Emigration Course

Tips on the Interview Process

Jeannette M. Wing

9 February 1996
7 February 1997
30 January 1998
4 December 1998
18 February 2000
7 December 2001
4 December 2003
2 December 2005
15 February 2008
1 March 2011
24 February 2012

Why I Am Giving This Talk

- To help you.
- To help CMU SCS and me.
  - You represent not just you, but also your advisor, your Ph.D. program, your SCS unit, SCS, and CMU.
  - You are our ambassadors.

Don't blow it.

Outline for Today

Part I: The Job Interview

Pre-Interview

The Interview

- General Dos and Don'ts
- Typical Structure
- *The Job Talk*
- 1-on-1
- Department Head
- General Things to Keep in Mind

Post-Interview

Part II: Academia vs. Industry
Part III: Government

Assumptions

- You've sent your packet out.

- You've gotten a phone call inviting you to visit.

- You're sincerely interested in the place.

  - Don't waste your time if you're not.

  - Don't waste their time if you're not.

Pre-Interview: Dos and Don'ts

- Do your homework.
- Practice your job talk (at least) twice.
- Make up a list of questions to ask (more later…).
- Be prepared.
  - To explain your work to different audiences (more later…).
  - To answer some tough questions from them (more later…).
- Bring a notebook (paper or electronic).
- Pack some presentable clothes and shoes you feel comfortable walking and talking in. Think about the location of the place.

Do Your Homework

GOAL: Know your audience.

Find out
- Strengths and weaknesses of the place
- Who's on the faculty/research staff, especially the bigwigs, major players, eccentrics, "difficult" ones
- How big (number of people) the place is
- A bit about the place's organization
  - School: private vs. public, dept/school/univ relationship
 - Lab: How broad and deep is the hierarchy? Matrix?

From
- Your advisor
- Other faculty or people who went to school there, taught or worked there before coming to CMU
- Fellow students who have visited there
- Friends of above
- WWW
- Glossy brochures

Practice Your Job Talk

- Practice, but don't over practice.
  - First time: It will be the worst talk you ever gave and ever will give in your entire life. (Get some friends to play the role of known "difficult" people.)
  - Second time: It will be pretty good.
  - Third time: It will be great.
  - Nth time: It will bore you and the audience.
- Number your slides.
- Bring backup copies (e.g., memory stick and paper) of your slides.
- Bring blank slides and pens.
- The talk itself (more later…)

The Interview: General Dos and Don'ts

- Be yourself.

quiet

reserved

arrogant

shy

haughty

obnoxious
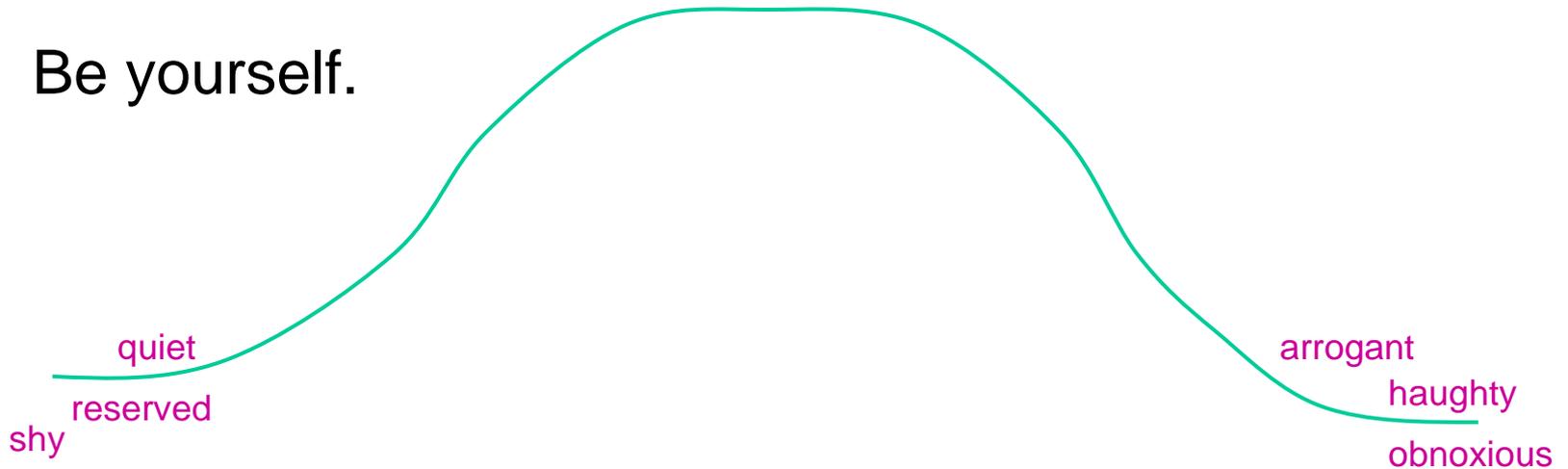
- Mind your manners.
  - Be polite
  - Be respectful
  - Don't offend
  - Don't be (unnecessarily) argumentative. If you disagree with someone, turn it into a fun technical debate, not a religious argument.

