
Preface

1974 was a turning point for the history and philosophy of mathematics in North America. After years of planning, the first issue of the new journal *Historia Mathematica* was printed. While academic journals are born and die all the time, it was soon clear that *Historia Mathematica* would be a major factor in shaping an emerging discipline; shortly, it became a backbone for a global network of professional historians of mathematics. In the same year, the Canadian Society for History and Philosophy of Mathematics (CSHPM) was founded, adopting *Historia Mathematica* as its official journal. (In the 1990s, the CSHPM recognized its broader mission by naming *Philosophia Mathematica* as its official philosophical journal, rechristening *Historia Mathematica* as its historical journal.) Initially consisting almost entirely of Canadian members, the CSHPM has become in practice the North American society for the scholarly pursuit of history and philosophy of mathematics. The joint establishment of society and journal codified and legitimized the field, commencing what has become a renaissance of activity for the past 30 years.

These initiatives were begun by, and received much stimulus from, one man: Kenneth O. May, of the Institute for History and Philosophy of Science and Technology at the University of Toronto. May was a brilliant researcher, but he recognized that the viability of the fledging discipline required administrative leadership as well. In the introduction that follows, Amy Shell-Gellasch, CSHPM archivist, describes May's life and some of his achievements. Central to May's vision of the history of mathematics was the dichotomy between the role of the historian and the use that a mathematician might find for history. Mathematical practitioners, for reasons of pedagogy or in order to contextualize their own work, tend to focus on finding the antecedents for current mathematical theories in a search for how particular sub-disciplines and results came to be as they are today. On the other hand, historians of mathematics eschew the current state of affairs, and are more interested in questions that bear on the changing nature of the discipline itself. How, for instance, have the standards of acceptable mathematical practice differed through time and across cultures? What role do institutions and organizations play in the

development of the subject? Does mathematics naturally align itself with the sciences or the humanities, or is it its own creature, and do these distinctions matter? The lead article in this volume, by Ivor Grattan-Guinness, is a strong statement on what makes history of mathematics unique, and reflects well May's own vision for our field.

May passed away, too early, in 1977. However, his legacy lives on partly through our thriving community; the continued prosperity of the CSHPM, *Historia Mathematica*, and *Philosophia Mathematica* are a resounding testament to that. In 2002, on the 25th anniversary of his passing, the CSHPM held a special meeting in May's honour. One of our actions at this meeting was to re-christen the keynote addresses at our annual general meetings as the "Kenneth O. May Lectures". Each of our annual meetings is a special occasion: while also providing a forum for presentations on all aspects of history and philosophy of mathematics, each meeting focuses on a specific theme, with activity revolving around an invited keynote address by a scholar of international repute. The diversity of these sessions over the years, witnessed in the table below, is a clear testament to the breadth and significance of the CSHPM's activities.

Since 1988 the CSHPM has preserved a record of the scholarly activities of the annual general meeting through the production of a volume of Proceedings, to which all speakers are invited to contribute. These Proceedings, distributed internally to Society members, are by now a repository of a great deal of valuable research. Some of these works have appeared elsewhere but many which deserve wider exposure have not; this volume represents our first attempt to correct this state of affairs. By printing the Kenneth May Lectures since 1990, we hope not only to choose some of the finest work presented at CSHPM meetings but also to present ourselves to the broader scholarly community. This volume represents by example who we are, how we approach the disciplines of history and philosophy of mathematics, and what we find important about our scholarly mission.

Many things happen over fifteen years. The editors attempted to reach all May lecturers since 1988, but were not wholly successful. Also, some of their lectures appeared later in formal scholarly journals (which the Proceedings is not), and some of these later versions incorporated improvements. In these cases we have chosen to reprint the polished final articles rather than the original lectures. One implication of this is that the bibliographic standards vary from article to article, reflecting the different sources in which the articles appeared. We are grateful to the following organizations that granted us permission to reprint articles free of charge from the pages of their journals and books: the Association for Symbolic Logic, the Canadian Mathematical Society (CMS), the Mathematical Association of America, and *Philosophia Mathematica*.

As editors of this volume, we have received a great deal of support from many people. The CSHPM, both its executive and its members, has been pivotal in working with us over the past year to produce the best possible

public imprint for the Society. The authors of the papers in this volume and archivist Amy Shell-Gellasch have combined to produce a truly admirable body of work. The editors of the CSHPM Proceedings over the years, listed below, have moved mountains to produce these volumes. Jonathan and Peter Borwein, editors of the CMS Books in Mathematics, provided highly valued encouragement and advice. Ina Lindemann, Mark Spencer, and Anne Meagher of Springer Verlag helped tremendously in bringing this volume to fruition. Thanks also go to Dennis Richter for technical support. Our families have sacrificed in their own ways, putting up with late dinners and with occasionally absent parents; we thank them especially for their patience. Finally, our greatest gratitude is due to the man to whom this volume is dedicated. Ken, your vision lives and prospers in the 21st century. Without your insight and formative efforts, the CSHPM might not be here today. Thank you.

Glen Van Brummelen and Michael Kinyon

A note on the title. Ken May considered the practice of the history of mathematics to be a unique melding of the crafts of mathematician and historian. This entails sensitivity both to the mathematical content of the subject, and to the various contexts in which it can be understood. Our daily work is constantly informed by our attempts to achieve this delicate balance. In Ken's words:

"Clearly in historical work the danger in missing the mathematical point is matched by the symmetric hazard of overlooking a historical dimension. The mathematician is trained to think most about mathematical correctness without a time dimension, i.e., to think ahistorically. Of course it is interesting to know how a historical event appears when viewed by a twentieth century mathematician. But it is bad history to confuse this with what was meant at the time. The historian concentrates on significance in the historical context and on the historical relations between events. And this is equally interesting to the mathematician who wishes to understand how mathematics actually developed.

