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## CURRICULUM VITAE

Peter J. Nyikos

Current Address:

Department of Mathematics  
University of South Carolina  
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Birthdate: March 8, 1946  
Birthplace: Salzburg, Austria  
Citizenship: USA  
Married, with four children

### Education

University of Chicago	Mathematics	1973–74	Postdoctoral
Carnegie-Mellon University	Mathematics	1968–71	Ph.D.
Carnegie-Mellon University	Mathematics	1967–68	M.S.
Washington and Jefferson College	Mathematics	1963–67	B.A.

### Employment History

1987–present	University of South Carolina	Professor
Fall 2001	University of Michigan, Ann Arbor	Visiting Professor
1979–1987	University of South Carolina	Associate Professor
1977–79	Institute for Medicine & Mathematics, Ohio University	Fellow
1976–79	Auburn University	Visiting Assist. Professor
9/78–12/78	Ohio University	Visiting Assist. Professor
1974–76	University of Illinois	Visiting Lecturer
1972–73	Biomedical Laboratory, Edgewood Arsenal, Md.	1st Lt./Mathematician
1971–72	MISD, Edgewood Arsenal, Md.	1st Lt./ADPS Officer
6/71–8/71	SUNY at Binghamton	Lecturer

### Honors and Awards

Faculty Advisor of the Year, 2006.

*This is a university-wide award, given each year to one faculty advisor, of a campus student organization.*

Visiting Professor, Alfred Rényi Institute of the Hungarian Academy of Sciences, July 15 - August 15, 2003.

Sabbatical leave at University of Michigan, Ann Arbor, MI, Fall 2001

Sabbatical leave at University of Colorado, Boulder, CO, Fall 1993

Russell Research Award in Science and Engineering, 1990

*[The University of South Carolina gives two Russell Awards in each academic year for excellence in research, one in the Humanities and one in Science and Engineering.]*

### Honors and Awards (continued)

SERC Research Fellowship at University of Oxford, England, 1986  
Sabbatical Leave at Dartmouth College, Fall 1985  
Outstanding Young Man, 1980  
Army Commendation Medal, 1973  
NSF Postdoctoral Fellowship, 1971 (for 1973-1974)  
Society of the Sigma Xi, 1971  
NDEA Title IV Fellowship, 1967–1970  
Summa Cum Laude, 1967  
Phi Beta Kappa, 1967  
Outstanding Student - Pittsburgh Diocese, 1963  
*[The Diocese of Pittsburgh gives two Outstanding Student awards each year, one to a boy high school student and one to a girl high school student.]*  
National Merit Scholarship for 1963-1967

### Grants Funded:

NSF Grant DMS-9322613, June 1994 – May 1998    \$84,002.  
NSF Grant DMS-9209711, Aug 1992 – May 1995    \$48,300  
NSF Grant DMS-8901931, June 1989 - Nov 1991    \$43,200  
NSF Grant DMS-8703008, July 1987 - Dec 1989    \$36,300  
SERC Grant, January 1986 - June 1986    8000 pounds = approx \$12,000  
NSF Grant DMS-8503391, June 1985 - Dec 1987    \$30,632  
NSF Grant MCS-8301916, June 1983 - Nov 1985    \$26,209  
USC Research and Productive Scholarship grant, Summer 1980  
NSF Grant MCS-8003004, June 1980 – November 1982  
NSF Grant MCS-7813270, joint with Phillip Zenor of Auburn University, March 1979 – August 1980

### Professional Activities

Chief organizer, Special Session in Set-theoretic topology, Sectional Meeting, American Mathematical Society, Huntsville, Alabama, October 24-26, 2008.

Co-organizer, Special Session in Set-theoretic topology, Special Session in General/Set-theoretic topology, 42nd Spring Topology and Dynamical Systems Conference, Milwaukee, March 13-15, 2008

Co-organizer, Special Session in Set-theoretic topology, Summer Conference on Topology and its Applications, July, 2007 in Castellón, Spain

Chief organizer, Special Session in Topology and Set Theory, Summer Conference on Topology and its Applications, July 6-9, 2006 Statesboro, GA.

Editorial Board, Topology and its Applications, 1983–present

Judge, Regional Science Fair, Columbia, SC    March 2000, 2001, 2009.

Ciphering Judge, High School Mathematics Contest (sponsored by the University of South Carolina for high school students throughout the state)    December 1996, 1997, 1998, and January 2000, 2001, 2002, 2007.

### Professional Activities (continued)

Organizer, Special Session in Set-Theoretic Topology, AMS Regional meeting, Chattanooga, TN, October 1996

Editor, Problem Section, Topology Proceedings, 1976–1996

Co-organizer, Spring Topology Conference, Columbia, SC, March 1993

Reviewer, Mathematical Reviews, 1975–1993

Organizer, Regional Topology Conference, Columbia, SC, November 1991

Chief Organizer, Regional Topology Conference, Columbia, South Carolina, October 1984

Organizer, Special Session in General Topology, AMS Summer Meeting, Kalamazoo, August, 1975

Member, Mathematical Association of America, 2009

Member, American Mathematical Society, 1973–1983

### Dissertations and theses directed:

Mabruk A. Sola, M.S. thesis, “The Stone-Čech compactification of the integers,” June 1982

Stephen M. Eure, M.S. thesis, “The role of trees in topology,” June 1985

Mabruk A. Sola, Ph.D. dissertation, “Roy’s space  $\Delta$  and its N-compactification,” June 1987

Jamel Kammoun, M.S. thesis, “Normality in products,” June 1988

Timothy A. Swartz, M.S. thesis, “Internal forcing axioms and the continuum,” December 1989

Guanshen Ren, Ph.D. dissertation, “On Non-Archimedean normed spaces,” July 1990

Jamel Kammoun, Ph.D. dissertation, “Products with a k-metrizable factor,” July 1991

Leszek Piatkiewicz, Ph.D. dissertation, “Paracompact spaces in box product topology and the equivalence of some consequences of the proper forcing axiom,” Aug. 1994

Peter von Rosenberg, Ph.D. dissertation, “Countable and finite migrant open covers,” Aug. 1994

Rishipana Rehana Patel, M.S. thesis, “Continuous functions in the topology of pointwise convergence and classification of spaces,” May 1995

László Zsilinszky, M.S. Thesis, “Polishness of the Wijsman hyperspace topology,” Dec. 1996

Chunliang Pan, Ph.D. Dissertation, “Insetion properties of monotonically defined topological spaces,” June 1997

László Zsilinszky, Ph.D. dissertation, “Topological Games and Hyperspace Topologies” May 1998

Edward E. Johnson, M.S. Thesis, “Classification and Completeness of Quasi-Metrizable Spaces,” July 1998

## Dissertations and theses directed (continued)

Ellison-Anne Williams, M.S. Thesis, “A Forty-one year old problem: Does  $M_3 \implies M_1?$ ,” May 2001

Akira Iwasa, Ph.D. Dissertation, “Metrizability of trees,” July 2001

Kathryn Lynn Basha, M.S. Thesis, “A reflexive Banach space with few operators via greedy minimal walks on countable ordinals,” May 2009.

Heather Cheatum, Ph.D. Dissertation, “D-spaces and L-special trees,” August 2011.

Jeffrey Hankins, Ph.D. Dissertation, “The uniform box product of some spaces with one non-isolated point,” May 2012.

## Refereed Publications

### In Print:

1. “Not every 0-dimensional realcompact space is N-compact”, Bulletin AMS 77 (1971) 392-396.

