

Handbook of the History of General Topology

History of Topology

Volume 2

The titles published in this series are listed at the end of this volume.

Handbook of the History of General Topology Volume 2

Edited by

C. E. Aull

*Department of Mathematics,
Virginia Polytechnic Institute and State University,
Blacksburg, Virginia, U.S.A.*

and

R. Lowen

*Department of Mathematics and Computer Science,
University of Antwerp, RUCA,
Antwerp, Belgium*



SPRINGER-SCIENCE+BUSINESS MEDIA, B.V.

A C.I.P. Catalogue record for this book is available from the Library of Congress.

ISBN 978-90-481-5023-6 ISBN 978-94-017-1756-4 (eBook)
DOI 10.1007/978-94-017-1756-4

Printed on acid-free paper

All Rights Reserved
©1998 Springer Science+Business Media Dordrecht
Originally published by Kluwer Academic Publishers in 1998
No part of the material protected by this copyright notice may be reproduced or
utilized in any form or by any means, electronic or mechanical,
including photocopying, recording or by any information storage and
retrieval system, without written permission from the copyright owner

Contents

Introduction	vii
Wacław Sierpiński (1882–1969) – His Life and Work in Topology	399
<i>Ryszard Engelking</i>	
The Works of Stefan Mazurkiewicz in Topology	415
<i>R. Pol</i>	
Kazimierz Kuratowski (1896–1980) – His Life and Work in Topology ...	431
<i>Ryszard Engelking</i>	
R.H. Bing’s Human and Mathematical Vitality	453
<i>Michael Starbird</i>	
From Developments to Developable Spaces	467
<i>S.D. Shore</i>	
A History of Generalized Metrizable Spaces	541
<i>R.E. Hodel</i>	
The Historical Development of Uniform, Proximal, and Nearness Concepts in Topology	577
<i>H.L. Bentley, H. Herrlich, and M. Hušek</i>	
Hausdorff Compactifications: A Retrospective	631
<i>Richard E. Chandler and Gary D. Faulkner</i>	
Minimal Hausdorff Spaces – Then and Now	669
<i>Jack R. Porter and Robert M. Stephenson, Jr.</i>	
A History of Results on Orderability and Suborderability	689
<i>S. Purisch</i>	
History of Continuum Theory	703
<i>Janusz J. Charatonik</i>	
Why I Study the History of Mathematics	787
<i>Douglas E. Cameron</i>	
The Alexandroff–Sorgenfrey Line	791
<i>Douglas E. Cameron</i>	
The Flowering of General Topology in Japan – Correction	797
<i>J. Nagata</i>	
Index	799

Introduction

This account of the History of General Topology has grown out of the special session on this topic at the American Mathematical Society meeting in San Antonio, Texas, 1993. It was there that the idea grew to publish a book on the historical development of General Topology. Moreover it was felt that it was important to undertake this project while topologists who knew some of the early researchers were still active.

Since the first paper by Fréchet, “*Généralisation d’un théorème de Weierstrass*”, C.R.Acad. Sci. 139, 1904, 848–849, and Hausdorff’s classic book, “*Grundzüge der Mengenlehre*”, Leipzig, 1914, there have been numerous developments in a multitude of directions and there have been many interactions with a great number of other mathematical fields. We have tried to cover as many of these as possible. Most contributions concern either individual topologists, specific schools, specific periods, specific topics or a combination of these.

The first volume, which was published in 1997, contains the following articles:

Felix Hausdorff (1868–1942) (G. Preuß)

Frederic Riesz’ Contributions to the Foundations of General Topology (W.J. Thron)

The Contributions of L. Vietoris and H. Tietze to the Foundations of General Topology (H. Reitberger)

Some Aspects of the Work and Influence of R.L. Moore (B. Fitzpatrick Jr.)

