

Chapter 4: Substance

4.1 Introduction

Kant's main views on 'Substance' are found in *Critique of Pure Reason* (1781) and then in *Metaphysical Foundations of Natural Science* (1786). The principle of permanence of substance is one of the important principles of physics. It gives rise to the law of conservation of mass in physics. In this chapter, I shall examine Kant's views on substance and argue for the two points: (1) The permanence of a substance is postulated and (2) The empirical judgments are not possible without the permanence of substance. The question 'what is substance?' is related to both science and philosophy (metaphysics) but the way philosophy deals with the question is different from science. The impressive take on 'substance' in the history of philosophy is found from the period of René Descartes. That is why I begin my journey by briefly revisiting views of Kant's three rationalist predecessors (Descartes, Spinoza and Leibniz) on substance before arguing for the above two points.

4.2 The Three Rationalist Predecessors

Greek philosophy sought to find a 'unifying matter' or a 'world substance' from which every individual thing comes into being and again transforms into it. These matters as substances were identified with some specific matters like

water, air and fire. Many philosophers (Thales, Parmenides, Democritus and Pythagoras) of the past considered reality to be interchangeable with substance and used both concepts in the same sense. As a consequence, for a long time, the concept of substance remained hardly distinguishable from the concept of reality. It was Plato who regarded ideas as substances or permanent essence of things with which, however, they hold no living relation. For him, the soul is a spiritual substance, and it is eternal and real. Later, Aristotle thought of substance in relation to form and matter. All the tangible things of the world are formed of matter. For him, matter in itself is not a reality, but only a 'potentiality' or possibility and exists only with form. Aristotle used the expression 'form' in place of the ideas of Plato and considered the form to be the substance or essence. In this way, we find confusion in the use of the concept of substance in general with that of matter and this remained unchanged till the Post-Socratic period.

The three main rationalist predecessors of Kant are (1) René Descartes (1596-1650), (2) Benedict or Baruch Spinoza (1632-1677) and (3) Gottfried Wilhelm Leibniz (1646-1716). Their views on 'Substance' are as below:

4.2.1 Descartes' View

Historically, the concept of 'Substance' occupies an important place in the ontology and metaphysics of philosophy. Philosophers have been divided in their views about the numbers of substances that the world comprises of. According to the Monistic view, there is only one substance. Dualistic view considers the

world as being composed of two fundamental substances and the Pluralistic view considers the existence of more substances which often can be placed into an ontological hierarchy. Among the three views, Descartes is the propounder of dualistic view and this view is also known as ‘Cartesian Dualism’. According to Descartes, there are two kinds of substances—‘Infinite’ and ‘Finite’. The former is the only one perfect substance, i.e. God, who is the perfect substance.

The finite substance is of two kinds: a material substance (matter) and mental substance (mind). The former is defined by extension and the latter by thought. In other words, the essence of the matter is ‘extension’ and the essence of mind is ‘thought’ or ‘consciousness’. The two finite substances are ultimate and indefinable, and they are mutually exclusive. Descartes’ two-fold division of substance is known as the ‘Double–Dualism of Substance’. There is no problem with the relation between substance and its property. In Descartes’ case, material substance falls more naturally into the ‘stuff’ category rather than into the ‘thing’ category. The cogito shows that each person is a different individual mental substance.

4.2.2 Spinoza’s View

According to Spinoza, the substance is self-caused and the cause of everything. The substance is indefinable and infinite. There is only one substance and that is God. God is the only substance and matter and mind are attributes of God. There can be no substance without attributes. Attributes may be either essential or accidental. The accidental attributes are those variable characters which a

substance can lose without ceasing to be what it is. As the substance is self-contained and infinite, so it has an infinite number of attributes, each of which expresses the essence of the substance infinitely. There are two conditions under which an attribute can limit the substance, namely, (1) If an attribute excludes the possibility of other attributes and (2) If an attribute by itself is finite. However, God has infinite attributes which neither limit one another, nor the substance. They are co-existent properties, each of which equally manifests the essence of the substance. Thus, the infinite number of attributes, each infinite in itself leaves the substance indeterminate.