2. (with J.J. Schäffer) “Flat spaces of continuous functions”, Studia Math. 42 (1972), 221–229.

3. “Strongly zero-dimensional spaces”, pp. 341–344 in: General Topology and its Relations to Modern Analysis and Algebra III Academia, Prague, 1972.

4. “Prabir Roy’s space  $\Delta$  is not N-compact”, Gen. Top. Appl. 3 (1973) 197-210.

5. “The Sorgenfrey plane in dimension theory”, Fund. Math 79 (1973) 131- 139.

6. “The p-adic topologies and their generalizations”, pp. 517-525 in: Topics in Topology, Colloquia Mathematica Societatis János Bolyai V. 8 (1972) Keszthely (Hungary). Published in 1974.

7. “The p-adic topology on abelian groups”, pp. 354-367 in: TOPO 72 General Topology and its Applications, Lecture Notes in Mathematics No. 378, Springer-Verlag, 1974.

8. (H. Champion, W. Sacco, W. Long, H. Smith, P. Nyikos, R. A. Cowley, W. Gill) “Indications for early haemodialysis in multiple trauma”, The Lancet 7867 (June 8, 1974) 1125–7.

9. (with H. C. Reichel) “Uniforme Raume mit geodneter Basis I”, Monatshefte Math 79 (1975) 123-130.

10. (with H.C. Reichel) “On the structure of zero-dimensional spaces”, Indag. Math 37 (1975) 120-136.

11. (with H. C. Reichel) “Topologically orderable groups”, Gen. Top. Appl. 5 (1975) 195-204.

12. “Some surprising base properties in topology”, pp. 427-450 in: Studies in Topology, Stavrakas and Allen ed., Academic Press, New York, 1975

13. (with H. C. Reichel) “On uniform spaces with linearly ordered bases II”, Fund. Math. 93 (1976) 1-10.

### Refereed Publications (continued)

14. “A survey of zero-dimensional spaces”, pp. 87-114 in: Topology: Proceedings of the Memphis State University Conference, Franklin and Thomas ed., Vol. 24 of Lecture Notes in Pure and Applied Mathematics, Marcel Dekker, New York, 1976.
15. “Epireflective categories of Hausdorff spaces”, pp. 452-479 in: Categorical Topology, Lecture Notes in Mathematics No. 540, Springer-Verlag, 1976.
16. (with W. F. Lindgren) “Spaces with bases satisfying certain order and intersection properties”, Pac. J. Math. 66 (1976) 455-476.
17. “Countable small rank and cardinal invariants”, pp. 344-347 in: General Topology and its Relations to Modern Analysis and Algebra IV, Part B. Society of Czech. Math. and Phys., Prague, 1977.
18. “Inverse preservation of small inductive dimension”, Topology Proceedings 1 (1976) 63–66. Published in 1978.
19. (with G. Gruenhagen) “Spaces with bases of countable rank”, Gen. Top. Appl. 8 (1978) 233–257.
20. (with W. Gill, H.R. Champion, Weinstein, W. Sacco, W. Long, G. Linhardt, R. A. Cowley) “Serum hyperosmolality in the injured patient”, Md. State Medical J. 27 (3) (March 1978), 60–63.
21. “On the product of metacompact spaces I: Connections with hereditary compactness”, Amer. J. Math. 100 (1978), 829-835.
22. (with S. W. Davis and G. Gruenhagen) “ $G_\delta$ -sets in symmetrizable and related spaces”, Gen. Top. Appl. 9 (1978) 253-263.
23. “A compact nonmetrizable space  $P$  such that  $P^2$  is completely normal”, Topology Proceedings 2, No. 1 (1977) 359-363. Published in 1979.
24. “Covering properties on  $\sigma$ -scattered spaces”, Topology Proceedings 2, No. 2 (1977). Published in 1979.
25. “A survey of two problems”, Topology Proceedings 3, No. 2 (1978), 461-471. Published in 1980.
26. “The normal Moore space problem”, Topology Proceedings 3, No. 2 (1978), 473-493. Published in 1980.
27. “A provisional solution to the normal Moore space problem”, AMS Proceedings 78 (1980), 429–435.
28. “Some normal Moore spaces”, in Coll. Math. Soc. Janos Bolyai, Vol. 23, (1978) pp. 883-903. Published in 1980.
29. (with H. C. Reichel) “Some results on cardinal functions in metrization theory”, in Glasnik Math. 15 (35) (1980) 183-202.
30. (with M. Ismail) “On spaces in which countably compact subsets are closed, and hereditary properties”, Top. Appl. 11 (1980) 281-292.
31. “Tunnels, tight gaps, and countably compact extensions of  $\omega$ ”, Topology Proceedings 5 (1980) 203-229.
32. “The topological structure of the tangent and cotangent bundles on the long line”, Topology proceedings 4, No. 1 (1979) 271-276. Published in 1981.

### Refereed Publications (continued)

33. “Metrizability and the Fréchet-Urysohn property in topological groups”, AMS Proceedings 83 (1982) 793-801.
34. (with M. Ismail) “Countable small rank and cardinal invariants II”, Top. Appl. 14 (1982) 283-304.
35. “Set-theoretic topology of manifolds”, in: General Topology and its Relations to Modern Analysis and Algebra V., J. Novak, ed., Heldermann-Verlag, Berlin (1983) 513–526.
36. (with J. Vaughan) “On first countable, countably compact spaces I:  $(\omega_1, \omega_1^*)$ -gaps” AMS Transactions 279 (1983) 463–469.
37. “A topological test space for many set-theoretic axioms” Uspehii Mat. (Russian) and Russian Math Surveys (in English) 38:6 (1983) 99-106.
38. (with J. Vaughan) “Sequentially compact, Franklin-Rajagopalan spaces” AMS Proceedings 101 (1987) 149-155.
39. “The Complete Tunnel Axiom” Top. Appl. 29 (1988) 1-18.
40. (with Z. Balogh, A. Dow, and D. H. Fremlin) “Countable tightness and proper forcing,” AMS Bulletin (New Series) 19 (1988) 295-298.
41. “Progress on countably compact spaces” in: General Topology and its Relations to Modern Analysis and Algebra VI, Proc. Sixth Prague Topological Symposium 1986, Z. Frolík ed., Berlin, Heldermann Verlag, 1988, pp. 379–410.
42. “Discrete  $G_\delta$ -sets in Morita P-spaces” Q & A in General Topology 6 (1988) 163–170.
43. (with H. Kierstead) “Racing pawn games” Congressus Numeratum 67 (1988) 257–264.
44. (with H. Kierstead) “Hypergraphs with finitely many isomorphism subtypes,” AMS Transactions 312 (1989) 699–718.
45. “The Cantor tree and the Fréchet-Urysohn property,” in: Papers on general topology and related category theory and algebra, Ralph Kopperman et al. ed., Annals of the New York Academy of Sciences 552 (1989) pp. 109–123.
46. (with S. Purisch) “Monotone normality and paracompactness in scattered spaces,” in: Papers on general topology and related category theory and algebra, Ralph Kopperman et al. ed., Annals of the New York Academy of Sciences 552 (1989) pp. 124–137.
47. (with D. H. Fremlin) “Saturating ultrafilters on  $\mathbb{N}$ ,” J. Symbolic Logic 54 (1989) 708–718.
48. “Classes of compact sequential spaces,” in: Set Theory and its Applications, J. Steprans and S. Watson, ed., Lecture notes in Mathematics #1401, Springer-Verlag, 1989, pp. 135–159.
49. (with I. Juhász) “Omitting cardinals in tame spaces,” Coll. Math. 57 (1989) 193–202.
50. “Sequential properties of  $2^{\omega_1}$  under various axioms,” Baku International Topology Conference Proceedings, Akademia Nauk CCCP, 1989, pp. 314–322.

