Athena Unbound
The Advancement of Women in Science and Technology

Why are there so few women scientists? Persisting differences between women’s and men’s experiences in science make this question as relevant today as it ever was. This book sets out to answer this question, and to propose solutions for the future.

Based on extensive research, it emphasizes that science is an intensely social activity. Despite the scientific ethos of universalism and inclusion, scientists and their institutions are not immune to the prejudices of society as a whole. By presenting women’s experiences at all key career stages – from childhood to retirement – the authors reveal the hidden barriers, subtle exclusions and unwritten rules of the scientific workplace, and the effects, both professional and personal, that these have on the female scientist.

This important book should be read by all scientists – both male and female – and sociologists, as well as women thinking of embarking on a scientific career.

HENRY ETZKOWITZ is Director of the Science Policy Institute and Associate Professor of Sociology at the State University of New York at Purchase.

CAROL KEMELGOR is a psychotherapist and psychoanalyst in private practice in Westchester County, New York, and Director of the Center for Women in Science, at the Science Policy Institute, State University of New York at Purchase.

BRIAN UZZI is Associate Professor of Business and Sociology at the Kellogg Graduate School of Management at Northwestern University.
To my mother
MARY MIRIAM LIFSHITZ ETZKOWITZ
BA Hunter College 1933
Magna Cum Laude, Geology
H.E.
For LARRY
C.K.
ATHENA UNBOUND
THE ADVANCEMENT OF WOMEN IN SCIENCE AND TECHNOLOGY

HENRY ETZKOWITZ
Science Policy Institute,
State University of New York at Purchase

CAROL KEMELGOR
Science Policy Institute,
State University of New York at Purchase

BRIAN UZZI
Kellogg School, Northwestern University

With:
MICHAEL NEUSCHATZ, American Institute of Physics
ELAINE SEYMOUR, University of Colorado
LYNN MULKEY, University of South Carolina
JOSEPH ALONZO, Rockefeller University
Contents

Acknowledgements
Introduction: Women in science: Why so few? 1
1 The science career pipeline 5
2 Women and science: Athena Bound 15
3 Gender, sex and science 31
4 Selective access 49
5 Critical transitions in the graduate and post-graduate career path 69
6 Women’s (and men’s) graduate experience in science 83
7 The paradox of critical mass for women in science 105
8 The ‘kula ring’ of scientific success 115
9 Women’s faculty experience 131
10 Dual male and female worlds of science 137
11 Differences between women in science 147
12 Social capital and faculty network relationships 157
13 Negative and positive departmental cultures 179
14 Initiatives for departmental change 187
15 International comparisons 203
16 Athena Unbound: Policy for women in science 225
Appendix 251
Bibliography 257
Index 269
Acknowledgements

We express our appreciation to the National Science Foundation and the Sloan Foundation for research support.