Further, each attribute taken by itself does not limit the substance but manifests its nature infinitely and boundlessly. One may wonder whether an infinite number of attributes can co-exist without mutual exclusion. According to him, out of an infinite number of attributes, only two can be perceived, namely, extension and thought. The extension attribute helps us to understand how the substance can be physically extended in space, and the thought attribute helps us to understand how the substance can be composed of thought. Here, thought and extension, as Descartes had made familiar, are entirely independent of each other. As such, these two attributes do not limit each other. Further, each of them is infinite. They are two forms of the same reality. Thus, there is a possibility of an infinite number of attributes co-existing together, which limit neither one another nor the substance.

4.2.3 Leibniz's View

Leibniz's substance is simple and without parts. Every substance has a perfect spontaneity which means that everything that happens to it is a consequence of its idea or its being and that nothing determines it except God alone. A substance is causally isolated, and it must be both real as well as an individual. Leibniz has named such substance 'Monad'. The freedom of such substance lies in action. According to Leibniz, the characteristics of Monads are: (a) Individuality, (b) Eternity, (c) Windowlessness, (d) Mobility, and (e) Uniqueness.

Monads are particular, independent, self-sufficient and ultimate substances. God is an absolute independent thing. Leibniz thought that phenomena in science cannot be explained without relation to bodies and motion. The explanation of the concept of motion postulates the existence of force. It makes things active. It is the essential characteristic of the universal substance. The concept of the monad is based on the principle of force⁷⁰. The concept of monad on the principle of force is also accepted by Kant⁷¹.

Descartes, Spinoza and Leibniz explicitly maintain the same tradition that substance is a bearer of modes or properties. Kant has gone further than his rationalist predecessors in many ways as per the thesis of his transcendental (critical) philosophy.

⁷⁰In the sense of contemporary theoretical science, the word 'force' is understood as synonymous with other words like 'energy' and 'gravity'.

⁷¹But in modern physics the acceleration of motion is not based on the principle of force.

4.3 Kant's View on Substance

Kant's view on substance shows that his main intention was not to do pure metaphysics but to establish a metaphysical foundation for the science of nature and to provide it with an epistemological structure. He never promulgated anything like 'Prime Substance', 'First Principle' and 'First Cause' in his principles of pure understanding as a part of natural science. Rather he constructed his principle of permanence of substance (First Analogy of Experience) in the CPR and the first principle of mechanics in the MFNS. The principles of substratum and causality are interrelated and make empirical knowledge possible. The principles are *a priori* propositions because they are constructed on fundamental concepts (and derived from pure intuition). These concepts are pure and without empirical admixture. They are synthetic *a priori* propositions because they are meant to be applied to reality. However, Kant refuses to give definitions for any of the categories in the CPR (A83/B109). Not only categories, but he has also refused to define substance. Despite this, some have considered Kant's following view on the substance found in different places of the CPR to be the definition of substance. However, as per Kant, the following refusals in explanation are not the definitions of substance but his views (notions) explaining the principle of substantial permanence and possibility of empirical knowledge:

1. We could not, for instance, apply to it the concept of substance, meaning which can exist as the subject but never as a mere predicate. (CPR, B149, p.164)

2. Substance, for instance, when the sensible determination of permanence is omitted, would mean simply something which can be thought as the only subject, never as a predicate of something else. (CPR, A147, p.187)

3. Something can exist as subject only, and not as a mere determination of other things, that is, how a thing can be substance. (CPR, A235/B288, p.252)