### Refereed Publications (continued)

51. “On first countable, countably compact spaces II: Remainders in a van Douwen construction and P-ideals,” *Top. Appl.* 35 (1990) 185–196.
52. (with J. Kulesza and R. Levy) “Extending discrete-valued functions,” *AMS Transactions* 324 (1991) 293–302.
53. (with Z. Balogh and J. Mashburn) “Countable covers of spaces by migrant sets,” *Topology Proceedings* 14 (1989) 7–23.
54. (with S. Morris) “Sudden cardiac arrest and a problem in topology,” *J. Austral. Math. Soc. Ser. B. - Applied Mathematics* 33 (1991) 123–132.
55. “Various smoothings of the long line and their tangent bundles,” *Advances in Math.* 93 (1992) 129–213.
56. “Hereditary normality versus countable tightness in countably compact spaces,” *Top. Appl.* 44 (1992) 271–292.
57. (with H. C. Reichel) “Topological characterization of  $\omega_\mu$ -metrizable spaces,” *Top. Appl.* 44 (1992) 293–308.
58. (with J. Vaughan) “The Scarborough-Stone problem for Hausdorff spaces,” *Top. Appl.* 44 (1992) 309–316.
59. “Subsets of  ${}^\omega\omega$  and the Fréchet-Urysohn and  $\alpha_i$ -properties,” *Top. Appl.* 48 (1992) 91–116.
60. (with A. Dow) “Representing free algebras,” *Fund. Math.* 141 (1992), 21–30.
61. “Countably metacompact locally countable spaces in the constructible universe,” *Coll. Math. Soc. János Bolyai* 55: *Topology, Pécs (Hungary)*, 1989. Published in 1993.
62. (with N. Frank, F. D. Tall, R. Kopperman, and M. E. Rudin) “Reminisces of Boris Shapirovskii,” *Ann. N. Y. Acad. Sci.* 704 (1993) *xiii–xxi*.
63. “Mary Ellen Rudin’s contributions to the theory of nonmetrizable manifolds,” *Ann. N. Y. Acad. Sci.* 705 (1993) 92–113.
64. (with G. Gruenhagen) “Normality in  $X^2$  for compact  $X$ ,” *AMS Transactions* 340 (1993), 563–586.
65. (with B. Shapirovskii, Z. Szentmiklóssy, L. Soukup, B. Veličković,) “Complete normality and countable compactness,” *Topology Proceedings* 17, 1992, 395–403. Published in 1994.
66. (with Jamel A. Kammoun) “Normality in products with a non-Archimedean factor,” *Top. Appl.* 56, (1994) 175–184.
67. (with L. Soukup and B. Veličković), “Hereditary normality of  $\gamma\mathbb{N}$ -spaces,” *Top. Appl.* 65 (1995) 9–20.
68. (with L. Piatkiewicz) “On the equivalence of certain consequences of the proper forcing axiom,” *J. Symbolic Logic*, 60 (1995) 431–443.
69. (with L. Piatkiewicz) “Paracompact Spaces in the Box Product Topology,” *AMS Proceedings* 124 (1996) 303–314.

## Refereed Publications (continued)

70. “Various topologies on trees,” pp. 167–198 in: Proceedings of the Tennessee Topology Conference, P.R. Misra and M. Rajagopalan, eds., World Scientific Publishing Co., 1997.
71. “On some non-Archimedean spaces of Alexandroff and Urysohn,” *Top. Appl.* 91 (1999) 1–23.
72. (with J. D. Monk) “On cellularity in homomorphic images of Boolean algebras,” *Topology Proceedings* 22 (1997) 341–362. Published in 1999.
73. “Metrizability, monotone normality, and other strong properties in trees,” *Top. Appl.* 98 (1999) 269–290.
74. “Hereditary normality versus countable tightness in countably compact spaces,” *Topology and its Applications* 44 (1992) 271–292.
75. (with E. Lane and C. Pan) “Continuous function characterization of stratifiable spaces,” *Acta Math. Hungar.* 92 (3) (2001) 219–231.
76. “Complete normality and metrization theory of manifolds,” *Top. Appl.* 123 (1) (2002) 181–192.
77. “Applications of some strong set-theoretic axioms to locally compact  $T_5$  and hereditarily scwH spaces,” *Fund. Math.* 176 (1) (2003) 25–45.
78. (with Laszló Zsilinszky) “Strong  $\alpha$ -favorability of the (generalized) compact-open topology,” *Atti del Seminario Matematico e Fisico Dell’Universita di Modena* 51 (1) (2003) 1–8
79. (with Todd Eisworth and Saharon Shelah) “Gently killing S-spaces,” *Israel J. Math.* 136 (2003), 189–220.
80. “Correction to ‘Complete normality and metrization theory of manifolds’,” *Topology and its Applications* 138 (2004) 325–327.
81. “Hilbert’s first and second problems and the foundations of mathematics,” *Topology Atlas*, 2004. Published electronically at <http://at.yorku.ca/t/a/i/c/52.htm>
82. “Crowding of functions, para-saturation of ideals, and topological applications,” *Topology Proceedings* 28 (1) (2004) 241–266.
83. (with Todd Eisworth) “First countable, countably compact spaces and the continuum hypothesis,” *Transactions AMS* 357 (2005), 4269–4299.
84. (with Sina Greenwood) “ $\omega_1$ -compactness in Type I manifolds,” *Topology and its Applications* 48 (2005), no. 1-3, 165–171.
85. (with I. Juhász and Z. Szentmiklóssy) “Cardinal restrictions on some homogeneous compacta,” *Proceedings of the AMS* 133 (2005), no. 9, 2741–2750.
86. (with Akira Iwasa) “A non-metrizable collectionwise Hausdorff tree with no uncountable chains and no Aronszajn subtrees,” *Comment. Math. Universitatis Carolinae* 47 (3) (2006) 515–523.



### Refereed Publications (continued)

87. “Non-stratifiability of  $C_k(X)$  for a class of separable metrizable  $X$ ,” *Topology and its Applications* 154 (7) (2007) 1489–1492.
88. “Sequential extensions of countably compact spaces,” *Topology Proceedings* 31 (2007) no. 2, 651–665.
89. (With John E. Porter) “Hereditarily strongly cwH and other separation properties,” *Topology and its Applications* 156 (2008), no. 2, 151–164.
90. (with Todd Eisworth) “Antidiamond principles and topological applications,” *AMS Transactions* 361 (2009), no. 11, 5695–5719.
91. “Workshop lecture on products of Fréchet spaces,” *Topology Appl.* 157 (2010), no. 8, 1485–1490.
92. (with Angelo Bella) “Sequential compactness vs. countable compactness: the effect of cardinal invariants,” *Colloquium Mathematicum* 120 (2010), no. 2, 165 – 189.
93. (with with Lewis D. Ludwig and John E. Porter) “Dowker spaces revisited,” *Tsukuba J. Math* 34 (2010) No. 1, 1 – 11.
94. “D-spaces, trees, and an answer to a problem of Buzyakova,” *Topology Proceedings* 38 (2011) 361 – 373.
95. “A countable product theorem for anti-ponderous spaces,” *Topology Proceedings* 40 (2012) 337–342.

