Emigration Course

Tips on the Interview Process

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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
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 (also Roy Levin, Feb. ?)

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.

• 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?)*
  – 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.
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
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 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
  – 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 ☺, ...