

Foreword

ROBERT ORRILL

“Quantitative literacy, in my view, means knowing how to reason and how to think, and it is all but absent from our curricula today.”

Gina Kolata (1997)

Increasingly, numbers do our thinking for us. They tell us which medication to take, what policy to support, and why one course of action is better than another. These days any proposal put forward without numbers is a nonstarter. Theodore Porter does not exaggerate when he writes: “By now numbers surround us. No important aspect of life is beyond their reach” (Porter, 1997).

Numbers, of course, have long been important in the management of life, but they have never been so ubiquitous as they are now. The new circumstances arrived suddenly with the coming of computers and their application to gathering, processing, and disseminating quantitative information. This powerful tool has brought unprecedented access to quantitative data, but in so doing it also has filled the life of everyone with a bewildering array of numbers that often produce confusion rather than clarity. The possible consequences for our ability to direct our affairs are worrisome to say the least. For some observers, the flow of numbers amounts to an inundation that calls forth images of a destructive flood of biblical proportions. Looking toward the future, James Bailey warns that “today we are drowning in data, and there is unimaginably more on the way” (Bailey, 1996). Even if we manage to keep our heads above water, Lynn Steen writes, we can be sure that “the world of the twenty-first century will be a world awash in numbers” (Steen, 2001).

Gina Kolata looks at this data-drenched environment from a special vantage point. She reports on science and health issues for the *New York Times* and often hears from readers who complain that numbers presented by experts seem to mean “one thing one day and another thing the next.” What are they to believe, readers ask, when a regimen first said to promote well-being is later said to undermine it? Kolata’s response is that they must learn to interpret the numbers for themselves. The only remedy, she says, “is that they have to learn how to think for themselves, and that is what an education in quantitative reasoning can teach them.” Such an education, she writes, “makes all the difference in the world in people’s ability to understand issues of national and personal importance and helps them evaluate in a rational way arguments made by the press, the government, and their fellow citizens” (Kolata, 1997).

But, as a practical matter, Kolata counts on no such well-prepared readership in her own reporting. The attention to quantitative reasoning that she thinks so essential to sound judgment simply does not exist in the academic programs of most of our schools and colleges. Thus, even the college-educated often lack an understanding of how to make sense of numerical information. For a democracy, this is no low-stakes concern. If numbers are present everywhere in our public discourse, and many are more confused than enlightened by them, what happens to decision making in our society? If we permit this kind of innumeracy to persist, do we not thereby undermine the very ground and being of government of, by, and for the people?

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How, then, should we act to address this concern? If attention to quantitative literacy is absent from our curricula, how can we make certain that it is given the priority it deserves? These are questions that many educators in our schools and colleges are beginning to ask, but, at this point, we are still far from having programmatic answers or anything approaching a plan of action scaled to the need. This should not be surprising given that the penetration of numeracy into all aspects of life confronts us with a rapidly evolving phenomenon that we understand at best imperfectly. The need now is to make a start: to bring together the many scattered discussions that are taking place and mount a sustained national conversation about how schools and colleges can give effect to expectations for learning that better take account of the quantitative challenges of life in the twenty-first century.

To help launch this conversation, the National Council on Education and the Disciplines (NCED) sponsored a National Forum on December 1–2, 2001, aimed at promoting discussion and debate about Why Numeracy Matters for Schools and Colleges. Held at the National Academy of Sciences, the Forum was designed to bring together many different points of view — education, business, government, and philanthropy were all represented in the deliberations. International perspectives on quantitative literacy also were presented, making it clear that numeracy is a growing global concern. The most immediate outcome is the rich and abundantly informative proceedings presented in this volume, which we believe — in giving voice to a wide range of opinion — provide a benchmark discussion from which the needed national conversation can go forward.

In an introduction to the proceedings, Bernard Madison provides a comprehensive overview of the essays and commentaries collected in this volume. Here I need add only that thanks go to many who joined together in organizing the Forum and making it a success. Indeed, the event was a cooperative undertaking from first to last. Special thanks for hosting the Forum are owed to the Mathematical Sciences Education Board of the National Research Council and, for its cooperation throughout, to the Mathematical Association of America. Financial support and welcome encouragement were provided by the Pew Charitable Trusts.

A great many individuals contributed to the making of the Forum, and I am very sorry not to be able to thank them by name in these overly brief acknowledgments. But a special word must be said about Bernard Madison, who, with unfailing geniality, led every step of the way in turning the Forum from idea into reality. In all ways that count, the Forum is his handiwork. Thanks also to Lynn Steen, whose many contributions to the cause of quantitative literacy have become legendary. The Forum benefited immensely from Lynn's wise counsel throughout as well as his expert editorial work on the proceedings. Diane Foster also attended to the production of the proceedings with her uncommonly good executive sense, and Dorothy Downie watched over organizational matters with the professional skill and tact vital to all cooperative initiatives.

References

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