The Ph.D. Job Hunt – Helping Students Find the Right Positions

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Our reputations – individually and institutionally – are built largely through the accomplishments of our students. What can we, as faculty members and as departments, do to help our students find appropriate positions – positions in which they'll succeed, and make both themselves and us look good?

The *sine qua non*, of course, is a graduate student career that demonstrates clear success in research and teaching. (As far as I'm concerned, the skills that make a great teacher and mentor are just as valuable in industry as in academia.) No amount of attention to the "end-game" can compensate for shortcomings in these areas. But there are various things that we can help our students do, in the final year or two of their graduate careers, that can increase the likelihood of a happy ending to the job search.

The following ideas are abstracted from a "How to Get a Job" seminar that's given each year to graduate students in Computer Science & Engineering at the University of Washington. While the material is aimed at students, much of it represents "departmental philosophy," and is thus important to faculty and to chairs. And the most critical element of this departmental philosophy has already been stated – that we in universities are in the *people business*, with reputations that are built largely through the accomplishments of our students.

General principles

We impress upon our graduating students the importance of supporting each other, rather than being in competition with each other. Our department produces only about 1% of the nation's new Ph.D.s every year. If a student feels the irrepressible urge to compete, then let him or her compete with the other 99%. Our own students will need each other's support in order to succeed. (I still recall fondly how my University of Toronto graduate school officemate, also on the job market 25 years ago, helped me get an offer from the University of Washington by bluffing the department chair on my behalf.) UW CSE students embrace this wholeheartedly – discussing strategy, critiquing presentations, sharing experiences, etc.

We urge students to be strategic about where they apply – this respects their own time and energy, and the time and energy of potential employers. Plus, it leaves room for others.

Students must be well-rounded (they should refresh their knowledge of all areas of computer science before heading out on the circuit) and well-informed (about the places they'll be visiting and the people they'll be meeting). They must prepare a *great* talk. And they must make their advisor and the department fulfill their obligations.

Getting – and sharing – advice

Students have many resources, throughout the process: their advisors, other faculty members (especially young ones, who will have faced the same issues recently), summer internship supervisors, recent graduates of the department, and each other. While the advisor must bear the major responsibility, the entire department is on the hook – because the entire department benefits from the success of each student.

Each year our graduating students set up a "job-seekers" bboard where they can exchange information throughout the season -- information about preparation, about interviews, about impressions, about offers. Sharing information is valuable in many respects – everyone learns with experience, and even with lots of experience, it's impossible to think of everything and learn everything during one visit. Remember that each individual will have his or her own decision process and criteria – it's the inputs to this process that are being shared.

At the end of the season, we organize a session where that year's graduating students describe their experiences to the next year's crop.

Where to apply

The choice between industry and academia is a personal one. I tell students to think about how they're most effective at achieving leverage – a multiplicative effect. If it's through designing things that others will use, and through working with peers, then an industrial setting may be best. If it's through mentoring the next generation, then an academic setting may be best.

Within industry, one must choose between research and development. Within academia, one must choose between a research institution and a teaching institution. It's important not to get hung up on titles, rankings, etc. In industry, exciting forefront work can occur at places that don't formally have a "research division." In academia, reputations lag reality; also, even for those with a research bent, a top-tier teaching institution could be lots more fun than a lower-tier research institution, since being around smart people is what makes life interesting.

Within a category, it's a bit like applying to college. The student will need to do an honest assessment of him or herself – with the help of others – and then identify some "eye level" positions, some "stretch" positions, and some "safeties." Everybody needs to understand that no one's interests are served by sending a student off on the wrong "circuit" – not the student's interests, or the advisor's, or the potential employers', or future students'. Letters must be detailed, positive, and honest.

It's important for student and advisor alike to understand that even an apparently terrific match is no guarantee of an offer – each institution has only a few positions, in a particular year an institution may have a narrow focus (e.g., on a particular subfield), and there's no accounting for taste. (For all of these reasons, don't take a negative decision personally! The people you meet when interviewing – regardless of the outcome – will be some of your closest colleagues in the early years of your career.)

To get ideas, we tell our students to look at the Computing Research Association website (in particular the "Jobs Service" – but don't fail to apply to a place just because you don't see an ad or you see an ad that focuses on subfields other than your own), our departmental Ph.D. jobs bboard (where email regarding positions is posted), and the destinations of recent graduates, and to consult with their advisor, with new faculty (most of whom have interviewed widely), with each other, and with recent graduates.

When to apply

No later than during the December holidays – mid-January is too late. The list of places to which the student will apply must be finalized before then, references must be nailed down, and references must see the list of places to which the student will apply. It takes a lot of care and planning on the part of the faculty to help everyone get the job that s/he wants.