From the above, it becomes clear that 'substance' logically considered is something that can be used only as 'subject term' and never as the concept of the real object. The experience reveals only the accidents that inhere in a substance; this implies that substance is postulated because it is not perceived as its qualities are. Further, it means something non-empirical and its existence is postulated. Without this postulating, we never reach the inter-subjective world of individual objects. This is explicitly expressed in the principle of permanence of substance. According to Kant, substance without schemata (CPR, A147, p.186) acquires no meaning and does not produce any concept of the object. This implies that substance as a category cannot be defined. But when it is applied to any object of reality, it becomes a principle. Kant has already declared that the substance cannot be defined as 'substance is permanent' because it becomes an analytic proposition. For Kant, a principle must be a synthetic *a priori* proposition (or judgment). I think Kant had that difficulty in his mind and because of that, he suggests that the permanence of substance is not to be defined but used as a principle⁷². When it is used as a principle of permanence of substance, then

⁷²Kant tells us that there remains, therefore, no concept which allow of definition, except only those which contain an arbitrary synthetic that admits of *a priori* construction. Consequently,

permanency of substance is not experienced in reality but postulated. The postulation in physics is, however, quite different from the postulation that we have in mathematics. However, mathematics is related to physics⁷³ because all the empirical objects of the world are in space and time and all the phenomena of reality take place in space and time. And mathematics is also made possible due to the *a priori* nature of space and time.

4.4 The Principle of Permanence of Substance

Kant had a different view from his predecessors regarding the concept of substance. He tried to give more critical thoughts by freeing himself from traditional metaphysics and connecting it with systematic science. This was very obvious to him because he was trying to develop his philosophy into a systematic work within the philosophy of science. The principle of permanence of substance is found as the First Analogy of Experience⁷⁴ in the CPR and its mature form as the first law of mechanics in the MFNS. There are some differences in their uses of language (interpretations), but they are otherwise similar in principle. This can be observed in the following:

mathematics is the only science that has definition. (Kant, I., *Critique of Pure Reason*, N. K. Smith (Tr.), London, Macmillan & Co Ltd, 1963, p.587)

⁷³Kant thought that physics needs some mathematics because the two are ultimately founded on space and time.

⁷⁴The ‘Analogies of Experience’ is one of the principles of pure understanding and the ‘Principle of Permanence of Substance’ is the ‘First Analogy’ of the ‘Analogies of Experience’. The analogies explain how subjective sense-data transform into judgments about empirical objects when the categories of substance are applied.

1. In all change of appearances, substance is permanent; its quantum in nature is neither increased nor diminished. (CPR, A182, p.212)

2. 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. (CPR, B, p.212)

3. With regard to all changes of corporeal nature, the quantity of matter taken as a whole remains the same and is neither increased nor decreased. (MFNS, p.80)

Kant has formulated the principle of permanence in the two editions of CPR ('Edition—A' and 'Edition—B') by the use of different words in each proposition (statement). It often creates confusion to understand why Kant uses such different words for the same principle in the two places. Regarding this, Dennis Sweet expresses Kant's indecision in his 'Intuition and Substance: Two Aspects of Kant's Conception of an Empirical Object':

The A-version of the principle emphasizes the transcendently ideal nature of substance. Here substance is described in terms of a temporally schematized category, i.e., the representation of the activity of subsuming our pure intuition of time under a pure concept of the understanding. The B-version, on the other hand, with its talk about substance as a "quantum in nature," emphasizes a more materialistic and empirically real sense of substance—substance represented as something spatially extended and localizable, or as what we might call a "transcendental space-determination". (p.58)

Kant did not directly define substance or formulate the principle of permanence of substance as "substance is permanent". His point was not to prove that the substance is permanent. If it were so then that would be an analytic proposition

and against his objective of proving the possibility of synthetic *a priori* propositions in natural science. Kant suggests that from the determination of the substance and its permanence we cannot directly make the principle—“substance is permanent”, because, it would be a tautology. The subject ‘substance’ and the predicate ‘permanent’ have the same meaning. Thus, we should instead make it “In all appearances, there is something which is permanent”. This is a synthetic *a priori* proposition. The synthetic *a priori* proposition is that proposition which is necessary and universal and includes nothing but the synthesis of the possible intuition which is not given *a priori*. This also means that a proposition is *a priori* if it is pure, that is, independent of experience, but to be *a priori* plus synthetic it must be applicable to possible intuition of outer sense when applied. When this synthetic *a priori* proposition is applied and found valid of the object of experience, then this becomes a case of judgment and knowledge for us. It is not easy to decide which of these statements should be taken as expressing Kant’s real meaning (p.46).

