Put Your PhD to Work!

Dr. Peter S. Fiske
Why am I here?
Why am I REALLY here?

• **Experience**
  – My career path (so far) has been unusual (for a Geophysicist) but highly stimulating and enormously enjoyable.
  – I benefited from numerous mentors and got lots of good advice
    • Pass some of it along

• **Concern**
  – Young S&Es don’t get very good career development advice.
  – Such advice is of greatest value at the START of your career!

• **Prejudice**
  – I believe that technically-trained individuals have enormous opportunity to improve the world.
Exploring outside of our own career field can be ...

- Frightening
- Confusing
- Amazing
- Liberating
- Empowering

More than the Academic Job Market is Changing ...

**Old**

- Go to school for skills
- Job Security = Good
- Wages = Reward
- Infrastructure = Biggest Asset

- Seniority (mattered most)
- Guilds (were everywhere)
- Risk Aversion (was the smart thing)
- Passivity (was the safe bet)

**New**

- Life-long learning
- Risk-taking = Good
- Stock Options = Reward
- IP = Biggest Asset

- Experience (matters most)
- Independents (are everywhere)
- Risk Management (is the smart thing)
- Entrepreneurialism (is the safe bet)

*Unfortunately, much of academia reinforces ...the OLD*
Now the Good news!

Young people themselves don’t realize how valuable they are with a Ph.D. It means an ability to think deeply, solve problems, analyze data, criticize and be criticized. [Science-trained graduates] often don’t realize the breadth of what they are capable of doing.

Neal Lane (Former Director, National Science Foundation)

We possess many of the traits and skills that are of highest value in the “real world”
Transferable skills

1. ability to function in a variety of environments and roles
2. teaching skills: conceptualizing, explaining
3. counseling, interview skills
4. public speaking experience
5. ability to support a position or viewpoint with argumentation and logic
6. ability to conceive and design complex studies and projects
7. ability to implement and manage all phases of complex research projects and to follow them through to completion
8. knowledge of the scientific method to organize and test ideas
9. ability to organize and analyze data, to understand statistics and to generalize from data
10. ability to combine, integrate information from disparate sources
11. ability to evaluate critically
12. ability to investigate, using many different research methodologies
13. ability to problem-solve
14. ability to do advocacy work
15. ability to acknowledge many differing views of reality
16. ability to suspend judgment, to work with ambiguity
17. ability to make the best use of "informed hunches"

Did you know a PhD teaches you these things?
Personal qualities

1. intelligence, ability to learn quickly
2. ability to make good decisions quickly
3. analytical, inquiring, logical-mindedness
4. ability to work well under pressure and willingness to work hard
5. competitiveness, enjoyment of challenge
6. ability to apply oneself to a variety of tasks simultaneously
7. thorough, organized and efficient
8. good time management skills
9. resourceful, determined and persistent (and able to live on $2K/month!)
10. imaginative, creative
11. cooperative and helpful
12. objective and flexible
13. good listening skills
14. sensitive to different perspectives
15. ability to make other people "feel interesting"

Employers in all fields are looking for people with these traits
20 successful PhDs in non-academic careers were asked ...

“Of the many skills you developed while in graduate school, which ones are the most valuable to you now?”

Finding one’s own path and taking initiative with little assistance
Ability to work in a high-stress environment
Independence
Maturity
Computer skills
Circumventing the rules
Learning to seek out problems and solutions
Ability to persuade
Ability to create
Ability to work productively with difficult people

and my favorite:

The ability and courage to start something even if you don’t know how yet
What image does the PhD conjure?
The Curse of Being Smart

