Peter Borwein
1953-2020

Veselin Jungic (Simon Fraser University)

Peter Borwein's death on Sunday, August 23, 2020, will be felt as a personal loss for many mathematicians around the world. He was an exceptional person, a well-rounded intellectual, a creative and productive mathematician, a visionary leader, an inspiring teacher, and a generous mentor and collaborator.

Peter obtained his B.Sc. (1974) at the University of Western Ontario and his M.Sc. (1976) and Ph.D. (1979, under the supervision of David Boyd) at the University of British Columbia. In the spring of 1980, during his post-doctoral studies at Oxford University, Peter was offered a position at Dalhousie University.

It was at Dalhousie that Peter grew into his own as a mathematician. He began working closely with his older brother, Jonathan. Of their time at Dalhousie, Jonathan once commented, "We talked math for the first time in our lives and we made up for lost time." One of the outcomes of their collaboration was the book "Pi and the AGM." In his review, George Andrews wrote: "Fortunately we have the Borweins' beautiful book..." (As a side note, many years later I witnessed Peter proudly but also somewhat mischievously recite the slogan that he created during the 1988 strike at Dalhousie: "Building a better university – sorry for the inconvenience!")

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Figure 1 Jonathan (right) and Peter Borwein in CECM cc 1994. The image in the background represents roots of the Littlewood polynomials of degree at most 18 (Art by Bethani L'Hereux)

Both Peter and Jonathan joined Simon Fraser University's Department of Mathematics in 1993. Peter was an exceptional researcher, teacher, and supervisor, who contributed to the SFU community in numerous ways. Together with Jonathan, in 1993 he established the Centre for Experimental and Constructive Mathematics (CECM). In the late 1990s he served as the Pacific Institute for the Mathematical Sciences (PIMS) SFU site director, and in the early 2000s secured over 11 million dollars in Canada Foundation for Innovation (CFI) funding to build and operate the Interdisciplinary Research in the Mathematical and Computational Sciences (IRMACS) Centre, a visionary project with the purpose to, in Peter's words, "host any scientist who uses computers as a tool in their research." Peter was the true heart and soul of the IRMACS Centre.

With video conferencing increasingly becoming our main communication tool as a result of the current pandemic, it is easy to forget that hosting synchronous scientific meetings with speakers and audience members across Canadian universities was in the recent past a pioneering, complex, and in many ways heroic endeavour. Thanks to Peter and Jonathan's vision, the IRMACS Centre and D-Drive at Dalhousie University hosted the first "Coast-to-Coast Seminar" on Tuesday, September 13, 2005, and started accumulating insight into how to deal with issues that we now take for granted, such as scheduling events across multiple time zones, reaching out to scientific communities in different parts of the country, and establishing etiquette for remote collaboration meetings. The series would run for the following 10 years.

Peter has nearly 200 scientific publications, including several books, to his credit. Peter's research interests spanned Diophantine and computational number theory, classical analysis and symbolic computation. He had a central interest in scientific collaboration and computational experimentation technologies. For example, the Bailey-

Borwein-Plouffe (BBP) formula is still one of the major components of the algorithms used to calculate large amounts of the digits of the number Pi.

Over the years, Peter supervised 35 post-doctoral fellows,13 doctoral students, 9 master's students, and 28 undergraduate (USRA) students.

Peter was a member of several editorial boards, including "The Canadian Journal of Mathematics," "Ramanujan Quarterly," and "Electronic Transactions on Numerical Analysis." In addition, Peter was a co-editor of the CMS/Springer Advanced Mathematics Series.

All of these achievements should not come as a surprise for someone who attended his first International Math Congress when he was only five years old. The conference was held in 1958 in Edinburgh, Scotland, and Peter's dad David, a faculty member at the University of St. Andrews at the time, was the secretary of the General Assembly. Peter recently claimed to still have his nametag from the conference; he wore it to his first day of school in St. Andrews

Through Peter's parents' friendship with Paul Erdős, the young Peter was one of "uncle Paul's Epsilons". Peter would write many years later: "My first published paper as a graduate student was on a problem of Erdős'. As were at least a dozen subsequent papers. Erdős touched many mathematicians in this way. I often got 2:00 am phone calls that began in a distinctive Hungarian accent: 'This is Paul, I have a problem for you.'"

Peter was a full professor, a recipient of the Chauvenet Prize and the Hasse prize in 1993 (with Jonathan Borwein and David H. Bailey), and a co-recipient of the 1996 CUFA/BC Academic of the Year Award. He also received the University of Western Ontario National Alumni Merit Award in 1999, the Ford Prize 2002 (with Loki Jorgensen) and held a SFU Burnaby Mountain Chair award.

For many years Peter battled with progressive Multiple Sclerosis, a cruel illness he bore with exceptional grace and courage.

On a personal note, Peter was my friend, mentor, and a role model. On Saturday, March 13, 2004, Peter was the first speaker in the "A Taste of Pi" series of talks and activities that I co-organized with Malgorzata Dubiel for many years. Appropriately, the title of his talk was "A VERY LARGE Piece of Pi."

Peter was born in St. Andrews, Scotland, on May 10, 1953. Peter and his wife Jennifer have three daughters, Alexandra, Sophie, and Tess. Peter would often repeat the words of Bertel van der Waerden: "None of the three of my children had any interest in mathematics."

Due to the COVID-19 pandemic the family will not be having a ceremony in the near future but hope for one in the spring/summer of next year.

Acknowledging Pam Borghart's contribution to this article.

Donations to the Peter Borwein Graduate Scholarship are welcome through here .