4.5 Permanence of Substance as a Necessary Postulation

All our apprehensions of the manifold of appearances are successive and are therefore always changing. We successively apprehend this manifold. This manifold as an object may be successive as well as co-existent but through our apprehension alone we cannot know whether the apprehensions of the manifold of appearances are successive or co-existent. In order to determine this, we require something permanent and all changes and co-existence have to be thought of in relation to it. The permanent is required to make time-relation

possible. This means that permanence of substance is not seen and perceived but it is postulated (CPR, A185/B228, p.215). Without this postulation, we cannot have inter-personal or inter-subjective knowledge, because our experience presupposes the permanent as the underlying ground of all appearances. In the world, the substance remains but only its accident changes. Thus, Russell's concept of substance as a bundle of qualities, which is also known as 'quasi-permanent' and 'the bundle theory of substance', would be discarded by Kant and Einstein⁷⁵. We may quote Walter Smith from his 'The Category of Substance'⁷⁶:

The appearance of objects is made up of the sensations of the various external senses, and substance is the inner reality other than appearance. Substance is not merely a synthesis of sensations, as Kant maintained. Even in Kant's treatment of it, it becomes apparent that it is the essay of the mind at the interpretation of the reality behind sense-data. (p.255)

All changes of appearance occur in time, but time itself does not change. As a consequence, time becomes the substrate of all temporal appearances and all appearances are temporal. However, time cannot be perceived because time is

⁷⁵According to David Robb, the bundle theory reduces an object to its properties. Robb writes, "Enter the bundle theory: the world does not contain substrata in addition to properties. To be sure, there are what we may neutrally call substances or objects—chairs, trees, human beings, electrons, stars—but these objects are not, nor do they contain as constituents, substrata: they are merely bundles of properties. Not only must a being be some way or other, it is exhausted by ways of being." (Robb's notion of the bundle theory in his article 'Qualitative Unity and The Bundle Theory', *The Monist*, Vol.88, No.4, 2005, p.466)

⁷⁶Smith, W., 'The Category of Substance', *The Philosophical Review*, Vol.5, 1896, p.255.

neither intuition nor pure intuition but a form of intuition. Thus, we need to postulate something as the substratum equivalent to the time in general, which makes the succession and co-existence of appearance intelligible. This substratum, as permanent or not liable to change, is called 'substance'. Therefore, substance being unchangeable, its quantity in nature neither increases nor decreases.

Empirical judgments are impossible without the postulation of substance. For such judgments, we require substance-accident relation to our perception. This means empirical knowledge comes into existence when we organize perception using substance-accident relation. What is permanent is substance and what is transitory is a mode of its existence; which may be called its accident. A substance may pass through many modes, and new modes may arise in it, but the substance remains the same. The concept of alternation is also grounded upon this. Alternation of substance is only a change of state. This change determines 'something permanent' which is a substance.

Kant has given twelve categories corresponding to twelve kinds of judgments. Among these twelve categories, 'substance-accident' is one of the important categories. In fact, without the permanence of substance, we cannot have objective knowledge of this world (the reality).

4.6 Permanence of Substance as Necessary Condition for Empirical Knowledge

The cause of sensation and intuition depends on something permanent. Hence, the sensation is mental modification and intuition is regarded as presenting the substance. The substance is the thought of perception, which is outside us. Empirical knowledge is not possible without the postulation of the principle of permanence as a necessary condition for the objects of possible experience.

