Some history of Mathematics retirees at University of Manitoba

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Abstract

In preparation for the 27 June 2022 celebration of recent retirees in the Mathematics department, this document contains some brief bios of mathematicians who have retired recently, and some who have retired or passed away long ago. I have also added a little history of the department and names of some retired mathematicans from other departments.

I have added bits of biographical information in the cases that I was familiar with or had time for; it is hardly comprehensive. Many details are still missing. Photos might be added later. For many of the Professors Emereti, lists of their accomplishments could take dozens of more pages, so please forgive me for the some of the bios being rather brief in such cases.

Throughout, "UM" denotes University of Manitoba.

Some details are from the Math Geneology project [7], old department spreadsheets, MathSciNet, UM websites (e.g. [11], [18]), the Manitoba Historical Society webpages (e.g., [10]), the University Calendar, and many personal communications. In particular, I deeply thank John, Leah, Kristina, Pad, Don, George, Robert, Bill, Shiv, Michelle, and Joe for their enormous help in putting this together. My deepest apologies are offered for the (obviously) many missing, vague, or incorrect entries.

I begin with five "recent" retirees, each individual recently dedicating at least 50 years to the Math Department in some form or another. Coincidentally, this year marks 50 years of the Math Department in Machray Hall, and the Faculty turned 50 two years ago (celebration plans were postponed due to the Covid pandemic).

1 Five recent 50-year colleagues

The following five celebrants could be listed in different ways (e.g., birthday, starting date, retirement date, ...), but I simply list them alphabetically.

Michael Doob (1942–). Ph.D. CUNY 1969, advisor Alan Jerome Hoffman, dissertation: *On characterizing a line graph by the spectrum of its adjacency matrix*. At UM 1969–2020, now Emeritus. He and Craig Platt ran the TeX and

editorial office for CMS journals for decades. Doob is also known for algebraic graph theory, publications on LaTeX, and electronic linear algebra notes. [Personal note: It seemed that whenever I came to Michael with a question in graph theory, he immediately gave me the correct proof—no matter what the topic. He also used to do the daily NYT crossword puzzle in mere minutes—it was as if he knew everything! Another hobby of his was curling (along with Hugh Saunderson, Joe Williams, and Grant Woods) with the UM curling club.]

Ranganathan Padmanabhan (Pad) (1938–). Ph.D. 1967, Madurai, advisor Dr. M. Venkataraman (with external examiners George Gratzer and B. H. Neumann). At UM Oct 1968, began as postdoc, then assistant/assoc/prof in 1970/1976/1980. Retired from teaching 2015, but still supervised a student and helps the department while "retired". Emeritus 2019. [Personal note: Pad always showed extreme kindness to me, and many others. He was a great source for answers to my geometry questions—he sometimes wrote up notes for me, and researched and drew diagrams for my lectures—and always with a warm message.]

Craig Robert Platt (1942–). Ph.D. 1969, Penn. state, advisor George Gratzer, dissertation: *Iterated Limits of Universal Algebras*. UM 1970–2019, Senior Scholar 2019. Worked for the CMS TeX office here for decades (while teaching). For many years, was responsible for checking course compatibility from other universities. [Personal note: I am very lucky to have Craig and Virginia making me smile every time we talk, even if it is only about gardening. He liked doing cryptic crosswords with Tommy each lunch hour. It was fun to kibitz.]

Pappur Nagappa Shivakumar (Shiv) (1935–). M.Sc. 1957, University of London, thesis: *Studies in elastic dislocations*. Ph.D. 1967, University of London, no advisor [14], dissertation: *Some plain strain problems in isotropic and aeolotropic elasticity*. D.Sc. 1991, University of London. Post-doc at UM 1967–1968. UM faculty 1968–2014, (a portion in the Department of Applied Mathematics). Emeritus 2016. Was instrumental in founding the IIMS (Institute of Industrial Mathematical Sciences) for many years (along with Tom Berry and John Brewster from Stats). Fellow of the Institute of Mathematics and Applications (FIMA) (UK).

Donald Trim (1942–). PhD 1971, University of Waterloo in 1971, supervisor John Wainwright, thesis: *Neutrino and electromagnetic fields in curved space-time*. Started UM 1971, the first member of the Department of Applied Mathematics. Taught many courses to engineers (among students, he had/has a great reputation). 1997 3M National Teaching Fellows award: in the award, "Donald Trim is the most highly respected teacher in the Faculty of Science." See https://www.stlhe.ca/award_winners/1997-3m-national-teaching-fellows/. Organized and supervised Math Camp for many years, and helped with Student Advising. Half-retired 2012. Still teaching (after 50 years!). [Don also had the reputation of doing whatever was needed by the Department, never complaining.]

2 Other "recent" retirees or Senior Scholars, in approximate chronological order

Sasho (or Sašo) Kalajdzievski (1954–). Ph.D. 1989, University of Toronto, advisor James McCool, dissertation: *Centralizers of finite subgroups of the automorphism groups of a free group.* Started UM around 1991? Became Instructor 1998, Senior Instructor 2003. Will retire 1 July 2022, becoming Senior Scholar. (topology, math and art)

David Shane Gunderson (1955–). Ph.D. 1995, Emory University, advisor Vojtech Rödl, dissertation: *Extremal problems on Boolean algebras, sum-sets of integers, and hypergraphs.* Erdős number 1 (with 3 joint papers). University of Manitoba Outreach Award, Fall 2004 (for community outreach, design of Brookside monument, and Machray Hall display of wooden math models). Helped in mathletics training 2003–2019. Member of the IIMS 2003–2009. 2007 Fellow of the Institute for Combinatorics and its Applications (ICA). UM 2002–2021. Department head 2010–2012. Retired 2021, Senior Scholar 2021. (combinatorics, Ramsey theory)

Benqi Guo (1944–). Ph.D. 1985, University of Maryland, advisor Ivo Babuška, dissertation: *The h-p version of the finite element method.* UM 1989–2017. Emeritus 2017.

