

Preface

The present volume is a response to a request from the Educational Materials Committee (EMC) of the National Council of Teachers of Mathematics (NCTM) to develop a compilation of articles that have “influenced the direction of mathematics education today and that reflect the history of research in mathematics education.” On the surface, that request would not seem overly difficult but one that would require consultation and reflection. However, when added to the request is a boundary condition on the maximum number of pages, the problem becomes almost unsolvable.

We began by considering the review works of the field that have addressed similar requests in the past. Most are familiar with the works edited by Shumway (1980), Grouws (1992), Bishop et al. (1996), and English (2002) and the ever-growing number of quality texts focusing on specific topics in our field. Because the EMC envisioned the volume to “provide researchers and graduate students in mathematics education with a single resource for [important] research articles,” we decided to ask a variety of individuals from the mathematics education research community what they thought should be included in such a work.

In December 2002, we sent out a letter to about 50 individuals requesting their assistance in identifying articles that should be included. These individuals were selected for their wide diversity as well as their expertise. Approximately 60% were from the United States, with the remaining reflecting an international perspective. Almost all have significant responsibilities for working with graduate students and several for working in teacher education or curricular projects.

We asked them to nominate articles, including their own, and to make comments on the direction that they thought the volume should take. We received responses from 38 individuals. These responses identified 220 different potential research works. Of these, 175 of the works were nominated by a single individual, 27 received 2 nominations, 9 received 3 nominations, 3 received 4 nominations, 2 received 5 nominations, 3 received 6 nominations, and 1 received 7 nominations. These were spread across 136 journal articles and a selection of works found in proceedings of conferences, chapters in books, and entire books themselves. Among the 32 periodicals mentioned, the most prevalent sources were the *Journal for Research in Mathematics*

Education (48), *Educational Studies in Mathematics* (20), *Mathematics Teacher* (7), *American Education Research Journal* (6), *Arithmetic Teacher* (6), *Educational Researcher* (6), and *For the Learning of Mathematics* (6). Several of the recommendations referred to articles found in the NCTM’s *Handbook for Research on Mathematics Teaching and Learning*. In a like manner, the nominations were spaced across time: 5 from the 1930s, 5 from the 1940s, 3 from the 1950s, 6 from the 1960s, 19 from the 1970s, 96 from the 1980s, 68 from the 1990s, and 6 from the first three years of this century.

We did not see the selection task as being a plebiscite. We also felt the need to have the volume speak to its readers relative to current conditions and to have a sense of direction that would help it add to the understanding of our discipline. To move the selection process forward, we began to institute our own boundary conditions as we surveyed the list and thought of general principles that would help shape the volume. We first ruled out articles or chapters that were contained in the *Handbook* or were widely available in other research summaries such as *A Research Companion to Principles and Standards for School Mathematics* (Kilpatrick, Martin, & Schifter, 2003).

One question we were faced with was whether to include a broad range of topics such that the most important content areas in mathematics were addressed. That proved impractical for reasons of space and coherence. In a similar manner, we ruled out works describing results of the National Assessment of Educational Progress and similar works dealing with international comparative studies. It also proved impractical to provide a balanced international perspective. Although there has been excellent research in a variety of content areas from around the world, we simply could not balance the articles across topics and countries. Even though a volume that included a broad sampling of research on different topics from around the world might represent a valuable contribution to the field, we were committed to taking a more thematic approach than a broad survey afforded. We wanted the research that we included to tell a story. Because of space limits, we decided to concentrate on developing a few central themes in recent research on the learning and teaching of mathematics. We wound up with six articles by authors from other countries, but we recognize that the volume represents a decidedly American perspective on research in mathematics education

and fails to include a great deal of important research on a broad range of topics.

Working within these bounds, we then moved to narrow the list of articles to a list reflecting the foundations for much of the research in mathematics education today. We shared this list with a smaller group of individuals who advised us on omissions, additions, and the general conditions of our minds. Bearing their advice in mind, we then moved to develop the final list of articles you see in the table of contents. All articles are published as they appeared. We did not edit the articles to make them conform to current publication standards or style. We have, however, edited some of the mathematical expressions from the original articles to forms that current readers are accustomed to seeing.

We are most appreciative of the assistance provided us by the following individuals in the development of the list of potential contents of the present volume and to the subset of this group that added additional comments as we winnowed the list down to the final selections: Alan Bishop, Maria Blanton, Hilda Borko, Janet Bowers, Paul Cobb, Thomas Cooney, Ubiratan D'Ambrosio, Erik DeCorte, Lyn English, Megan Franke, Douglas Grouws, Guershon Harel, James Hiebert, Victoria Jacobs, David Johnson, James Kaput, Carolyn Kieran, Jeremy Kilpatrick, Carole Lacampagne, Gilah Leder, Mary Lindquist, Joanne Lobato, Nel Noddings, Terezinha Nunes, Douglas McLeod, Randy Phillip, Denise Pitcher, Robert Reys, Bonnie Schappelle, Alan Schoenfeld, Michael Shaughnessy, Edward Silver, Judith Sowder, Les Steffe, David Tall, Patrick Thompson, and

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Thomas P. Carpenter
John A. Dossey
Julie L. Koehler

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