"One could continue indefinitely, but the essential point is that the best history requires sensitivity to both mathematical and historical issues, a respect for good practice of the crafts of both the historian and the mathematician. It may even be that the best mathematical research is aided by an appreciation of historical issues and results. I know of many instances and hope that the work of historians may contribute to increasing their frequency."¹

¹Kenneth O. May, "What is good history and who should do it?", *Historia Mathematica* 2 (1975), 453.

Annual Meeting Themes & Kenneth O. May Lecturers Since 1990

- 2003: Maritime Mathematics (Halifax, NS)
– Jim Bennett, *Geometry, Instruments and Navigation: Agendas for Research, 1500-1800*
- 2002: In Memory of Kenneth May (Toronto, ON)
– Ivor Grattan-Guinness, *History or Heritage? Historians and Mathematicians on the History of Mathematics*
- 2001: French Mathematics (Québec, PQ)
– Jean Dhombres, *The Applied Mathematics Origins of Lebesgue Integration Theory and Why it was Read as Pure Mathematics During the First Years of the 20th Century*
- 2000: History of Mathematics at the Dawn of a New Millennium (Hamilton, ON)
– Rüdiger Thiele, *Hilbert and his 24 Problems*
- 1999: Joint meeting with the British Society for History of Mathematics (Toronto, ON)
- 1998: Late 19th-Century Mathematics (Ottawa, ON)
– Volker Peckhaus, *19th-Century Logic: Between Philosophy and Mathematics*
- 1997: Science and Mathematics (St. John's, NF)
– Rüdiger Thiele, *The Mathematics and Science of Leonhard Euler*
- 1996: Ancient Mathematics (St. Catharines, ON)
– Alexander Jones, *Greek Applied Mathematics*
- 1995: Mathematics Circa 1900 (Montreal, PQ)
– Joseph W. Dauben, *Cantor and the Epistemology of Set Theory*
- 1994: History of Mathematics in the United States and Canada (Calgary, AB)
– Thomas Archibald (co-author Louis Charbonneau), *Mathematics in Eastern British North America in the Nineteenth Century: Some Preliminary Remarks*
– Karen Hunger Parshall, *The Emergence of the American Mathematical Research Community 1876-1900*

- 1993: Philosophy of Mathematics (Ottawa, ON)
 – Stuart Shanker, *Turing and the Origins of Artificial Intelligence*
- 1992: Ethnomathematics (Charlottetown, PEI)
 – Michael Closs, *The Ancient Maya: Mathematics and Mathematicians*
- 1991: Women in Mathematics (Kingston, ON)
 – Ann Hibner Koblitz, *Women in Mathematics: Historical and Cross-Cultural Perspectives*
- 1990: History and Pedagogy (Victoria, BC)
 – Judith Grabiner, *Was Newton's Calculus a Dead End? A New Look at the Calculus of Colin Maclaurin*

CSHPM/SCHPM Presidents

- 1974 – Charles V. Jones
 1975, 1976 – Viktors Linis
 1977, 1978 – J. L. Berggren
 1979, 1980 – G. de B. Robinson
 1981, 1982 – Wesley Stevens
 1983, 1984, 1985 – Edward J. Barbeau
 1986 – Marshall Walker
 1987 – Louis Charbonneau
 1988, 1989 – J. L. Berggren
 1990, 1991 – Craig Fraser
 1992, 1993, 1994, 1995 – Thomas Archibald
 1996, 1997 – Robert Thomas
 1998, 1999 – James J. Tattersall
 2000, 2001 – Glen Van Brummelen
 2002, 2003 – J. L. Berggren
 2004, 2005 – Robert Bradley

CSHPM/SCHPM Proceedings Editors

- 1988, 1989 – Tasoula Berggren
 1990 – Francine Abeles, Victor Katz, Robert Thomas
 1991 – Hardy Grant, Israel Kleiner, Abe Shenitzer
 1992-1999 – James J. Tattersall
 2000, 2001 – Michael Kinyon
 2002-present – Antonella Cupillari

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Thomas Archibald and Louis Charbonneau. Mathematics in Canada before 1945: A preliminary survey, in Peter Fillmore, ed., *Mathematics in Canada*, vol. I, Ottawa, ON: Canadian Mathematical Society, pp. 1-90. The article appears in both English and French; only the English version (pp. 1-43) is reprinted here.

Judith V. Grabiner. Was Newton's calculus a dead end? The continental influence of Maclaurin's treatise of fluxions, *American Mathematical Monthly* **104** (5) (1997), 393-410.

Ivor Grattan-Guinness. History or heritage? An important distinction in mathematics and for mathematics education, *American Mathematical Monthly* **111** (1) (2004), 1-12.

Ann Hibner Koblitz. Mathematics and gender: Some cross-cultural observations, in Gila Hanna, ed., *Towards Gender Equity in Mathematics Education*, Dordrecht: Kluwer, 1996, pp. 93-109.

Volker Peckhaus. 19th century logic between philosophy and mathematics, *Bulletin of Symbolic Logic* **5** (4) (1999), 433-450. Copyright held by the Association for Symbolic Logic.

Stuart Shanker. Turing and the origins of AI, *Philosophia Mathematica* **3** (1) (1995), 52-85.