

Applying for Jobs: Advice from the Front (and the Rear)

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Introduction

If you are reading this article, you're probably sitting where I was sitting a dozen years ago: getting ready to put together job applications and blitz them out across the country in hopes of landing a job in a math department somewhere. I wrote an early version of this article as a result of my experiences then; that's the "Advice from the Front". I was fortunate enough to land my dream job, where I eventually earned tenure and became Chair. I've seen the hiring process from both sides now, and the few updates I've made to the current version of this article are the "Advice from the Rear".

I love "how to" books, and I hope that you'll find this article helpful and maybe even enjoyable. I remember the anxiety of "The Search" far too well to advise you to "sit back and enjoy the ride". Still, there's a way in which this time of your life is a time when you get to decide for yourself—indeed, when you *ought* to decide for yourself—what shape your future might hold. And that decision can be exciting. So I hope you get to enjoy that aspect of "The Search" at least.

I will break my advice into various parts: a brief discussion of the job market; advice for those who will be applying far in the future; general aspects of the job application (including letters of recommendation and the interview); and issues of concern to graduate students entering the job market.

What You'll Be Facing

For a number of reasons, today's applicants apply to an incredible number of schools. They do so out of convenience: "Print merge" has made 140 applications only marginally more difficult than seventy. They do so out of inexperience: Many believe that blanketing the market is the most effective strategy for landing a job. They do so out of error: Who has not heard about the excellent mathematician who applied to 200 places and received no offers? They do so out of pressure from their faculty: I initially applied to

"only" sixty places and was urged to double that number. (I eventually applied to eighty, but subsequently withdrew many of those applications.) Finally, they do so out of peer pressure: While nonmathematicians are amazed that I applied to as many places as I did, for us it has become standard.

The sorry state for job applicants has not, however, resulted in a fiesta for employers. There is an incredible amount of work involved in sorting through the multitude of applications. Moreover, having a surplus of applications doesn't mean that it's easier to hire "superstars": The best people are still fought over as fiercely as ever.

Here's my advice about facing the vast list of positions that EIMS offers. Before you even read the list, think carefully about the kind of job you want. It's tempting to think, "I'll take anything!" But that's probably not true: There are positions that you would almost certainly turn down no matter what. So you save your time (and theirs) by not sending them an application.

Perhaps you agree with this advice in theory, but you have a hard time letting go of any opportunity for employment, however bizarre or unappealing it may be. Then let me offer you two more concrete reasons for not blanketing the country with your applications.

The first reason is that people who say, "I'll take anything," don't get anything. Employers are looking for a good fit, not for someone who is desperate for charity. The second reason, related to the first, is that if you think carefully about what you want from a career in math, your application will show it. Not only are you more likely to get a job if you focus on what you want, but you're more likely to get exactly the kind of job you want. I'll return to this advice later.

Long Before You Graduate

All job search manuals begin with the timely advice, *Start early*. Unfortunately, the amount of work that is necessary to maintain a graduate existence keeps us from thinking about extrane-

ous affairs before they are directly upon us, and so most people who see the words *Start early* have long since lost the advantage those words could have afforded. I am hardly a conformist, but I also present this advice with the optimistic and perhaps vain hope that it may do somebody, somewhere, some good.

The best way to get an interesting job is to have evidence that you have done interesting things. The best way to have interesting things to do is to have so many options that you can choose the most interesting ones yourself. Even a young, inexperienced graduate student with few connections and no reputation to speak of has a number of ways to open up those options, most of which essentially come down to advertising.

Volunteer. Go to departmental seminars. Go to conferences. Going to a local conference doesn't have to cost you anything. Write a polite letter to your deans asking for a grant. They won't mind shelling out fifty or sixty dollars for a good cause. Getting grants, no matter how small, looks very good to employers. Giving talks to undergraduates or high school students is an excellent way to prepare for the bigger talks that follow, and it lets people know that you're out there (it looks good on your CV, too).

Most of all, talk about your interests. For young graduate students, it's often intimidating to talk to the faculty. However, making use of professors' knowledge, experience, and connections is one of the foremost reasons for being in graduate school. An appreciable benefit of talking to faculty outside of class is that, if the faculty know what you're doing, they'll feel much more comfortable writing letters or verbally recommending you to others, sometimes even before you ask them to. The two most exciting opportunities that came my way while I was in graduate school were both passed along by professors who'd received phone calls asking "We need somebody for such-and-such. Do you know anyone who might be interested?" For foreign graduate students, talking to faculty becomes an effective way to increase your command of English—and this will make a big difference when it comes time to apply for jobs.

Next, collecting and maintaining evidence of what you've done is of supreme importance. It's a wise idea to have a folder (mine was unabashedly called "Bragging" as long as it stayed in my drawer) where you can dump everything that's going to make you look good some day. You might keep lists of awards and honors you've received, invitations to speak or to teach external classes,

brochures from conferences you've attended, copies of transcripts, copies of old CV's or resumes, interesting computer experiences, student evaluations, unsolicited comments from students (letters, notes on exams, etc.), statistics on student retention, letters—especially thank you letters—from faculty or administrators, and so on.

