Remembering Bruce Shawyer: Mathematician, Musician, Educator, Gardener, Loving Husband, Father and Grandfather

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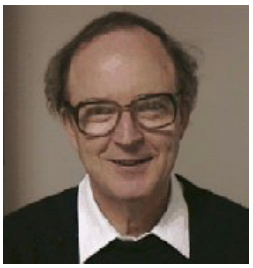

Bruce had a profound influence, not only on me, but on many of the people he came in contact with. He will be missed.

We only met in person a handful of times and he always made me feel like a friend and a valued colleague.

Bruce was always kind to me, and he challenged me to do more. I think I'll consider my mathematical career a success if I can measure my positive influence in a fraction of Bruce's positive influence.

I always found him to be calm, and to have a calming presence. I can't recall him being upset, perhaps sometimes slightly exasperated or a bit frustrated with some problem or other, but somehow he always seemed to see them in perspective. I don't know this, but I suspect he asked himself if he would even remember the problem after some time had passed, and decided that he would not, and therefore it was really not that important. It also helped that he had a good sense of humour.

His joy of life and of mathematics clearly shines through whenever one encounters him.

Bruce L.R. Shawyer (12 May 1937 – 21 November 2021) passed peacefully at St. Luke's Homes, St. John's, after a sudden illness. The above quotes from contributors to this piece speak to the person. An effort is made here to offer a tribute to Bruce Shawyer through broadening awareness of his contributions to the mathematical community while offering a wider lens for viewing his life as a mathematician and beyond. Many of the voices appearing in this piece are those of long-time colleagues at Memorial University of Newfoundland (MUN).

As a child in Kirkcaldy, Scotland, during WWII, he discovered a love for Mars Bars, provided by his grandfather, a naval blacksmith who had access to chocolate rations. He was the first in his family to attend university. At the University of St. Andrews, his mentor David Borwein encouraged his interest in mathematics, and Bruce received his PhD in 1963. He taught at the University of Nottingham from 1962-1966, where he met his beloved wife Jo. In 1966 they moved to Canada for a six month visit that extended 55 years. Bruce taught at the University of Western Ontario (1966-1985) and Memorial University (1985-2002) prior to being named a Professor Emeritus of Mathematics at MUN in 2004.

Bruce Watson had an unusual take on Bruce Shawyer's experience in Canada, as reflected in his words here:

> *Bruce moved to St. John's in 1985 to take up the position of head of the Department of Mathematics and Statistics at Memorial University. But I had known him since the 1966-67 academic year. Soon after arriving from the UK as a new faculty member at Western University, Bruce was assigned to teach the complex half of the third-year honours course Real and Complex Analysis. I was an undergraduate student in that class. Two years later I became a graduate student of David Borwein. Bruce had also been a student of David's at St. Andrew's in Scotland. Hence, we were interested in the same sorts of problems.*
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> *After I was hired by Memorial, Bruce visited the university. He and his wife, Jo, liked the city and university and he later applied for the headship position. During his time at Memorial, besides allowing me to bounce my ideas off him, we collaborated on two books. The first was an Oxford publication entitled Borel's Methods of Summability: Theory and Applications. Bruce's early research work had been on problems in Borel's methods. The other book was volume XI in the CMS's ATOM series called Problems for Junior Mathematics Leagues.*
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> *Bruce's contributions to mathematics education in Newfoundland and Labrador were extensive. He started the very successful Senior High Math League in St. John's area high schools and later, via the internet, it was expanded to other interested schools in the province. He encouraged me to extend the math league idea to the junior high level when I was acting head in 2000-01. This led to the ATOM book.*

Years earlier in 1987, Bruce Shawyer and Rita Janes established the Newfoundland and Labrador Teachers' Association (NLTA) Senior Math League in St. John's. This league brought together various schools in a common setting, such as a host school or the MUN campus, usually four times annually. The league extended beyond the overpass to regional gatherings across Newfoundland and Labrador. Bruce was a regular attendee at the St. John's games for many years along with Peter Booth as representatives of the math department. Volumes III, VI, and VIII of the ATOM series are *Problems from Mathematics Leagues I, II and III* respectively. These publications along with *Shaking Hands in Corner Brook* offer collections of math league problems prepared by Bruce Shawyer, Peter Booth, and John Grant McLoughlin.

