I can be said to be claiming that I am being appeared to in a certain way, that *ceteris paribus* I will have certain perceptions. But there is no inference here to scientific matter (atoms) or an underlying metaphysical substratum (or about the activities of God).

Locke lamented the fact that we could never know whether such inferences were correct because the nonsensible external causes were in principle non-experienceable. Thus, he denied that we can know what everyone would claim that we can know, because there is no way to check the validity of our inferences to external causes. But for Kant this analysis lands us in the unnecessary position of not being able to say our ordinary and scientific perceptual claims are true. Kant asserts that the only inference we can make from such statements is that certain things about the nature of objects are true, that is, their publicity and permanence. But there is good reason for giving up a position that ends up denying that we see physical objects. Thus, the ‘way of ideas’ has to be given up if we are to account for the universality and necessity in knowledge.

Transcendental idealism retains the distinction between the objective and subjective orders, but it does not identify the objective order with a world of nonsensible causes of percepts. Kant undercuts such a theory by locating the subjective-objective distinction within the order of appearances.

The main distinction between the subjective and objective orders for transcendental idealism is that whereas subjective apprehension is always a *succession* of subjective representations or states of mind, the objective order of phenomena contains permanent substances with *enduring* and *coexisting* qualities or states. Although representations, as subjective, may be successive in our apprehension, as states of substances they endure and coexist. This is Kant's fundamental distinction between nature and personal, mental history.

If we interpret Hume as a thoroughgoing phenomenalist, then indeed Kant's distinction does enable him to steer a safe course between Scylla and Charybdis. For on such a view there is nothing but our distinct and separable subjective apprehensions connected by the customary bonds of association. But such a connection cannot yield universality and necessity required to justify knowledge. For the time difference in our apprehensions can never be equal to the time difference in the object apprehended or the objective succession of events.

In discussing our apprehension of a house, for example, Kant tells us everyone can admit that our apprehension is successive, but no one believes the parts of the house are successive. The parts of the house coexist. When our apprehension is from left to right (supposing I am scanning the house from one position), we can symbolize this as a_1, b_1, c_1 . Apprehending the house again, from right to middle, to the left would be c_2, b_2, a_2 . This series ($a_1, b_1, c_1, c_2, b_2, a_2$) forms a set of successive representations whose members are distinct and separable. But the apprehension of the house as a set of enduring qualities of a permanent substance is not the cognition that we have a string of six distinct subjective representations. We cognize a reversible sequence with only three distinct members, namely, a, b, c , where a, b , and c are taken as states of a permanent substance and not as successive states of mind.

In cognizing the house ('seeing the house') a_1, b_1, c_1, c_2, b_2 , and a_2 are enduring states or qualities of a permanent substance and these states endure at least as long as the process of apprehending. In other words, in our cognition, $a_1 = a_2, b_1 = b_2$, and $c_1 = c_2$ inasmuch as a, b , and c are numerically identical states of the same substances, even when a_1, b_1, c_1, c_2, b_2 , and a_2 are all distinct subjective representations. We *must* so construe the data of subjective apprehension to see the house as a house, that is, as an object in an objective order.

The Humian phenomenalist account of things is inadequate on two accounts, at least, (1) Our successive apprehension of appearances are not yet objective time-relations or modes of time, e.g., objective succession and simultaneity. We cannot determine, from subjective apprehension alone, whether the manifold of appearances is coexistent (e.g., the house) or in sequence (e.g., the event of the ship sailing downstream). (2) Subjective representations are post-analytically abstraction from experience. We can confine our attention to these representations, only when we realize that their order is determined by phenomenal objects and events. It is only by an act of analysis that we can form a concept of successive apprehension. This second point can now be elaborated.

A Humian phenomenalist view is incorrect in attributing epistemic priority to our succession of apprehensions. The order of nature, its objects and events, is first in the order of knowledge. Only postanalytically and by a great effort of abstraction can we arrive at a subjective sequence of percepts. Subjective successions of percepts must presuppose an objective order that is a part of the complex experience from which we isolated them. Kant himself expresses this succinctly at B238-A193 where, referring to the causal principle, he says that "we must derive the subjective succession of apprehension from the object as reversible in relation to objects, but not in relation to events.

