

The Classroom

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The Newsletter For Teaching and Learning at Georgia Tech

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The Different Faces of Mentoring: A Personal View

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In this issue of *The Classroom*, we explore the topic of mentoring at Georgia Tech. I have trouble with this term – what do we really mean when we refer to someone as a mentor? When I look back at my academic career (which I consider to have begun while still a student), I find that there have been many people who have helped me – by advising, guiding, comforting, advocating, teaching, bringing me back to reality, and waking me up. But have these been mentors? Shouldn't I be able to just point at one person and declare "this person has been my mentor!"? So, in preparation for this newsletter, I have done some investigating. Here is a short description of my search and what I have learned. Hopefully, it will prove helpful to you.

We know that the term mentor comes from Greek Mythology, where legend has it that Odysseus left his son, Telemachus, in the care of Mentor while he went off to war; upon his return, Odysseus was pleased with the job that Mentor has done in raising the boy to manhood. The dictionary¹ defines a mentor to be a trusted counselor or guide, and gives tutor and coach as synonyms. But, how does this help us apply the term here in academia?

Since the dictionary didn't supply me with any easy answers, I next turned to a handbook for new faculty members, *Mentor in a Manual: Climbing the Academic Ladder to Tenure*² (reviewed in this issue on page 10). Here is what this reference (pages 75-76) has to say about its title phrase:

"Recently 'mentoring' has become a 'buzz word' in higher education as a variety of programs have come into

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¹Webster's Seventh New Collegiate Dictionary, 1970.

² by A. Clay Schoenfeld and Robert Magnan, Magna Publications, Madison, WI, 1992.

use, particularly to help promote the advancement of minority group members and women.

“But not much is really known about mentoring between faculty members. To bridge that knowledge gap, three ed psych professors recently looked systematically at how faculty at a public, research-oriented university in the Midwest actually envision and practice mentoring among themselves.

“A result: faculty mentoring faculty is not common. When it occurs, it’s mutually negotiated, primarily between persons of the same sex and between assistant and full professors.

“Another result: demonstrating that mentoring is a complex multi-dimensional activity, there appear to be four distinct types of mentors – friend, career guide, information

source, intellectual guide (although multiple attributes can sometimes be combined in a single individual).

“A conclusion: if you go looking for a mentor, know the type you’re seeking; and faculty members willing to serve as mentors should acknowledge the kind of help they’re willing and able to offer.”

This is a “light bulb moment” - the reason that I remember many different people supplying me with support (mentoring if you wish) might be because

there are different “flavors” of mentors, and I have been lucky enough to experience many of these different types. With this new perspective, let me share three personal stories that illustrate some of the different faces of mentoring that I have encountered through my career. (To protect people who might not want to be known as having helped me, I am not using the names of anyone who you might know.)

Student day mentors. When I was in high school, I had the most exceptional math teacher. Mr. Bernard Goudreau was a diminutive man who was the first to show me that math can be beautiful. Through having us make geodesic domes out of index cards and rubber bands, to teaching us about the fibonacci series and the golden mean, Bernie convinced me that there was more to math than being able to solve hard computational problems quickly; that elegance mattered. While to many, this math teacher would simply fall into the category of talented and dedicated

“ When I was in high school, I had the most exceptional math teacher. Mr. Bernard Goudreau was a diminutive man who was the first to show me that math can be beautiful.”

teacher, for me he was my first academic mentor because it was his belief in me that convinced me that I could one day teach math. He was the “mentor as teacher and inspirer.”

Early professor years mentors. When I arrived at my hotel for my Georgia Tech interview, I received a call from an assistant professor who was to have breakfast with me the next morning. She told me that she could help me in any way necessary to help make the interview a success – indeed if I had a run in my last pair of hose, I was to call her home the next morning at any time and she would bring me a new pair before the interview was to begin. While this might seem like

an insignificant event to many, it has stayed with me for the last 17 (!) years – perhaps at least in part because this faculty member did go on to provide valuable assistance (although no hose) in those ensuing years. She has been there to listen to me complain, to help me celebrate, to share ideas, and to collaborate with me. This has been the “mentor as a friend.”

Later mentors. As I progress through my career, it is less important for me to find a more senior person to mentor me. However, it is still important for me to have trusted colleagues, guides, and people with whom I can get a reality check. Indeed, at this stage of my life, mentoring has become much more of a two-way street where one day I may receive mentoring advice from a colleague, only to turn around the next day and provide mentoring advice to that same person. I am lucky enough to have a small group of people on

campus to fill this role as “mentor as colleague.”

In addition, though, I do have a more senior advisor at another institution who provides me with the perspective of successful experience. He helps me determine which battles are worth fighting and which really have to be just an accepted part of living in academia. He asks the right deep questions, and listens deeply to my answers. He is the “mentor as sage.”

