Preface to the Series

The first books in Springer’s series on the history of mathematics education are being published in 2016. From the outset it was decided that the series would comprise scholarly works on a wide variety of themes, prepared by authors from around the world. We expect that authors contributing to the series will go beyond top-down approaches to history, so that emphasis will be placed on the learning, teaching, assessment and wider cultural and societal issues associated with schools (at all levels), with adults and, more generally, with the roles of mathematics within various societies. In the past, scholarly treatises on the history of mathematics education have featured strong Eurocentric/American emphases—mainly because most researchers in the field were scholars based in European or North or South American colleges or universities. It is hoped that the books in the new series will be prepared by writers from all parts of the world.

In addition to generating texts on the history of mathematics education written by authors in various nations, an important aim of the series will be to develop and report syntheses of historical research that have already been carried out in different parts of the world with respect to important themes in mathematics education—like, for example, “Historical Perspectives on how Language Factors Influence Mathematics Teaching and Learning,” and “Historically Important Theories Which Have Influenced the Learning and Teaching of Mathematics.”

The mission for the series can be summarized as:

• To make available to scholars and interested persons throughout the world the fruits of outstanding research into the history of mathematics education;
• To provide historical syntheses of comparative research on important themes in mathematics education; and
• To establish greater interest in the history of mathematics education.

We hope that the series will provide a multi-layered canvas portraying the rich details of mathematics education from the past, while at the same time presenting historical insights that can support the future. This is a canvas which can never be complete, for today’s mathematics education becomes history for tomorrow. A single snapshot of mathematics education today is, by contrast with this canvas, flat and unidimensional—a mere pixel in a detailed image. We encourage readers both to explore and to contribute to the detailed image which is beginning to take shape on the canvas for this series.

Nerida F. Ellerton
M. A. (Ken) Clements

August, 2016
Preface to the Book

This book is about the creation and subsequent influence of the mathematics department within Christ’s Hospital, a school which was established in central London in 1552, 465 years ago (Manzione, 1995). The school still exists, but is now located at Horsham, about 47 miles south of its original location. We decided to study intensively the early history of school mathematics at Christ’s Hospital because our research suggested that it was in that school that the modern idea of “secondary school mathematics for all” had its beginnings.

Although we believe that the findings of the research described and summarized in this book have confirmed the view that modern secondary school mathematics “for all” began at Christ’s Hospital, we recognize that that claim is likely to be contested. We shall be pleased to read serious counter-commentaries which not only take full account of the analyses of data and interpretations presented in this book, but also report and analyze, carefully and fully, data which have not been taken into account in the analyses we present in this book.

This book appears as part of Springer’s “history of mathematics education” series—for which we (Ellerton and Clements) have overall editorial responsibility. Our aim for the series is to generate a scholarly body of literature on the history of mathematics education, especially the history of school mathematics. Mathematicians have always been interested in the history of mathematics but, until recently, mathematics educators have paid little attention to the history of school mathematics. Yet, today vast amounts of money and time are being spent on servicing school mathematics in all parts of the world, and there is much debate—often bitter debate—about issues associated with school mathematics curricula, mathematics teaching methods, assessment and reporting of mathematical learning, mathematics teacher education (both pre-service and professional development), etc. There is also much discussion on the roles that governments should play in framing school mathematics, and on the possibility, and desirability, of internationalizing curricula and assessment. There is an obvious and urgent need to develop well-researched historical perspectives on these and many other related key issues.

School mathematics is very different now from what it was 200 years ago. In the early 1800s most children in most countries rarely attended formal schools. Of those who did, most did not study any mathematics beyond elementary arithmetic. Very few school teachers stood at the front of a room and taught whole classes, and many students, even those studying mathematics, did not own a mathematics textbook. Written examinations of any kind were not used. Most teachers of mathematics did not have formal qualifications in mathematics (Clements, Keitel, Bishop, Kilpatrick, & Leung, 2013; Ellerton & Clements, 2014). At the beginning of the nineteenth century less than 1 percent of all the world’s children learned how to add, subtract, multiply or divide common fractions or decimal fractions while they were at school. An even smaller proportion studied logarithms, or geometry, or algebra, or trigonometry (Clements & Ellerton, 2015). We believe that before one can constructively examine and interpret modern twenty-first-century developments one needs to know more about the situations which prevailed before those developments occurred.

The relatively few scholars who have given serious attention to the history of school mathematics have tended to do so from top-down, largely Eurocentric, and high-
mathematical vantage points. The emphasis has been on how curricula and textbooks in post-
elementary school mathematics were passed downwards from universities and colleges—and
especially from leading institutions located in Europe and in North America. The role of
textbooks in the history of secondary school mathematics has been much emphasized, and
efforts by well-known European mathematicians who sought to improve school mathematics
have tended to be identified.

Results of TIMSS, PISA, and other international comparative studies in the second half
of the twentieth century suggested that the world might have something to learn about the
history of school mathematics curricula and assessment, and about the history of the teaching
and learning of mathematics, from data generated by books and manuscripts emanating from
countries in Asia, Africa, Oceania, and the Middle East. In this new Springer series a
conscious effort will be made to take advantage of the research of knowledgeable scholars in
nations such as Australia, China, Ethiopia, Finland, India, Iran, Japan, Korea, New Zealand,
Pakistan, Papua New Guinea, Singapore and South Africa—although, of course, well-
credentialed researchers from Europe and America will not be overlooked.

