

# Preface

*From Primate Cognition to Spacetime Physics*—What do the orientation of apes and the theory of relativity have to do with each other? This book discusses different forms of spatial thinking and their relation in a long-term history of knowledge. Starting from an analysis of the elementary structures of spatial knowledge found in animals and humans, it then investigates how human spatial knowledge is further shaped by various societal conditions. These conditions range from the universal human ability to share knowledge by means of language to the very specific development and ongoing differentiation of disciplinarily structured science. Other conditions relate to the emergence of systems of notation in the context of administrative challenges in the early civilizations, or to the systematic reflection on all sorts of knowledge in traditions of disputation. Scientific concepts of space such as Newton's absolute space or Einstein's curved spacetime are thus presented in their rootedness in pre-scientific knowledge structures. At the same time it is shown how these concepts are part of broader conceptual systems that are able to integrate expanding corpora of experiential knowledge.

This book should be viewed as a first attempt in the direction of a historical epistemology of space. Its main goal is to show that such a historical epistemology is possible at all: that the different forms of spatial knowledge are indeed related in their development, and that the study of this interrelated development may indeed provide insights into their epistemic status. The examples from different cultures and historical ages are chosen so as to substantiate systematic points. No attempt was made to give a balanced, let alone exhaustive, account of the world history of spatial thinking, since this is not the aim of the book. One can easily think of other examples from various cultures and times whose discussion under the perspective presented here would further contribute to the historical epistemology of space. Obvious examples are traditions of optics and perspective, and non-European traditions of theoretical reflection. It is therefore hoped that the book is taken as an inspiration to pursue further studies of this kind, which would not necessarily be restricted to spatial concepts. As will become clear from the arguments in this book, the epistemic separation of space from the context of other fundamental concepts

such as time, matter, and force is, at least in part, itself due to historical circumstances. Therefore, the immediate cognitive context of spatial thinking cannot be excluded if a full understanding of the long-term development of spatial knowledge is aimed for. Further contributions to a historical epistemology of space along similar lines will appear in: Matthias Schemmel (ed.), *Spatial Thinking and External Representation: Towards an Historical Epistemology of Space*. Edition Open Access, Berlin.

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