“ At this stage of my life, mentoring has become a two-way street where one day I may receive mentoring advice from a colleague, only to turn around the next day and provide mentoring advice to that same person.”

So, what have I learned about mentoring? That a mentor can be an advisor, teacher, sympathetic shoulder, advocate, thrower of cold water, reality checker, collaborator, and/or guide. And, that we are each richer if we can find the right people to help fill these roles in our lives.

The stories that I have not told, though, are perhaps just as enlightening as those that I have shared. The people who helped me along the way without truly believing in me, the people who wanted to remake me in their image, and the people who guided me for their own gain – these I do not consider as mentors. You might disagree, and that is okay. But, I have decided to use a higher standard. As Odysseus entrusted Mentor with his son, and was proud of the outcome, I believe that for a person to be a mentor, you have to, at least figuratively, trust a person with a life to consider them a mentor. And so, I have determined that those who have not earned that trust, those who did not help me for my own good, are not deserving of the term mentor.

In closing, as you each travel along your academic career path looking for mentors and acting as mentors, I ask you to treat this as a highly trusted position. At each stage of your career, you will need different types of mentors, and you will be able to provide different types of mentoring experiences to others. If this is to be an academic community in the best sense of the word, then we all need to be in active mentoring relationships. ■

Q & A:

An Interview With Dr. Ronald W. Schafer

Regents' Professor
John & Marilu McCarty Chair of Electrical Engineering

and **Dr. G. Tong Zhou**

Associate Professor
School of Electrical and Computer Engineering

*In the Spring of 2000, Dr. Ronald W. Schafer and Dr. G. Tong Zhou, both of the School of Electrical and Computer Engineering at Georgia Tech, were honored with the first **College of Engineering Faculty Mentoring Award**. Established jointly by the College of Engineering and the SUCCEED Faculty Development Program at Georgia Tech, the Award recognizes as a team a Georgia Tech mentor and mentee who together have demonstrated an exemplary teaching and/or research mentoring partnership*

***Dr. Ronald W. Schafer** attended Doane College and then the University of Nebraska where he earned the B.S.E.E and M.S.E.E. in 1961 and 1962 respectively. After a year of teaching at the University of Nebraska, he enrolled at the Massachusetts Institute of Technology where he earned a Ph.D. in 1968. Following this he joined the Acoustics Research Department at Bell laboratories where he did research on digital signal processing and speech coding.*

Dr. Schafer came to Georgia Tech in 1974 as the John and Marilu McCarty Chair Professor. Since then, he has played a major role in Establishing ECE's Digital

Signal Processing Group as one of the finest in the world. Dr. Schafer has become an internationally recognized leader in his field. He is author of four major digital signal processing textbooks, and has received numerous awards and distinctions from professional societies and from Georgia Tech.

***Dr. G. Tong Zhou** received her B.Sc. degree in Biomedical Engineering and Instrumentation from the Tianjin University, P.R. China in July 1989. From September 1989 to May 1995, she was with the University of Virginia (UVA), where she obtained her M.Sc. degree in Biophysics/Magnetic Resonance Imaging (MRI) in May 1992, M.Sc. degree in Electrical Engineering in January 1993, and Ph.D. degree in Electrical Engineering in January 1995. She was awarded the 1995 Allan Talbott Gwathmey Memorial Award for outstanding research in the physical sciences at UVA based on her Ph.D. dissertation. From June to August 1995, she was a visiting researcher at the Tokyo Institute of Technology on a National Science Foundation Fellowship. She has been on the faculty of the School of Electrical and Computer Engineering at Georgia Tech since September 1995. In 1997, she received the National Science Foundation Faculty Early Career Development (CAREER) Award. She is also a recipient of the 2000 Meritor Teaching Excellence Award at Georgia Tech.*

Q: Dr. Schafer, describe your initial encounters with Dr. Zhou.

Dr. Schafer: I first met her when she interviewed for a faculty position in the School of ECE just after she received her Ph.D. I remember being impressed with her poise and maturity. Needless to say, my colleagues and I were impressed with her potential to be an outstanding faculty member in our digital signal processing group because we made her an offer and fortunately she accepted it. I believe that she was the only new faculty member hired (in ECE) that year.

Q: At what point did you realize that you had become a mentor to her?

Dr. Schafer: I really didn't think about it until this award nomination came along. We never talked in those terms. I just enjoyed working with her and talking about teaching and research with her. In 1996 our group moved to the GCATT building and our offices are adjacent so it was easy to keep in touch.

“Tong and I never talked in terms of me being a ‘mentor’ to her . . . I just enjoyed working with her and talking about teaching and research with her.”