In addition to the obvious things, the application should include a two-page statement describing accomplishments and directions in research and teaching. This is a chance to put things in perspective. What sort of person will the employer be hiring? (For academic jobs, there may have been a time when the teaching statement was of secondary importance, but if so, that time has passed!)

Ask your references to send letters directly, whether or not the potential employer requests this. Delayed letters are a major factor in delaying the consideration of a candidate (thus reducing the chance of being interviewed, as slots fill up).

Preparing a great talk

We tell students: Iterate on an outline with your advisor. Iterate on slides with your advisor. Go through a dry run with a couple of students. Go through a dry run with your advisor. Try it with a larger audience.

Be sure that your audience includes people from outside your subfield – the only way to be sure that your talk works with a general audience. Remember that, while the goal of a conference talk is to inform a specialized audience about a particular research result, the goal of a job talk is to convince a broader audience that you've identified an important and difficult problem, that you've come up with an innovative and effective solution, that you have concrete ideas for a future research agenda, and that you'll be a strong contributor to their scholarly community.

Here is the secret weapon: videotape your presentation (our department has owned a video camera for more than a decade for this explicit purpose) and *force yourself to watch the tape*. After you've recovered from the shock, fix the many annoying things that you are bound to have observed.

Rehearse responding to questions – a critically important aspect of the presentation. Beg people at your dry runs to ask more questions, even bizarre questions – you'll get plenty of these on the road, and practice definitely helps. Under questioning, be honest, not glib. If a question points to a flaw in your work or a limitation in your understanding, acknowledge this, promise to follow

up, and do so! Practice gracefully disengaging from rat-holes – time management is the speaker's responsibility.

Being well rounded

Each fall, our graduating students arrange a seminar series in which they bring each other back to the forefront of the entire field.

This provides a tremendous advantage. Each student has been relentlessly focusing on his or her thesis research for several years. What important things have happened in the other areas of computer science, since the student took the quals courses in these areas? Learning this allows the student to make better use of each interview slot. The student will know the recent developments in each interviewer's field, so it'll be possible to spend time talking about the interviewer's own work and possible technical relationships, rather than wasting time on basics or spending the entire time talking about the student's own work.

The visits

We tell students: Become well-informed about each place you'll be visiting and each person you'll be meeting – consult the web, your advisor, new faculty, your fellow graduating students.

Develop one-on-one interview skills. A great way to do this is to schedule time with visitors to your own department. This will also increase your visibility. (Some departments offer "mock one-on-one interviews" to prep graduating students.)

Prepare answers to the "standard questions" – What is your research about? (Have 1-minute, 5-minute, and 15-minute versions.) What are you interested in doing next? What questions do you have about this place?

Inter-personal issues are important. In addition to evaluating your research and your presentation, potential employers will be asking themselves, "Is this someone I'd like to have around … potentially forever?" Consequently, in one-on-one meetings and in social settings, project a person who is smart, engaged, open-minded, of broad interest. Related point: beware of "entrapment" – don't say anything negative about person or place A to person or place B – it will kill you with both A and B.

Return home after the first visit – you'll need to re-group, and you'll need support to do it.

Schedule downtime while traveling. No one can give ten talks without a break and stay healthy and sane. Plus, you'll need time to tune your talk and your approach.

Phone home – let your advisor and your fellow students know how it's going. (Your advisor may be getting valuable back-channel feedback, too.)

The advisor's job

End-game elements include: helping to identify appropriate places to interview; letting colleagues know that your student is applying; helping to get the talk into shape; making the phone calls that the student would rather not make him or herself; acting as a sounding board; loaning money if reimbursements lag and the student gets into a cash-flow squeeze.

Of course, the work really begins years earlier. In addition to providing great mentoring, the best faculty promote their students, greatly enhancing their prospects. A student who is known – who has a "justified buzz factor" – has a better shot than a hidden genius. Activities might include: bringing students to the leading conferences in their field and introducing them to your faculty colleagues, whether or not the students are presenting papers; allowing students to be the ones who present joint faculty/student work at conferences (and working to ensure *great* presentations); attending conferences where your students are presenting their own work, to provide support and ensure networking opportunities; supporting collaborative work outside the department (including placing students in strong internships).

At UW, we have a faculty meeting every fall where each graduating student is discussed in detail – strengths, weaknesses, accomplishments, goals – by the entire faculty. This allows faculty to brainstorm about options for each other's students, and positions each faculty member to be an effective advocate for each of the department's graduating students.

To end where I began: Our reputations – individually and institutionally – are built largely through the accomplishments of our students. It's our job as faculty to help each student – and to help students help themselves – to find the right position.

Acknowledgements