### In Press:

1. “Some screenable,  $\sigma$ -relatively discrete Dowker spaces,” in *Topology and its Applications*.

### Papers Submitted:

1. “The uniform box product  $\Pi_\mu$ ,” to *Topology Proceedings*.

### Unrefereed Publications

1. “Classic problems”, *Topology Proceedings* 1 (1976) 360-365.
2. “Problems from other sources”, *Topology Proceedings* 2, No. 2 (1977) 667-674.
3. “Some surprising base properties in topology II”, pp. 277-305 in: *Set-Theoretic Topology*, G.M. Reed, ed., Academic Press, New York, 1977.
4. “Classic Problems”, *Topology Proceedings* 2, No. 2 (1977) 674–688.
5. “Order-theoretic base properties”, *Surveys in General Topology*, ed. by G. M. Reed, Academic Press, 1980, 367-398.
6. “F. Burton Jones’s contributions to the normal Moore space problem,” published by Mathematics Department, Guilford College, 1980.
7. “Axioms, theorems, and problems related to the Jones lemma,” *General Topology and Modern Analysis*, Academic Press (1981) 441-449.

## Unrefereed Publications (continued)

8. “The theory of nonmetrizable manifolds,” *Handbook of Set-Theoretic Topology*, K. Kunen and J. Vaughan ed., North-Holland (1984) 633-684.
9. “Problems from other sources,” *Topology Proc.* 11 (1986) 419-421.
10. “On first countable, countably compact spaces III: The problem of obtaining separable noncompact examples,” *Open Problems in Topology*, J. van Mill and G. M. Reed ed., North-Holland (1990) pp. 127–161.
11. “Dichotomies in compact spaces and  $T_5$  spaces,” *Topology Proc.* 15 (1990), 208–214.
12. “Convergence in topology,” *Recent Progress in General Topology* (Prague 1991), M. Hušek and J. van Mill, eds., North-Holland (1992) 221–234.
13. Untitled review, *J. Symbolic Logic* 56 (1991) no. 4, pp. 1490–1492.  
[A review, more like a leisurely book review than the review of articles, of a paper by Andreas Blass and another by Claude LaFlamme, giving information about ultrafilters on a countable set.]
14. Untitled review, *J. Symbolic Logic* 57 (1992) no. 2, pp. 763–766.  
[A book-review-style review of 7 papers authored or co-authored by Andreas Blass, giving applications of forcing to algebra, analysis, and topology]
15. (with Todd Eisworth) “Recent applications of totally proper forcing,” *Topology Proceedings* 23, Spring 1998, pp. 339-348. Published in 2000.
16. “The structure of locally compact  $T_5$  spaces under strong axioms,” *Topology Proceedings* 23, Spring 1998, pp. 349-356. Published in 2000.
17. “A history of the Normal Moore Space Problem,” in: *Handbook of the History of General Topology*, volume 3, edited by C. E. Aull and R. Lowen and published by Kluwer Academic Publishers, 2001, pp. 1179–1212.
18. “Classic Problems — 25 Years Later (Part 1),” *Topology Proceedings* 26 (1) (2002) 345–356.
19. “Classic Problems — 25 Years Later (Part 2),” *Topology Proceedings* 27 (1) (2003), 365-378.
20. “Countable Paracompactness, Countable Metacompactness, and Related Concepts,” article d-14 in *The Encyclopedia of General Topology*, Elsevier, New York, 2003, pp. 202–203.
21. “Generalized Metric Spaces III: Linearly stratifiable spaces and analogous classes of spaces,” article e-3 in *The Encyclopedia of General Topology*, Elsevier, New York, 2003, pp. 281–285.
22. “Čech-Stone remainders of discrete spaces,” in: *Open Problems in Topology II*, ed. by Elliott Pearl, Elsevier B.V., Amsterdam, 2007, pp. 207–216.
23. “First countable, countably compact, noncompact spaces,” in: *Open Problems in Topology II*, ed. by Elliott Pearl, Elsevier B.V., Amsterdam, 2007.

**Regular feature:** Problem section, *Topology Proceedings*, subsections “Contributed Problems” (v.1 through v.20) and “Information on Earlier Problems” (v.2 through v. 20).

### Abstracts (of otherwise unpublished research)

1. "The N-compactification of Prabir Roy's space  $\Delta$ ," AMS Notices 18 (1971) 439.
2. "On the product of suborderable spaces," AMS Notices 21 (1974) A-464.
3. "Not every scattered space has a scattered compactification," AMS Notices 21 (1974) A-570.
4. "A Dowker manifold assuming  $\diamond^*$ ," AMS Abstracts 1 (1980) 138.
5. "Versions of  $\gamma\mathbb{N}$ ," AMS Abstracts 2 (1981) 446.
6. "Mappings into linearly ordered spaces with nowhere dense fibers," AMS Abstracts 3 (1982) 102.
7. "More about  $(\omega_1, \omega_1^*)$ -gaps," Interim Report of the Prague Topological Symposium 3 (1988) 2.
8. "An elementary topological application of Martin's Maximum," Interim Report of the Prague Topological Symposium 3 (1988) 4.
9. "The cardinality of weakly first countable compacta," Interim Report of the Prague Topological Symposium 3 (1988) 16.
10. (with S. Purisch) "Tubularity and normality in products," AMS Abstracts 16 (1995) Abstract no. 906-54-178.

### Papers Presented at Professional Meetings

#### Invited Conference Addresses:

1. "A survey of zero-dimensional spaces," Annual Topology Conference, Memphis, March 1975 (1 hour)
2. "Epireflective categories of Hausdorff spaces," Categorical Topology Conference, Mannheim, BRD, July 1975 (1 hour)
3. "Compact hereditarily normal spaces," Regional Topology Conference, Columbia, SC, October 1977 (1 hour)
4. "A provisional solution to the normal Moore space problem," Annual Topology Conference, Norman, Oklahoma, March 1978 (1 hour)
5. "Large cardinals and the normal Moore space problem," Third Great Lakes Topology Conference, SUNY at Buffalo, April 1978 (1 hour)
6. "Ideas behind nearness spaces," Regional Topology Conference, Fairfax, Virginia, June 1978 (20 min.)
7. "Normal Moore Spaces," International Colloquium in Topology, Budapest, August 1978 (30 min.)
8. "Cardinal invariants on Boolean algebras," Tagung über Boolesche algebren, Oberwolfach, BRD, January 1979 (1 hour)
9. "F. Burton Jones's contributions to the normal Moore space problem," Regional Topology Conference, Greensboro, NC, October 1979 (1 hour)
10. "Axioms, theorems, and problems related to the Jones lemma," Conference on General Topology, Set Theory, and Modern Analysis, Riverside, CA, May 1980 (30 min.)

