

**In Memoriam:
Bernhard Banaschewski
(March 22, 1926 - October 31, 2022)**



Prof. Bernhard Banaschewski at UC's Palace of St. Mark

This volume is a revised edition of the original monograph published by the Department of Mathematics of the University of Coimbra in 1997. It is published in memory of the author, Professor Bernhard Banaschewski, McKay Professor (Emeritus) in Mathematics (McMaster University), in the centenary year of his birth.

The text originated in a course that Bernhard Banaschewski lectured in Coimbra in April 1997 and has since then become a foundational reference in the pointfree treatment of real numbers and real-valued functions, shaping both the development of the theory and the work of researchers and students in the area. Its clarity, motivation, depth, and enduring relevance reflect the author's distinctive mathematical vision. Quoting John Isbell, in his AMS Mathematical Review of the monograph,

"It is a careful exposition, not constructive but almost entirely conducted in ZF without choice. The last three sections, on realcompactness/strong realcompactness, on Stone-Weierstrass theorems, and (using countable choice) on σ -frames/Aleksandrov algebras, are more than careful: innovative exposition (with some technically new results)."

The present edition has been carefully revised and expanded. Alongside the original text, where misprints were corrected, it includes an essay on the author's mathematical career, style, and impact on mathematics, by Prof. Karl Heinrich Hofmann (Darmstadt), as well as an interview with the author, conducted by Prof. Christopher Gilmour (Cape Town) in December 2016. In the interview, the author reflects on his work, influences, and original interest in formulating topological notions in "purely lattice-theoretic" terms. The list of Banaschewski's publications is also included, showing his contributions to an impressive number of areas. Together, these additions aim not only to preserve a classic work, but also to honour the life and legacy of a mathematician whose ideas continue to inform and inspire the field.

We would like to express our gratitude to Professors Hofmann and Gilmour for their contributions.

Bernhard first visited Coimbra in 1996, and was a regular visitor ever since. We gratefully acknowledge the support of the Centre for Mathematics of the University of Coimbra, which made all of his visits possible. Having Bernhard visit our research group in Algebra, Logic and Topology was always a great occasion in Coimbra. His unrivalled, crystal-clear blackboard style was unique. He was a mentor, colleague and friend who had an enormous influence on all the areas in which he worked (point-free topology, general topology, lattice theory and ordered structures, mathematical foundations, and category theory).

We would also like to express our gratitude to:

- Patricia Murphy for her beautiful painting of Bernhard at work in his study;
- the editors of the CGASA journal for their permission to reprint the interview.

Finally, we would like to thank his heirs for granting us permission to reprint the original monograph.

Coimbra,
January 2026

*Manuela Sobral
Jorge Picado*