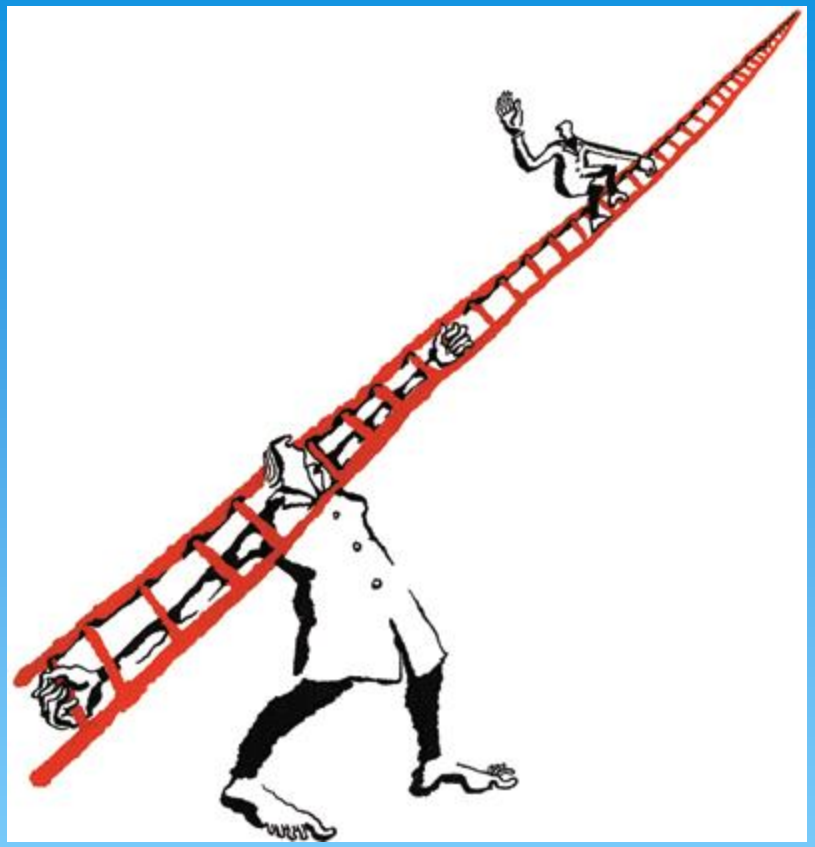

Belle Mellor

Mentoring

Dena Plemmons
San Diego Research Ethics Consortium
LIAI April 21, 2011

From *Academic Duty*

"Future researchers, like other professionals in the making, need to become acquainted with the kinds of challenges they are likely to face. Without some thoughtful consideration of what their own responsibilities are to be, and an examination of ethical issues researchers regularly confront, is it reasonable to expect that they will get it right the first time? Surely that places too much faith in instinct, or in the general kind of moral guidance that is part of an average upbringing."

Donald Kennedy, Academic Duty, page 19

From the journal *Science*

"At the advanced level, research training occurs mainly via apprenticeships. And probably the best way to learn scientific integrity is by example, from principled mentors who model scientific virtues: meticulous attention to detail, an intensely critical approach (including, especially, to their own work), a commitment to truth above reputation -- or to the idea that reputation is intrinsically linked to truth -- and so on. Of course, not everyone has a principled mentor who is a master scientist who recognizes the importance of passing on the unspoken substance of what we do as scientists."

* “…there's value in conscious analysis, in the careful consideration of what integrity is, globally and in the context of particular fields and decisions, and what it means to have it and use it.”

By Jim Austin

November 05, 2010

Accessed at http://sciencecareers.sciencemag.org/career_magazine/previous_issues/articles/2010_11_05/caredit.a1000108

Ethics and morality, defined

"The difference between [ethics and morality] is subtle: 'moral' implies conformity with some established code of behavior or accepted notions of right and wrong, while 'ethical' implies a need to deal with difficult questions of rightness and wrongness that may not have stock answers in accepted moral codes. Thus, we can think of ethics as the set of processes by which we decide what is right and wrong, and morality as a set of more or less clear statements regarding what actually is right and wrong."

Dale E. Lehman, 3/24/2006, from http://www.planetbahai.org/cgi-bin/articles.pl?article=269

"[E]thics is any way of answering the question "How ought one to live?" while morality is a certain kind of answer to that question…"

Paraphrase of Bernard Williams

What IS that process?