- We have become very highly skilled → We tend to value our skills the most
- We can conceptualize → We can conceive of complications
- We are used to knowing it all → We fail to ask basic questions
- We are intellectually smart → We fail to appreciate other forms of smart
- We are used to being exceptional → We don’t like to fail
<table>
<thead>
<tr>
<th>Person</th>
<th>Career</th>
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<td>Cell Biologist</td>
<td>Science Media Entrepreneur</td>
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<td>Geophysicist</td>
<td>Software Entrepreneur</td>
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<tr>
<td>Mathematician</td>
<td>High School Teacher</td>
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<tr>
<td>Electrical Engineer</td>
<td>Secretary of Defense</td>
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<tr>
<td>Medieval History</td>
<td>Programmer</td>
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Match the Person and the Career: The Answers

Cell Biologist ——— Science Media Entrepreneur
Chemist ——— Congressional Staffer
Astrophysicist ——— Financial Analyst
Biophysicist ——— Management Consultant
Geologist ——— Rodeo Star
English ——— Experimental Physicist
Plant Biologist ——— Book Editor
Oceanographer ——— Acquisition Editor
Geophysicist ——— Software Entrepreneur
Mathematician ——— High School Teacher
Electrical Engineer ——— Secretary of Defense
Medieval History ——— Programmer

They do have ONE thing in common: They’re SMART ... like YOU!
The 80:10:10 rule

How will you grow and gain new skills if you don't invest the time?

How will people know of your abilities if you don't tell them?

“Opportunities are seldom labeled”
- John Shedd
The skills that will REALLY count ...

Leadership
Persuasion
Humor
Tact
Understanding of Risk and Reward
Understanding of Investment and Return
Organization
Sensitivity
Drive
Perspective
Creativity

Good News: You can LEARN These!

“Give me ten people who have all of these skills and I could do anything”
Typical questions asked by Science grads facing an uncertain job market

“How do I get a job in ______?”
“How do I write a resume?”
“What jobs call for my skills?”
“Where is the bathroom? I’m going to be sick!”

Better questions are:

What do I enjoy doing and what am I good at?
What are various career like?
What careers and jobs are a good match to my skills, interests, and values?
Who can I talk to?
Why are these questions better?

• PhDs are preoccupied with matching skills and ignore other important factors in choosing a career
• PhDs lack information and exposure to other career fields
• Career change for PhDs can be harder:
  – lack of an established pathway
  – fear/anger of getting a degree “for nothing”
  – ignorance/fear of life in the “real world”

If you don’t like what you do for a living, you probably won’t be very good at it!
Steps in the Career Planning Process

Career development is a continual process

Career development is part of being a professional

most people think it starts here but it really starts down here
Self-Assessment:

• Informal methods
  Initial brainstorming

• Self-guided methods
  Interest Exercises

• Formal methods
  Exams and Tests
  Career counseling

Make your neuroses work for you!
Initial brainstorming

• What do I enjoy doing most?
• What do I like most and least about my present career?
• What are my values?
• What do I like to read?
• What organizations or jobs sound interesting to me?
• When have I been my happiest at work?
• When have I been most unhappy?
Self-guided exercises

1. Make a two-column list of everything you can think of that you like and dislike about the academic career, and then assign priorities. What do you learn about your values, interests and skills as they affect the work and workplace?

<table>
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<tr>
<th>Things I love about a research career</th>
<th>Things I hate about a research career</th>
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<tr>
<td>Intellectual challenge</td>
<td>Long hours</td>
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<tr>
<td>Teaching</td>
<td>Low pay</td>
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<tr>
<td>Flexible work schedule</td>
<td>Isolation</td>
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<tr>
<td>Independence</td>
<td>Funding rat race</td>
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<td>Smart colleagues</td>
<td>Politics</td>
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<tr>
<td>Learning new things</td>
<td>Arrogant colleagues</td>
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<tr>
<td>Collaborating</td>
<td>Lack of teamwork</td>
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These differences are critical to career success and happiness
Self-Guided Exercises

Think back over the experiences you have had in your life - in the areas of work, leisure, or learning - and pick three to ten that have the following characteristics:

a. you were the chief or a significant player
b. YOU - (± the world or significant others) - regard it as a success:
   you achieved, did, or created something with concrete results, or acted to solve a problem, or gave something of yourself that you are proud of and are pleased by

c. you truly enjoyed yourself in the process.

