

Abstract

Kant's philosophy of physics is based not on observation and experiment, but only on arguments and inferences and is formal in character. It is concerned with the pure part of physics. In this thesis, I have focused on a conceptual and critical analysis of Kant's philosophy of physics. I have divided my thesis into eight chapters: (1) Introduction, (2) *A priori*, (3) Categories, (4) Substance, (5) Causality, (6) Space and Time, (7) Motion, and (8) Conclusion.

The thesis starts with an introduction to Kant's philosophy of physics, explaining the role of his 'Architectonic Plan', the nature of his philosophy of physics, and his distinctions between metaphysics and his philosophy of physics. Kant's transcendental philosophy is a new metaphysics. 'New Metaphysics' is a 'Universal Science' and 'Kant's philosophy of physics' is 'Universal Physics' because all *a priori* categories, principles and laws are universally valid.

Kant's 'Architectonic Plan' as a system of concepts is the blueprint of his transcendental philosophy. Kant's philosophy of physics rests on this 'Architectonic Plan'. As per this plan, 'Reason' is on the top and 'Experience' is at the bottom. All the *a priori* categories and principles are empty without this foundation. This cognitive structure is necessary to both philosophy and science. Kant's philosophy of physics is concerned mainly with the *a priori* aspects of empirical physics. His philosophy of physics is not a scientific theory. It is dependent on both reason and experience.

Kant's main ambition in his philosophy of physics was to find out the categories, principles and laws that are *a priori*. The *a priori* principles spontaneously involve space, time and categories. Kant's philosophy of physics is a body of *a priori* categories, principles and laws. The *a priori* aspects of empirical physics constitute the *a priori* foundation of physics. Empirical knowledge is obtained from empirical judgment, and this judgment is dependent on sensation, intuition and pure concepts. *A priori* concepts are necessary for both empirical and *a priori* knowledge. Even in our experience, there enters the mode of knowledge that originates *a priori*. *A priori* gives coherence to our sense-representations. Kant's principles of axioms of intuitions, principles of anticipations of perception, principles of analogies of experience and the three laws of motion are instances of *a priori* knowledge.

The twelve categories logically correspond to the twelve forms of judgment. Quantitatively the judgments are universal, particular and singular. These judgments regarded as representatives of things become categories of unity, plurality and totality. Qualitatively the forms of judgment are affirmative, negative and infinite. When they represent things, they transform into the categories of reality, negation and limitation. Relatively the judgments are categorical, hypothetical and disjunctive. When they transform into categories, we have the relation of substance-accident, cause-effect and agent-patient. In the same way, the model judgments have their counterparts: possibility, existence and necessity.

The categories like substance, causality, community, reciprocal and relation are applied to reality, and when found to be objectively valid of actual experience and possible experience become laws. The categories are formal when derived from pure understanding, but when applied to the objects of experience become synthesized. The synthesizing of a category is also a process of giving it objective validity. Categories have a subjective origin and have their source in human reason. They are not pure forms of intuition like space and time. Categories are not applicable to transcendental objects and things-in-themselves. They are only applicable to the objects of experience. Thomas Kuhn's concept of the change of function in the movement of categories from one paradigm to another in a 'Paradigm Shift' is not applicable in the Kantian case. Kant's categories are valid for the past, present and future, so long as human sensibility and understanding remain unchanged.

Kant's views on substance are quite distinct from his predecessors like René Descartes, Benedict Spinoza and Gottfried Wilhelm Leibniz. According to him, substance is postulated and cannot be defined. Kant's principles of permanence of substance are non-tautological. The principle of permanence is a necessary postulation, and without it, the inter-personal (inter-subjective) knowledge of human beings is not possible. It is also a necessary condition for our empirical and scientific knowledge. The application of 'substance-accident' to our judgment makes the empirical knowledge possible. The principle of permanence gives rise to a reorientation of many theories of the creation of the universe. If the creation of the universe out of nothing is allowed, then 'the unity of

experience' will be impossible. For Kant, the unity of synthesis or the uniformity of mind is vital in understanding physics.

Causality enables us to transcend our subjectivity on the occasion of the reception of sensation. The principle of permanence of substance, the principle of causality and the principle of community are possible only through the representation of the necessary connection in perception. The knowledge of the objects of the world is not possible without their objectivity. Appearance gives us only contingent knowledge; for knowledge to be "something true for everybody", it must be necessary. It is categories that make them necessary. The proofs of analogies in *Critique of Pure Reason* show that knowledge of object cannot be possible without the application of categories like substance, causality and community.

Kant's space and time are pure forms of intuition and necessary conditions for having experience. We human beings perceive objects spatio-temporally and think (or judge) them through categories. The known objects are not wholly independent of us because they are subjected to human forms (space and time). Space and time cannot be separated by tearing them apart. What is in space is also in time. Empirical intuition is made possible by space and time. We cannot get rid of them, even in our imagination. Space and time are "transcendentally ideal and empirically real". The Kantian space and time are not theory-bound concepts and do not exclude any kind of scientific theory of space and time in science.

Motion that we talk about in physics is in our outer intuition. This intuition is made possible by *a priori* space and time. Motion is responsible for the concept of succession. The succession and its determination are *a priori* due to the category of causality. Kant's three laws of motion differ from the Newtonian laws of motion only due to their differences in the derivation of 'Universality'. Kant's laws of motion in *Metaphysical Foundations to Natural Science* are founded on the principles of pure understanding in *Critique of Pure Reason*.

Kant's philosophy of physics is an epistemological inquiry into the source of *a priori* judgments of physics. It helps us to understand certain features of classical physics, the conceptual construction of modern science, the fundamental concepts and their sources, and the presupposition of principles and laws of physics.