

# Preface

*The essence of mathematics lies in its freedom.*

(Georg Cantor)

*The moving power of mathematical invention is not reasoning but imagination.*

(Augustus De Morgan)

Approach theory was introduced in a series of papers which appeared between 1988 and 1995, and I refer to the bibliography for details. In 1997 a first book, Approach Theory: the Missing Link in the Topology-Uniformity-Metric Triad, appeared with Oxford University Press (Lowen 1997). With the maturing of the theory and the many further developments in applications since then, the time was ripe to write a more definitive account.

The work presented in this book could not have been completed without the enthusiastic collaboration of many colleagues and students.

A very special thought goes to my wife, Eva Colebunders for the exciting times we had when developing so many fundamental aspects together in our many joint papers on approach theory, metrically generated theories, and lax-algebraic theories.

Further, I have collaborated on approach theory, either in its own right or related to metrically generated theories, lax-algebraic theories, or approach frames, with many colleagues: Maria-Manuel Clementino, Guiseppe Di Maio, Eraldo Giuli, Horst Herrlich, Dirk Hofmann, Som Nainpally, Sevda Sagioglu, Gavin Seal, Walter Tholen, Jan Van Casteren, David Vaughan and especially Bernhard Banaschewski and Piet Wuyts.

Many of my Ph.D. students, over the years, have helped develop parts of the theory: Rony Baekeland, Ben Berckmoes, Marc Nauwelaerts, Kristin Robeys, Wannes Rosiers, Mark Sioen, Anneleen Van Geenhoven, Christophe Van Olmen, Francis Verbeeck, Stijn Verwulgen, and Bart Windels. Several Ph.D. students of Eva Colebunders too contributed to the development of parts of the theory: Veerle Claes, Sarah De Wachter, An Gerlo, Gert Sonck, and Eva Vandersmissen. Many of

their results are present in the text and references to their work in Ph.D. theses and in joint publications can be found in the bibliography.

Most of these students were supported by Research Foundation Flanders (FWO) doctoral and/or post-doctoral grants, and the FWO also funded the research project on Metrically Generated Theories in cooperation with Eva Colebunders which has had a fundamental impact on approach theory. Other students were supported by doctoral grants from the University of Antwerp. Both the FWO and the University of Antwerp also supported the series of conferences “Aspects of Contemporary Topology” where approach theory always played an important role. Thus the FWO and the University of Antwerp have indirectly also contributed to the coming into existence of the present work and I wish to express my thanks for those many years of considerable financial support.

Besides the colleagues mentioned above, I have been fortunate also to have had interesting exchanges on approach theory with, and enjoy the support and encouragement of many other colleagues, including the following, several of whom have also worked on approach theory individually: Gerald Beer, Lamar Bentley, Guillaume Brümmer, Peter Collins, Ákos Császár, Dikran Dikranjan, Szymon Dolecki, Paul Embrechts, Marcel Ern , David Holgate, Mirek Hu ek, George Janelidze, Max Kelly (†), Darrell Kent, Hans-Peter K nzi, Bill Lawvere, Sandro Levi, Geert Molenberghs, Fr d ric Mynard, Louis Nel, Gerhard Preuss (†), Ales Pultr, Dieter Pumpl n, Gary Richardson, and Jerry Vaughan.

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R. Lowen

## Reference

Lowen, R.: Approach spaces: The Missing Link in the Topology-Uniformity-Metric Triad Oxford Mathematical Monographs. Oxford University Press, Oxford (1997)

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Approach Theory at Work

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