* Reasoned analysis to identify problems
* Critical thinking to identify possible solutions
* Action based on the best available information and conclusions
* Learning from experience to do better in the future

From the journal *Science*

"At the advanced level, research training occurs mainly via apprenticeships. And *probably the best way to learn scientific integrity is by example, from principled mentors who model scientific virtues*: meticulous attention to detail, an intensely critical approach (including, especially, to their own work), a commitment to truth above reputation -- or to the idea that reputation is intrinsically linked to truth -- and so on. Of course, not everyone has a principled mentor who is a master scientist who recognizes the importance of passing on the unspoken substance of what we do as scientists."

* The role of a mentor is different from that of a supervisor or adviser, although these formal academic roles can lead to a mentoring relationship.

* But a distinctive feature of a great mentor as opposed to a great supervisor seemed to be a special focus on helping to build the mentee's career. *"For me there is a difference between a supervisor and a mentor. With the latter you find that you are not simply a student with a research project, but a student with a career in front that the mentor helps you start."*

* **A mentor is someone who has:**
  - **experience with the challenges to be faced by the trainee,**
  - **ability to communicate that experience, and**
  - ***willingness and availability to do so***

* If there was one theme that came through all the reports it was this one. Availability is the standout quality appreciated by the mentees. Despite enormous workloads and responsibilities, the mentor was always there and the door was always open. They never failed to respond to an urgent request immediately. Mentees marvelled at e-mails answered in 20 minutes, responses made to drafts in two days and the willingness to listen to their problems.

* *"First, her door is always open, even now in her retirement she can never say 'come back later'. I now greatly admire this skill for I find myself struggling with administration and feeling guilty in making appointments to see students. M always put scientific discussion first."*
* *"I cannot remember him ever cancelling an appointment with me despite the tremendous demands on his time (he was head of department for some of the time that I was his student)."*
* *"M was always accessible, and she always made it abundantly clear to her students that she would rather talk about science with them than do just about anything else."*

"... apprenticeship was a time of what social scientists call socialization. Socialization includes more than is ordinarily understood by education or by training: it involves acquiring the norms and standards, the values and attitudes, as well as the knowledge, skills, and behavior patterns associated with particular statuses and roles. It is, in short, the process through which people are inducted into a culture or subculture."

Zuckerman H, 1977. Scientific Elite: Nobel Laureates in the United States. New York: Free Press.

* *"[Mentoring is a] partnership in which power is granted to the relationship, not the mentor. (Mentor is not the expert that is telling mentee what to do. Mentor is a partner that is sharing their knowledge and learnings from their work experience)"*

Orientation Session for
Flight Programs and Projects Directorate: "Mentoring for Success"

Marilou Bova, Inc.
MLBova1@home.com

Topics for mentoring (1 of 4)

Research Knowledge and Skills

- methods for doing research
- research directions
- creative thinking
- completing academic or professional requirements
- scientific communication

Topics for mentoring (2 of 4)

Career Development

- understanding of current job market
- opportunities to make contacts with leaders in the trainee's field of research
- active introduction into the network of people working in his or her discipline
- awareness of the range of career options

Topics for mentoring (3 of 4)

Socialization

- ethical development
- understanding of political, economic, and social elements of interacting within academic community
- instilling a sense of collegiality
- promotion of skills for teaching, communication, working in teams, leadership, management of people, listening, expressing ideas, administration and planning, and budget management

Topics for mentoring (4 of 4)

Special Circumstances

- Gender
- Race
- National origin
- Language
- Speech or hearing issues

Amos Jones was accepted to an excellent graduate program in molecular biology. The faculty was relatively small but there were two outstanding professors, Claire Cheng and Patricia Slocum, who really determined the quality of the graduate program. Amos had been encouraged to train under Dr. Slocum by his undergraduate advisor.

Amos planned to do rotations in both the Cheng and Slocum laboratories. When inquiring about the research activities in the labs, Amos was told by Dr. Slocum's trainees that whether for a rotation or a thesis, Amos would be given a specific project, he would be expected to communicate results only to his direct supervisor, and he would have to give a formal presentation on the progress of his research once every two months. They noted that daily handwritten and dated entries were required for their laboratory notebooks. Much of the work had potential for commercial applications, so the laboratory was locked even during the day, with entry limited to the staff. The graduate students were reluctant to describe their experiments. The pace was very intense and trainees were required to prepare abstracts for the two important national meetings every year. The trainees also noted that many famous investigators visited the lab, spending time in formal and informal scientific discussion. Trainees were allowed to examine copies of papers that Dr. Slocum had received for review and to discuss them at lab meetings. They also saw an occasional grant application that she was asked to review. The trainees expected to be in great demand for postgraduate fellowships.