Fereidoun Ghahramani (1947–). Ph.D. Edinburgh 1978, advisor Allan M. Sinclair, dissertation: *Homomorphisms and derivations on weighted convolution algebras.* UM 1987–2017, Emeritus 2017. Functional analysis.

Joseph John Williams (1943–). Ph.D. 1970, University of Toronto, advisor Israel Halperin, dissertation: *Non-isomorphic tensor products of Von Neumann algebras.* For a time, was faculty in the department of Applied Mathematics. Dean of Studies of St. Paul's College 1981–1985. UM 1970–2013. Senior Scholar 2013–2019. [Personal note: He picked me up from the airport for my interview here, and immediately, I felt welcomed to Winnipeg, which played a huge role in me accepting the job.]

Guenter Krause (1941–2015). Ph.D. 1967, Johann Wolfgang Goethe-Universität Frankfurt am Main, advisor Reinhold Baer, dissertation: *Moduln über linksnoetherschen Ringen: Ihr Sockel und Herz, ihre Charakteristik und ihr Träger.* UM start 1969, half-time 2012. Department Head 2003–2010 (and acting head for a while in 2002—when I was hired). (algebra) [Personal note: Guenter had the reputation of someone who tried to help everyone with his gentle nature and great chuckle. After his passing, I somehow inherited his famous leather jacket and Ruth gave me some of his tools.]

Jiří Jan Sichler (1941–2013). Ph.D. 1968, Charles University, Prague, advisor Vladimir Kořínek, dissertation: *O omezujících primitivních třídách algeber (On binding primitive classes of algebras).* Universal algebra. Started at UM circa 1970, went half-time 2012. There is now a scholarship in his name for one undergraduate and one graduate student in algebra, donated

by his wife Marie. Jiri and Marie were good at electronics and early computers and loved outdoor ventures. Jiri was notoriously quiet, but always with just a few words could make you smile and think at the same time. See more at https://passages.winnipegfreepress.com/passage-details/id-208265/SICHLER_JIRI, retrieved 25 June 2022. [Personal note: To demonstrate how sweet he and Marie were, they once invited Karen and I to their home for his birthday party (maybe his 70th). To our dismay and delight, he and Marie had baked another cake and bought champagne to also give a surprise celebration of my and Karen's engagement! Needless to say, our family is still dear friends with Marie.]

Robert Spencer David Thomas (1941–). Ph.D. Southampton, advisor Hubert Brian Griffiths, dissertation: *Commuting continuous flows on manifolds*. At UM 1970–2011 (in CS dept 1970–1978, then joined math, also in Dept of Philosophy 96–99). Editor of *Philosophia Mathematica*, the only journal on the philosophy of mathematics (I think the journal is 30 years old). Emeritus 2016.

Thomas George (Tom) Berry (1947–2014). Ph.D. 1973, Waterloo, advisor David Lovelock, dissertation: *Subspaces of a Riemannian manifold and associated variational problems*. Taught for a year in Arizona before coming to Manitoba. Originally hired by Department of Applied Mathematics, 1974. Taught for 38 years at UM. See the obituary https://passages.winnipegfreepress.com/passage-details/id-267376/BERRY_THOMAS for more details. Worked with Bristol Aerospace on the Oedipus-A project. Served as undergraduate head for many years. Almost always came in at roughly 7AM and had coffee ready for the early risers. Paul Erdős once said "A mathematician is a machine that turns coffee into theorems"; many theorems were proved with his coffee. You had to love the guy for the coffee and the laughs while he showed you math cartoons he used in daily lectures. He always seemed to be working happily and tirelessly to keep the programs alive and to manage students as associate head. Long time assistant to the IIMS and editor of our *Mathlinks*.

Extensive outreach work with industry, high schools, and indigenous students. He received the Annual Outreach Award 2001–2002 for his work with Bristol Aerospace: https://umanitoba.ca/admin/vp_academic/awards_honours/outreach_previous_winners.html. He received the Dr. and Mrs. Ralph Campbell Outreach Award for 2008 for organizing the Peguis First Nation Science and Technology Symposium: https://umanitoba.ca/admin/vp_academic/awards_honours/campbell_award.htm. Received major teaching awards, including the Dr. and Mrs. H. H. Saunderson Award for Excellence in Teaching (1999–2000), https://www.umanitoba.ca/publications/reports/annual_report00/teaching/awards.shtml. He became ill in 2008 and soon after, went on disability; he retired in 2012 [19]. [Personal note: He was on my headship search committee in 2009.]

R. Grant (Russell) Woods (1941–). Ph.D. McGill 1969, advisor Stelios A. Negrepontis, dissertation: *Certain properties of $\beta X \backslash X$ for σ-compact X*.

UM 1969–2007, then Senior Scholar, Professor Emeritus 2008. Was department head 1998–2003. An avid bridge player, famous for a very detailed set of notes on his bridge conventions. He was also active in the UM curling club. [Personal note: In a 2003 MCBL game, we once made 7 Clubs without the Ace of Clubs (I had messed up interpreting his bids, arriving in a grand slam contract, but the opponents also renegged in one play, and so the judges awarded us the extra trick).]

David A. Kelly (1942–). Ph.D. 1972, Queen's, advisor Günter Hermann Wenzel (a student of Grätzer at Penn State), dissertation: *Basic equations: free algebras, word problems, and Mal'cev conditions*. At UM 1972–2009. Then lived in the Toronto area. Senior Scholar until 2012. (lattice theory, comparability graphs, ...) [Note: there are rumours that he passed away recently [6].]

