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Einstein, Kant, and Their Debt to Hume

In his autobiography "My Own Life" (1777), David Hume bitterly remarked that his *Treatise of Human Nature* (1739) had fallen "dead-born from the press." For this reason, several years later he published *An Enquiry concerning Human Understanding* (1748), in which he presented, in a more concise form, the main epistemological ideas of the *Treatise*. As is well known, Hume's philosophical ideas did not initially receive the recognition they deserved during his lifetime. Later, however, they attracted the attention they merited, and Hume came to be regarded as one of the most influential figures in the history of philosophy. Moreover, he inspired two of the greatest minds in the history of philosophy and physics. In *Prolegomena to Any Future Metaphysics That Will Be Able to Present Itself as a Science* (1783), Immanuel Kant stated that Hume had awakened him from his dogmatic slumber, while Albert Einstein acknowledged Hume's direct influence on the development of his own ideas in his letters to Moritz Schlick (1915) and Michele Besso (1948). What immediately stands out in Einstein's writings is his explicit acknowledgment of Hume and his critique of Kant on certain points.

The aim of my paper is to trace Einstein's reception of Hume's and Kant's philosophical views by showing the role of Hume's theoretical ideas in the development of transcendental idealism, on the one hand, and the theory of relativity, on the other. To this end, I shall examine the following topics:

1. *Hume's relational theory of space and time and its reception by Einstein.* Hume develops a relational theory of space and time. On this view, the concept of time is formed through the relations of succession among objects, while the concept of space is formed through their arrangement in relation to one another. This implies that space and time are not absolute entities, as in Newton's conception, but are measurable in experience. Such a conception is significant for understanding the conceptual background of the special theory of relativity. Einstein develops the idea that space and time are measurable within every frame of reference. Space and time are therefore relative to the frame of reference, whereas four-dimensional spacetime has an invariant character.
2. *Hume's critique of causality and its reception by Kant.* Hume's critique of the concept of causality points the way for Kant's transcendental turn in the *Critique of Pure Reason*. In the *Transcendental Aesthetic*, Kant offers an interpretation of time and space that is radically different from both Hume's and Newton's, affirming space and time as a priori forms of intuition and sensibility. In the *Metaphysical Deduction*, Kant derives the whole system of the pure categories of the understanding in the *Transcendental Analytic*. Kant scholars have criticized the *Metaphysical Deduction* on various grounds. One of the main objections concerns its system of a fixed number of categories of the understanding. Einstein's critique may be seen as extending this line of criticism to the *Transcendental Aesthetic*. Whereas for Kant space and time are pure, a priori forms of intuition and sensibility, for Einstein they belong to the conceptual framework of scientific theory.
3. *Einstein's reception of Hume and Kant, his conception of scientific knowledge and the theories of relativity*. In this section, I shall continue examining Einstein's critique of Hume and Kant. While Einstein values Hume's relational theory of space and time, he rejects Hume's critique of causality. With regard to Kant, despite his critique of apriorism, Einstein adopts the spirit of Kant's Copernican turn and presents concepts and scientific theories as free inventions of the human mind.

A detailed analysis of the themes of space and time, spacetime, and scientific knowledge along the Hume–Kant–Einstein line can show how philosophical ideas themselves may contribute to the development of scientific theories.