How does the present book fit into a series which aims to do what we have just
outlined? Well, it was at Christ’s Hospital, in 1673, that the study of mathematics beyond
elementary arithmetic was first offered to children other than the privileged few. And,
because, for the next 200 years, graduates of the Royal Mathematical School at Christ’s
Hospital would be scattered across the world, especially into British colonies, the influence
of the Christ’s Hospital mathematics program on the growth of the concept and influence of
school mathematics in many nations around the world was profound.

We wish to thank librarians, archivists and the staff at the British Library, Guildhall
Library, London Metropolitan Archives, the Royal Observatory and the National Maritime
Museum at Greenwich, the Bodleian Libraries at the University of Oxford, the Cambridge
University Library, the Pepys Library at Magdalene College within the University of
Cambridge, the Phillips Library at the Peabody Essex Museum, Salem, Massachusetts, the
Butler Library at Columbia University, New York, the Clements Library at the University of
Michigan, the Houghton Library at Harvard University, the Library of Congress (in
Washington DC), the Wilson Library at the University of North Carolina at Chapel Hill, the
Beinecke Library at Yale University, the Winterthur Museum in Delaware, the Special
Collections Research Center in the Swem Library at the College of William and Mary and
the Rockefeller Library (both in Williamsburg, Virginia), the New York Public Library, the
State Library of Victoria (Australia), and the Milner Library at Illinois State University, for
locating relevant manuscripts, artefacts, and books for us. We also visited Christ’s
Hospital—now located at Horsham, 47 miles south of central London—where we examined
artefacts relating to matters about which we have written in this book.

We feel deeply honored that Dr Benjamin Wardhaugh, of All Souls College, within the
University of Oxford, agreed to write the foreword to this book. Benjamin has written much
on the history of mathematics and of mathematics education, and in December 2014 and
December 2015 we were privileged to speak at high-level conferences organized by
Benjamin and held at All Souls College. Our encounters with Benjamin and with the other
scholars who attended those conferences certainly helped us to define, refine, and extend our
knowledge and understandings of the history of school mathematics in the United Kingdom.
In addition, we would like to thank Dr George Seelinger, the Head of the Mathematics
Department at Illinois State University (in which we both work), for encouraging us in our research endeavours.

We also wish to thank Clifford Jones and Ken Mansell, volunteers in the Christ’s Hospital Museum, who took time to answer questions that we asked of them. Clifford’s 350-page book on the history of the Royal Mathematical School (RMS) at Christ’s Hospital appeared in December 2015 (Jones, 2015). When we started writing this present book we were not aware that Clifford Jones was writing a history of RMS. We purchased Clifford’s book as soon as we became aware it had been published, and have profited from reading it.

There are differences between the emphases in Clifford’s book and ours: Clifford’s tells the story of RMS from a school perspective, and this present work is written from the perspective of the international history of school mathematics. We do not accept Clifford’s contention that Samuel Pepys did not have much to do with the creation of RMS. Another important difference is that, unlike Clifford, we have emphasized that from RMS’s beginnings, the “cyphering tradition” had a strong influence on how RMS students were expected to learn. Despite such differences we are confident that readers will find the two accounts highly complementary.

After finishing our writing for this book we began to reflect on who might be especially interested in what we have written. Obviously, Clifford Jones will be, as will many old-Blues within the Christ’s Hospital community. We want to assure Clifford and the old-Blues who read this book that we have developed a genuine admiration for what the school stands for now, and what it has stood for over the centuries.

The world of publishing has changed considerably over the past few decades, and that has had an impact on how we have written this book. In the past, authors could assume that a whole book, or at least quite a few chapters in it, would be read by interested persons. But now, e-books and individual chapters of a book in digital form are readily available, and from the outset we recognized that that should affect how we would go about writing individual chapters. Thus, for example, a careful reader of this book might notice that sometimes points made in earlier chapters are repeated later in the book. Obviously, because readers may want access to just one of the chapters in the book, it made sense for us to repeat material covered in earlier chapters. We have attempted to limit such repetition to cases where what is being repeated represents essential knowledge if the present chapter is to be understood as a stand-alone document. Another sign of the times is that there is a reference list at the end of each chapter, and a composite reference list after all 10 chapters have been presented. The reason for that is simple: readers who have access to just one chapter are likely to want to have access to a fully documented statement setting out the works to which reference is made in the chapter.

We hope that many historians of education, especially those interested in the history of school mathematics, find this book to be worthy of their attention. There are strong political and educational differences and undercurrents within that community of scholars, and undoubtedly some Continental researchers will disagree with our claim that the beginnings of modern secondary-school mathematics were to be found at Christ’s Hospital. Although we also expect reactions to our emphasis on the importance of the cyphering tradition within the Royal Mathematical School, we would wish to add that until recently very little had been written about that tradition.
References


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