Mentoring in Academia and Industry

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by Donna J. Dean

Donna J. Dean

Getting the Most out of Your Mentoring Relationships

A Handbook for Women in STEM

Springer

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Foreword

Mentorship practice has been part of the human experience since the Golden Age of Greece. Engaging with a mentor as a way to learn and achieve one's full potential is an ancient and respected practice. And, it has been the keystone on which the Association for Women in Science (AWIS) has built its program over the past three decades.

Trailblazers, such as Dr. Estelle Ramey and Dr. Anne Briscoe, experienced first-hand the isolation of women in the country's male-dominated scientific establishment and worked to build an organization that would promote women through mentoring relationships. Dr. Ramey, who earned her degree in physiology and biophysics and taught at Georgetown Medical School, was a well-known feminist speaker and writer. Noted for her great wit, she once quipped, "I was startled to learn that ovarian hormones are toxic to brain cells." Throughout her career, Dr. Ramey decried sexist comments and situations that treated women as less than fully human. She felt very strongly about how little, if anything, it took to extend a helping hand to someone else in a way that could really make a huge difference in her life. As she wrote in her book called *Letters to our Grandchildren*, "If I could leave you with any advice, it would be to speak words of caring not only to those closest to you, but to all the hungry ears you encounter on your journey through a cold world. Stop on the mountain climb to bring all those less lucky, less agile, or well endowed. It will make the view even more beautiful when you get to the top."

This dictum has served generations of women well and has been the leitmotif for AWIS programming since 1971. AWIS has a strong track record in providing mentoring as well as in authoring and publishing materials about mentoring such as our classic mentoring primer *A Hand Up: Women Mentoring Women in Science*. This new guide is designed specifically for protégés and builds on the collective wisdom within our organization.

Today, AWIS continues to serve women in all science and engineering disciplines by providing opportunities for networking, peer-mentoring, e-mentoring, coaching, and career enhancement around the country through local chapters and strategic partnerships. As the only national, multi-discipline organization for women in science, technology, engineering, and mathematics (STEM), our members include researchers, entrepreneurs, teachers, policy

makers, and writers employed in industry, academia, government, and the non-profit sector. They span the range of seniority from undergraduates to postdocs to senior members of the National Academies of Science and of Engineering.

We invite you tap into this rich resource for self-discovery and personal development and wish you much success and happiness along your path.

Washington, DC Janet Bandows Koster

Preface

Donna J. Dean, past-president and long-time member of the national Executive Board of the Association for Women in Science describes in the introduction to *Getting the Most Out of Your Mentoring Relationships* how her amazement at incredible scientific feats combined with her desire to use what she learned from her own experiences as a Ph.D. scientist to help guide others became the impetus for this handbook. In focusing on the needs of the protégé, she responds to one of the most pressing issues articulated by young women scientists. Women scientists seek mentoring not only in the early stages of deciding whether to major in science and what scientific field to choose, but also in later decisions about how to obtain promotion and advancement in their particular work sector and setting. In a study I undertook of 450 academic women scientists at research universities and small liberal arts colleges, "lack of camaraderie and mentoring due to small numbers of women" emerged as the issue cited second most frequently by women in all scientific disciplines as they plan their careers. The only issue mentioned more often and underlined as more significant was "balancing work with family responsibilities" (Rosser, 2004).

One woman scientist in that study articulated why mentoring by other women scientists is particularly critical: "Although possibly less now than before, women scientists still comprise a small proportion of professors in tenure-track positions. Thus, there are few 'models' to emulate and few to get advice/mentoring from. Although men could also mentor, there are unique experiences for women that perhaps can only be felt and shared by other women faculty, particularly in other Ph.D. granting institutions. Some examples of this: a different (i.e., more challenging) treatment by undergraduate and graduate students of women faculty than they would of male faculty; difficulties in dealing with agencies outside of the university who are used to dealing with male professors; difficulties related to managing demands of scholarship and grantsmanship with maternity demands. More women in a department would possibly allow a better environment for new women faculty members to thrive in such a department through advice/mentoring and more awareness of issues facing women faculty members." (respondent 26 in Rosser, 2004, p. 40)