George A. Grätzer (1936–). Ph.D. 1960, Hung. Acad. Sci Eőtvős Loránd University, advisor László Fuchs, dissertation: *Standard ideals*. UM 1966–2011. Born in Budapest. 14 Ph.D. students, (including Craig Platt, Ivan Rival, George William Sands (Bill), and Brian Davey), 76 descendants. Authored many (maybe 30 or more, I lose track; he is just now finishing his 3rd edition for one in lattice theory) books on Universal Algebra, Lattice theory, and LaTeX. Instrumental (with Mendelsohn) in attracting early department hirings of experts in universal algebra, lattice theory, and combinatorics, building one of the top such groups in the world. [Some authors [2] rank Grätzer as one of three top in the world in lattice theory.] In 1971, founded the journal *Algebra Universalis*. In 1986, received Killam Research Fellowship. Elected to the Royal Society of Canada 1973. During 1998–1999, elected to Hungarian Academy of Science. For more information and awards, see his *Wikipedia* page https://en.wikipedia.org/wiki/George_Gratzer, and for his papers and books, see https://server.math.umanitoba.ca/~gratzer/ (both retrieved June 2022). He was named Distinguished Professor 1985, Distinguished Professor Emeritus 2011. Now residing in Toronto.

(James) Arthur Gerhard (1941–2020). Ph.D., McMaster 1968. Advisor Günter Bruns, dissertation: *The lattice of equational classes of idempotent semigroups*. UM 1968–2008 (almost 40 years). Associate Dean of Science for a few years (circa 2010). Semigroups.

Nathan Saul Mendelsohn (1917–2006). Ph.D. Univ. of Toronto, 1941, advisors Richard Dagobert Brauer and Gilbert de Beauregard Robinson, thesis: *A group theoretic characterization of the general projective collineation group*. UM 1948–2005 (57 years). Department head for 27 years. On the winning team of the first William Lowell Putnam competition in 1938. Also while a student at Toronto, took second prize at an International Brotherhood of Magicians contest. (He later often used card tricks while teaching math—a big hit with the students.) Worked as a code-breaker during WWII. Then taught at Queen's University for three years. Came to Manitoba in 1948. Worked also in block designs and related combinatorics. As department head, beginning in the late 1960s, responsible for assembling a "new" math department. He

hired what might be said were some of the world's leading groups in combinatorics, lattice theory, and universal algebra, (maybe 10 in total?), starting with Gratzer in 1966, (and Doob, Platt, Lakser, Kelly, Padmanabhan,... not quite in that order) Henry Marshall Tory Medal of the Royal Society of Canada in 1979. Distinguished Professor, 1981. There are many stories about his kindness, absent-mindedness, and career. See, e.g., [1] or the *Wikipedia* page for him.
[Personal note: There are some stories that don't seem to appear in the literature, but existed around the department; Nathan confirmed a number of these stories with me:

1. While driving home one day, he saw a woman having difficulty boarding a bus since she had large packages and perhaps a stroller. He pulled up behind the bus, got out, helped the woman onto the bus—then stayed on the bus and forgot his car running on Pembina Hwy!

2. On the way to a class in which he was about to give a midterm, some of his students ambushed him in the hallway, knowing his absent-mindedness, asked him some math questions to delay him; he happily helped the students and forgot to get to class in time for the test.

3. After work one day, Nathan discovered that his car was missing from parking lot A, and so reported it stolen. It turned out that he had taken the bus that day!

The next are personal recollections: On his way home each late afternoon, he would often stop by my office (then MH 431, I think) and chat or at least wish me a good night. He told me many funny stories, a lot of math, and I used to tease him about his age. One night he passed by my office and asked a question about some geometry by Eudoxus—I replied "Why didn't you ask Euclid?" He smiled for the next hour while giving me a geometry lesson. One evening (late 2003?), he passed by my office and said goodnight on his way home. I noticed that his glasses were sitting twisted and offered to straighten them for him. Well, I broke the frame. He could not drive home without glasses and he was in a hurry to get home to help his wife with something, so I ran to the Bookstore and returned with some krazy glue; it didn't work on the carbon fibre, so I ran back (at full speed) and got some wire and some 5-minute epoxy. I "fixed" the glasses, but now with a huge blob of wire and epoxy on one corner so he could at least get home. Many times I offered to buy him new frames, to which he told me that it doesn't bother him. He continued to proudly wear those glasses for as long as I knew him—each time I saw him I cringed with guilt!]

Also on a personal note, nearing his departure from UM, he gave me his entire collection of JCT, JCTA and JCTB and many other books and original notes—which I treasured. For the last year or so of his life, he moved to Toronto, closer to his son Eric Mendelson, a Professor in combinatorics at the University of Toronto, now Emeritus. See https://www.utsc.utoronto.ca/cms/eric-mendelsohn

Peter Aitchison (1942–2013). Ph.D. Australian National University. At UM 1969–2004. He joined the Department of Mathematics & Astronomy in

1969. Circa 1975, he transferred to Applied Mathematics and then to Mathematics after the 1998 amalgamation [19]. then Senior Scholar, (applied math, incl. discrete math and graph theory).

Died on 7 August 2013 while climbing Mount Victoria the fifth time. The Alpine Club of Canada's President's Award posthumously in 2015. In 1989 he received the Alpine Club of Canada's Silver Rope Award for Leadership. In 1992, Peter received the Order of the Buffalo Hunt—Manitoba's highest honour, in recognition of the first ascent of Mount Manitoba in the Yukon. For more, see https://www.alpineclubofcanada.ca/web/ACCMember/Community/Bios/Peter_Aitchison.aspx or https://www.accmanitoba.ca/peter-aitchison.