-Dr. Schafer

Q: Dr. Zhou, describe your experiences as a first year faculty member at Tech? What were the challenges, issues and difficulties you encountered?

Dr. Zhou: During the first year, it was sheer excitement. I was grateful that I could be among some of the most respected DSP (digital signal processing) educators and researchers in the world. I already had a good start in research and my teaching evaluations

were satisfactory. So I didn't really encounter much difficulty during the first year. One challenge was to find funding. I kept writing proposals and felt stressed when none of my proposals were funded during the first year.

Q: How did your acquaintance with Dr. Schafer develop into a mentor/mentee relationship?

Dr. Zhou: There was no formal structure to our mentor/mentee relationship. Neither Ron nor anyone else was assigned to be my mentor, and there was no formal agreement. It just happened because we have common research interests. Ron is a very caring person and shows interest in the success of all junior faculty members in the DSP group. And our offices are close by so a lot of our joint work started casually with a chat at the door. As in any relationship, I believe there has to be some personality match and “chemistry” between the mentor and mentee. I don't think an assigned mentor/mentee relationship is a good idea.

Q: Do you have any thoughts on what constitutes success as a first year faculty member?

Dr. Zhou: My performance during the first year was satisfactory, but I won't say that I was successful. If you do not already have a lot of research done during your Ph.D. years, it would be very difficult to start a new research program during the first year when you have to teach courses and adjust to a new

environment. It is important to write a lot of proposals during the first year, otherwise you feel really uncomfortable if by the second year you still don't get any funding. One important aspect that some new members don't realize is that you need to be cooperative, pleasant, and show respect to the support

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Q & A

an interview

staff. Oftentimes, they can be your best help. Within the first year, some people already get a reputation of being difficult, and that won't help with their success at Georgia Tech.

Q: *Do you have any suggestions to improve the first year experience of the new faculty member?*

Dr. Zhou: I would suggest the new hires to organize some group activities. For example, get together for monthly lunch meetings. They can exchange information on how to do a proposal budget, how to make sense of the account ledger reports, what teaching tools people use, where to buy a house, et cetera.

Q: *Do you think it is important for a professor to have a “teaching philosophy”?*

Dr. Schafer: I'm sure that we all do. Perhaps we should articulate it more to ourselves (and others only

“ . . . our offices are close by so a lot of our joint work started casually with a chat at the door . . . I believe there has to be some personality match and ‘chemistry’ between the mentor and mentee. I don’t think an assigned mentor/mentee relationship is a good idea”

- Dr. Zhou

if they ask).

Q: *As people who teach, how do you define “learning”?*

Dr. Schafer: We can learn facts, we can learn techniques, but the most useful learning is when we learn how to synthesize what we know with what we

can do to respond to new situations and to solve new problems. We seem to do pretty well at creating problem solvers here at Georgia Tech, but I doubt if you can get agreement on how we do it.

Q: *What is a professor’s most important role in facilitating the learning of students?*

Dr. Schafer: A professor must try to make difficult concepts clear and he/she should aid the student by providing an organized context for learning the subject. Through the organization of a course, we offer our view of a subject and provide a framework for the student to learn how to learn that subject. And if possible, the professor should try to inspire and encourage the student to want to learn. It is then up to the student.

Q: *Most of us have had teachers whom we respected, admired, and appreciated because of the positive impact they’ve had on our lives. Describe your fondest memories of such a teacher.*

Dr. Schafer: I have a long list of great teachers that I have learned from both as a student and as a colleague, but my favorite teacher was Professor Levi T. Wilson, who taught ALL the math and physics courses during my undergraduate years at Doane College in Crete,

Nebraska. Professor Wilson had retired after 40 years of teaching at the U.S. Naval Academy, and after that he had taught for some years at Emory University. He just could not stop teaching. He was a demanding teacher and my classmates and I were much in awe of him because he seemed to know so much. He was my first real teacher role model, and I guess from my current perspective, it was not only his knowledge and intellect, but also his dedication to teaching that sets him apart in my list of great teachers.

continued,

with Dr. Schafer and Dr. Zhou

Dr. Zhou: My Ph.D. dissertation was dedicated to two of my elementary school teachers. One of them is Mr. Shouli Li. He was totally devoted to his students without any expectation for extra pay, promotion, et cetera. One day when I overheard a conversation on the bus that Mr. Li suffered a heart attack while in class (I was in middle school then), I went directly to the emergency room in the local hospital. I cried as soon as I saw the oxygen mask on his face but he struggled to comfort me. He instilled in me the belief that the gift of education is priceless. Indeed, sometimes it may seem that it does not pay to put in so many hours in course preparation (consulting pays a lot better), but I appreciate the real worth of education that I received from many great teachers I have had.