Professor Cheng's students reflected on the openness of the laboratory and her constant and immediate availability. They thoroughly enjoyed broad scientific interplay within the lab and with investigators on campus and elsewhere. They indicated that they were encouraged to explore their own ideas and expected to select their own thesis project. The students gave no formal presentations except when rehearsing for meetings. Progress in the laboratory was episodic rather than steady as various concepts were explored. Although their notebooks were not specifically examined, Dr. Cheng knew about every experiment and provided constructive criticisms and suggestions. Dr. Cheng did not go to many meetings and refused to show papers she received for review to her trainees. The students admitted that they felt a little out of touch with the newest developments in the field. Although Dr. Cheng did not enjoy the same prestige and reputation as that of Dr. Slocum, the trainees said Dr. Cheng's lab was a much more pleasant and collegial environment in which to work.

Bill and Sara meet in an introductory graduate course and over the span of the upcoming academic year, fall in love and get married. At the beginning of the second year they select different mentors in the same department and begin their dissertation research. The mentors and their groups frequently collaborate and co-author publications. They both work extremely hard, but frequently has Bill help her in the lab. On weekends they are commonly seen working together doing experiments which are exclusively part of Sara's research project. Over the course of the next three years Sara prepares 6 senior authored manuscripts and all are published in peer-reviewed journals. Bill is not included as an author on any of the papers, but he is acknowledged in 5 of them. In her last year in the program, Sara wins the prestigious graduate student honors day award and is also selected by the departmental faculty to receive the outstanding graduate student annual award. Recently, Sara has been offered a permanent position in a biotechnology company. Bill is not likely to be finished with his dissertation research anytime soon, and has no publications or even abstracts to his name. A small group of graduate students meet with you, the departmental chair, and bitterly complain that Sara has had an unfair advantage during her graduate research career. They claim her publication record is deceptive as it fails to account for all the "extra collaborative help" she received from her spouse. They claim both she and her mentor are party to inappropriate practices. They want you to intervene in some way.

Professor Steve Hill and his wife, Karen, had just sat down at their table and begun to study the menu.

"Hi, there. My name is Jake, and I'll be your waiter. Allow me to tell you about today's specials."

Looking up from his menu Dr. Hill looked as if he had seen a ghost.

"Jake, what are you doing working in this place?"

"Hey, Dr. Hill. Hello, Karen. Well the funding for my post-doc over at the research center was not renewed, and other employment options in academia have not come up. The mortgage company isn't very sympathetic, so here I am. I am trying to remain optimistic that something will surface, but I needed to pay the bills in the meantime."

"I must say that I'm rather surprised to see you here. You should have let me know you were going to be out of a job. Perhaps I could have been of some assistance," Hill replied.

"Well, I felt as if I had exhausted those connections after grad school, and I didn't want to seem as though I couldn't take care of myself," Jake explained.

After a fine meal and an exceptionally large tip, the Hills discussed the encounter as they headed home.

"I thought that once you got your Ph.D. , a job was supposed to be waiting for you," Karen commented.

"Perhaps that's how it used to be, but not anymore. I had heard from some of my other students that the job market had become a bit saturated, but this really hits close to home. Jake was an excellent student!" Hill said.

Hill enjoyed an illustrious career as a marine ecologist. He had been a mentor to many students, the majority of whom went on to successful careers. He wondered, though, whether his research program had become a bit dated. Although other specialties had become more prosperous, he was reluctant to subscribe to them. He was always able to obtain funding and lure quality graduate students, making him a valuable and esteemed member of the faculty.

At a faculty meeting the following day, Hill spoke openly about the situation. "Perhaps there might be a problem with an over-abundance of professionals in biology. Good students are having trouble finding jobs and I wonder whether we bear some of the responsibility. Perhaps the department should consider limiting the number of graduate students that are accepted."

"Now, Steve, you know the grad students are the bread and butter of the university. We should continue to recruit and take on the best and brightest, as long as we can bring in the funding with them. I don't want to hear another word about this," replied Dr. Butz, chair of the biology department.

"Today's Specials" Online Ethics Center for Engineering 2/16/2006 National Academy of Engineering Accessed: Tuesday, April 26, 2011 <www.onlineethics.org/Resources/Cases/specials.aspx>