The Works of Bronisław Knaster (1893–1980) in Continuum Theory
(J.J. Charatonik)

Witold Hurewicz – Life and Work (K. Borsuk, transl. by K. Kuperberg,
A. Kuperberg)

The Early Work of F.B. Jones (M.E. Rudin)

The Beginning of Topology in the United States and the Moore School (F.B. Jones)

Some Topologists of the 1940s (A.H. Stone)

Miroslav Katětov (1918–1995) (Petr Simon)

Origins of Dimension Theory (M. Katětov, P. Simon)

General Topology, in Particular Dimension Theory, in The Netherlands: the Decisive Influence of Brouwer’s Intuitionism (T. Koetsier, J. van Mill)

The Flowering of General Topology in Japan (J. Nagata)

Rings of Continuous Functions in the 1950s (M. Henriksen)

Categorical Topology – its Origins, as exemplified by the Unfolding of the Theory of Topological Reflections and Coreflections before 1971 (H. Herrlich, G.E. Strecker)

History of Sequential Convergence Spaces (R. Frič)

Interaction between General Topology and Functional Analysis (E. Kreyszig)

The present second volume contains articles covering the work of:

W. Sierpiński (R. Engelking)
K. Kuratowski (R. Engelking)
S. Mazurkiewicz (R. Pol)
R.H. Bing (M. Starbird)

Furthermore there are articles covering:

Uniform, Proximinal and Nearness Concepts in Topology (H.L. Bentley,
 H. Herrlich, M. Hušek)
Hausdorff Compactifications (R.E. Chandler, G. Faulkner)
Continua Theory (J.J. Charatonik)
Generalized Metrizable Spaces (R.E. Hodel)
Minimal Hausdorff Spaces and Maximally Connected Spaces (J.R. Porter,
 R.M. Stephenson Jr.)
Orderable Spaces (S. Purisch)
Developable Spaces (S.D. Shore)
The Alexandroff-Sorgenfrey Line (D.E. Cameron)

And finally there is a short paper concerning:

History of Mathematics (D.E. Cameron)

We decided to publish this work in volumes of 300–400 pages each, as papers became available. Waiting for all contributions to be completed before proceeding with the publication would indeed have involved an unacceptable delay for many authors. At the point of writing of this introduction, sufficient material for two more volumes has either been written or is in preparation. Nevertheless, at this moment, there are still some significant topologists, schools, periods and subareas of the field that we are seeking authors to write about.

In addition to the articles contained in the first two volumes, the following articles will appear in the next volumes.

A. Arhangel'skiĭ, *Some Observations on the History of General Topology*
 C.E. Aull, *Toward an Outline of the History of General Topology*
 P.J. Collins, *The Work of Hugh Dowker and its Legacy*
 W. Heath, *History of Metrization*
 R.E. Hodel, *History of Cardinal Functions*
 P.T. Johnstone, *History of Pointless Topology*
 B. Karl, *On the Early History of Topology*
 A. Lelek, *Dilemma in Topology (and in Science): Bizarre versus Common*
 E. Lowen, R. Lowen, *Supercategories of TOP and the Inevitable Emergence of Topological Constructs*
 S. Marsedic, J. Segal, *History of Shape Theory*
 J. Mioduszewski, *Polish Topology Between the Two World Wars*
 S. Nowak, S. Spiez, H. Toruńczyk, *Karol Borsuk – his life and contributions to topology and geometry*

P. Nyikos, *History of the Normal Moore Space Problem*
G. Reed, *History of Counterexamples*
H.-C. Reichel, P. Nyikos, *History of Generalized Metrics*
Ju M. Smirnov, *The Development of Topology in Moscow*
M.G. Tkačenko, *Topological Features of Topological Groups*
J.E. West, *History of Infinite Dimensional Topology*

Most of the authors for this work either were contacted personally by one of the editors or were recommended by experts in the field. The first drafts of papers were sent to readers and their suggestions were forwarded to the authors. We expect that there will be some disagreement among some authors, but we also consider this to be healthy. We hope that this work will encourage, not only further study in the history of the subject, but also further mathematical research in the field.

We would like to thank all colleagues who willingly contributed to what we hope will become a standard reference work on the History of General Topology. In view of the fact that most contributors would consider themselves primarily mathematicians rather than historians of mathematics, we are especially grateful for their efforts.

Finally, we would like to thank D. Vaughan for his extensive T_EXnical help in turning a varied set of manuscripts into a uniform entity, and Kluwer Academic Publishers for their professional support in the publication of this book.

C.E. Aull, R. Lowen
The editors