This folder can be used in various ways. You will almost certainly use it to prepare your CV. You can give it to your letter writers, who will be more than happy to have tangible things to say: "I've seen copies of her course syllabi and they're very good" is nicer to write and read than "I've heard she's a well-organized teacher." And finally, you can clean it up and carry it around to prospective employers.

Putting Together Your Application

First, figure out what kind of job you want to apply for. Really. You'll have to do it some day, and doing it now will make your applications much more effective. What do you want out of a job? To learn more math? To work with hotshots in your field? To have access to large computers? To work in a college? Four-year or two-year, liberal arts, community, or technical? Or do you want to get out of academia altogether? To live in a particular geographic area? Your institution's Career Services Office probably has copies of books which discuss academic institutions and their various departments. Careful use of these books is a big help in deciding where to apply and in putting together well thought-out applications.

Once you have these things in mind, you can begin to assemble your application. I am most familiar with applying to institutions that place a high emphasis on teaching (and with state budgets being cut, a lot of the hiring is indeed being done at private colleges), but I hope that this advice is generalizable to other institutions.

An application will include many of the following items:

- an AMS coversheet (available in the *Notices of the AMS*);
- a curriculum vita, or CV, which is best prepared by looking at other people's CV's and deciding which style best suits your needs;
- a thesis abstract and research statement;
- reprints or preprints of any articles you've written;
- two copies of your graduate and undergraduate transcripts. (These cost money and take time, so order early. You can send photocopies in your mass mailings, but once places get serious about you, they'll want the originals.)

- four letters of recommendation, one of which addresses only teaching (more on this later);
- a statement of your teaching philosophy (if you're interested in a teaching job);
- a cover letter that includes the position you're applying for and the following: your name, address, email address, and phone number; the names and addresses of your recommenders; your professional interests and aspirations; the reasons you're applying to that particular place (name people you can work with, programs which interest you, location, reputation, etc.); and the fact that you'll be attending the Employment Center at the Joint AMS-MAA meetings in January (if, in fact, you will be).

Keep the cover letter short. If you want to brag more, do it in a follow-up letter in which you brag like crazy and/or respond to questions the school has asked you.

Here are some general strategies for arranging your application. First, if you are one of the many who have not been able to "start early", now would be the perfect time to invest in a good coffeemaker. When you sit down to put your application together, you must realize that many schools receive upwards of 400 applications, a large number of which are obviously inappropriate. Reading hundreds of applications carefully without becoming jaded is strenuous (think about grading your exams), so the first sort merely verifies whether the applicant fits the advertised criteria. If a school advertised for a differential geometer and you're a topologist, you're out, no matter how brilliant the rest of your application is. If you apply to a two-year college that wants someone with computer expertise but your letters of recommendation all talk about nothing but your research, you're out.

A lot of applicants still believe in the "safety school" approach: They want to do research, but they'll apply to a small college "just in case." Small colleges that advertise for teaching excellence want, believe it or not, teaching excellence, not researchers. So the first rule of thumb is: Don't bother applying to places that are advertising for what you're not. It's a waste of time and money.

Another consideration to keep in mind is that a person high on one institution's list is likely to be high on another's list, and institutions are fully aware of this. Potential employers have to worry not only whether the applicant is suitable for that school but also whether that applicant is likely to accept the job if it's offered. Therefore, it's a good idea to try to convince the places to which you're applying that you know what you're doing.

If you're applying to a new geographic area, for example, explain why you're doing so. (Employers are likely to be reluctant to interview people who are too far away. They're expensive to interview and less likely to accept.)

Pay attention to your cover letter, especially if you're applying to small schools. Larger schools may not pay them much heed, but smaller schools tend to emphasize the individual and read the letter fairly carefully. If you are "print merging" your letters, check them over: Employers do not "read merge".

It's not a bad idea—and may even be a good one—to have some part of your application, clearly marked, that goes into depth about something that reflects your own strengths and interests. Your teaching philosophy and research statements are the standard place to talk about your interests, but there may be another aspect you'd like to emphasize. It could be computers or integrating music and mathematics or getting grants for mathematical trips to the Caribbean. But there should be something about your application that makes a school think, "Wow. Wouldn't it be nice to have this person here?"

A research statement written for a research position should be different from one written for a smaller school. The former is aimed at experts in the field and can be as technical as you like; the latter is aimed at general mathematicians and should convince the reader that you can describe technical material to non-experts. As you describe your research, it's a good idea to keep these questions in mind: How does your research fit into the field as a whole (that is, do you have a good feeling for what else is going on in your area)? What projects do you have lined up for the future (that is, can you keep doing the research once you're out of the hands of your advisor)? Are there any spin-off projects that undergraduates could work on? (Undergraduate research is hot stuff nowadays.) Keep the statement to a few (2?) pages; it is after all a summary. No matter how long it is, make sure that you summarize the answers to the questions above early on and then go into as much detail as you feel comfortable doing later.