List each of them, write why you consider it a success, and write a paragraph or two detailing the experience, step by step.
Formal methods of self-assessment

**Myers-Briggs Type Indicator Test** - analyzes your beliefs and interests and categorizes you into 1 of 16 personality types. Used to understand how individuals may work well or not well together.

**Strong Interest Inventory** - analyzes your interests and skills and compares them to representative people in a variety of careers and work environments.

**Career Beliefs Inventory** - assesses the sources of anxiety about jobs, careers and career change.

**StrengthFinder** – identifies the things you are BEST at (so you can play to your strengths)

Your school’s Student Career Services Center has some of these (and others)... for free
Exploring the World of Work

1. Keep your eyes and ears open
   - read the newspaper
   - talk to people
   - browse the Web
   - hear outside speakers

2. Build your skills base
   - stay conversant with the latest technologies
   - attend workshops
   - take a class or two outside your area

3. Build your NETWORK
Networking: How most people get their jobs

Networking is:
Developing relationships with people who share your professional or personal interests
Alerting them to your career goals and abilities

Networking is not:
Tiresome schmoozing for a job
Restricted to the slick and superficial

As a young scientist you have been networking throughout your career, you just probably didn’t realize it!
Who is my Network?

Anybody you know and feel comfortable talking to can be part of your Network:

Schoolmates
Recent graduates
Collaborators
Friends from High School or College
Past bosses and colleagues
Family
People you meet at seminars, conferences and workshops
Other people who are looking for jobs

and

Anybody they know

The most valuable in your network are those already established in the career field that interests you and who are willing to give you help
Your E-persona

- Facebook – for friends
- Linked In – for colleagues and professional friends
- Your/your group’s website
  - Post your papers
  - Post your bio
  - Don’t post your CV
- Vanity Google

You can link to me at Linked In (Peter Fiske – Put Your Science to WORK)
Constructing a bio

Biography for Dr. Peter S. Fiske

Dr. Peter S. Fiske is the Chief Technology Officer of PAX Mixer Inc. and PAX Water Technologies as well as VP for R&D for parent company PAX Scientific, Inc. In his various roles, Fiske manages day-to-day operations for PAX Water and PAX Mixer, overseeing all aspects of Sales, Marketing and Product Development. Under his leadership, PAX Mixer Inc. won a prestigious 3-year, $2M Advanced Technology Program award from the Department of Commerce.

Prior to joining the PAX Companies, Fiske was co-founder of RAPT Industries, Inc., a start-up based on technology from Lawrence Livermore National Laboratory, where Fiske was a staff member for 6 years. Fiske identified the technology while at LLNL and, as a second-year evening M.B.A. student, developed the business plan for RAPT which won first place in the third annual U.C. Berkeley Business Plan Competition in 2001. Fiske and his partners subsequently closed a series A round of investment and since then have raised over $12M in government funding from the DOD, NIST and NASA. Fiske led negotiations to license a portion of the technology to a major semiconductor equipment manufacturer, and led the first sales of products. Fiske was CEO of the Company from May, 2001 to April, 2004.

Fiske is the author of 20 technical articles, most in international peer-reviewed journals including SCIENCE. He presently serves on Rep. Ellen Tauscher’s (CA-10) Small Business Advisory Committee where he works with other small business owners and Congressional staff to evaluate and propose legislative initiatives to increase the growth and economic vitality of the East Bay of the San Francisco Bay Area.
A methodology for answering questions: STAR

**Situation/Task:** Describe the situation you encountered. Give the background, and its relation to you.

**Action:** Describe what YOU did to address the situation or solve the problem.

**Result:** Describe the result of your actions.
Negotiating an offer

1. Delay the salary negotiations as long as possible - try not to get locked into a salary before you are offered a job

2. Value the offer fully. Consider these other parts of compensation:

- health care
- schedule of raises
- bonus plan
- commission plan
- stock option
- pension plan
- profit sharing plan
- employee education/tuition reimbursement
- stability of company
- dependent tuition reimbursement
- paid parking
- car provided
- vacation
- sick leave
- maternity/paternity leave
- flex time/alternative work schedule
- anticipated work hours
- relocation allowance
- potential for advancement

Get it in Writing!
Can you get the offer raised?