The building of relationship with students and colleagues was significant. David Pike adds, "When I was a junior member of my department, Bruce's

mentorship and advice were always welcome and sage. He was particularly fond of working with undergraduate students and helping to provide them with opportunities, including the annual invitational to his splendid backyard garden."

Bruce was a mentor who touched the lives of many people. Neil and Rebecca McKay are among the math league participants who have gone on to pursue academic careers in mathematics. "Dr. Shawyer largely contributed to both of us ending up in mathematics." As a participant in the *Women in Science and Engineering (WISE)* program, Bruce showed Rebecca the beauty of mathematics (and LaTeX!). Neil states, "Bruce's biggest impact was through the NLTA Senior Math League. The Math League introduced me to collaborative mathematics and to sharing mathematics in a room full of strangers, which I now do professionally." One of the noticeable hallmarks of the league was the high level of participation by women, as supported by the collaborative model with teams of four at tables doing mathematics. The fact that the league continues to flourish 35 years after its inception speaks to the legacy of Bruce's efforts in building a community for mathematical problem solving.

Bruce served as Editor-in-Chief for *Crux Mathematicorum*. Shawn Godin comments on his own experience upon joining Crux to edit the *Mathematical Mayhem* section: "I was intimidated. I had enjoyed *Crux* for years, and was proud when I was able to solve a problem or two from an issue, but I didn't feel qualified to work on it. Bruce was a wonderful mentor, he taught me LaTeX, gave me praise for some of my work and gave me feedback that allowed me to grow without feeling that I was out of place." Later this year a special issue of *Crux* will be dedicated to Bruce Shawyer. The call for contributions is forthcoming in the next month.

Exemplary mentorship was an aspect of his leadership that showed in other ways, as expressed here by Eddy Campbell.

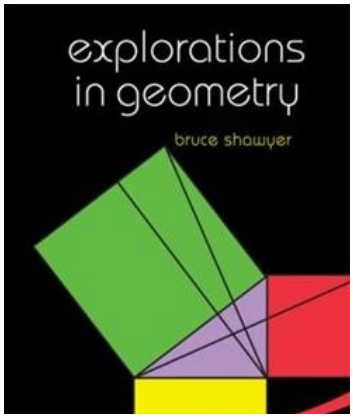
> *In my experience, he was balanced and fair in his work as an administrator. A good citizen, without whom no department, faculty or university can run well or aspire to be great. He cared about teaching—this was really obvious in his work for the CMS—and this, too, is essential for any university, and Memorial benefitted a great deal from his passion for teaching, part of why I use the word balanced. Of course, he understood the importance and value of research, this showed in his work as Head in the hires that he oversaw. Service teaching is the bread and butter of mathematics departments everywhere, it helps if our leaders show that they care and work hard to support it. He also helped nurture undergraduates with his life-long commitment to problem-solving and Crux.*

Bruce Shawyer's contributions to mathematics have been recognized throughout his career. These honours include recognition as a Fellow of the Alexander von Humboldt Foundation. The CMS named him the recipient of the Adrien Pouliot Award in 1996 for his contributions to mathematical education. Recently in 2019 he was named a Fellow of the CMS.