Let us consider the difference between an object and an event, which constitute the objective order. The distinguishing criterion is that we must think the sequence of representations in subjective apprehension as irreversible in relation to objects, but not in relation to events. In reference to an event, the subjective sequence is reversible because of the objectivity of events. An event cannot be thought to be reversible without making either two sequences of events or an object out of what was supposed to be one sequence of events.

Consider the case of the ship sailing downstream. Our percept when the ship is upstream will be p , when it is a little downstream q , and a little farther downstream, r . Thus p, q, r is the order of our subjective apprehension. We cannot in this occurrence or event, have the reversed sequence r, q, p . The reason is not that we cannot imagine a ship

sailing upstream but that sailing upstream is a *different* event from sailing downstream. There is also another possibility. Suppose when we look again at the ship we find that the ship is in the same position as it was in percept r ; call it r_1 . Now suppose when we look again at the ship and we find that the ship is in the same position as it was in percept r_1 ; call this next percept r_2 . We look again, and with the aid of memory, we recognize a percept similar to the downstream-bound ship at q_1 , which we can call q_2 . In this case, the sequence in subjective apprehension is $p_1, q_1, r_1, r_2, q_2, p_2$. With this sequence, we are able to say that we see a complex of relations of object, namely, $\{p, q, r\}$, where p, q , and r are enduring states of a permanent substance. Thus events happen once and for all and are done with; as irreversible sequences of representations, they would not make very good investments or living quarters as opposed to the reversible sequences of apprehensions constituting a house, or any object of experience.

To return from this brief digression, we have shown where Kant retains the distinction in epistemological dualism between the objective and subjective orders and rejects Hume's epistemological monism or the consideration of only a subjective order. We can now focus our discussion of the concept of substance.

Locke viewed substance from both a causal and a logical perspective. From a causal perspective, substance is the stuff out there in the external world causing what we perceive. From a logical perspective, substance is what possess certain attributes. Russell expresses this view by saying our sense data are taken as signs of something existing independently of our perceptions and of us. The appearances of color, hardness, noise, and the other qualities making up the appearances of a table are appearances of something that is responsible for these appearances. Substance or matter is unsensed. It is what is left when I shut my eyes and the color ceases to exist, when I remove my arm from touching the table, and so on with the other senses. There is a table there even when we cease to sense it (27). It is what you get when you strip off all the qualities of an object.

Kant undercuts the causal aspect of substance and retains the view that substance is the ultimate subject of predicates and the permanent substratum of change—a view held by Aristotle. The categorical form of judgment, when expressed in terms of time, makes for the permanent subject of changing predicates and the permanent substratum of change. Kant argues that there is a permanent substratum of change and that this substratum is the only way the concept of substance can have objective validity, that is, application to objects of experience.

Let us now look at Kant's argument for the existence of a permanent substratum of change. "Our apprehension of the manifold of appearance," he says, "always successive, and is therefore always changing." Such and apprehension can never distinguish the objective time-relations of succession and simultaneity because this distinction, as well as the time-relations themselves, must have as their "ground or condition something which always is, that is, something abiding and permanent" (B226, A183-B227, A184). All objective change and simultaneity are simply the many ways—or what H. J. Paton calls "modes of time"—in which this permanent substratum exists, because, as he explains, only in time can appearances be conceived as permanent, successive and simultaneous. Time itself cannot be any of these. Such modes of time affect only appearances in time (164, 5).

Kant argues from the conditions of experience (time-relations) to the formal conditions of experience (the schematized category of permanence of the real in time). Permanence is a way of expressing the nature of time since both permanence and time are the constant correlate of all existence of appearances ("existence can be thought only as a determination of substance"—B225) of all change and concomitance. Time and permanence are so related because change affects only appearances, and not time itself. Parts of time are simultaneous and coexistent, not time itself. Time itself is not successive either, for if it were, we would then be forced to think of another time in which the sequence took place.

Duration in time requires permanency because in bare succession existence is continually vanishing and coming to be, and it has not quantity or magnitude at all. Therefore, there is at least an affinity between time and permanency, that is, they are closely analogous. Since time itself cannot be perceived or intuited, the permanent must be present in appearances, and it must be the substratum of all time-terminations. The permanent in appearances must be the possibility of the synthetic unity of appearances in one objective time order.