### Invited Conference Addresses (continued):

11. "Countably compact noncompact spaces," Tagung über Mengentheorie, Oberwolfach, BRD, January 1981 (1 hour)
12. "Nonmetrizable manifolds," Fifth International Topological Symposium, Prague, Czechoslovakia, August 1981 (30 min.)
13. "Applications of forcing to topology," AMS Summer Conference in Set Theory, Boulder, Colorado, June 1983 (20 min.)
14. "Recent results in set-theoretic topology," International Colloquium in Topology, Eger, Hungary, August 1983 (30 min.)
- 15.& 16. "Convergence of diagonal sequences," and "Fiber bundles over the long line," Semester in Topology, Warsaw, June 1984 (two 1-hour talks)
17. "Various smoothings of the long line and their tangent bundles," International Conference in Topology, Trieste, Italy, June 1986 (40 min.)
18. "Progress in countably compact spaces," Sixth International Topological Symposium, Prague, August 1986 (30 min.)
19. "Recent progress in countably compact spaces," Regional topology conference, Duke University, October 1986 (1 hour)
20. "Topological groups and vector spaces defined with the help of a single filter," Third New York Conference on Limits, June 1987 (1 hr.)
21. "Classes of compact sequential spaces," STACY conference, York University, Downsview, Ontario, August 1987 (45 min.)
22. "The tangent bundle as a counterexample," International topology conference, Baku, Azerbaijan SSR, October 1987 (30 min.)
23. "Countably compact, countably tight spaces," Symposium in General topology, Tsukuba, Japan, June, 1988 (1 hour plenary address)
24. "Hereditary normality in compact spaces," Spring topology conference, Knoxville, March, 1989 (30 min.)
25. "Fiber bundles over the long line," Mini-conference in topology, Miami University, Oxford, Ohio, April, 1989 (1 hr.)
26. "Hereditary normality versus countable tightness in compact spaces," Topology conference, University of Oxford, England, June 1989 (30 min.)
27. "Countably metacompact spaces in the constructible universe," János Bolyai Topology Conference, Pécs, Hungary, August 1989 (45 min. plenary address)
28. "Migrant sets," Regional topology conference, Duke University, Oct. 1989 (30 min.)
29. "Countable compactness and hereditary normality," Spring Topology Conference, Sacramento, April 1991 (30 min.)
30. "Two large-cardinal results relevant to the philosophy of mathematics," NESTS, Smith College, Amherst, Mass., April 1991 (1hr.)
31. "Mary Ellen Rudin's research on nonmetrizable manifolds," Summer Conference on General Topology and Applications, Madison, Wis. June, 1991 (25 min. plenary address)

### Invited Conference Addresses (continued):

32. "Topological groups and vector spaces defined with the help of a single filter," Conference on Uniform Topology, Bern, Switzerland, August 1991. (1 hr. plenary address)
33. "Countable compactness and hereditary normality," Seventh Prague International Topological Symposium, August 1991. (30 min.)
34. "Some Moore pseudocompactifications," Regional topology conference, Kansas State University, Manhattan, Kansas, January 3-6, 1992.
35. "Axiomatic fine-tuning," Symposium in Topology, Szekszard, Hungary, Aug. 1993 (1 hr. plenary address)
36. "Trees and their topologies," Tennessee State University Summer Conference, July, 1996 Nashville (1 hr. plenary address)
37. "Metrizability and other special properties on trees," International Topology Conference, Morelia, Mexico, March, 1997, 30 min.
38. "Applications of totally proper forcing," Colloquium on Topology, Gyula, Hungary Aug. 10-15, 1998, (50 min.)
- 39-41 "Ingredients for a renaissance in set-theoretic topology?"; "The status of some Dowker spaces"; and "Applications of a saturation axiom of Shelah," Workshop in Set-Theoretic Topology, Budapest, Hungary, July 1999 (all 1-hour lectures)
42. "New techniques in set-theoretic topology," Spring Topology Conference, San Antonio, Texas, March 2000. (30 min.)
43. "Hereditary normality and metrization theory of manifolds," Summer Topology Conference, Miami University, Oxford, Ohio, Aug. 2000, 30 min.
44. "New axioms and techniques in set-theoretic topology," 9th Prague Topological Symposium, Prague, Czech Republic, August 19-25, 2001, 30 min.
45. "Classic Problems - 25 years later," International Conference on Topology and its Applications, Shimane University, Matsue, Japan, June 24-28, 2002, 30 min.
46. "New Axioms and Techniques in Set-Theoretic Topology," University of Auckland, New Zealand, July 1-4, 2002. 1 hr. plenary address.
47. "Balogh's 'lost' theorems on paracompactness in locally compact spaces," Zoltan Balogh Memorial Topology Conference, Miami University, Oxford, Ohio Nov. 15-16, 2002, 30 min.
48. "Diagonalizable spaces," 30 minute talk in Special Session on Topological Algebra and  $C_p$ , Conference in honor of A.V. Arhangel'skii, Brooklyn College of CUNY June 29 -July 3, 2003.
49. "Three problems in set theory with topological applications," 10th South-eastern Logic Conference, University of Florida, Gainesville, Florida, March 6, 2004, 30 min.
50. "Recent research on the compact-open topology and modifications," 2nd joint Japan-Mexico Topology Conference, Oaxaca, Mexico, December 6-10, 2004, 30 min.
51. "Generalized Kurepa and MAD families and topology," 6th Iberoamerican Conference on Topology and its Applications, Puebla, Mexico, July 4-7, 2005, 30 min.

### **Invited Conference Addresses (continued):**

52. “Special axioms applied to metrization theory of manifolds,” The Forty-First Spring Topology and Dynamics Conference, Rolla, MO, March 29–31, 2007, 30 min. address televised on the Internet.

53. “The Peano problem, related problems and solutions,” 11th Galway Topology Colloquium, National University of Ireland, Galway, June 5-6, 2008, 1 hour.

54 and 55. “Workshop in Convergence,” Advances in Set-Theoretic Topology conference, Erice, Sicily, June 9-19, 2008, two one-hour lectures.

56. “Tutorial in Set-Theoretic Topology,” BLAST 2008, Denver, August 6-10, 2008. one 2-hour lecture

57. and 58. “Elbow room in Banach spaces, with applications to Erdős space,” and “Some topological questions and results on trees and D-spaces,” 13th Galway Topology Colloquium, University of Birmingham, Birmingham, UK, July 13-15, 2010. Two one-hour lectures.

59. “Screenable Dowker spaces,” Pitt Topology Conference, University of Pittsburgh, April 9, 2011. (1 hour)

60. “Convergent sequences in countably compact spaces,” Topology/Geometry+Foundations Workshop, University of Pittsburgh, April 21, 2012.(1 hour)

61. Brazilian Conference on General Topology and Set Theory - STW 2013, Sao Sebastiao, Brazil, August 12–16 2013 (pending, topic to be decided on).

### **Invited talks at AMS Special Sessions:**

1. “Base conditions, generalized metric spaces, and metrization,” AMS Regional Meeting, Special Session in Topology, Blacksburg, Virginia, November 1975

2. “On compact hereditarily normal spaces,” AMS Regional Meeting, Special Session on General Topology, Charleston, November 1978

3. “The problem of obtaining a separable, countably compact, noncompact manifold,” AMS Regional Meeting, Special Session on Set-theoretic Topology, Pittsburgh, PA, May 1981

4. “Countably compact spaces, the core model, and Chang Conjecture variants,” Special session on set theory, AMS regional meeting, Lawrence, Kansas, October 1988.

5. “Normal thin-tall spaces,” Special session in set-theoretic topology, Regional AMS Meeting, Dayton, October, 1992.

6. “The history of the normal Moore space problem,” Annual AMS Meeting, San Antonio, Texas, January, 1993.

