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Kant's conception of space – a metaphysical contribution to physics

Abstract

In *Concerning the ultimate ground of the differentiation of directions in space* from 1768, Kant presents a novel conception of space as absolute against the backdrop of Leibniz' 'relational space' and Newton's 'absolute space'. Kant's novel conception of absolute space represents a break with Leibniz' and Newton' conceptions of space on two important points: Kant's absolute space has an independent *reality* vis-à-vis all matter (unlike Leibniz) and it is viewed from the transcendental *ideal* perspective that our mind imposes onto the world (unlike Newton). In *On the form and principles of the sensible and the intelligible world (Dissertation)* published two years later, Kant has worked out the critical distinction between the transcendental *ideal* forms of intuition (space and time) and the empirical *real* that serves as the matter of these forms.

Kant continues this line of thought on space and imports it in an almost unchanged version in the transcendental aesthetic section of the *Critique of Pure Reason* (1781/1787). In this paper, I will examine Kant's modalities *ideal* and *real* in order to justify that, despite the apparent differences, there is a continuous line in Kant's arguments of space from the *Gegenden* via the *Dissertation* and up to the *Critique*. Further, I will show that the following properties of space are defended throughout the period: i) space as a unity of which every extension must be regarded as part; ii) space as a *totum analyticum*, that is, a space whose parts presuppose in their possibility their composition within the whole. i) and ii) exhibit the *analytic holistic* character of space. Finally, I will argue that given the properties of space described above, space as such is neither reducible to a purely empirical or physical entity nor to what is empirically or physically measureable. This means that space as such does not in itself exemplify – or exhibit – a specific geometrical entity. Instead, it is what makes different geometries possible.

Topics: space, modality, holism