Therefore "in all appearances the permanent is the object itself, that is, substance as phenomenon," the unchanging subject to which changing accidents are attributable as predicates. Everything that changes, or can change, belongs to the way in which this substance or substances exist, i.e., to its determinations, Q.E.D.

In unpacking this argument, we must mention (1) the permanent and its relation to time-determination, (2) the permanence of time, and (3) the sense in which substance is perceivable. Kant maintains that time-relations are possible only on the condition that there is permanency. We could never experience temporal relations without the permanent. Our experience of change requires the permanence in time as a necessary presupposition.

The Permanent and its Relation to Time Determination:-

At B229, 231-2 Kant argues that the persistence of identical substances is a necessary condition for the unity of time. The coming into being of some substances and the passing away of others would involve us in saying that appearances relate to two different times in which existence flowed, as it were, in parallel streams—which is palpable nonsense. There is only *one time* that is the condition of the empirical unity of time, that is, in which all the different moments must be placed as successive.

In other words, time and permanency are reciprocally dependent. Their mutual co-determination can be expressed with regard to any substance. In the case of seeing the house, time can be looked at as our moving along the house part by part, and substance can be taken as the house itself. But it would not be incorrect to say that time is the house itself and substance is our observation or moving along the parts of the house. Time and substance are mutually co-determinative with respect to each other; each one has objective validity only in terms of the other. According to Paton, this time that Kant is concerned with, as a condition of experience, "is the one time in which all objective time-determinations are. All objective time-determinations, whether of succession or simultaneity, must be found in an object, that is, must be constituted by referring appearances to an object in which they are related (198). Since time cannot be perceived itself, experience requires a permanent object and one principle of permanency for the entire objective and phenomenal world.

The Permanence of Time:-

Time is permanent in the sense of constituting a unity in which events occur. We can determine the position of events in relation to one another thus in one time. To do this we must be able to hold the successive parts of time together and before us in the unity of time. Therefore, time is permanent as a unifying condition of experience.

The Sense in Which Substance Is Perceivable :-

In the argument in the first analogy we were told that time itself cannot be perceived. But we can, in some sense, perceive the permanence of substance. Otherwise, Kant would be holding that both time and the permanence of substance cannot be perceived but must be presupposed as conditions of our experience of objective change. But this would be unfortunate, for in his argument he said that the reason permanence must be presupposed in appearances is that time cannot be perceived. Thus, if the permanent could not be perceived, Kant would be arguing from one unperceivable condition to another.

However, we can perceive the permanent since the permanent is what fills space. In our commonsensical and pre-scientific view of nature we think of that which is permanent as something which fills space and is solid. We notice the qualities of an object and take it that they are qualities of a solid something and occupy an area identical with surface of the solid.

We know the permanent that fills space by the cooperation of thought and intuition, just as we know everything else. In thought appearances are synthesized in time and space in accordance with the categories. We take these combined appearances as appearances of a permanent spatial object. From the aspect of intuition, we commonsensically believe that the most ostensible verification of permanence lies in our observations of impenetrability or resistance. Bodies are impenetrable with respect to one another and with respect to our own bodies. [See Kant, A266 : "We are acquainted with substance in space only through forces which are active in this and that space, either bringing other objects to it (attraction), or preventing them from penetrating into it (repulsion and impenetrability)."]

We can now pass to the relation of substance to space or outer sense. Kant's position is that permanent substances are to be found only in space. The permanent that is a condition of our experience is to be found only in objects of outer space. Inner sense yields no permanent object. It is a paralogism of reason to suppose that we can pass from knowledge of the empirical self as it is presented in inner sense and the unity of consciousness to a soul substance that is permanent. Kant is explicit about this: to demonstrate the objective validity of (the categories) we need...intuitions that are in all cases outer intuitions. . . . in order to obtain something permanent in intuition corresponding to the concept of substance, and to establish the objective reality of this concept, we require an

intuition of space (of matter). For space alone is determined as permanent, while time, and therefore everything that is in inner sense, is in constant flux. (B291, 292)

Space is permanent amid all the changes in time. Paton suggests that a more plausible proof of substance might have been given by bringing in space. He suggests that we must be able to hold time together as a unity in order to be aware of space as permanent through time, or to experience objects in space that must be the same at all times. This is a necessary condition of experience. The argument might have gone that "since we can perceive neither absolute space nor absolute time, there must be a permanent in the spatial objects of experience to 'represent' or 'express' the permanence of space in time" (200).