More General Dos and Don'ts

- Show conviction, passion about something.
- Have an inner voice, a rudder that steers you. Know yourself.
- Show an interest in what people are saying, but
  - Don't try too hard to please.
  - Don't be too agreeable. Don't be spineless. Stand up for what you believe in.
- **Listen carefully** to what people are asking or saying before answering questions or responding to comments.
- Don't say anything stupid.
  - If you don't know anything about something don't pretend that you do.
  - Don't talk off the cuff.
  - Don't be glib, especially with people you don't know.
- Keep detailed notes (people's names, impressions, etc.).
- Dress neatly.

Structure

A typical two-day interview:

- Arrive the night before. Dinner maybe.
- Day 1
    - Breakfast
    - 1-on-1s (30-60 minutes each)
    - Talk
    - Lunch
    - 1-on-1s
    - Dinner
    - Collapse
- Day 2: Repeat Day 1 minus talk, maybe minus dinner.
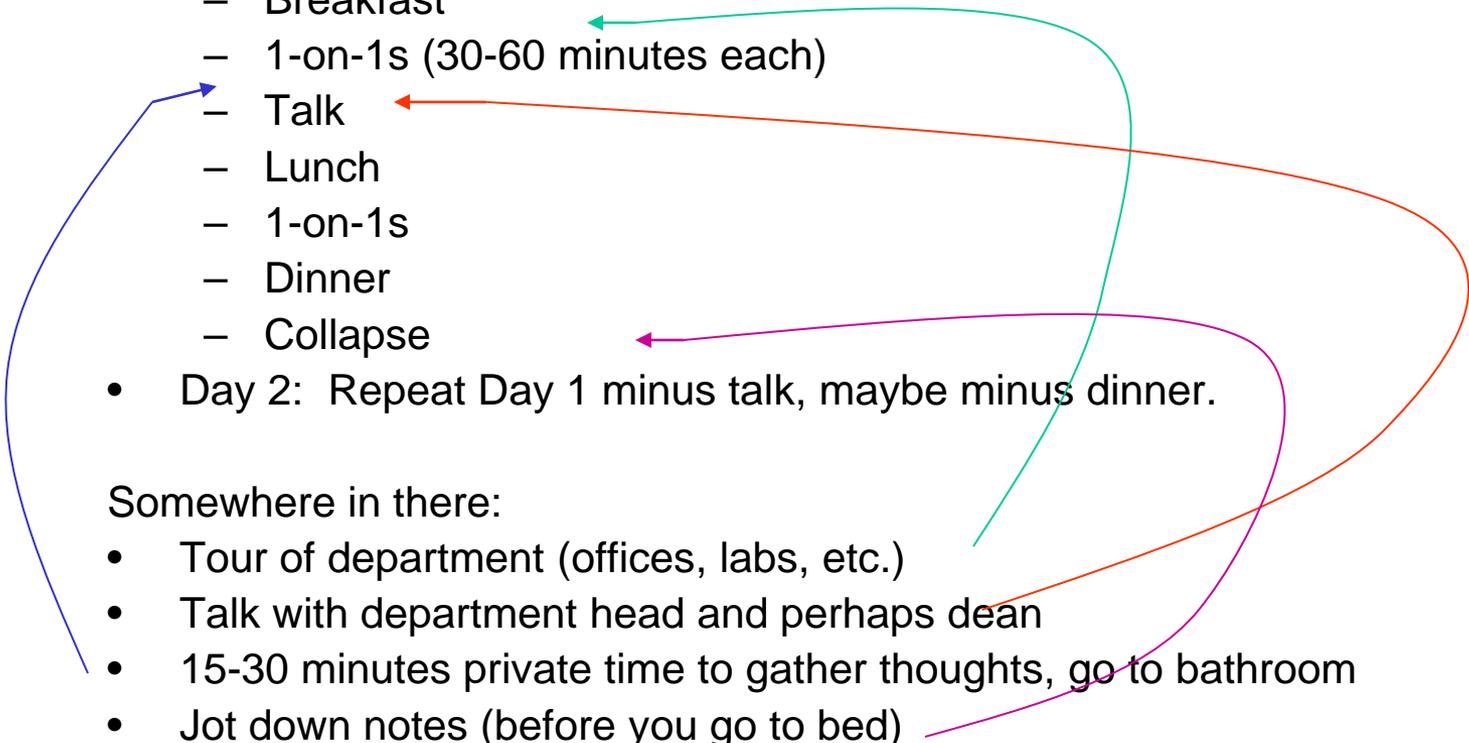
Somewhere in there:

- Tour of department (offices, labs, etc.)
- Talk with department head and perhaps dean
- 15-30 minutes private time to gather thoughts, go to bathroom
- Jot down notes (before you go to bed)

The Job Talk

Two main purposes

- To sell yourself (sales talk).
- To sell your research (technical talk).

There are different audiences in the same room.

- 1-2 experts, people who know what you're talking about.
- Everyone else.
  - Faculty/researchers in a tangentially-related field. *(How can your work help me?)*
  - Faculty/researchers outside of your field. *(Do you sound like you know what you're talking about? Does your research problem sound interesting, worth solving? Are you a deep thinker?)*
  - Faculty/researchers who are known to be "difficult."
  - Graduate students (Watch out for some of them!)
  - People out of touch with research, e.g., (some) administrators, old fogies.

The Job Talk

I **assume** you know some general-rules-of-thumb about

- Giving a talk.   Olivier Danvy's "Talk on Talks"
- Making slides.

…so what follows are just some reminders…

The Talk Itself

Memorize
- The first couple of sentences
- Transition sentences (between slides)
- "Dense" sentences (e.g., with tricky definitions of highly technical terms)
- Catchy phrases

Before the talk
- Look at the audience.
- Take a deep breath.
- Relax. *(Smile!)*

During the talk
- Use eye contact.
- Pay attention to pace.
  - Pace yourself.
  - You set the pace. It's your talk. You are in control.
  - Use pauses to your advantage.
- Use feedback: head-nodders, puzzled expressions, blank stares.

At the end of the talk
- Say "Thank you" (or something that indicates you're done).

After the talk (or later that night)
- Make minor adjustments to slides, order of slides, etc.
- Jot down reminders on the "Notes Page"

Dividing Up Your 60-Minute Slot

- First 15 minutes
  - Motivate the problem you were trying to solve.
  - Clearly and succinctly (for a general audience) state the problem and explain your solution or approach.
  - You need to convince *everyone* that what you did is interesting and worth their time listening to.
- Next 2 minutes
  - Start diving into technical talk.
- Next 20 minutes
  - The technical talk.
  - Go into enough detail so that the experts can follow everything you say and are absolutely convinced that you've done good, solid work.
  - You may lose the rest of your audience, but they should still be able to make sense of your high-level arguments. Also you want to impress them with something that they don't understand.
- Next 3 minutes
  - Begin wrapping up.
- Next 5-7 minutes
  - Related work: Be scholarly. Explain how your work relates. *What's new? What's different?* Don't just give laundry lists.
- Last 3-5 minutes
  - Conclusions, future work, vision

Dividing Up Your 60-Minute Slot

Leave time for 5-10 minutes worth of questions interspersed or at the end.

Have backup slides for anticipated questions, further details about tricky or interesting technical points.

Multiple Talks

- Have multiple versions of the talk in your head, for different audiences and different durations.
    - The one-hour job talk version.
    - The technical one-on-one version.
    - The dean/department head version.
    - The elevator version(s)
        - The "waiting for the Wean Hall elevator" version.
        - The ride up/down the elevator version.

- Refresh your job talk from time to time. It's going to get stale.