7. “Compact Hausdorff spaces with moderately large families of convergent sequences,” AMS Regional Meeting, Richmond, VA, November 12, 1994

8. “Tubularity and normality in products,” AMS Regional Meeting, Greensboro, NC, Nov. 18. 1995

9. “Totally Proper Forcing,” Special Session in Set-Theoretic Topology, AMS Regional Meeting, Atlanta, GA, October 1997

10. “Metrizability of completely normal, hereditarily cwH manifolds”, AMS Regional Meeting, Winston-Salem, NC, Oct. 9, 1998

### **Invited talks at AMS Special Sessions (continued):**

11. "Trichotomies and tetrachotomies in locally compact spaces," AMS Regional Meeting, Charlotte, NC October 1999.
12. "Hereditarily normal Dowker spaces," AMS Regional Meeting, Toronto, Ontario, Canada, September 23, 2000.
13. "Axiom F: its status and uses," Special Session in general and set-theoretic topology, AMS Regional Meeting, University of Kansas, Lawrence, Kansas, March 30-31, 2001.
14. "Hereditarily screenable normal, non-paracompact spaces" AMS Sectional Meeting, Georgia Southern University, Statesboro, GA, March 13, 2011 Special Session on Set-Theoretic Topology, 10:00 am
15. "Utterly normal spaces," AMS Sectional Meeting, Wake Forest University, Winston-Salem, NC, September 25, 2011, Special Session on Set-Theoretic Topology, 9:00 am

### **Other Conference Addresses:**

1. "Not every zero-dimensional realcompact space is  $N$ -compact," Pittsburgh International Topology Conference, June 1970
2. "Strongly zero-dimensional spaces" Third Prague International Topological Symposium, August 1971
3. "The  $p$ -adic topology on abelian groups," Pittsburgh International topology Conference, December 1972
4. "Non-Archimedean spaces," Annual Topology Conference, Blacksburg, March 1973
5. "Some surprising base properties in topology," Annual Topology Conference, Charlotte, March 1974
6. "On the product of suborderable spaces," AMS Regional Meeting, DeKalb, Illinois, May 1974
7. "Not every scattered space has a scattered compactification," AMS Regional Meeting, Middletown, Connecticut, October 1974
8. "On the product of metacompact spaces," AMS Annual Meeting, San Antonio, Texas, January 1976
9. "Inverse preservation of small inductive dimension," Annual Topology Conference, Auburn, March 1976
10. "Some surprising base properties in topology II," Regional Conference in Set-Theoretic Topology, Athens, Ohio, May 1976
11. "Countable small rank and cardinal invariants," Fourth Prague Topological Symposium, August 1976
12. "Length, width, and breadth in Boolean algebras," AMS Annual Meeting, St. Louis, Missouri, January 1977
13. "Covering properties on scattered spaces," Annual Topology Conference, LSU, March 1977

### Other Conference Addresses (continued):

14. "A compact nonmetrizable space  $X$  such that  $X^2$  is completely normal," AMS Annual Meeting, Atlanta, Georgia, January 1978
15. "Weakly first countable topological groups are metrizable," AMS Regional Meeting, Syracuse, October 1978
16. "The tangent bundle on the long line and other strange 2-manifolds," Annual Topology Conference, Athens, Ohio, March 1979
17. "A topological test space for many set-theoretic axioms," Moscow International Topology Conference, USSR, June 1979
18. "On the number of Hausdorff manifolds," AMS Regional Meeting, Birmingham, November 1979
19. "A Dowker manifold assuming  $\diamond^*$ ," AMS Annual Meeting, San Antonio, January 1980
20. "Tunnels, tight gaps, and countably compact extensions of  $\omega$ ," Annual Topology Conference, Birmingham, March 1980
21. "Problems on countably compact noncompact spaces," SETOP, University of Toronto, Mississauga, Ontario, July 1980
22. "Two problems concerning first countable countably compact spaces," Regional Topology Conference, Appalachian State University, Boone, North Carolina, October 1980
23. "The problem of obtaining arbitrarily large first countable, locally compact, countably compact spaces," Annual Topology Conference, Blacksburg, Virginia, March 1981
24. "Mappings into linearly ordered spaces with nowhere dense fibers," AMS Annual Meeting, Cincinnati, January 1982
25. "When is the product of sequentially compact spaces countably compact?" Annual Topology Conference, US Naval Academy, Annapolis, MD, March 1982
26. "On the product of sequentially compact spaces," AMS Summer Meeting, Toronto, August 1982 (presented by S. W. Williams)
27. "Fiber bundles over the long line," Regional Topology Conference, George Mason University, Fairfax, Virginia, October 1982
28. "Simple P-points," Annual Topology Conference, Houston, Texas, March 1983
29. "Products of sequentially compact spaces," Jacob Kofner Memorial Topology Conference, George Mason University, Fairfax, Virginia, October 1983
30. "Countably paracompact spaces and PMEA," Annual Topology Conference, Auburn, Alabama, March 1984
31. "Recent advances in set-theoretic topology," Regional Topology Conference, Columbia, SC, October 1984
32. "Some problems in set theory," Southeastern Conference in Set Theory, University of Florida, February 1985



### Other Conference Addresses (continued):

33. "Various smoothings of the long line and their tangent bundles I: Basic ZFC results," AMS Annual Meeting, San Antonio, January 1987
34. "Some results in set-theoretic topology, obtained within the last nine years," Spring Topology Conference, University of Alabama at Birmingham, March 1987
35. "Net convergence under PFA," Regional Topology Conference, Duke University, October 1987
36. "Various smoothings of the long line and their tangent bundles II: countable metacompactness and sections," AMS Annual Meeting, Atlanta, January, 1988.
37. " $\omega_1$ -transitive groups need not be  $\omega$ -transitive," Southeastern Logic Conference, Columbia, SC, March, 1988.
38. "Notes on the Scarborough-Stone problem," Spring Topology Conference, Gainesville, FL, April, 1988.
39. "Weakly compact sets in Banach spaces," Spring Topology Conference, San Marcos, Texas, April, 1990.
40. "Bisquentiality in weakly compact subsets of Banach spaces," Summer Conference in General Topology and its Applications, Long Island University, June, 1990.
41. "Compact Hausdorff spaces with only trivial convergent sequences," Regional Topology Conference, North Carolina State University, Raleigh, October 6, 1990.
42. "Some Moore pseudocompactifications," Regional Topology Conference, University of South Carolina, Columbia, November, 1991.
43. "Properties of Eberlein compacta," Spring Topology Conference, Charlotte, NC, April 2, 1992.
44. "Biradiality in weakly compact subsets of Banach spaces," Summer Topology conference, Flushing, NY, June 18, 1992.
45. "Countable dense subsets of product spaces," Annual Spring Topology Conference, Auburn University, AL, April, 1994.
46. "A versatile Hausdorff gap," Annual Spring Topology Conference, Newark, Delaware, April, 1995
47. "Tubularity in products," Annual Summer Topology Conference, Portland, Maine, August, 1995
48. "Topologies on trees," Annual Spring Topology Conference, Muncie, Indiana, March, 1996.
49. "Topological properties of trees," Eighth Prague International Topological Symposium, Aug. 1996.
50. "Separable normal nonmetrizable manifolds," Summer Topology Conference, Nipissing U., North Bay, Ontario, Aug. 1997.
51. "New axioms in set theory and their applications," Annual Spring Topology Conference, Fairfax, VA, April, 1998.
52. "Alignments and the theory of locally compact spaces," Spring Topology Conference, Salt Lake City, March 1999.
53. "Complete normality and metrizability in manifolds," 44th Annual Meeting of the Australian Mathematical Society, Brisbane, July 2000.