[In 2002 or so, he told me that he had recently bought three houses in the north end on his credit card! After he retired, I once ran into him at Lee Valley Tools—he was often renovating.] See the obituary https://umanitoba.ca/outreach/retirees/media/OBITAITCHISON.pdf for more details, including an extensive list of community contributions.

Harry Lakser (1938–). Ph.D. 1968, University of Manitoba, advisor N. S. Mendelsohn, (previously did Ph.D. work at Princeton [4]). Started UM 1967. Retired 2004 or so [4]. Published with George Gratzer in 2021 (see *MathSciNet*). Combinatorics, lattice theory. Now living in the Toronto area.

Robert Willis Quackenbush (1942–). Ph.D. 1969, Stevens Inst. Tech., advisor Roger Stanton Pinkham, thesis: *Monte Carlo quadrature with exactness for polynomials*, came to Manitoba as post-doc under George Gratzer, hired two years later. A founding member of the department in 1971. Retired 1998. Kept working as editor for *Algebra Universalis*. was Senior Scholar (e.g., c. 2011), and still attends seminars. Lattice theory and Universal Algebra.

Dianne Mary (Johnson) Dowling (1933–2005). Ph.D. 1958, University of Toronto, advisor Gilbert de Beauregard Robinson, dissertation: *Representations of the symmetric group*. (both BSc and MSc at University of Manitoba). Started at UM 1958. In 1980, became member of St. Paul's College. Campbell Outreach Award, Father Cecil Ryan Award. A combinatorist, e.g., published with Mendelsohn on latin squares. Retired after 47 years, became Senior Scholar c. 1995. Was Chair of the Manitoba Mathematical Contest Committee. Was on Executive of the Manitoba Association of Mathematics Teachers.

Roy Joseph Dowling (1924–2017). BSc at University of Manitoba 1944. Taught at St. Paul's College 1946–1948, Ph.D. University of Minnesota (date, advisor, title unknown) In 1952, associate professor at St. Thomas College, St. Paul Minnesota. Prof at St. Paul's (here) 1977–1993, Senior scholar 1993. Murray McPherson Award in Mathematics in 2007. Credited for establishing Manitoba's high school math contests and extensive outreach.

Narain Gupta (1936–2008). Ph.D. 1965, ANU, advisor Bernhard Hermann Neumann, thesis: *Commutation algebras of groups*. Started at UM 1967, Distinguished professor 2000, Distinguished Emeritus 2005. Fellow of the Royal Society of Canada (1985?), the Killam Fellowship, and Senior NATO Scientist

Award. (One of his Ph.D. students is G. Iraghi Moghaddam, an Instructor here at UM.) Algebra, group theory.

Chander Kanta Gupta (1938–2016). Ph.D. 1967, Australian National University, advisor Michael Frederick Newman, dissertation: *Centre extended by metabelian groups*. Started at UM 1967. Elected to Royal Society of Canada 1991. Krieger–Nelson Prize of the Canadian Mathematical Society in 2000. Distinguished Professor 2003. Half-time 2008. Group theory. [Personal note: I think that it was only a few weeks after I began my job in 2002. One day, she shows up at my doorstep on Ashland Dr with a box of sweets and pastries, and an invitation to her son's wedding at the Convention Center! She was always sweet to me.]

Gerald Otis Losey (1930–2000). Ph.D. 1958, University of Michigan, advisor Roger Conant Lyndon, dissertation: *Group rings and dimension subgroups*. Started at UM 1964. Served in both CS and Math.

Harley Cohen (1933–2022). M.Sc. in Applied Mathematics from Brown University 1958. PhD in Mechanics & Materials in 1964 from the University of Minnesota. Started at UM in 1966 as Associate Professor in Civil Engineering. Enhanced the mathematics curriculum in the faculty of Engineering. Distinguished Professor in Applied Mathematics 1983. Head of the Department of Civil Engineering 1984–1989. Dean of Science 1989–1994. Retired 1998 (Emeritus).

3 Other Senior Scholars in Mathematics

[This section started from names in an old department spreadsheet, and adding older data that I discovered while researching these names. Sorry, this section needs much more work.]

Martin Clutton-Brock (1933–). (astronomy, mathematical analysis) An astronomer, once listed as an administrator/contact for math. As of 2011, still publishing. Retired unknown date. As of 2022, was listed as a member of UMRA.

Henry (Hank) Charles Finlayson (1930–2022). (All I know is that he was teaching calculus in 1957, and was in St. Paul's college, when Tom Holens was his student; see https://www.dignitymemorial.com/obituaries/winnipeg-mb/henry-finlayson-10605461.) Maybe got PhD in Minneapolis, unpublished [4]? As of 2022, listed as a member of UMRA.

Thomas F. Holens. Robert Thomas [15] writes "He was employed by St John's College, I believe, and was grandfathered into the University Mathematics Department when SJC ceased to have independent academic staff in 1970." As of 2022, listed as a member of UMRA.

Nora E. Losey (1936–). Ph.D. 1963, University of Wisconsin, advisor J. Marshall Osborn, see "Useful theorems in commutative non-associative algebras", *Proceedings of the Edinburgh Mathematical Society* **15** (3), 1966. Was at UM in 1964 (see List of Members of Canadian Mathematical Congress, *Canadian Math. Bulletin*, 1965, p. 255). Received the Queen Elizabeth II Silver Jubilee Medal in 1977, http://www.mhs.mb.ca/docs/people/silverjubileemedal.shtml#l, Retired circa 1996. In 2007, Roy Vogt Memorial Award for Exceptionally Meritorious Service (to UMFA). As of 2022, listed as a member of UMRA. Bridge player. I think that her area was non-abelian finite groups.