1-on-1: Questions You Might Be Asked

Easy

- Why did you do what you did for your thesis research?
- Why did you use your approach and not something else or someone else's? Know the assumptions and limitations of your approach and solution.
- What's so interesting about your thesis research? What's novel about your contribution? Why should I be interested in the problem or solution?
- What's the key insight to your solution? Your secret weapon?
- What are the one or two most significant contributions you feel you have made to the field, to Computer Science?
- What difference is your solution or approach going to make to someone who is outside of your field?

Tougher

- **What do you want to do next?**
- What do you see yourself doing in three, five years?
- Where do you see the field being in five years? Ten? What are you going to do that will help us get there? What is your vision for Computer Science
- What do you think are the top two or three problems in Computer Science? What are you going to do that will help us solve them?
- What do you think is the most significant advance in Computer Science (or in your field) in the past year? Past two-three years?
- Do you know anything about X? (Be careful!)
- What do you think of X? (Be careful!)

1-on-1: Questions to Ask

Definitely

- What research are you doing? *(Get a feel for how ambitious a research project can be at this place; the scope of research activity at this place; whether there's anything going on of interest to you; potential collaborator?)*
- Do you have any students? What are they doing?
- Do you collaborate with anyone? What are you doing together? Is collaboration encouraged?
- How is your research funded?
- What courses are you teaching?
- What are the students (undergraduate, Master's, Ph.D.) like?
- What do you perceive the strengths and weaknesses of this place to be?
- Do you like it here?

Maybe

- Are you happy?

With the Department Head (or Dean)

Statistics, financial matters, and procedures.

- Find out about
  - Facts about the place
  - Evaluation and promotion processes
  - How faculty are funded for research
  - Any special research support for junior faculty
  - Role of junior faculty in getting research money (NSF, DARPA)
  - View on collaboration
  - View on interdisciplinary research
  - Teaching load
  - Computing facilities support: who buys, who maintains
  - Benefits (health, dental, retirement, tuition exemption, etc.)

- With respect to you:
  - How are hiring decisions made? (So you know when to expect to hear from someone.)

Ask Host or Anyone When Appropriate

Find out about

- Getting students, quality of students, support for students.
- Educational programs at all degree levels (B.S., Master's, and Ph.D.).
- Expectations of junior faculty or junior member of research staff.

Meals

- If you have any dietary restrictions, speak up.

- Mind your table manners.

- Relax, be yourself, but don't get drunk.

- Be prepared to talk shop. Some faculty/researchers will be able to talk to you only during a meal; they might miss your job talk. *(And, some just might like to grill you to wear you out!)*

- It's a good time to bring up social issues, e.g.,
  - life on campus, life in town/city, housing, schools for kids, two-body situation, outside interests
  - But don't ask about these too much unless
    - you get the sense that they really want you, or
    - you can't live without something or without being able to do X.

- It's a good time to hear the real "scoop" on a place.

Time Leftover?

- Ask to talk to some graduate students.
- Get an informal tour of campus, neighborhoods where you might live, town or city. *(Show an interest in your surroundings.)*

What They Are Looking For

- **Theory vs. Practice**
  - Are you a theoretician, a systems person, a bridge person?
  - Do you prove theorems or build systems?
  - Are you an applications builder?
- **Creativity**
  - Are you full of ideas, an innovator, a visionary?
  - Are you a thinker?
  - Are you an incrementalist, an integrator?
  - Are you a clone of your advisor?
- **Independence**
  - Are you an independent thinker?
  - How well do you work on your own and with others?
- **Brainpower**
  - Are you smart?
  - Are you a clever problem solver?
- **Technical skills and ability**
  - Are you an engineer, a technician?
  - Are you a detail person, a techie, a hacker?
  - Can you program? Can you do math?

What They Are Looking For

- Energy
  - Are you a go-getter? Will you make things happen?
- Leadership
  - Will you start new initiatives? Will you inspire those around you?
- Articulate
  - How well do you express yourself orally and in writing?
- Teaching
  - Can you teach?
  - What can you teach?
- Fitting In
  - Do you complement interests of current faculty/research staff?
  - Do you fill in a hole or overlap?
  - Does your personality mesh well with the place?
  - Would you make a good colleague?
- Are you a superstar?
  - NSF CAREER Award material?
  - ACM Dissertation Award material?
  - Future Turing Award winner?