Q: *Dr. Schafer, how did your role as a mentor to Dr. Zhou benefit you?*

Dr. Schafer: Immensely. She has a very keen mind and lots of energy. I began to talk with her about a statistical modeling problem that I was working on with a young biological scientist at UCSD (my son Bill Schafer). She knows a lot about probability and statistics and she led the way on the mathematical modeling side of the project. I can say with certainty that the two papers that I co-authored with Tong and Bill are as important and gratifying to me as anything I have done in my career.

Q: *Has being a mentor to a junior faculty member caused you to change the way you teach? If so, in what ways?*

Dr. Schafer: Perhaps, though I'm not sure how. Seeing her in action certainly makes me think a lot about how we more experienced (read older) faculty need to keep on learning new things and finding new ways to teach them. Experience is valuable, but so are enthusiasm and willingness to try new things.

Q: *Tell us about the time commitment required of the mentor. What time constraints are/should be involved in mentoring? How do you control the time spent mentoring without "putting off" your mentee?*

Dr. Schafer: I have not seen it in these terms. It just needs to be part of what you do as a faculty member. After all, we are supposed to be teachers. Why should we limit our teaching to undergraduate and graduate students?

Q: *Dr. Zhou, can you describe what you gained from Dr. Schafer that fostered your success as a new faculty member.*

Dr. Zhou: Ron is a "Godfather" of DSP but he also sets a great example for teaching. He puts tremendous effort into course preparation, he is up-to-date on educational technologies, and he teaches undergraduate classes. I have tried to follow his model. I have benefited from Ron's connection to the outside world. Once a company contacted Ron for help on a research project. Ron referred them to me because I work on similar topics. I ended up getting that contract.

Q: *Dr. Schafer, what is the best piece of advice you can offer to a new faculty member?*

Dr. Schafer: I would not presume to know anything that could be encapsulated in one profound piece of advice. However, I would venture the opinion that those who are smart enough and lucky enough to find themselves in the position of being professors at a major university like Georgia Tech should periodically ask themselves the following question: Do I believe that being a university professor is the greatest job in the world? If they can't answer yes, then they must have taken a wrong turn somewhere along the line. To achieve such a position without truly enjoying it every day would be a waste for all concerned.

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Q & A, continued

an interview with Dr. Schafer and Dr. Zhou

Q: How has your mentor/mentee relationship benefited your students? Your academic unit?

Dr. Schafer: To the extent that it has helped Tong Zhou be successful here and to have a good feeling about being at Georgia Tech, there may be great benefit. Soon I will be gone, but if we are lucky, she will still be here teaching some of the things that I taught, but in a fresh new way.

Q: What difficulties of being a mentor came about that you did not expect?

Dr. Schafer: It has been all positive as far as I am concerned.

Q: In your opinion, should the mentor and mentee be in the same academic field? Why/why not?

Dr. Zhou: It would be best if they can be in the same field so they can collaborate, and for the mentor to understand the problems that the mentee may be facing.

Dr. Schafer: It helps to be in the same field because the experience of the mentor in navigating the academic shoals is more relevant.

Q: What kinds of things are necessary for a mentor/mentee relationship to succeed?

Dr. Schafer: Two people who have something to offer to each other.

Dr. Zhou: Personality match is important. Mentoring is a volunteer activity (not an obligation), so if the mentor and mentee cannot talk with ease, then it won't

be productive. All my colleagues are very nice, but I won't say that it would have worked out this well between me and everyone. I think it is to the new faculty member's best interest to seek out a mentor early on, taking into account the personality factor, research interests, respect for the mentor, et cetera.

Q: In a mentor relationship, is it possible to create compatibility or is this an "organic" thing that either happens or doesn't happen?

Dr. Schafer: I don't think that this kind of thing works if it is forced. Ideally it should just happen naturally.

Q: Do you believe it possible for those who are not "born mentors" to develop this ability? How?

Dr. Zhou: I think any established faculty member who regards himself as successful at Georgia Tech, is interested in the success of a person, and is willing to spend a little time can be a mentor. I don't regard this as a natural ability; it is more the willingness. I hope they find that it is a mutually beneficial thing.

Dr. Schafer: Any experienced person who has a genuine interest in another person and their growth should be able to provide support and guidance that will be useful.

Q: What suggestions would you have for anyone who wants to implement a formal mentor program?

Dr. Schafer: Don't force it. Make it voluntary on both sides.