Caird suggests the deduction of the principle of substance could have been made in relation to the notion of changing objects determined in space. A change that would involve the decrease or increase of the substance moved would make consciousness of such motion impossible. Since we do not perceive space itself, we can only determine motion as something permanent which represents space, that is, is as unchangeable as space is (I, 544). We must conceptualize motion as changes of the position of parts of an unchangeable whole or as parts of a substance as a phenomenon in space.

Before we look at the theory of change involved in his theory of substance, let us examine Kant's view of the relation between substance and its accidents or qualities (attributes). For Locke, substance could not be discovered to be in any object. Calling an X a substance is not like mentioning one of its properties. Substance is something that is distinguishable from the properties that we perceive. This something, for Locke, we do not perceive. It is what is assumed when we talk of a thing being hard, green, and heavy. He talks as if it were an underlying substratum or support for the attributes we are acquainted with, some kind of stuff that is separable from the object and left over when we peel all the attributes away.

At A187, E230 Kant also distinguishes sharply between a substance and its accidents. Accidents are determinations of substance or the way in which it exists. We distinguish the existence of accidents as inherence from the existence of substance, which is entitled subsistence. But this is only a method (and an often misleading one, especially for Locke) of saying that the accidents are the ways in which substance exists. We may inevitably fall into the misconception of thinking of substance as existing apart from its accidents and the accidents as existing apart from the substance, but this is to turn a logical distinction into a real separation. The relation of substance to accidents is not one of the support of some stuff to a congeries of other objects. There is no such metaphysical pincushion. The category of substance and accident is a condition of relations, i.e., of succession and simultaneity, and does not itself contain a relation.

Therefore, substance exists for us and is known through its attributes and their relations, in the way a subject is known to us in its course through its various predications and their relations. Substance is nothing apart from its attributes and must be referred to the reciprocal relations of its attributes. Everything we say about substance depends on the states of affairs constituted by the accidents and their relations. The relation between substance and attributes says nothing that isn't already said simply by the attributes being the attributes of that substance. We might say that substance can be considered as a complex of relations that shows, or displays itself, through the attributes. The attributes are what can be said, what we can talk about, and the substance as such cannot be said; it is shown through the attributes. An analogy can be made here to the concept of noumena. Phenomena are noumena as they appear to us, and they are not something existing apart from noumena. Phenomena are the noumena as they exist in experience, that is, the way the noumena present themselves. The noumena are not said but are shown in what we say about the phenomena. Similarly, substance is not first cognized and the attributes attached on. We conceptualize attributes as attributes of a permanent substance in order to make our experience intelligible. The category of substance and accidents shows itself in our experience.

Thus, Kant is closer to Hume than to Locke on the relation between substance and attributes. For Hume, substance is the sum of its properties, but it must change whenever and however the properties change. Thus for Hume, substance loses its permanency. There would be no difference between saying 'the blue litmus paper turned red' and 'blue replaces red.' Kant insists that a collection of properties is not enough. The object that has the properties is determined transcendently as the form by which we cognize these properties, not as something else in the object. Substance cannot itself be an object of thought apart from attributes suitably related because it is the form of thought. This is Kant's thrust against, what is to him the most hair-raising conception of substance: the theory of the

rationalists that views substance as an object of transcendent metaphysics. Kant states the distinction between substance and object very nicely: “the concept of substance is itself used only as a function of synthesis, without any underlying intuition, and therefore without an object. It concerns only the condition of our knowledge; it did not apply to any assignable object” (A357). Thus substance, as a form of thought, is like form without content and can only yield an object of experience that persists through time when combined with intuition. This is an illuminating instance of Kant’s fundamental empiricism.