For empirical knowledge, we require the principle of permanence. There cannot be any empirical knowledge without an assumption of something permanent. The empirical judgment is possible only when we apply substance-accident relation to our judgment. Moreover, without this application, we cannot have judgment. What we actually see or perceive are qualities and quantities which are said to belong to an object. Take the example of a wooden table. A wooden table is an object because it exists in space and time and has both quality and quantity. The object 'table' is not given to our consciousness but only its qualities and quantities. Thus, the principle of permanence of substance makes empirical knowledge possible. If we violate this principle, then 'the unity of experience' will be impossible.

The question is not related only to the possibility of empirical knowledge but also to the theories of creation. If we do not accept the principle of permanence of substance and say that the universe is created from nothing (or spontaneity), then we face a difficulty in propounding the theory of creation. The material

status of the universe cannot be created from nothing. The only determination in every change of appearances is something which is permanent and this is allowed to be called a substance. Thus, this universe which is full of matter (including visible and invisible sub-atomic particles) cannot be created from nothing. Kant's principle of permanence of substance gives rise to a reorientation or new approach to many theories of the creation of the universe. It also cannot be applied to things-in-themselves (*Noumenon*) and sub-particle physics. The theory of sub-particles of physics excludes the category of causality. The things-in-themselves are not transcendental objects and therefore, categories cannot be applied to them. If the creation of the universe is accepted to be something imperceptible and impermanent, and then this will turn out to be a metaphysical solution. The First Analogy of Experience as the principle of permanence in the CPR (p.212) and in the First Law of Mechanics in the MFNS (p.80) is equivalent to the Law of Conservation. However, the application of the principle of permanence of substance has a wide range of application. The principle cannot be enclosed within the system which has been called the "classical concept of a closed system" because we cannot be sure whether there is such a system in nature or not.

The principle of permanence refers only to appearances within the field of experience. For Kant, only something can be produced from something but not something from nothing. The theory of something from nothing as propounded

by Lawrence Maxwell Krauss⁷⁷ in his *A Universe from Nothing* is theoretically possible but not empirically as it has already been mentioned that a theory cannot be empirically proved. Further, if new changes or substances could come into being, the unity of experience would be lost and there would be no proper experience at all. We always require a permanent something about which we can perceive succession and alternation. This ‘permanent something’ is substance. Thus, whatever is substantial is to be thought of as existing in all time. This ‘all-time’ includes both past and future. However, the term ‘permanent’ is not adequate to use for something that is existing in all time because the term is mainly applied to the future. Kant was well conscious of the limitation and difficulty of using the word ‘permanent’, but he could not find any other suitable and better substitute for it.

4.7 Conclusion

In this chapter, I have tried to show Kant’s three rationalist predecessors’ views on substance. By doing that I have shown how Kant frees himself from his predecessors and goes further by being more systematic. I argued that substance as a category cannot be defined but has to be postulated. The definitions of substance that appear in many places in the CPR are not definitions in a real sense. I have also shown the problem of Kant’s indecisions in the two editions of the CPR and a possible solution. The category of substance, when applied to any

⁷⁷Lawrence Maxwell Krauss (born May 27, 1959) is an American-Canadian physicist and cosmologist. His two bestselling books are (1) *The Physics of Star Trek* (1995) and (2) *A Universe from Nothing* (2012).

object of experience or reality, becomes a principle. The definition of substance as 'substance is permanent' makes it an analytic proposition. I have argued that without the permanence of substance as necessary postulation, empirical knowledge is not possible. The substratum of all that is real is substance. Something cannot be produced from nothing. All changes determine something permanent, which is a substance but not the alternation and transition themselves. The permanence of substance being non-empirical is only postulated. I have also argued that 'permanence of substance' is a necessary condition for our empirical knowledge. The succeeding chapter is closely connected to this chapter on the point that we cannot imagine the possibility of knowledge of objects in the absence of any one of the categories like substantiality and causality. The instinctive application of certain *a priori* concepts, principles and laws are the grounds of the determination of the objects (or events) of reality.