What You Should Look For

- **Research**
  - Is there any interesting research going on there? Can you imagine doing the kind of research you'd like to do there?
  - Is there someone with whom you can have a deep technical talk?
- **Colleagues**
  - Number and quality: How many are there? Are any of them any good? How good is their best? Are you smarter than all of them?
  - Do you like the people?
  - **Is there a potential *buddy?***
- **Students** (at all levels)
  - Number and quality: How many are there? Are any of them any good? How good is their best? Are you smarter than all of them?
  - Where are they from? Mostly foreign or domestic? Where did their graduate students get their undergraduate degrees from?
  - Where do their graduates go? Industry? Academia (top schools?)?
- **Teaching**
  - Are there courses you would enjoy teaching?
  - Is there flexibility in choosing what to teach?
  - Is the teaching load acceptable? Flexible? Can you "buy out" of teaching?

What You Should Look For

- Management
    - Do you get along with the department head?
    - Can you imagine working within the department/research lab's organizational structure?

- Location
    - Can you imagine yourself living near there?
    - Think of your day-to-day life, more than where you'd like to spend your vacations.

Post-Interview

- Keep in touch with your host or department head.

- The chance to write a formal "thank you" is in the cover letter when sending back your receipts for a reimbursement check.

- Use peoples' names.

- Don't pester people about status, but don't let too much time go by. *(Show that you're still interested, a "live" candidate.)*

Congratulations!

You got an offer…

- You may request a second visit. Maybe to bring an SO/spouse to see the place, city, etc.
- Don't be ridiculous in your requests, especially what you want to put in your offer letter. It comes off sounding petty.
- Do get in writing
  - Starting salary
  - Starting date (this is when your tenure clock starts and sometimes affects when benefits kick in)
  - Support for computing and networking facilities (for office, home, traveling; to start up a lab)
  - Support for summer(s) (how many months for how many years)
  - Support for students (how many for how long)
  - Support for moving expenses
  - Release from any teaching responsibilities (how many semesters)
  - Any special deals, e.g., using your n years of post-doc, industrial experience, etc. towards your tenure clock

Congratulations!

- Ask about, and maybe get in writing if you sense you need to
  - Secretarial support
  - Policy about if you haven't finished your thesis after you start

- Don't ask (now) about support for telephones, the size, location, or paint color of your office with a window, a room with a view, office supplies, parking, etc. You will sound silly. You may ask later, when it is more appropriate.

- *Negotiate as high a starting salary as possible.* Subsequent raises are percentage increases.

Remember

Whether you get an offer or not,

- You have made new, important contacts for the future.
- You have **represented Carnegie Mellon** and your advisor. Whatever impression you gave them is a direct reflection of the Carnegie Mellon University and your Ph.D. program. (Don't embarrass us!)

Finally

- Be yourself.
- Mind your manners.
- Enjoy it!

Part II: Academia vs. Industry

Academia vs. Industry Research (I)

- Nature of research often differs
  - Academia
    - Ivory-tower
    - Long-term, risky, visionary
  - Industry
    - Company-relevant
    - Low-hanging fruit; solve the problem at hand, not the general problem
    - Risk-averse
- Evaluation and promotion criteria differ
  - Academia
    - Peer (purely technical) evaluation
    - Vague "tenure process"
  - Industry
    - Tiers of review, eventually by upper management (perhaps non-technical evaluation)
    - Clearly spelled out company guidelines
    - Clearly followed processes: matrix, peer-ranking, self-evaluation forms, etc.
- Career advancement opportunities differ
  - Academia
    - Research ladder (aP, AP, FP, Lab Director, Center Head)
    - Administrative ladder (aP, AP, FP, DH, Dean, Provost, President)
  - Industry
    - Research ladder
    - Management ladder
    - Development ladder (switch from Research)

Academia vs. Industry Research (II)

- ## Getting money
  - Academia
    - Writing grant proposals, going to PI meetings, writing progress reports
  - Industry
    - Internal funding requests, management reviews

- ## Where you spend your time differs
  - On the job

  - Nights and weekends

- ## Communication skills are important for both!

Industry Particulars

- Fit with others
  - Are you a team player?
    - Collaborate with other researchers
    - Work with development organizations

- You represent your company, not just you.

Part III: Government

Job Opportunities

- Government labs (research)
  - NASA, DOE, ONR, NIST, …
- Government agencies (service, leadership)
  - DARPA, NSF ☺, …