The view that substance is a condition of experience allows Kant to avoid any commitment as to the particular nature of a material as physical object or substance. He certainly accepted and allowed for the theories of science of his day, but we could say that his view leaves it open to the scientist to determine the nature of substance. What we know a priori is only that there is something that is permanent in time. But this is not to say what it is that is permanent. The question of what it is that is permanent is an empirical matter that has at least two distinguishable levels; (1) scientific theories of the nature of matter, and (2) particular classes or sorts of physical objects picked out by naming.

Scientific theories of the nature of matter could be relatively a priori in the sense of not being objectively valid prior to experience but have the status of laws such that nothing would be countenanced as a counter-instance to their truth or applicability. Today, the talk of mass and energy is perfectly compatible with the Kantian formal conditions of experience. The scientific theory of matter that the principles of the understanding apply to can be determined empirically, but we must presuppose something that is absolutely permanent if the unity of our experience is to be a real possibility. As Abraham Kaplan once told me, the relationship between mass and energy can be an empirical mark of the permanence of the real in time.

Kant did identify substance with the matter as known to the science of his time, however. This theory included the doctrine of the conservation of matter and probably motivated his addendum in his first formulation of the principle of substance that the quantum of substance in nature can neither be increased nor diminished. But it must be remembered that in the analogies of experience Kant is trying to account for change. For change to be possible, there must be something that is unchanging, and it is this whose quantum in nature that is conserved. Experience is not possible as a unified whole unless there is something permanent changing its relationships with other things. Kant argues for this by saying that there would be no unity of experience if we allowed for new substances coming into existence and ceasing to exist. At A188 he states that

if we assume that something absolutely begins to be, we must have a point of time in which it was not. But to what are we to attach this point, if not to that which already exists? For a preceding empty time is not an object of perception. But if we connect the coming to be with things that previously existed, and which persists in existence up to the moment of this coming to be, this latter must be simply a determination of what is permanent in that which precedes it.

Particular objects of experience come and go, but the constancy of change occurs against a background of the unchanging. Substances don’t pop in and out of existence but are the result of a prior state of something else that is also substantial. There must be multiple substances, because substance is essentially spatial, and the parts of space are outside of one another. Thus, substances can be made up of substances. Kant rejects the traditional rationalist view that substance is self-sufficient and the claim that substances exist independently of anything else.

Think of your desk. It is a substance that is composed of other substances, such as drawers, a slab of wood on top, legs, and sides. Each of these are substances insofar as they are separate subjects of discourse possessing attributes, thus changing predications and accidents. Each part of the desk fills space and is movable. The parts can exist in space independently of their combination with other adjacent parts of the physical desk. Paton tells us that Kant had said that the multiplicity of substances is distinguishable by the movability of matter, because any movable part of a substance is a substance (211). But this need not be taken as a necessary condition.

At the beginning of the twentieth century, G. F. Stout complained that Kant illegitimately assumes that the Independence “necessary to constitute any object must be of the kind characteristic of material things and processes” (10). Stout says that it is conceivable that someone would only experience sounds that he or she might compare in terms of their pitch, intensity, and timbre and arrange in a series according to their resemblances and differences.

But one may also enjoy their musical combination without attending to the sounds enduring, changing, and succeeding one another, apart from their presence to consciousness.

Kant would no doubt agree with Stout, but would argue that our experience of sounds must be of successive sounds and this can be objective only by being unified under the unity of apperception and the categories of the understanding. A combination or arrangement of pitches, intensities, and varying timbre may constitute an object of experience by being given, synthesized in the reproductive imagination according to a rule under the categories of relation and recognized or identified in the way we might identify the musical score of a symphony.

Stout inadvertently provides a good example of the more general point that the analogies of experience are applicable to the five senses taken individually, collectively, or in varying combinations. Successive perceptions of touch, taste, and smell are temporal and spatial. They can be cognized, unified, and synthesized according to rules. The principles of the understanding necessarily apply to them, e.g., I smell a freshly baked apple pie. This experience takes time and presupposes the permanence of the object having the odor. I may not know of any other attribute of this object yet I still think of something that is having this odor. The odor itself can be singled out, and I can think of an odor (sound or taste) as being a permanent object enduring or persisting through time while its states change. What is important is that the content of sensation must be something that is passively received in intuition, and organized by the forms of sensibility to attain determination and structure; and it must be capable of being conceptualized. Conceptualization involves judgments or functions of unity among our representations enabling us to discover unity in diversity through the copula.