Jacek Fabrykowski In Mathematics and Astronomy for a couple of years [5], perhaps 1989–1993? Was publishing in number theory and algebra in 1980s and 1990s. He attended a number theory conference in Winnipeg in 1983. In a 1984 *Acta Arithmetica* paper, Warsaw was his home. In a 1985 *Linear algebra and its Applications* paper, he uses University of Alberta. In 1987 and 1991, he co-wrote papers with Narain Gupta. In a 1988 paper in *Amer. Math. Monthly*, he still hailed from Alberta. He published a paper in *Number Theory*, Walter de Gruyter, 1989, listing Manitoba as his home. In 1992 and 1993, he published papers citing Winnipeg as his home (e.g., *Acta Math. Hung.* **62**). His last paper given by MathSciNet was published in 1994 (*Proc. Amer. Math. Soc.* **122**), where no home institution was given. According to Research Gate https://www.researchgate.net/scientific-contributions/J-Fabrykowski-2059247412, it appears that he is now at Youngstown State.

Murray G. Bell (1950–2001). Ph.D. 1977, University of Alberta, advisor Steve Willard, thesis: *Supercompact spaces*. UM 1981–2001. (set theoretic topology) See http://at.yorku.ca/t/o/p/d/22.htm for a brief obituary. [Personal note: In 2002, I moved into his old office, which was recently repainted because Murray continued to smoke in his office with the door closed—long after it was not allowed—and so the walls had changed colour.]

(John) Peter McClure (1943–). Ph.D. 1970, University of Newcastle upon Tyne, advisor: Graham Robert Allan, dissertation: *On some questions related to analytic functional calculus for commutative algebras*. Started at UM in 1970. Department Head of Mathematics and Astronomy, 1995–1998. Retired 1998. As of 2022, listed as a member of UMRA. (functional analysis).

Marlon Cecil Rayburn (1931–), Ph.D. 1969, University of Kentucky, advisor John Eldon Mack, dissertation: *On Hausdorff compactifications*. Topology. According to Joe Williams [19], he was already a member of the department when Joe arrived in 1970. So perhaps his start date was 1969. Joe also reports that early on, Rayburn was known as the Department's master punster. He retired circa 1995–1996 [19]. Michelle Davidson knew him well (in the 1990s?) and remembers his two rules for creating exams [3]: 1. Why flunk them with hard questions when you can flunk them with easy ones? 2. Never set a question on a final exam the answer to which you do not want to mark.

Rangachari Venkataraman (1931–). Ph.D. 1967, University of Madras, advisor Dr. M. Venkataraman. (topological groups, Lie groups, harmonic anal-

ysis). Ph.D. thesis advisor for 1. Watanabe in Algebraic Geometry (*Topological Definition of a Variety*) and 2. William Kramer Forrest, *Logic and applications to algebraic varieties*. Dr. Venkataraman is very much involved in community activities. Recipient of 2018 Community Service Award from Gandhi Peace Foundation (Canada).

Mangalam R. Parameswaran. For a while, at Ramanujan Institute of Mathematics, Madras; India, was publishing in 1959. At UM 1966–1996 or so. Sequences, series, summability. (Taught Pad while at Madurai. MRP was Pad's senior by five years or so) where Pad became interested in lattices. Now (2022) living in Texas with Uma and their daughter [12].)

William (Bill) D. Hoskins (1945–). Ph.D 1970, Brunel University, Uxbridge, England. Supervisor: E. L. Albasiny, "(I think)" [5] from Division of Numerical and Applied Mathematics, National Physical Laboratory, Teddington, England), dissertation: *Studies in spline approximation and variational methods*. Came to U of Manitoba in 1970 in the CS department. Had two Ph.D. descendants in mathematics (mentioned below in Section 4), Dereck Meek (1973) and Desmond Walton (1978). Transferred from CS to Applied Mathematics in the early 1990s [5]. [Personal note: I haven't yet found his retirement date nor much other information—except that in Fall 2003, we both were teaching our old Discrete Math course 136.120, and me for the first time, so he was a great help. I seem to recall, but I might be mistaken, him telling me that he was seriously involved in making or playing big harps. I hope that I have the right guy.]

Peter T. Penner (1942–). Ph.D. 1981 University of Manitoba, advisor George Gratzer, dissertation: *Hyperidentities of lattices, semilattices, and diagonal semigroups*. I think his start date at UM was in early 1980s as an Instructor. Retired 2009, then becoming Senior Scholar.

Roderick S. C. (Sue-Chuen) Wong (1944–). Ph.D. 1970, University of Alberta, advisor Max Wyman, dissertation: *A generalization of Watson's Lemma*. (classic analysis) Joined Department of Mathematics & Astronomy in 1969. Full professor 1979. Killam Research Fellowship 1982–1984. University of Manitoba Rh Award 1984. Head of Applied Mathematics 1986–1995. Fellow of the Royal Society of Canada in 1993. (with one year interruption). He resigned from UM in 1994 or 1995 to help found a mathematics department in Hong Kong. See his *Wikipedia* page: https://en.wikipedia.org/wiki/Roderick_S._C._Wong (last accessed 25 June 2002).

He is now an Emeritus Professor at City University of Hong Kong and was a founding director of the Liu Bie Ju Centre for Mathematical Sciences. [Thanks to Joe Williams [19] for some of this info.]