Consider the factors listed below. The more that are true, the greater your flexibility:

- You possess unique abilities
- They have few other candidates for the job
- The search has been going on a long time
- This is a unique position in the organization
- The organization is flexible in general
- You have other offers
- They really need someone soon

In contrast, you will have less flexibility to negotiate salary and benefits if the following are true:

- The job is at an entry level and similar to others in the organization
- The organization is highly structured and rigid
- The organization expects you will take what is offered
Some final advice on interviewing

- Arrive early—give yourself 10-15 minutes to sit and chill out

- Case the joint—if it is in a place you’ve never been before, swing by the day before just to make sure you know how to get there. The assurance of having been there before will help

- Bring along extra copies of your resume

- Give a good handshake—if you are unclear about what a good handshake is, go try out your handshake on your friends

- **Make eye contact**—one simple technique for ensuring that you have made good eye contact: make a mental note of the color of your interviewers eyes

- Ask questions—it’s better to be clear about the question at the start than go rambling down some tangent

- Be yourself—people tend to do a poor imitation of anything else but
Perceptions and Realities: Overcoming Stereotypes

According to business people, academics/scientists are:

- simple minded about money
- impractical about time
- no sense of deadlines
- socially passive
- value ideals as absolutes

Other potential perceptions to overcome:

- hermit vs. leader
- arrogant vs. team player
- rebel vs. organizer
- problem person vs. solution person
Don’t forget your own misconceptions...
Summing it all up: You must be a T-person

Experience, Drive, Communications, Leadership

Your PhD Thesis, research, expertise

What your school can give you

What you must create for yourself
Myths and Realities of the Modern Job Market

Myth 1# Find a job that matches your skills
Myths and Realities of the Modern Job Market

Myth 1#  Find a job that matches your skills

Reality #1: SKILLS, VALUES and INTERESTS are all critical aspects of finding a fulfilling career.

“You always end up overvaluing what you know and undervaluing what is out there in plain sight”

Thomas Friedman – The Lexus and the Olive Tree
Myths and Realities of the Modern Job Market

Myth #2: Employers care only about technical skills
Myths and Realities of the Modern Job Market

Myth #2: Employers care only about technical skills

Reality #2: Employers care about lots of things in addition to skills:
- Personality
- Degree of Fit
- Learning Ability
- Leadership
- Communication Skills
- Persuasion Skills
- Drive

“We hire for attitude and train for skills”
VP for Product Development – Specialty Chemical Manufacturer
Myth #3: You should map out your career trajectory many years into the future
Myths and Realities of the Modern Job Market

Myth #3: You should map out your career trajectory many years into the future

Reality #3: Serendipity, unplanned detours, and "setbacks" are inevitable. The people who can exploit chance opportunities, explore new areas and make the best of setbacks tend to be happier and more successful.

"Five years ago, I would never have predicted that I would end up here!"

Astrophysicist-turned-Financial Analyst
Some final thoughts

1. Job hunting in the new century involves personal connections, chance encounters, and random opportunities.
2. The more people you know, the greater your "job cross section."
3. Getting a job in science requires the same job hunting skills and techniques as any job (including getting a job in academia).
4. Thinking about finding a job is stressful, demoralizing and produces anxiety. Actually doing something about finding a job is liberating, empowering and fun.
5. You can serve science, your community, and your country in many different environments - don’t be afraid to consider a non-traditional career path just because it is unfamiliar to you, your advisor, your department or your family.
Further information and resources

Peter Fiske’s columns at ScienceCareers.org: “Opportunities”


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