'The apple pie has a fresh odor.'

'The odor is appetizing.'

'The odor is becoming more intense.'

These judgments have the common feature of being restricted to what is a possible object of intuition, something capable of being categorical forms of judgment, and of being synthesized by a rule of the productive imagination. The synthesis, in each case, involves the schematized category of the concept of the synthesis of the permanent and the changing in time, where the permanent is the unchanging subject (substance, for example, apple pie, the odor, the taste) to which the changing predicates (accidents) belong.

Thus, the schematized category is a rule for the synthesis of the manifold of appearances in one objective time—a rule for bringing diverse representations under one common representation. As we mentioned above, the nature of what is permanent can be left to the scientists. But substance qua category is a way of existing, that is, as having certain accidents. Kant's view may be compatible with scientific views that deny the existence of any material, enduring objects as substances. He defines or characterizes an object as "that in the concept of which the manifold of a given intuition is united" and united in the unity of consciousness and therefore in terms of the categories of relation (B137). A house, as outlined above, is an ordered set of representations, interrelated by causal connections that are necessary successions.

At A177 Kant states the principle of analogies: "All appearances are, as regards their existence, subject a priori to rules determining their relation to one another in time." It may well be, then, that a succession of events or representations tied together by causal laws is all the permanency that is necessary for the schematized category of substance. This is possible when we note (1) that the three analogies are specific aspects or manifestations of the general principle of the analogies which asserts that our perceptions are united by necessary connections, and (2) that Kant considered the first analogy as being presupposed by the second and third analogies. Caird points out that it is only by regarding phenomenon as changeable states or permanent substances that a phenomenon can be a term in a relation of succession or coexistence (546). We presuppose the permanent identity of substance in connecting phenomena with each other. (3) Such permanence is also plausible when looked at from the side of the time-relations. Duration is not really a relation in time in the same way that succession and simultaneity are. An objective duration is one that is related to other durations, and so presupposes permanence. As Paton puts it, succession and simultaneity can be described as "modes of the existence of the permanent or ways in which the permanent exists" (166). Permanence is a relation to time and not a relation in time, distinguishing it from the other time-relations. An objective duration as well as objective succession and coexistence are all alike in presupposing permanence as a condition for objective time-relations and, therefore, for their being objective determinations of objects of experience.

We now pass to brief discussion of the most important topic of the analysis, the concept of change in relation to substance. Change can be made intelligible by showing that it is subsumed under the unity of thought. The formal conditions that make change intelligible are the principles articulated in the three analogies, namely, that there must be a permanent that changes, that every change must have a cause, and that causal series and objects are reciprocally interrelated with all other series and objects in the unity of nature (where nature is the connection of appearances in accordance with laws). It is the principles of the categories of relation that make the unity of the laws of nature possible.

Consciousness of change is not possible unless it is a consciousness of the sequence of states of an enduring substance. Substance is the unchanging subject on which changing accidents are predicated and by which it exists. Substances are movable and can therefore change their spatial position. They also undergo *Veränderung* (alteration) and *Wechsel* (replacement, exchange, interchange). There is both a change in us (subjective succession) and change in the things we perceive (objective succession). It is permanence that assures us that the change is not due to ourselves; it must be happening to external objects.

Two untenable alternatives to this view are put forward by A. D. Lindsay. First, he says, if there were no changes in the objective order (reality), then the only change we would notice would be our own movements and the succession of our apprehension. All change would be our own mental history, and thus all succession would be subjective and all coexistence objective. Alternatively, he says, if we always saw changes we could not distinguish between changes in us and changes outside of us—our succession of ideas would be the ideas of succession, and the distinction between the objective (scientific) and subjective (psychological history) orders would collapse. But our experience of change, as a given fact, is not like either of these phantasmagorias. Our successive apprehension is an apprehension of both the co-existing and of succession (82-83).

At B233 Kant tells us that the principle of the first analogy could be expressed as "all change (succession) of appearances is merely alteration. When a substance is subjected to coming into being or passing away, it is replaced (exchanged) and not altered. Alteration presupposes the same subject as existing with two opposite determinations. The states of substance are what endure and alter. Alteration is the way in which the permanent exists (A187).

