

Personal Experiences with Mentoring and Academia

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Why did I choose academia?

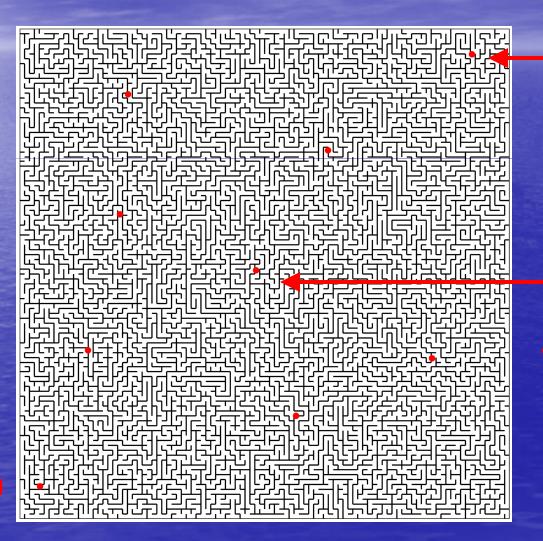
- Decision made very early (undergraduate)
- Didn't want to have a "boss" (independent)
- Mentors who encouraged me early on
- Creative freedom
- Body of work that would make a difference
- Scheduling freedom; Family policies
- Long term travel -sabbaticals
- Passion for research/science and engineering
- Somewhat naive of "disadvantages": tenure process, responsibility of funding, low percentage of URMs
- Not aware of many more advantages

Unforseen advantages

- Job Selection in location of my choice.
- Long Term Travel –Sabbaticals
- Meet the (former) US President at the White House, Speaker of the House, Governors, etc.
- Defense Science Study Group 2008
 Immersed in the U.S. Armed Forces
- Choice of collaborators/students/organization
- Amazing students/mentoring
- Interaction with Industry
- Leadership



The Thesis Maze: A Long and Convoluted Road



Why am I doing this?
 Where do I get the motivation to continue?
 (a Critical Junction)

Graduation

Graduate school is a whole new world

Initiative and Independence

Tenacity

Flexibility

Scientific and technical skills are necessary but not sufficient!

Interpersonal skills

Organization Skills

Aggressiveness

Financial

Communication Skills / Persuasion

Family

Cultural Fluency

Location

Motivation / Self-confidence

"Looking from the Balcony"

- Step back and see the big picture; take a global view
- Focus on the longer-term (5-10 years) rather than the immediate; spend the time to think about and create a 5-10 year strategic plan for your life
 -What are passionate about?
- Concentrate on a few specific goals

Facilitating a Path *TO* Graduate School

Substantive Undergraduate Research:

-Integration into a active research group
 -Well thought out projects at an appropriate technical level and scope

Graduate student / post-doctoral mentors who have a passion for science (URM)

-Interaction with faculty (URM)-Critical training

Continuous Information Flow From Multiple Sources

-Benefits of higher education / limitations of the B.S.; Ph.D. opportunities after graduation (beyond research)
-Counteracting reasons why not to go:

Debt \$, Family, Location, Too long, Insecurity (The "Imposter Syndrome"), Overqualified/too specialized for jobs, Isolation

Facilitating a Path *TO* Graduate School

Continuous Information Flow (Cont'd)

-Advising: Early on (freshman year) conveying graduate school requirements to undergraduates so that they can prepare throughout their undergraduate career (e.g. get to know faculty for letters of recommendation, build up CVs, apply for fellowships, international internships, etc.)

Support to Facilitate Academic Excellence at Undergraduate Level

(e.g. UMBC) Financial support, study groups of differing levels, tutoring, mentoring, advising, summer internships, building community, academic and social integration, support and motivation, career counseling, etc.
 (American Psychologist 59, 6, 547-556)

Facilitating a Path *TO* Graduate School

International Experience

-Summer Internships Abroad

Departmental Recruitment

-On Campus Hosting Weekends (MIT-CONVERGE)

-Off-Campus Recruiting (SHPE, NSBE, SACNAS, etc.)

URM Graduate Student Participation is Crucial

Faculty Participation is Crucial

-Graduate admissions committees aware of diversity issues

-Peer University Networking to Identify Talent

-Create an environment conductive to a diverse population

-Show continual understanding and commitment to diversity (e.g.

Dept. Head, administrators); websites, hosting weekends, etc.

Why should I go to graduate school?

- You are driven by passion, curiosity for research/science and engineering
- You want to have numerous career options /job offers when you graduate
- Financial Security: You want to earn more than \$100,000/year five years after finishing your Ph.D.
- You want to be a Professor, Dean, or President of a college or university
- You want to conduct research at a university or in industry or at a government lab
- You want to avoid the industrial "glass ceiling", i.e. you want to be a manager and move up the professional management track
- Tomorrow's leaders will be scientists and engineers.

Why graduate school?

- You want to have a positive impact on society;
 major technological developments that originated and/or were developed at universities; computing, laser, internet, global positioning satellites, financial engineering, modern medicines → energy, environment, food, manufacturing, communications
 - -"This is the most exciting time in human history in science and engineering and technology. Exponential advances in knowledge, instrumentation, communication, and computational capabilities create mind-boggling possibilities." C. Vest, Former MIT President
- Globalization→ Innovative programs during graduate school that includes exposure to different cultures, customs and work ethics.

Recruitment and Retention of URMs to Graduate School "Looking from the Balcony"

- Step back and see the big picture; take a global view
- Think about the longer-term (5-10 years); spend the time to think about and create a 5-10 year strategic plan
 - -What are you passionate about?

"Looking from the Balcony" Implementation

Keep your strategic plan in mind on a daily basis: take advantage of the opportunities along the way to building a coherent foundation for your strategic career/life plan

Don't think of graduate school stipend as a salary; it is an investment in your future and your future family.

Seek out opportunities for international collaborative exchange as a graduate student - ask your thesis advisor.

Network-Keep in mind your peers will be your future colleagues.

Don't be discouraged by criticism or take it personally; it serves to improve your skills and is a necessary part of training

Some challenges for URMs in graduate school

Academic and social isolation

Identification of mentors

Financial Issues - Debt

Family

Location

International Experience

Seek out opportunities for international collaborative exchange as a graduate student - ask your thesis advisor.

Most universities will have funding, advisor will not have to pay.