Dr. Zhou: Georgia Tech has a "Take a Prof to Lunch" program where, periodically, students have the opportunity to ask professors to an organized buffet lunch at the Student Center. The lunch is subsidized by Georgia Tech. We are all exceedingly busy, so to encourage mentoring activities, I would suggest for Georgia Tech to offer similar opportunities for mentors and mentees. ■

Q&A

Students are Mentors for Proteges and Mentees

By Billiee Pendleton-Parker
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Mentor: a trusted counselor or guide; a tutor or coach. Who, in academe, would NOT want to be this for someone? Certainly, senior faculty serve as informal and formal mentors for junior colleagues. For years, our upper division students at Tech have informally served students in the lower division. Now they are able to serve them in formal programs.

The sharing that transpires on our campus is manifested by two student-run programs: the Mentor and Mentee program (M&M), sponsored by the Women in Engineering program (WIE), and Leadership Enhancement and Resource Networking (LEARN).

M&M's participants (restricted to female engineering students when the program started two years ago, but now open to all) are paired according to major. All pairs within a given major form a team that also has a team leader to oversee activities. The teams engage in social and informative/educational activities, with a focus on pertinent topics geared toward each major. Some group activities are also periodically organized by WIE. The group sessions this academic year focus on getting to know the culture, written and unwritten rules in organizations, projecting a professional image, building a professional support network, career management, interviewing skills, and a trip to Fernbank. Commenting on the M&M program, one mentor, who had been a mentee, said, "... I see my mentees asking the same questions that I had when I was in their position. I had a tough time finding answers to these questions, especially in one department where the academic advisors are sparse and usually advise a few hundred students each! It is great to be able to e-mail someone about classes/school who will respond quickly and honestly..." Information about the M&M program is available from the Director of WIE, Dr. Mimi Philobos (email: mahera.philobos@ce.gatech.edu).

LEARN is a peer mentoring program created to give anyone the resources needed to help make a difference on our campus, and in his or her future, as a leader. The mentor, who shares similar interests in campus involvement, guides

his or her protégé through the semester-long program. Protégés use their mentors as resources for information—both are actively involved in and benefit from the learning process. The LEARN student founders and steering committee members believe that having a peer mentor to serve as a guide through varied facets of the college experience is the key to building a stronger foundation for genuine, life-long success. Another goal of LEARN is to enhance the Tech community through a well-developed leadership base.

LEARN offers programming throughout the year—including team building, knowing and using campus resources, fundraising, and goal setting. Information is provided through seminars, exercises in leadership, and the LEARN leadership notebook. This document, produced by Tech students, provides modules on topics, including those cited above, plus vision development, networking, and effective publicity. The programming, modules, and meetings between mentors and protégés all work in concert to allow in-depth development of the many facets of leadership for Tech students. A protégé who became a mentor in the program comments, "The opportunity of being a part of LEARN has allowed me to develop stronger networking and communication skills. [I learned] how to adjust to the Tech environment. As a protégé, I benefited from my mentor's experiences, while learning applicable leadership concepts. LEARN played a big part in teaching me how to balance my academics and extracurricular activities and how to combat stress. LEARN encourages the students of today to create their place in the Georgia Tech community of tomorrow." Information about LEARN is available from thier advisor, Billiee Pendleton-Parker (email: bp4@prism.gatech.edu).

Mentoring: counseling, guiding, tutoring, coaching. This is what our best and brightest are doing for each other. What apt role models our students are for us—they just may have something to teach us. ■

In the CETL Library:

The Scholarship of Mentoring

Mentor in a Manual

Schoenfeld, A. Clay & Magnan, Robert
Magna Publications (2nd ed. 1994)
ISBN 0-912150-35-1

Mentor in a Manual is not a handbook on how to be a mentor for a fellow faculty mentor or for a student; rather, Schoenfeld and Magnan wrote this book to BE a mentor for any faculty mentor. The authors state that their fundamental objective is to answer the question, “How does an assistant professor earn tenure?” and they proceed to explore the answer(s) to that question through the twelve chapters of the book. Schoenfeld and Magnan use a combination of advice from their combined experience, empirical and anecdotal research, as well as real and invented scenarios in order to demonstrate all of the intricacies of the typical tenure process.

In the first four chapters (“Acquiring a professional state of mind”; “Getting to know your territory”; “Grasping generic institutional expectations”; “Appreciating the practical politics of getting promoted”), the authors guide the readers to observe, investigate, and critique themselves, their institution, and their profession as a whole, in order to determine the possibilities of a good “fit”, with those possibilities indicating the likeliness of a favorable tenure position. Schoenfeld and Magnan introduce the fictitious Midland University to illustrate practices and documentation that most faculty members will encounter in their march towards tenure.