The alteration of a substance is itself an event (B291) and therefore has some cause, that is, some preceding state or states. Thus, the concept of cause applies to the intuition of alteration (B292). Motion is alteration in space when there is a change in velocity. When blue litmus paper turns red we have an alteration in color. Alteration consists of a combination of contradictory or opposite determinations of the permanent. Kant would, of course, grant that a change in colors is a change in contrary qualities, but they are contrary only in the sense that the litmus paper cannot be both blue and red at the same time. Kant explains that alteration, as the combination of contradictorily (mutually exclusive) opposed predicates in one object, can only occur in time: "is possible only through the representation of time" (B49). Only then can mutually exclusive predications meet in the same object, namely, "one after the other."

Russell has said that in physical science all natural phenomena are reduced to motions. Light and heat are due to wave motions and light is waves that are the physical cause of the sensations of light (27-29). Now, this seems to be compossible with Kant's theory of substance and change. The unseen motions of light-waves cause sensations of light in us and what we see of this (for example, when we see light-waves on a screen) is taken as alterations of light, which is itself permanent in the sense that it has a constant velocity. Alteration, then, is the way that the permanent in time exists and is determined.

Replacement occurs only in contrast to alteration and can be viewed from two perspectives: (1) The states or accidents of an object do not themselves alter but are replaced, coming and ceasing to be. From the perspective of what changes, this is an alteration, but from the aspect of the properties, it is an exchange, a substitution or replacement.

(2) From the other perspective whatever changes, including objects of experience, can be replaced. A slab of ice is replaced by water when it ceases to be a solid. Kant, however, is not denying that a thing can be annihilated. The water can be annihilated, at least apparently, by evaporation, but the permanent itself is not annihilated; only particular kinds of things are. The difference between alteration and replacement thus seems to involve a theory of identity.

At A264 - B320 Kant indicates that the numerical difference of objects is an empirical matter. Two drops of water, although they may have the same properties, are different insofar as they occupy different parts of space. When we combine them, we no longer have two drops, but we do have one. In regard to one thing becoming another, Kant says that it is a matter of degree. What we cannot do is ascribe distinguishing properties to the forms of experience, such as places, dates, and concepts. Properties are ascribed to the content or the matter of experience and it is here that we individuate kinds of objects to distinguish alteration and -replacement.

Whether we choose to call an object one that is altered, thus the same though different in some respects, or construe it as replaced by another, thus different, depends on the empirical criteria we accept for sameness. It is an empirical matter, and Kant can allow that what may be alteration for some purposes may be considered as replacement for other purposes. The same bed that George Washington slept in may require only the same frame and springs. But in the case of Elizabeth Taylor's bed, we may require that the same mattress be present for it to be thought of as her bed. What is important is that substance is not dependent on particular empirical properties or parts, but with material properties in general insofar as they are combined necessarily in the unity of thought and by the transcendental faculty of imagination working through the medium of time. There is no way to say in advance how we must identify a thing.

Kant's theory of change also succeeds in taking an intermediate course between Locke and Hume. For Locke, alterations were changes of external, nonsensible, noumenal entities and thus our subjective succession of apprehension could never be checked against the objective order. Locke is left lamenting the fact that we rarely ever know when we have the real essence or proper identification of the permanent that changes. Kant avoids bewailing our lack of knowledge of that which changes by making its identification an empirical question, something which Locke failed to accomplish. In the strict phenomenalist interpretation of Hume, a substance loses its sameness because alteration is not distinguished from replacement. If substance is the sum of the properties that occur together, it follows that whenever a property is replaced the object of experience is a new object.

We may conclude by citing a fine assessment by P. F. Strawson. While Kant may not have proved the scientific principles of the conservation of matter and energy, he does prove that our experience of the objective "demands the possibility of determining objective time-relations." This means, he says, that "we must have empirically applicable criteria of persistence and identity, under which we bring objects of non-persistent perceptions," which suggests that "we must have and apply concepts of substances" (132). We may find such a conclusion comforting in a world dominated by quantum uncertainty.

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