

Plan of the Investigation

It is well known that geometry presupposes both the concept of space and the first fundamental concepts for constructions in space as something given. It gives of them only nominal definitions, while the essential determinations appear in the form of axioms.

The relationship of these presuppositions thereby remains obscure; one sees neither whether, and to what extent, their connection is necessary, nor *a priori* whether it is possible.

This obscurity was, from Euclid down to Legendre — to name the most celebrated modern reviser of geometry — removed neither by the mathematicians nor by the philosophers who occupied themselves with it. The reason for this lay presumably in the fact that the general concept of multiply extended magnitudes, under which spatial magnitudes are contained, remained wholly unelaborated.

I have therefore first set myself the task of constructing the concept of a multiply extended magnitude out of general notions of magnitude.