Kant and the Applicability of Mathematics

Abstract

What is the relation between the abstract mathematical world and our physical universe? According to Kant, there are some pure concepts of understanding in our mind, through which we perceive the external world. Some of these concepts are "mathematical". So we are experiencing the world through the filter of "mathematical" concepts like quantity or quality. Kant invoked the notion of transcendental deduction for relating pure concepts to empirical world. Transcendental deduction is the manner by which apriori mathematical concepts can be applied to appearances. Pure concepts are independent of experience whereas appearance is empirical. Kant asserted that there is a third element called transcendental schema, which has homogeneity with category as well as appearance. The linkage between apriori concepts and empirical world is possible because of transcendental schema. But he did not show very clearly how schematism could make this linkage possible. In this paper, I wish to argue that all mathematical concepts can not be brought under Kant's mathematical category, all mathematical theory can not be independent of experience and the relationship between mathematical concepts and empirical world is not linear like the process of transcendental deduction. Still there is a natural relationship between human perception, mathematical knowledge and empirical world. Hence there is really not much of a mystery in the effective use of mathematics to describe physical phenomena.