## Other Conference Addresses (continued):

54. "Linearly stratifiable spaces: some open problems," Nordic Conference on Topology and its Applications (NORDTOP2001) Nordfjordeid, Norway Aug. 6-10, 2001.

55. "Updates on a 1903 paper by G. H. Hardy," special conference in honor of the 60th birthdays of David Gauld and Ivan Reilly, University of Auckland, New Zealand, July 5, 2002, 30 min.

56. "Hereditarily strongly cwH and separation axioms," Special Session in General Topology, Spring Topology and Dynamical Systems Conference, Lubbock, Texas, March 20-22, 2003.

57. "A gamma-set invariance," Special Session in Topological Algebras, Spring Topology and Dynamical Systems Conference, Lubbock, Texas, March 20-22, 2003.

58. "Salvaging a metrizable manifold theorem," Special Session on Set-Theoretic Topology, 2003 Summer Conference on Topology and its Applications, Howard University, Washington, DC July 9-12, 2003.

59. "2-to-1 closed preimages of  $\omega_1$ ," Colloquium on General and Set-Theoretic Topology, Budapest, Aug 8-13, 2004.

60. "Elbow room in Banach Spaces," Special Session in General Topology, Spring Topology and Dynamical Systems Conference, Birmingham, Alabama, March 25-27, 2004.

61. "A problem in theoretical computer science about  $C_s(\mathbb{P}, \mathbb{N})$ ," Special Session in General/Set-theoretic Topology, Spring Topology and Dynamical Systems Conference, Rome, Georgia, March 17-19, 2005.

62. "Sequential compactness (and lack thereof) in topological spaces," Spring Topology and Dynamics Conference, Greensboro, NC, March 23-25, 2006.

63. "Subsequentiality and countable compactness," 21st Summer Conference on Topology and its Applications, Georgia Southern University, Statesboro, GA, July 6-9, 2006.

64. "Monotone normal, ultranormal spaces," 10th Prague Topological Symposium, Prague, Czech Republic, August 13-19, 2006

65. "Ostaszewski Scarborough-Stone spaces in forcing extensions," 22nd Summer Conference on Topology and Its Applications, Castellón, Spain, July 24-27, 2007

66. "Discontinuities and smooth curves in  $n$ -space," Special Session in General/Set-theoretic topology, 42nd Spring Topology and Dynamical Systems Conference, Milwaukee, March 13-15, 2008.

67. "D-spaces, trees, and a ZFC solution to Problem 342 in OPIT II," Special Session in General/Set-theoretic topology, 43rd Spring Topology and Dynamical Systems Conference, Gainesville, FL, March 7-11, 2009.

68. "Cofinal Kurepa Families," BLAST09, Las Cruces, NM, August 7-14, 2009.

69. "D-spaces and trees," 44th Spring Topology and Dynamical Systems Conference, Mississippi State University, Starkville, MS, March 18-20, 2010.

70. "Productivity of anti-ponderous spaces," University of Texas at Tyler, Tyler, TX, March 17-19, 2011.

71. “Screenable anti-Dowker spaces,” 26th Summer Conference on Topology and its Applications, New York, NY, July 26–29, 2011.

72. “Three closely related topological games,” The 2012 Ibero-American Conference on Topology and Its Applications, Guanajuato, Mexico, April 10–14, 2012.

73. “The main topological properties of some uniform box products,” 27th Summer Conference on Topology and its Applications, Mankato, Minnesota, July 25–28, 2012.

### Colloquia and Seminars

**Colloquium Addresses:** [All invited lectures, roughly one hour in length]

1. “N-compact spaces” SUNY at Buffalo, July, 1970
2. “N-compact spaces” Carnegie-Mellon University and University of Pittsburgh, May 1971
3. “The p-adic topology,” George Mason University, February, 1973
4. “Measure, integration, and probability: a unified approach” U.S. Naval Postgraduate School, August 1973
5. “The protean class of  $\omega_\mu$ -metrizable spaces”, Washington University, April 1974
6. “Zero-dimensional and scattered spaces”, Ohio University, June 1975
7. & 8. “Estimating the number of antibody bounding sites”, “Shock trauma”, Ohio University, January 1976
9. “Applications of mathematics to medicine”, Auburn University, March 1976
10. “Applications of mathematics to medicine”, University of Alabama, March 1976
11. “Symmetrizable spaces”, SUNY at Buffalo, August 1977
12. “Recent set-theoretic consistency results in topology”, University of Illinois, Urbana, May 1978
13. “The current status of the normal Moore space problem”, University of Wisconsin, Madison, May 1978
14. “The set-theoretic independence of some old conjectures in topology”, Washington University, November 1978
15. “Cardinal invariants in Boolean algebras”, Free University of Netherlands, Amsterdam, February 1979
16. “Recent advances in set-theoretic topology”, Oxford University, Oxford, England, February, 1979
17. “Recent advances in set-theoretic topology”, University of South Carolina, March 1979
18. “Recent advances in set-theoretic topology”, SUNY at Buffalo, April, 1979
19. “Recent advances in set-theoretic topology”, University of Vienna, Vienna Austria, January 1981
20. “The Stone-Cech Compactification of the Integers”, U. Autonoma Metropolitana, Mexico DF, July 1982

### Colloquium Addresses (continued):

21. “Products of sequentially compact spaces, U. Autonoma Metropolitana, Mexico DF, July 1982
22. “The theory of nonmetrizable manifolds”, U. Nacional Autonoma de Mexico, Mexico DF, July 1982
23. “Recent developments in set-theoretic topology”, U. Nacional Autonoma de Mexico DF, July 1982
24. “Sequences of integers and topology”, U. Autonoma Metropolitana, Mexico DF, July 1982
25. “Nonmetrizable manifolds”, University of South Carolina, Nov. 1982
26. “Convergence of diagonal sequences” (in Hungarian) University of Debrecen, Hungary, June 1984
- 27–32. “Approximate extension of continuous functions”, University of Queensland, Brisbane, Australia, June 1985; also at LaTrobe University, Melbourne, June 1985; also at Wesleyan University, Middletown, Conn., Oct. 1985; also at Dartmouth College, Hanover, NH, Nov. 1985; also at SUNY at Binghamton, Dec. 1985; also at University of London, Feb. 1986.
33. “Hypergraphs with finitely many isomorphism subtypes”, U. of Kansas, August 1985.
34. “Products of sequentially compact spaces”, University of Connecticut, Storrs, Oct. 1985.
35. “Set-theoretic consistency results on countably tight spaces,” Ohio University, Athens, Ohio, Feb. 1988.
- 36–40. “Various smoothings of the long line and their tangent bundles,” York University, Toronto, March, 1988; also at Tsukuba University, June, 1988; also at Osaka Kiyoku University, June, 1988; also at Bundoora University, Melbourne, Australia, July, 1988; also at Melbourne University, July, 1988.
41. “Approximate extension of continuous functions,” Shizuoka University, June, 1988.
42. & 43. “Countable tightness and proper forcing,” Kobe University, Japan, June, 1988; also at the University of New England, Armidale, NSW, Australia.
44. “Classes of Fréchet-Urysohn spaces,” Ehime University, Matsuyama, Japan, June, 1988.
45. & 46. “Various smoothings of the long line and their tangent bundles,” University of New England, Armidale, Australia, February 1989; also at the University of Auckland, New Zealand, February 1989.
47. “Hypergraphs with finitely many isomorphism subtypes, Arizona State University, March, 1989.
48. “Countable tightness and proper forcing,” Miami University, Oxford, Ohio, April, 1989.
49. “Topological indicators for sudden cardiac arrest,” University of Wollongong, July, 1992.
50. “Countably compact spaces and the Proper Forcing Axiom, University of Wollongong, July, 1992.