Schoenfeld and Magnan next examine the crucial aspect of instruction in the subsequent three chapters. The authors recognize the inherent rewards and pitfalls for a faculty member who focuses on teaching, and they address those concerns in order that that focus is both efficient (in that it does not detract from progress towards tenure) as well as recognized in the tenure decision. These chapters present information on the basics of getting off on the right foot from the start (“The teaching challenge: preparing to teach”);

working with students in order to ensure learning and to gather feedback on instruction (“The teaching challenge: in the classroom”); and, finally, applying your instructional ideals and successes towards documenting your value to the institution and the profession (“The teaching challenge: outside the classroom”).

Chapter 8, “The research paradigm”, stresses the importance of this aspect of the tenure decision at most institutions, and the authors discuss the issues of peerage, research norms, the use of students, and proposal writing, among others, and how these things enter into the tenure decision. These issues also are examined from different perspectives in light of the needs and requirements as found in various disciplines. In Chapter 9, the authors tackle the topic of service as it enters into the tenure equations, as they examine the standards, dimensions, and importance of the differing arenas of service: public, institutional, and professional.

Schoenfeld and Magnan spend the next two chapters discussing publishing and writing. The authors present the pros and cons of publishing one’s research at both the philosophical and practical levels, and the effects of the emphasis on publishing on all aspects of the tenure process. Additionally, the authors delve into the nuts-and-bolts of good writing, giving examples for the “do’s” and “don’ts” when producing research papers, interpretive articles/essays, and textbooks.

Chapter 12, “Presenting your credentials for the ultimate decision”, presents an outline for packaging THE PRODUCT: the documentation necessary for the P&T portfolio. Schoenfeld and Magnan base the majority of their discussion here on documents from the University of Wisconsin-Madison as a good model for faculty members to use in preparing their portfolio. Appendix A, immediately following Chapter 12, is entitled, “What do I do if I don’t make tenure”. This appendix presents four alternatives to consider, should a faculty member not achieve tenure at their institution.

Book Reviews by David J. Shook, Ph.D.

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At almost 500 pages, this book is full of information. Each chapter ends with a list of works cited, and Appendix B lists some 80 works as suggested readings. Therefore, one should not consider this volume as a “quick read” the night before the P&T portfolio is due! Rather, *Mentor in a Manual* is a great gift for a graduating Ph.D. student, or for a faculty member starting off in his/her first academic position. In addition, administrators might want to own a copy in order to effectively guide their faculty towards success. The discussions are thorough and the authors raise issues that make the readers examine themselves, their institutions, and the whole academic profession with critical forethought. Along with the human variety, *A Mentor in a Manual* is an excellent companion through successful professional development. ■

The Practice of Mentoring

Advisor, Teacher, Role Model, Friend: On being a mentor to students in science and engineering.
National Academy of Sciences, National Academy of Engineering, Institute of Medicine
National Academy Press (1997)
ISBN 0-309-06363-9
www.nap.ed/readingroom/books/mentor

The Committee on Science, Engineering, and Public Policy, made up of members from the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine, prepared this mentoring guide. The purpose of the guide is to help faculty and advisers prepare themselves adequately in serving as mentors to undergraduate and graduate students in their plan to become scientists or engineers.

This short volume consists of six chapters: “What is a mentor”; “The mentor as faculty adviser”; “The mentor as career adviser”; “The mentor as skills consultant”; “The mentor as role model”; and “Recommendation: improving the quality of mentoring”. Each chapter contains common sense

information related to its self-evident theme, noting different strategies or steps as necessitated by the different developmental stages of the students (graduate vs. undergraduate). Chapter summaries are found at the end of chapters 1-5. The seventh chapter of the volume, “Resources”, is a well-organized list of available information to those faculty who might serve as mentors. The list includes websites and organizations that help with specific career- and diversity-issues, as well as a list of print resources, covering topics such as the following: “Doing Science”; “Oral Communication”; “Responsible Scientific Conduct”; and “Teaching”. This text concludes with a report brief, “Reshaping the graduate education of scientists and engineers.” This report argues for a re-formulation of the Ph.D. requirements so that more career planning and guidance is undertaken by all participants: the students, the advisers, and the academic institutions.

While many established faculty members might find the chapter information trivial or uninteresting, new faculty might welcome a highlighting of easy-to-do steps towards successful mentoring of their students. All faculty members, however, might find the following chapter sections much more thought provoking:

- “Tips” present short checklists of practical habits of good mentoring.
- “Styles” gives short scenarios that exhibit good or bad mentoring in context with discussion.
- The three “Facts” sections intend to inform mentors of tangential issues to mentoring.
- Finally, “Profiles” describes the cases of three students who reflect on their career choices and the mentoring that led up to and has followed through from those choices.