Fortunately, as Janet Bandows Koster, Executive Director of the Association for Women in Science, underlines in her foreword, the organization has

given mentoring a central priority in its mission and activities during the last three decades. Members of the Association for Women in Science (AWIS) concur that the most significant contribution they make to other women scientists is mentoring. In 2005, I conducted a survey of AWIS Fellows. Launched in 1996 as part of the 25th anniversary celebration for AWIS, the Fellows Program aims to recognize and honor women and men who have demonstrated exemplary commitment to the achievement of equity for women in science, technology, engineering, and mathematics (STEM). Most AWIS Fellows have achieved considerable success in their own career that has brought them to a position where they have enabled women in STEM at a level worthy of national recognition. The AWIS Fellows include a significant number of university presidents, CEOs of major corporations, executive directors of professional societies, foundations, or non-profit organizations, as well as deans, department chairs, professors, government agency heads, and industrial research scientists.

In response to the question, "In your opinion, what changes in institutional policies and practices are most useful for facilitating careers of academic women scientists or engineers at the junior level?" AWIS Fellows demonstrated eloquence in identifying problems for junior and senior women in both their overall careers and in the laboratory environment. The Fellows also had thoughts about the changes in institutional policies and practices that would be most useful for facilitating the careers of academic women scientists and engineers, particularly at the junior level. "Mentoring for junior faculty" emerged as the response most frequently given by AWIS Fellows (41.3 percent) as the institutional policy/practice most useful for facilitating the careers of junior academic women scientists or engineers:

> Intense, active, continuing mentoring and establishment of support groups (breakfast, lunch or dinner on a regular basis–i.e. weekly or biweekly, gatherings) where women feel comfortable airing their concerns, gripes, fears, questions, to get reassurance, information, advice. . .from their peers (Rosser 2006, p. 286).

Getting the Most out of Your Mentoring Relationships: A Handbook for Women in Science, Technology, Engineering, and Mathematics responds to the needs articulated both by junior women scientists for mentoring and identified by senior AWIS Fellows as a top priority for facilitating careers in science. The *Handbook* provides the type of advice mentors need to guide their protégés successfully, while also allowing young women scientists to understand their role as protégés. Thank you, Donna J. Dean, for writing this handbook to fill a needed gap in the mentoring literature, and thank you, the Association for Women in Science, for publishing this volume and continuing to support mentoring activities.

Atlanta, Georgia Sue V. Rosser, Ph.D.

Acknowledgment

For those who are part of the network, the resource, and the voice for women everywhere in the fields of science, technology, engineering, and mathematics

Contents

Introduction

There was a wall. Like all walls, it was ambiguous, two-faced. What was inside it and what was outside it depended upon which side of it you were on.

– Ursula K. Le Guin, *The Dispossessed*, 1974

From the moment that I could read, I have been transfixed by the incredible scientific feats and discoveries of the protagonists in science fiction, whether for good or for evil. I was overjoyed, in the very first science fiction book that I read, by the strong and leading roles that females evidenced in these other places and times. I was mesmerized by the incredible creativity with which scientific principles were exploited by authors who could tell good tales that combined a strongly human story within a context of science. That many of these writers were themselves in scientific fields was my first encouragement as a pre-teen with strong interests in science and mathematics.

It was only much later, well after I was in graduate school, that I realized I was missing something critical in my pathway forward. While I could not describe or verbalize it, I now recognize that I was looking for a mentoring framework. I needed help in understanding those ambiguous walls before me, and guidance in perceiving what was "inside" and what was "outside" so that I could choose what was best for me. I had to struggle over many years to develop my own mentoring relationships for life and career. Now that I look back over my subsequent career, I believe that my own directions in STEM have been influenced by "random collisions" with other individuals who were there when I needed them for mentoring. There certainly did not seem to be a series of "ordered events" that made my particular pathway a logical or relatively smooth course to follow. Out of my own experiences, both good and bad, came the impetus for this handbook. It is intended to provide tools, techniques, and resources so that you, the reader, can be better prepared for those "random collisions" and "ordered events" which can enrich both your life and career work. As a quick, yet structured, guide to being mentored, it addresses finding the right mentors, being a good protégé, and making the most out of today's diverse mentoring environments.