Andrew Lloyd Dulmage (1917–1989): PhD 1952, University of Toronto and Brandon University, advisor H. S. M. (Harold Scott MacDonald) Coxeter, dissertation: *On the relation between continuity and angle sum in hyperbolic geometry*. Taught at UM 1942–1950 or so. Then taught at RMC Kingston

1950–1956. Joined UM (Mathematics) again 1956–1964, then became Head of Mathematics at University of Alberta. Returned to UM 1966 as Professor in Mathematics and Associate Dean of the Faculty of Arts and Science; named Dean of Arts and Acting Dean of the Faculty of Arts and Science in 1969. He left the UM in 1970 to be President of Brandon University, retiring in 1977. After retirement, taught mathematics for 2.5 years in Swaziland, then a year at Memorial University in Newfoundland. See http://www.mhs.mb.ca/docs/people/dulmage_al.shtml. [According to http://www.mhs.mb.ca/docs/organization/universitymanitoba.shtml#science, he was department head of Statistics during 1967–1969, so perhaps more research is needed.]

William Tier (1869-1939): Attended University of Toronto, then taught at some Ontario high schools before being appointed to the staff of Manitoba College in Winnipeg, in 1903. In 1914, joined teaching staff of the University of Manitoba. Was in charge of teaching mathematics and served as Dean of the Faculty of Arts and Science 1922–1939. The Tier Building (Fort Garry campus) is named after a mathematician! See http://www.mhs.mb.ca/docs/people/tier_w.shtml

Robert Rutherford Cochrane (1850–1910), mathematics, one of the original six Professors in Science in 1904; he held this position until his death. See [9], or for a more complete story of the original six, see http://www.mhs.mb.ca/docs/mb_history/47/manitobascience.shtml. See also [11] for more on the early history of the Faculty.

4 Retired Mathematicians in Computer Science

When I was an undergraduate in Calgary, I discovered that the University of Manitoba was one of the world's leading centers for combinatorics (e.g., design theory, graph theory, finite geometries), and other discrete math, such as number theory, foundations, lattice theory, and universal algebra. This is in large part because of mathematicians here in the Computer Science department, so I would be remiss if I didn't mention a few that have retired but have heavily influenced the face of mathematics here at the University and around the world.

Ralph Gordon Stanton (1923–2010). Ph.D. 1948, University of Toronto, advisor Richard Dagobert Brauer, thesis: *On The Mathiew Group* M_{24}. Taught at University of Toronto 1946–1957, then moved to Waterloo college. Instrumental in the foundation of the University of Waterloo. Created the Faculty of Mathematics, then became Dean of Grad Studies at University of Waterloo. Made Waterloo one of the major world centres for combinatorial research. Led in development of the Canadian Junior Mathematics Contest and the Descartes Senior Mathematics Competition.

Started at UM 1970, hired as head of CS. Founded the Charles Babbage Research Centre. Began five mathematics journals: *Ars Combinatoria*, *Utilitas*

Mathematica, *Congressus Numerantium* (proceedings), *Journal of Combinatorial Mathematics and Combinatorial Computing*, *Australasion Journal of Combinatorics*. Distinguished Professor 1984. Killam prize for mathematics 1986. Honorary D.Sc. degrees by University of Newcastle in 1979 and the University of Queensland in 1989. In 1990, co-founded the *Institute for Combinatorics and its Applications*. For a list of accomplishments up to 1991, see [8]. For one obituary, see [13].

Hugh C. Williams (1943–). PhD 1969, University of Waterloo, advisors Ronald C. Mullin and Ralph G. Stanton, thesis: *A generalization of the Lucas functions*. At UM 1970–2001. Killam Research Fellowship 1983–1985. Emeritus 2004. Moved to University of Calgary, Alberta Informatics Circle of Research Excellence (iCORE) Chair in Algorithmic Number Theory and Cryptography, retired 2016). Later became head of the Tutte Institute (dates unknown).

Gerritt (John) Hendrik Johannes Van Rees. Ph.D. 1978, University of Waterloo, advisor Ronald C. Mullin, dissertation: *The Role of* (r, γ)*-designs in some combinatorial configurations*. Was advisor of Ben Pak Ching Li (now prof in CS also doing combinatorics). See https://umanitoba.ca/research/media/October_11_2012_Bulletin.pdf for article on his work in lotto designs.

Douglas Robert Stinson (1956–). PhD 1981, Combinatorics and Optimization, University of Waterloo, advisor R. Mullin, dissertation: *Some classes of frames, and the spectra of skew Room squares and Howell designs*. NSERC post-doctoral fellow, University of Manitoba, Department of Computer Science, 1981–1982. Assistant professor, Department of Computer Science, 1982–1983. Associate professor 1983–1986. University of Manitoba Rh Award 1985. Full professor 1986–1991 (on leave, 1990–1991). Founding Fellow of the Institute of Combinatorics and its Applications, 1990. Went to CS in Waterloo (maybe retired now, but was still teaching in 2019). Fellow of the Royal Society of Canada, 2011.

John Aubrey Bate Ph.D. 1978, University of Manitoba, advisor Ralph Stanton, thesis: *A generalized covering problem*. (available at https://mspace.lib.umanitoba.ca/xmlui/bitstream/handle/1993/14180/Bate_A_generalized.pdf?sequence=1&isAllowed=y. Retired from CS 2019. Now Senior Scholar. Much of his work was in combinatorial design theory. Tommy Kucera [6] reports: For many years though his principal area of research was in Computer Music, and along with Michael Mathews of the School of Music, founded the Computer Music Studio which lived in the basement of Machray Hall for a decade or so. He continued to dabble in computational aspects of design theory during and after that period.

William Lawrence Kocay Ph.D. 1979 University of Waterloo, advisor Ronald C. Read, dissertation: *K-reconstruction of graphs*. Started at UM in 1979 as an NSERC post-doc, becoming Assistant Professor in 1981. University of Manitoba Rh Award 1987. Managing editor of *Ars Combinatoria* 1988–1997

and editor in chief 2010–2020. Founding fellow of the Institute of Combinatorics and its Applications. Member of St. Paul's College in 1997 (invited by Roy Dowling). Retired 2019. Now Senior Scholar. (graph theory, graph algorithms, Ulam's conjecture, 3-hypergraphs, projective geometry)

Riaz A. Usmani Ph.D. 1967, University of British Columbia, advisor Charlotte Froese Fischer, dissertation: *Numerical solution of boundary value problems in ordinary differential equations*. Was in CS as of 1970 [15], later transferring to Applied Mathematics. Passed away in the late 1990s. A numerical analyst.