All in all, this text is an easy read, and its practical information will not take most readers by surprise. Moreover, for the busy faculty member, this book can be a handy reference for those striving to serve as a good mentor for their undergraduate and graduate students in today’s dynamic job market. ■

Making I.T. Work

“Virtual” Seminars via Internet2

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When people think of distance learning, they typically have in mind a distributed model, with a single professor beamed to students at multiple locations. While useful for certain purposes, this model does little to promote the sort of interactive learning that occurs in discussion-centered, project-based seminar courses. Thankfully, completion of the NSF-sponsored Internet2 has opened new possibilities in this area.

During two recent terms, I collaborated in teaching a “virtual” seminar that brought together students and faculty from Georgia Tech and Stanford for regular, real-time meetings via this new communications backbone. Every week about fifteen students at each campus gathered around a seminar table to discuss a common set of readings. At one end of each table was a large screen displaying the projected image of the group gathered across the country. (A smaller monitor displayed the image being transmitted to the other end.) Several live microphones in each room enabled all participants to participate freely in discussion, without waiting for instructors or technicians to activate or reorient a particular mike. Instructors could easily pan the room and zoom in on particular speakers using remote-controlled cameras with presets. Affordable, PC-based operating systems took care of the audio mixing and all switching, so that faculty and students conversed almost as freely as if everyone had congregated around a common table in a single room.

Why bother to link classrooms in this way? In our case, we were interested in fostering collaborative study aimed at comprehending the interplay between high technology and regional development. We thought advanced undergraduates and graduate students located at two dynamic centers of technical innovation might learn a great deal by comparing the historical experiences of their two regions. Someone studying the role of Georgia Tech ECE graduates in fostering start-up companies, for instance, might benefit from having someone in Palo Alto pursue a parallel study of EE graduates from Stanford. Other pairs of students might examine topics such as venture capital, government policy, and immigrant entrepreneurs.

While we have been modestly successful in promoting such collaborative study, the real revelation from our experiment has been the unusually high quality of the discussion. Students have been extraordinarily energized. They have participated very actively in class, and they have kept a common, web-based discussion forum brimming with activity. Some weeks, we had upward of sixty postings. Many of these went on for several paragraphs, as students worked through themes raised by student leaders about each week’s readings. My Stanford colleague, award-winning Professor Timothy Lenoir, reports that he has never had such enthusiastic reviews.

Some of this may be a product of simple novelty. But I think it reflects something more. Right away, with our very first session, we realized just how much

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“local knowledge” our campus communities have embedded within them. Folks living and studying in a particular environment take a lot for granted. They tend to assume either the whole world works in the same fashion as their own or that their local situation is absolutely unique. A few minutes in our virtual seminar quickly reveals otherwise. Like travelers in a foreign land, students soon come to see both differences and similarities they had never even thought to ponder. Inevitably, they begin to pose new questions, to take new approaches to familiar subjects.

My guess is this phenomenon is not unique to our course and its subject matter. Any two groups of students, with their boundaries opened in this way, will engage the material in a different (and more creative) fashion. I can well imagine engineering students engaged in design projects, for instance, having much the same experience as our groups. I urge anyone whose teaching involves open-ended inquiry and problem solving to give this approach a try.

Feel free to contact me at steve.usselman@hts.gatech.edu for more information. You might also wish to get in touch with Sean Brennan of Educational Technologies, who has outfitted the Information Technology Development Classroom with an excellent system for conducting sessions of the sort I have described. ■

For assistance with instructional technologies, contact Melissa Bachman in CETL at 894-7569 (melissa.bachman@oars.gatech.edu).

Faculty Development - Thoughts on Mentoring

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My position as the Faculty Development Coordinator for the Southeastern University and College Coalition on Engineering Education (SUCCEED) on Georgia Tech's campus for the last several years has provided me with a unique perspective on the role of faculty development in helping faculty improve their research, teaching and service. In addition to the SUCCEED activities was my participation as a Lilly Teaching Fellow and its requirement of my attendance at national seminars aimed at new faculty. A common theme in these events was the need to have mentors, irrespective of one's own professional standing. Mentors are people who listen and provide guidance concerning research agendas, activities, and proposals. They help others improve their teaching styles and assist in assessment strategies. Finally, they advise or demonstrate by example how best to serve one's profession. While most often helpful, the advice one receives from mentors can sometimes be conflicting.

I am reminded of a joke about two senior faculty taking a junior faculty member fishing. As the group rows to the middle of the lake, they realize that in their excitement to fish, they left the bait on the dock. In an attempt to impress the senior faculty, the junior faculty member states that he will be more than happy to go and get the bait. So, with much excitement, the junior faculty member hops out of the boat and walks across the water to the dock, retrieves the bait and heads back to the boat. With great astonishment, one of the senior faculty looks to the other and says, "Wow, this person really CAN walk on water!" The other senior faculty member responds by saying, "Yes, but can we really tenure a person who doesn't know how to swim?" As with these two senior faculty, a view of promising potential by one could be seen as questionable by another. The best advice is to seek many opinions, much input, and weigh the information carefully.