Many women now in STEM careers do speak of pivotal events, or persons, that imbued them with the enthusiasm and desire to pursue their interests in a STEM field. Much has been accomplished in creating the frameworks, concepts, and approaches that mentors should take, but the primary focus has been on the mentor, not the protégé. As we take an active role in selecting appropriate mentors for ourselves, we can acquire useful advice in our career directions, learn how to mesh our personal values with the demands of the workplace, and know when it is time to move on to our next career step. By sharing our challenges with mentors, we can clarify our feelings, values, beliefs, and attitudes that positively (or negatively) influence our career trajectories. Is this going to be easy or will every woman's path be smooth? Assuredly not, but having good mentors provides venues for support networks, the sharing of perspectives, and the acknowledgement that even the most successful and accomplished female scientists have surmounted obstacles and have made tough choices throughout their careers. For me, the "glass ceiling, sticky floor" analogy is apt – the glass ceiling represents the barriers and obstacles that others create which may impede our scientific endeavors, but the sticky floor represents those things that we do (or fail to do) when the choices are ours to make.

I extend particular thanks to Monica Horvath, Jane Chin, and Marilyn Suiter, who have written excellent articles on pathways to success in STEM careers for the quarterly magazine of the Association for Women in Science. The critical role of knowing how to be mentored throughout one's career as a female scientist has been a central theme for each of them. They, along with many other individuals in the Association for Women in Science, have constituted a powerful and caring network, resource, and voice particularly for the preparation of Chapters 5, 6, 10, and 11 of this handbook. Bernice R. Sandler graciously permitted the inclusion of her strategies for addressing inappropriate behavior in Chapter 7. The concepts in Chapters 8 and 9 are adapted from research conducted by the Association for Women in Science under a grant from the National Science Foundation (PGE Grant No. 020865), which comprised a part of the book for mentors entitled "*A Hand Up: Women Mentoring Women in Science*".

A particular quote from Douglas Adams (author of *The Hitchhiker's Guide to the Galaxy* in 1979) has resonance in my own life and career: "I may not have gone where I intended to go, but I think I have ended up where I needed to be". I hope the same will be true for each of you.

Washington, DC Donna J. Dean, Ph.D.

Chapter 1
How to Use This Guide

This book is structured to provide overviews and perspectives on a variety of topics and issues relating to being mentored in the diverse fields encompassed by science, technology, engineering, and mathematics (STEM). It is not meant to be read cover to cover, but rather to serve as a handbook in times of need when a few moments of reflection and perspective would be highly useful. Some will find many topics of interest and relevance, while others may find only a few items that guide them to a fuller grasp of what to expect in mentoring relationships.

There have been many superb books and articles written for mentors and from the mentor's perspective. Those seeking quality mentoring can clearly find these of significant assistance, but framing questions, concerns, and issues from the protégé's viewpoint creates better guideposts for action. Because this book is all about the protégé and not the mentor, four chapters are structured specifically to place mentoring in context. Put simply, these are as follows:

- **"What about me?"** Chapter 3 focuses on the "me-ness" of mentoring, in providing some frameworks for self-analytical thinking as protégés assess themselves and their needs.
- **"What about me and my mentor?"** Chapter 4 discusses the mentoring relationship from the perspective of how protégés can develop, enhance, and sustain productive interactions, with examples from real-life experiences.
- **"What about me and my life?"** Chapters 5 and 6 address the role of the protégé–mentor relationship in sustaining a meaningful life and career in the context of family, culture, and workplace change.

The remaining portions of the handbook (Chapters 7, 8, 9, 10, 11, and 12) provide a rich compilation of viewpoints, strategies, perspectives, and resources that address specific topics and concepts important to a woman's career in the STEM professions.

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