The next two faculty entries come from Dereck Meek, via Bill Kocay [5].

Dereck S. Meek Ph.D. 1973, University of Manitoba, supervisor William D. Hoskins, dissertation: *On the numerical construction and approximation of some piecewise polynomial functions*. Came to UM in 1970. Retired 2016.

Desmond J. Walton, Ph.D. 1978, University of Manitoba, advisor William D. Hoskins, thesis: *Some new methods for the solution of matrix equations arising from discretized partial differential equations*, Came to UM early 1970s. Member of St. Paul's College. Was faculty beginning 1984? Looking at publications, it appears as if he retired circa 2012.

[It is also noteworthy that Bill Hoskins transferred from CS to Applied Mathematics in the early 1990s [5].]

5 Mathematicians in actuarial science at University of Manitoba

Lloyd A. H. Warren (1879-1949): Ph.D. University of Chicago, Began at UM in 1910 as Assistant Professor in Mathematics. Then founded department of Actuarial Science, serving as head 1935–1948. See http://www.mhs.mb.ca/docs/people/warren_l.shtml.

6 Some history of mathematics in University of Manitoba

The earliest mention of mathematics at UM that I could find was from [18]:

> 1884: The University's Board of Studies debates the issue of paying examiners. After assurances from the Bursar that sufficient funds were available for these payments a scale of pay based on the volume of work and the difficulty of the subject area is established. Examiners in Classics and Mathematics are paid $40.00. ...

Math was taught in different colleges (by 1955, there were six colleges) and in different contexts. From [11]:

> The next college to be founded was St. John's College in 1866. Like St. Boniface College, religion was the central focus of education practices. Under the strict directorship of Bishop Robert Machray, mathematical Ph.D.and classical curricula was a top priority for his students.

From [18]:

> June 1890: A new statute governing preliminary or matriculation examinations is adopted and provides for examinations in the fixed subjects of Latin, Mathematics, English or French, History or Geography, and one from an optional group of subjects which included Greek, French or English, and German, French or English, and Botany, German and Physics.
>
> 1904: Lord Strathcona donates $20,000 (4 instalments of $5,000 in 1904,1905, 1906 and 1907) to the University. This gift and the prospective increase in the University's annual revenue results in the establishment of the Faculty of Science with chairs in physics, botany, chemistry, physiology and zoology, and mathematics at a salary of $2,500 annually. A Chair in Bacteriology is also established on the condition that the provincial bacteriologist be appointed to the position and that the provincial government continue to pay his salary. The first professors of the University of Manitoba are appointed. They are A. H. R. Buller (Botany and Geology), Frank Allen (Physics and Minerology), M. A. Parker (Chemistry), **R. R. Cochrane** (Mathematics), Swale Vincent (Physiology and Biology) and Gordon Bell (Bacteriology, Pathology and Histology).

(See also [11].)

From [18]:

> 1916: The Department of Arts including Mathematics, the Department of Architecture, the Library and the administrative offices of the University are moved into the former Law Courts Building.

(From 1901, Science was in a building on Broadway; I refer the reader to the website http://www.mhs.mb.ca/docs/mb_history/47/manitobascience.shtml or [11] for details.) At some point, Science moved to the Fort Garry Campus; [I have no details.]

In 1932, the New Science building (now the Buller Building in Fort Garry campus) opens. [I can not tell if mathematicians occupied this building; years later, some were in Fletcher Argue.]

[The Faculty of Arts and Sciences separated into two faculties in 1970, and Mathematics (and Astronomy) went to Sciences.]

According to the *University of Manitoba Calendar 1955–1956* [17, pp. 141–144], the Mathematics and Astronomy department consisted of: Professors J.

W. Lawson (Chair), W. H. McEwen. Associate Professors T. H. Milne, **N. S. Mendelsohn**. Assistant Professors B. Noonan, N. Divinsky, F. Zeiler, R. Lockhart, D. G. Wertheim. [Besides Mendelsohn, I am not aware of who else were mathematicians. McEwen, Milne and Mendelsohn each later became Head of the department. Zeiler was later acting head of Applied Mathematics.]

Courses were: 110 Algebra, Trigonometry, and Analytic Geometry. 112 Algebra. 113 Analytic Geometry and Calculus. 116 Plane and Spherical Geometry. 201 Calculus. 202 Calculus. 208 Calculus. 209 General Astronomy. 301 Calculus. 302 Differential Equations. 303 Astronomy. 306 Basic Concepts of Mathematical Analysis. 307 Calculus. 308 Plane and Solid Analytic Geometry. 309 Topics in Algebra. 310 Analytic Geometry and Theory of Equations. 311 Differential equations. 312 Matrix and Vector Algebra. 403 Advanced Calculus. 404. Higher Algebra. 405. Differential Equations. 406. Vector Analysis. 407. Vector Analysis. 408. Algebra (intro to modern algebra). 409. Calculus and Differential Equations. 501. Theory of Functions of a Complex Variable. 502. Real Variable Analysis. 503. Projective Geometry. 504. Modern Algebra. 505. Advanced Vector Analysis and Tensors. 596. Differential Geometry. 508. Higher Algebra. 509. Laplace Transform. 510. Modern Algebra.

In 1955, the (separate) department of Mathematical Physics had only two Associate Professors and 5 courses (all in physics).