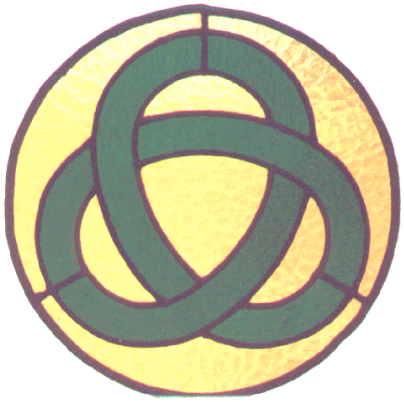
Bruce was a mathematician. His research was in the analytic theory of divergent series. In communications with Jo Shawyer, she wrote:

> *The bottom line is that Bruce enjoyed mathematics every day of his life. And he enjoyed sharing it with others, and demonstrating its excitement to even the most reluctant students. He was particularly fond of geometry and a little sad that it did not have a more prominent place in the curriculum in the years which he taught.*

His publication of a book entitled *explorations of geometry* illustrates his appreciation through a blend of theory and about 200 problems encompassing topics such as basic Euclidean geometry, concurrency and collinearity, constructions, and conic sections. Detailed solutions to problems cover almost 150 pages, thus, making up half of the book. In the preface, Bruce mentions the value of the material to students at secondary school and undergraduate levels with an interest in math competitions. He writes "I have been involved in helping in such events for many years, and still find it such an enjoyable occasion when students are having enjoyment solving mathematical problems." Bruce played an active role in coaching with the *International Mathematical Olympiad* (IMO) and most notably played a critical role in organizing and bringing the IMO to Canada in 1995.



The interests of Bruce Shawyer extended well beyond mathematics. Bruce played the piano his whole life and composed many Scottish and English country dance works. His favorite times in recent years were playing with his bandmates at St. Luke's. His father taught him gardening, and Bruce loved spending time outdoors and hosting garden parties. He also built beautiful things with wood and stained glass.



Bruce actually composed musical pieces for each of my two daughters when they were young in St. John's. Bruce and Jo were such kind people to our family especially when settling into St. John's. Bruce was a mentor as well as being the editor who brought me on board with *Crux* initially to coordinate the book reviews and subsequently to participate with *Mayhem* problem selection and so on. Bruce was also the Chair who vetted me to teach MUN's first year math courses in Labrador Community College in the early 1990's. The opportunity to collaborate with him on books and math leagues added to our professional connections, and visits to his home and the wonderful gardens were always a delight.

An amusing memory concerning Bruce occurred in 1998 in his absence. Bruce and Jo commonly went to the UK in May. Imagine the surprise when a person arrived in the department looking for Bruce having travelled from the UK. This person had come for the CMS Meeting in St. John's. We had to break the news that the Shawyers were in the UK and that he was a year early for the meeting. People really went out of their way to visit Bruce!

Bruce's spirit of hospitality and kindness was further reflected through opening a family home to immigrant families needing a place to stay, to Polish defectors during the Cold war, to Miranda Leather whom he loved like a daughter, and to numerous others who were always welcome at holiday meals. Bruce is loved by his sister Elma MacIntyre (Bill), his wife Jo, his children Janet Rowe (Glen), Andrew Shawyer (Molly), Anna Shawyer, Susanne Shawyer (Tony), granddaughter Amanda Shawyer and Miranda Leather (Chris).

In closing, the words shared by Edgar Goodaire offer further insight into why many of us feel fortunate to have had our journeys cross paths with Bruce Shawyer.

> *I think often of the early days. It is important to note that Bruce was the first Memorial Head of Mathematics/Statistics who was not a native Newfoundlander and natural friend of those who worked for him. There is no doubt that some were skeptical, even anxious,*

> *but these feelings did not last for long. I have never met a couple who defined «social» as did Jo and Bruce Shawyer. Almost immediately, they began hosting dinners. I'll bet there was not a member of the department who hadn't been invited over to the house. I was fortunate to have been there on many occasions. The children were chefs and waiters. For some reason, I was usually the designated wine server! Boy, what a great guy. Great person, friend, colleague, leader, citizen.*

Acknowledgments:
Contributions from Peter Booth, Eddy Campbell, Robert Dawson, Shawn Godin, Edgar Goodaire, Neil McKay, Rebecca McKay, David Pike, Jo Shawyer and Bruce Watson are respectfully appreciated.