Mentoring is a formal process between two or more individuals, both sharing the goal of improving themselves and each other. Mentoring activities can take place in many different forms and between many different people. The forms of mentoring vary between passive and unstructured activities, such as dialogue between faculty over lunch, to formal programs where requirements are defined and measured. Mentoring activities occur between individuals: faculty and students; faculty and faculty; faculty and staff; staff and staff; and, student and student. There is also mentoring that takes place between industry and academia as well as between government and academia. Mentoring addresses research, education, and service, and involves professional practice and ethics. The actions that we undertake, either implicitly or explicitly, provide others with insights on how we accomplish our work. Our actions become examples for others. Thus, traditional methods for performing research and teaching are propagated from faculty to graduate student. Faculty development activities can inject new ideas into our processes, allowing each of us to be more effective at what we do.

Research clearly shows that many new faculty are inefficient at performing research and teaching in their early years.¹ Surveys indicate that these individuals mean well, verbally giving writing and research their highest priority. Yet, when looking at productivity, often they are spending between 25-30 hours/week in lecture preparation, equating good teaching with good lecture notes. While much can be said about these practices and their true impact on student learning, the fact also exists that there are just so many hours in a week, and such preparation activities often lead to low research productivity.

¹Boice, Robert, *The New Faculty Member*. San Francisco, Jossey-Bass Publishers, 1992.

All faculty should be engaging in dialogue with their colleagues about research, teaching, and service. Mentors can be part of this process in each area. Mentors do not have to be located in one's home department, especially for non-research activities. In exchanging dialogue, both parties learn much about not only what is done, but also how it is done or how others observe the work to be accomplished. By establishing goals and objectives that are not only visionary but also attainable in both the short and long term, faculty are more likely to excel. The best mentoring often happens through listening and giving guidance on short-term goals and objectives.

Often, mentoring is thwarted because either the potential mentee or mentor believes that the other is too busy or does not want to be bothered. Sometimes, one may be reluctant to seek input or guidance lest he/she be viewed as inadequate for the job. This is often the case with new faculty. In reality, good mentoring relationships are rewarding for both parties, not just the mentee.

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As one catalyst to improve faculty mentoring, the College of Engineering and SUCCEED have teamed to create the College of Engineering Faculty Mentoring Award. This annual award is presented to full-time faculty members at Georgia Tech in the College of Engineering who clearly have demonstrated research and/or teaching mentoring. These individuals provide a role model to each other, but also for all of us on the faculty. The recipients of the Award receive \$5,000 and the School(s) where the faculty work also

receives \$5,000 to further promote mentoring activities. To learn more about this award, contact Dr. April Brown in the Dean's Office or myself.

With the assistance and resources of CETL and SUCCEED, there are a variety of seminars and workshops offered for each of us to become involved and learn from each other. Topics at these events are targeted for new and senior faculty. They occur on a monthly basis where you can come with your lunch or eat what is provided, and interact with colleagues on topics that impact all of us. You can visit the CETL web site (www.cetl.gatech.edu) for information on these topics and for information on national workshops for faculty development. You can obtain copies of the SUCCEED Effective Teaching Workbook and the SUCCEED Effective Teaching with Technology workbook by sending me an email. Other materials are in the CETL library for your use.

As with all endeavors in life, we must make choices about what we do and about how we do them. Many of us have wonderful instincts about performing our jobs, both in our research activities and in our educational activities. I believe, however, that by learning from others, we can improve what we do and how we accomplish our tasks.

I encourage all of us to become better mentors and mentees. We each have so much to share with each other and so much to learn. Collectively, we and Georgia Tech will become better because of mentoring. ■

Upcoming Events

Faculty Development Seminars

March 14	Advising Graduate Students
March 15	Educational Technologies: Real Audio & Real Video
April 4	Creating a Course Syllabus

Other Events:

March 20	Teaching Fellows Day
March 29	GTA Awards Luncheon
April 11	Faculty/Staff Honors Luncheon
April 17	Student Honors Luncheon
April 30	A workshop on how to use The CoWeb, an easy-to-use collaborative learning space available at Georgia Tech, will be presented on Monday April 30th, 11am-1pm in room 216 of the Bunger Henry (Chemical Engineering) Building. The workshop is free and lunch will be provided. To register see the web site: www.chemse.gatech.edu/coweb

For more information on these events, contact CETL at 404-894-4474

The Classroom

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