

Towards Excellence

Leading a Mathematics Department in the 21st Century

PDF Version



The American Mathematical Society Task Force on Excellence

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Foreword

Who Wrote This Book?

In many ways this is a book written by a committee. Every member of the Task Force on Excellence (see Appendix A) participated in focus groups and committee discussions; every member read and critiqued all the material; every member contributed to parts of the actual writing. The Task Force decided to make most of that writing anonymous, however, to emphasize that this was a collective effort, representing the experience of not only the Task Force but more than one hundred faculty, chairs, and deans.

Nonetheless, there was one person whose effort was extraordinary and who contributed the heart of this book, Part I: Conclusions. Jim Lewis of the University of Nebraska spent many weeks and months writing and rewriting those first four chapters. While they represent the collective view of the entire Task Force, that view was shaped and focused by Jim's experience and wisdom. He wrote those four chapters. He not only wrote but he also listened, accepting both praise and criticism with remarkable grace. We are all grateful for his uncommon effort; this book would not exist without Jim Lewis.

Finally, none of this work would have been possible without the leadership over the last five years of Mort Lowengrub, Dean of the College of Arts and Sciences at Indiana University and Chair of the Task Force. His many presentations at meetings and focus groups shaped the final form of this book. His enthusiasm and vision kept the book on target and made its purpose to help research mathematicians, not to criticize them. His faith in the value of mathematics shows throughout this book.

John Ewing

Preface

This publication was written by and for mathematicians who work in America's research universities. It is aimed at faculty who work in mathematics departments¹ granting Ph.D.s. We hope the material is useful to other faculty (for example, in departments of statistics or in liberal arts colleges), but we are speaking most directly to mathematicians in research universities.

The idea that led to this publication is simple. The American mathematics departments awarding doctoral degrees produce most of our future mathematicians and much of our mathematics research. If we want American mathematics to be healthy, these departments must be healthy as well. We need to give them a prescription for health — a recipe for creating an excellent department that not only deserves but also secures from its university the necessary resources for excellence.

When the Task Force on Excellence began its work, the approach was simply: “How do we make the case to the dean for more resources?” But that approach assumed that all departments received inadequate resources, had similar needs, and merited a greater share of a university's base. Of course, it is hard to argue that all mathematics departments are inadequately funded in comparison with their peers. All departments do not all have the same needs. And it is not possible to provide a prescription (at least publicly) for convincing every dean to move funds from other departments into mathematics. It soon became clear that the simple idea (a recipe for excellence) was illusory.

Eventually, the task force was drawn to a more fundamental idea: Mathematics departments should position themselves to receive new or reallocated resources by meeting the needs of their institutions. That does not mean sacrificing the intellectual integrity of an academic program, nor does it mean relegating mathematics to a mere service role. It *does* mean fulfilling a bargain with the institution in which one lives, and for most departments a major part of that bargain involves instruction.

The focus of the task force became finding ways in which research departments can enhance their instructional program, at both the undergraduate and graduate levels. If departments carry out this part of their mission (and for many departments, add outreach activities as well) in a way that brings credit to the department and distinction to the university, then the necessary resources for a healthy department should follow, at least consistent with the ability of each institution to support its academic programs. Benefits will accrue both to the department's instructional program *and* to its research program.

¹ There are 177 mathematics departments that award the doctoral degree in mathematics and comprise Groups I, II and III in the Annual AMS-IMS-MAA Report. (See Appendix A.) Most (about 70 percent) use the name, Department of Mathematics; Twenty-one call themselves Department of Mathematical Sciences; and 18 call themselves Department of Mathematics and Statistics. A variety of other names are also used. In this publication we will consistently refer to each department as the Department of Mathematics.

This is a simple idea that many people find either ridiculously obvious or insidiously subversive. Much of the material in this book is aimed at convincing the reader that it is neither. By describing examples, we show departments that they can find creative ways to position themselves better in their own institutions. This is not an obvious process. By sharing comments and views from many different people in many different departments, we hope to convince the reader that meeting the needs of one's institution does not subvert the fundamental mission of a research department, but rather makes a healthy research department possible.

Part I contains the background and conclusions of the task force. While putting the conclusions at the beginning may seem unusual, we believe the central message of this work should be stated clearly and immediately, in advance of the evidence. We also include with the background some commentary on what the Task Force could *not* accomplish in its work, as well as some cautions about the scope of this project.

Part II provides excerpts from the fourteen focus group discussions carried out by the Task Force, along with commentary that summarizes the messages from the various groups. These focus groups formed the basis for much of the Task Force's work. They provided an opportunity for groups of chairs, deans, and (in one case) young mathematicians to share concerns with the committee and with one another. While it is impossible to capture on paper the full exchange of views, the excerpts provide a glimpse of both the shared concerns and the individual successes of some departments.

Part III contains examples for departments to consider. These examples illustrate some ways in which departments can meet the needs of their institutions, and while they are not examples that all departments can emulate, they suggest the breadth of possibilities. The Task Force conducted five site visits, and each site was selected in order to understand a specific program or aspect of that department. A collection of shorter reports on other programs of interest is included as well.

Part IV includes some short essays that examine the ways in which the differing views of departments contrast and agree with each other. One fact became clear early in our work: Mathematics departments do not view themselves as others view them. Which view is correct? All are . . . and none are. It is essential, however, for mathematics departments to understand how others view them, and these essays are intended to begin the process of understanding.

Part V contains resources — material that departments might use for self-study or external reviews, as well as a list of books and articles that refer to many of the topics considered here.

Early in its work, the Task Force on Excellence was able to begin its work with grants from the Exxon Education Foundation. Those grants and the support of Bob Witte of Exxon were crucial to this work. Later, a substantial grant from the National Science Foundation allowed the Task Force to expand its focus and to reach a broader group. We are grateful to both the Exxon Foundation and the National Science Foundation for their support and continued encouragement throughout this project.

Throughout its work the Task Force has been supported by Raquel Storti from the American Mathematical Society. Her belief in this project, her dedication, and her enthusiasm made this project (and this book) possible. We are grateful for all that she has done over these past six years.

We stress that this small book was prepared by friends of mathematics, many of whom have had experience as a chair, dean, provost, or even president of a research university. If some comments are perceived as criticism, please accept them as criticism from a group of mathematicians who have spent their careers among research mathematicians, and who are thankful for the opportunity.

The Task Force on Excellence

