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## Preface

This volume is the first part of a large project which has its origin in conversations with Cecilia Jarlskog and Anders Barany in December 1999, in which the difficulties and confusions in understanding various issues related to the discovery of QCD were highly appreciated.

While the forthcoming part will be a comprehensive historical study of the evolution of various conceptions about the strong interactions from the late 1940s to the late 1970s, covering the meson theory, Pauli’s non-abelian gauge theory, S-matrix theory (from dispersion relation, Regge trajectories to bootstrap program), current algebra, dual resonance model and string theory for the strong interactions, QCD, lattice gauge theory, and also briefly the supersymmetry approach, the D-brane approach, and the string–gauge theory duality approach, titled *The Making of QCD*, this volume is a brief treatment, from a structural realist perspective, of the conceptual development from 1962 to 1972, covering the major advances in the current algebraic approach to QCD, and philosophical analysis of the historical movement.

The division of labor between the two parts of the project is as follows. This volume is more philosophically oriented and deals mainly with those conceptual developments within the scope of current algebra and QCD that are philosophically interesting from the perspective of structural realism; while the whole history and all the historical complexity in the making of QCD will be properly dealt with in the longer historical treatise. They will be mutually supportive but have minimal overlap and no repetition.

After the project was conceived, I have visited Santa Barbara, Princeton, Santa Fe, DESY in Hamburg, the Max Planck Institute of Munich, University of Bern, and CERN, and talked to theorists Stephen Adler, Luis Alvarez-Gaume, James Bjorken, Curtis Callan, Sidney Coleman, Richard Dalitz, Freeman Dyson, Harold Fritzsch, Murray Gell-Mann, Sheldon Glashow,