For your teaching philosophy, make sure that you're not writing in the "future wishful tense". A lot of applications say things like, "I think it's important for students to learn actively" without answering how they've come to this conclusion, how they've fostered such learning in their own classes, and what they intend to do in the future. It's better to use the "present actual" and "future specific" tense: "I arrange the chairs in my class-

room so that students can face each other and the board at the same time; this way they talk to each other much more easily. When they don't talk to each other, I give them activities and walk around the class to talk with them individually. In the future, I'd like to try a technique introduced by Tucker [T] and give them half individual/half group exams." Being realistic ("I'd like students to work with each other, but they don't always") shows that you can evaluate your own teaching style and can change it for the better. Employers won't believe you're perfect if you leave that out; instead they will believe that you are overly idealistic and out-of-touch.

When you list the classes you taught, be very clear about your duties. Did you grade homework? Grade exams? Choose the textbook? Employers look at your list of responsibilities carefully when they evaluate your teaching experience.

One last tip: Getting your application in early can mean the difference in getting an interview during the Joint Meetings in January. So give your letter writers plenty of time and push them to get things done early, and aim to get things done early yourself.

Letters of Recommendation

When I talked to employers about the process of reading job applications, their second largest gripe (next to the sheer quantity of applications) was bad letters of recommendation. Some "writers" can't. Some letters were, for various reasons, offensive. But most often, the letters were inappropriate for the type of institution to which they were being sent. Many interviewers complain that letters for an applicant to a small liberal arts college that emphasized teaching above all else often begin, "Let G be a semi-abelian variety. . ." And the statement we see so often it has become cliché is this: "I've never seen him teach, but he gave a very clear lecture in our research colloquium, so I'm sure he'd do a great job in the classroom." (This is about as meaningful as saying, "I've never seen his research, but he taught a wonderful Real Analysis course, so I'm sure he'll come up with stellar new results." Still, we see the former statement all the time, and the latter statement never.)

You have more control over your letters than you might think. It is imperative that you tell your writers the kinds of jobs you're applying for, your top choices, as well as which aspects of your career you'd like them to emphasize. Invite your letter writers to visit your classes. It's not unrea-

sonable to ask for two letters, emphasizing different aspects. Neither is it pushy to show them your "bragging" folder. If you think about how hard it is to write letters of recommendation for your own students, you'll realize that your writers will appreciate it. (This is especially true for those writers who don't know you well.) For goodness' sake, give your letter writers as much information as possible! Tell them your deadlines, both official and personal, and try to give them plenty of time to meet those deadlines.

Sending out letters can often be done through the department or through your Career Services Office. In fact, the folks at Career Services will often maintain a file of letters and other material you want sent out and will even send them out free of charge.

The Interview

When and if you get an interview at a school, make the most of it. Your talk will be better if you've asked beforehand what types of people are going to be in the audience, which upper-level courses are being taught that year, and what kind of knowledge you should assume. If possible, choose a talk that allows you to highlight your own teaching style (use of computer, lots of pictures, whatever).

Your interview is the time to ask all those questions you thought you wouldn't ask until you accepted the job: Is there child care on campus? How much does it cost to live around here? Does the city have a square dancing club? Can I talk to some of the undergrads today?—as well as those that more carefully define the job: On what decisions is tenure based? What is the salary? What are the benefits? Are there tenure quotas? Do faculty "own" courses? What will I be teaching?

You'll probably be meeting about ten different people during the day, most of whom will ask you, "So, er, do you have any questions?" Feel free to ask the same questions over and over; you'll get a lot of different answers anyway.

The kinds of questions that you'll be asked are: What is your research? (This is invariably asked by a dean who hasn't had math since freshman year of college, so practice now.) What courses would you like to teach? Where's your research going? Um, er, do you have any questions?

You're going to make a much better impression if you are enthusiastic, energetic, and smiling. When you do get to the interview, enjoy it, and drink a lot of coffee.

Optimism in the Job Market

Graduating students, even in the best of economic times, are prone to bouts of uncertainty and anxiety regarding their futures. A market such as the one we're facing can only further erode their confidence.

At the crucial stage when you are applying for jobs, it is vital that you have a realistic and even slightly idealistic view of your level of ability. This level may be higher than you think. I strongly urge all those who are in a position to advise students that they assure them of their abilities and encourage them to aim high.

To the mathematicians who are in the job market this year, I offer the following encouragement: For me, it was too easy to say, "Well, I've made it this far, but I don't know that I'm really any good." I learned pretty quickly that employers and colleagues alike believe that making it "this far" is a concrete indication that I am good. If the rest of the world is going to think you're amazing for doing all you've done, you might as well think so too. Aim high.

Conclusion

When you know how tough the job market is, it's hard not to send applications to every department that's advertising. Yet the sheer quantity of one-size-fits-all applications indicates that tailoring your applications for the jobs you really want

is not only more considerate to prospective employers but also a smart move on your own part. The application that stands out from the crowd is one that is intelligent and well-considered and that reflects the interests and aspirations of the applicant.

If I had to sum up my own experiences into one sentence of advice, I would say: "Start early, apply to the kinds of institutions where you'd really like to work, and do your best to convince them you're the perfect person for the job." If I were allowed two sentences, I'd add: "And drink a lot of coffee."