### **Colloquium Addresses (continued):**

51. “Migrant sets in topological spaces,” Kansas State University, October, 1994.
52. “Hilbert’s first problem and the foundations of mathematics,” University of Auckland, May, 2000.
53. “The Continuum Hypothesis: history and state of the art,” University of North Carolina at Greensboro, Greensboro, NC January, 2001.
54. “What does ‘random’ mean?” University of Auckland, June, 2004.
55. “Elbow room in Banach spaces,” Georgia Southern University, Statesboro, GA March 11, 2005
56. “Antidiamond and antiPFA axioms,” Gainesville, FL April 13, 2007

### **Seminars Organized and Led:**

1. Seminar in Algebra and Topology, Carnegie-Mellon University, 1970-71
2. Seminar in Topology, Auburn University, Winter Quarter 1979
3. Seminar in Set Theory, Auburn University, Winter Quarter 1979
4. Seminar in Differential Geometry, Auburn University, Winter Quarter, 1979
5. Seminar in Set theory, Ohio University, Spring 1979
6. Seminar in Topology, University of South Carolina, 1979-80, 1980-81, 1981-82, 1982-83, Spring and Fall 1984, Spring 1985, 1987-88, 1989- 90, Spring 1992, Spring 1993, Spring 1994.
7. Seminar in Set Theory and Logic, University of South Carolina, Spring 1980, Spring 1985
8. Graduate Seminar in Set-Theoretic Topology, University of South Carolina, 1990-91 and 1995.
9. Seminar in Set Theory and Topology, University of South Carolina, 1996-97, 1997-98, 1998-99, 1999-2000 and 2000-1.
10. Seminar in Logic, University of Michigan, Fall 2001.
11. Seminar in Logic and Set Theory, University of South Carolina, Spring 2002.
12. Seminar in Set Theory and Logic, University of South Carolina, 2006.
13. Seminar in Topology and Set Theory, University of South Carolina, Fall 2007.

### **Seminars Participated Regularly In:**

1. Seminar in Topology, University of Illinois, Urbana 1974-75, 1975-76
2. Seminar in Topology, Auburn University, 1976-77, 1977-78
3. Seminar in Differential Geometry, Auburn University, 1976-77
4. Seminar in Set Theory, Dartmouth College, Fall 1985
5. Seminar in Topology, University of Oxford, Winter and Spring 1986
6. Seminar in Logic, University of South Carolina, 1987-88
7. Seminar in Set Theory, University of Colorado, Boulder, Fall 1993
8. Seminar in Set-theoretic Topology, Greensboro and Charlotte, North Carolina, 2002-present [held about once every three Saturdays, on the average].

## Special Talks:

1. Seminar in Topology, University of Wisconsin, August 1985
2. Combinatorial Seminar, University of Wisconsin, August 1985
3. NESTS (New England Set Theory Seminar) October 1985
4. NESTS, Smith College, Northampton, MA, November 1985
5. Seminar in Topology, Cambridge University, April 1986
6. Seminar in Logic, University of Oxford, April 1986
7. Seminar in Topology, Australian National University, February 1989
- 8–17. Seminar series in set-theoretic topology (9 one-hr seminars) Ohio University, Athens, Ohio, May 1989.
18. Seminar in Combinatorics, Ohio State University, Columbus, Ohio, May, 1989.
19. Seminar in Topology, University of Pittsburgh, May 3, 1990.
20. Seminar in Topology, University of Pittsburgh, Sept. 14, 1990.
- 21–27. Seminar series in set-theoretic topology (6 one-hour seminars) University of Auckland, Auckland, NZ, May 1997.
28. “Recent advances in set-theoretic topology,” invited 1-hour lecture to complete advanced undergraduate course in topology at the University of Vienna, July 1, 1999.
- 29–41. Seminar series in set theory and topology, 12 one-hour seminars, University of Auckland, Auckland, NZ, May-June 2000.
42. “A weakening of AC due to G.H. Hardy,” University of North Carolina at Greensboro, March 2, 2002.
43. “Updates on a 1903 theorem of G.H. Hardy,” Fields Institute, Toronto, June 19, 2002.
- 44–47. Seminar series in set theory and topology, 3 one-hour seminars, University of Auckland, Auckland, NZ, July 2002.
48. “Hereditarily normal manifolds,” Fields Institute, Toronto, July 17, 2002.
- 49–51. Seminar series in set-theoretic topology, 3 one-hour seminars, Hungarian Academy of Sciences, July-August 2003.
- 52–55. Seminar series in set theory and topology, 4 one-hour seminars, University of Auckland, Auckland, NZ, July 2004.
56. “Elbow room in Banach spaces,” Analysis Seminar, University of South Carolina, February 27, 2004.
57. “An ordering of simple graphs and other relational systems,” Combinatorics Seminar, University of South Carolina, February 2, 2005.
- 58–63. Seminar series in set theory and topology, 6 one-hour seminars, University of Auckland, Auckland, NZ, May-June 2006.
- 64–65. “Antidiamond and antiPFA axioms and their applications,” and “Forcing applied to the construction of perfectly normal spaces,” one-hour seminars in set-theoretic topology, Hungarian Academy of Sciences, May 2007.

### Special Talks (continued):

66. “Large cardinals and topological applications,” Carnegie-Mellon University, September 9, 2008.

67. “D-spaces,” University of Pittsburgh, September 10, 2008.

68. “Large cardinals and general topology,” Pennsylvania State University, September 12, 2008.

69. “Kurepa families and Boolean Algebras,” University of Colorado, Boulder, November 2008.

70. “The Tukey order on finite graphs,” University of Denver, November 2008.

71–73. Seminar series in set-theoretic topology, 3 one-hour seminars, University of Auckland, Auckland, NZ, December 2008.

74. “The Tukey order on finite graphs,” University of Auckland, December 2008.

75. “Discontinuities and smooth curves in  $n$ -space,” Carolina Math Seminar, Benedict College, Feb. 11, 2011. Given to a general audience and available on YouTube:

[http://www.youtube.com/watch?v=-GU62j-VD\\_I&feature=related](http://www.youtube.com/watch?v=-GU62j-VD_I&feature=related)

76–78. Seminar series in set-theoretic topology, University of Auckland, Auckland, NZ, December 2012, 3 one-hour seminars:

“The uniform box product II,”

“Countable compactness and convergent sequences,”

“Three closely related topological games.”

*Note:* The first two Auckland series (1997 and 2000) were fully supported by the University of Auckland, which paid for roundtrip airfare from Columbia, SC and all local expenses. Ohio University did the same for the 9-seminar series of 1989. The University of Auckland paid for all local expenses for the 2002 and 2004 series, for airfare and local expenses for the 2006 series, for airfare and lodging for the 2008 series, and for airfare for the 2012 series. The Hungarian Academy of Sciences paid for the local expenses for both the 2003 series and the 2007 series. Carnegie-Mellon University defrayed part of my mileage expenses for the 2008 seminar. The University of Denver paid for airfare and lodging for the 2008 seminar there. The University of Auckland paid for both airfare and lodging in the 2008 series.