The Department of Applied Mathematics began in 1971 with Don Trim as the first member, overseen by Ralph Stanton until Felix Arscott was chosen as the first head over two years later, making the Department of Applied Mathematics an operational department in 1974 [19]. In 1974, Tom Berry was the next person added to the department. For quite a number of years after this, the only new members of the department were transfers from the Department of Mathematics including Peter Aitchison, Pappur Shivakumar, Joe Williams, Fred Zeiler, and, from CS, Robert Thomas [16] (Robert Thomas joined Applied Mathematics in 1978), and Riaz Usmani [15].

The department of Mathematics and Astronomy was, up until 1970, housed in the sixth floor of Fletcher Argue [12]. In 1972, the departments of Mathematics and Astronomy, CS, and Statistics moved into Machray Hall (MH) as a temporary measure. That was 50 years ago! Machray Hall was then called the NEMP: Northeast Multipurpose Building. Two references for the change of name from NEMP to Machray Hall are supplied by Joe Williams [19]:

http://sci.umanitoba.ca/wp-content/uploads/2019/07/1975-12-04.pdf, The minutes of the thirty-sixth meeting of the Executive Committee of Faculty Council of Science held on Thursday, December 4, 1975 See: 2. Matters Arising Therefrom: Naming of N.E.M.P.

http://sci.umanitoba.ca/wp-content/uploads/2019/07/1975-12-11.pdf, The twenty-third meeting of the Faculty Council of Science, Thursday, December 11, 1975 See: 4. Report from the Executive Committee. Naming of N.E.M.P. Ceremony

MH was designed as a library. George Gratzer tells me [4] that at first, there was only one light switch per floor, so if someone worked late, the entire floor

was lit up. Walls were also not soundproof. (We now have light switches for offices, but still little soundproofing.) This year marks the 50th anniversary of the "temporary" location of math in Machray Hall!

In 1998, the two departments merged into the Department of Mathematics. So as of 2022, the present Mathematics Department is only 24 years old. For more on the history of the Faculty of Science, see https://sci.umanitoba.ca/ourhistory/. Prior to 2012, math was scattered among floors 3, 4, 5. The main offices of both Statistics and Mathematics were at the end of the hall on the third floor. (The fifth floor was mainly for CS before 2002.) Starting 2011, offices were moved around, with the new main math office now in the lobby of the 4th floor, along with a media room; Mathematics is now on floors 4 and 5. Recently, new plans for Machray Hall are being drawn up; I don't know when they will be finalized or announced.

7 Department Heads

Data below is based on [10] with slight changes/additions; thanks to Joe Williams [19] for some clarifications.

7.1 Heads of Mathematics (or Mathematics and Astronomy)

- 1904-1910: Robert Rutherford Cochrane
- 1910-1928: Neil B. McLean
- 1928-1945: Norman R. Wilson
- 1945–1946: T. H. Milne
- 1946–1953: W. H. McEwen
- 1953–1963: Joseph M. Lawson
- 1963–1990: Nathan Saul Mendelsohn (1917-2006)
- 1990–1995: Lynn M. Batten
- 1995–1998: Peter McClure
- 1998–2003: Grant Woods
- 2003–2010: Guenter Krause
- 2010–2012: David S. Gunderson
- 2012–2014: Julien Arino (acting head)
- 2014–2020: Steve Kirkland (check dates)
- 2020– : Shaun Lui

7.2 Heads of Applied Mathematics

- 1974–1986: Felix M. Arscott (with Frederick Zieler as acting head for one of these years).
- 1986–1991: Roderick S. C. Wong
- 1991–1992: Joseph Williams (acting)
- 1992–1995: Roderick S. C. Wong
- 1995–1998: Robert S. D. Thomas

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[2] G. Czédli, Celebrating Professor George A. Grätzer, *Categories and Algebraic Structures with applications* **11** (2019), 1–9.

[3] Michelle Davidson, *Personal communication*, 23 June 2022.

[4] George Gratzer, *Personal communication*, 16 June 2022.

[5] Bill Kocay, *Personal communication*, 23 June 2022.

[6] Tommy Kucera, *Personal communication*, 24 June 2022.

[7] Math Geneology Project, https://www.genealogy.math.ndsu.nodak.edu/search.php, last accessed June 2022.

[8] Brendan D. McKay, Jennifer Seberry, Scott A. Vanstone, "Ralph Gordon Stanton", *Discrete Mathematics* **92** (1991), 1–8.

[9] *Memorable Manitobans: Robert Rutherford Cochrane (1850–1910)*, website http://www.mhs.mb.ca/docs/people/cochrane_rr.shtml, Manitoba Historical Society, accessed 18 June 2022.

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[11] *Our history*, Faculty of Science website https://sci.umanitoba.ca/ourhistory/. Accessed 18 June 22.

[12] R. Padmanahban, *Personal communication*, 18–23 June 2022.

[13] Hartmut W Sager, *Ralph Gordon Stanton* (obituary), Passages, Winnipeg Free Press, posted 2019. https://passages.winnipegfreepress.com/passage-details/id-163971/STANTON_RALPH. Accessed 22 June 2022.

[14] Pappur Shivakumar, *personal communication*, 22 June 2022.

[15] Robert Thomas, *personal communication*, 21–26 June 2022.

[16] Don Trim *Personal communication*, 21 June 2022.

[17] *University of Manitoba General Calendar, 1955–1996*, University of Manitoba.

[18] *University of Manitoba History: University of Manitoba Chronological History*, University of Manitoba Libraries page, https://libguides.lib.umanitoba.ca/archives/umanitobahistory/timeline, accessed 17 June 2022.

[19] Joe Williams, *personal communication*, 22–26 June 2022.