

Professional Development Notes: Professor Bruno Nachtergaele

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A research statement should be a balance of your research achievements and your future goals.

Writing a research statement:

- Give yourself enough time to think about it, plan on multiple drafts
- After each new research experience review & write a new research statement
- Demonstrate what you know: It's ok as a graduate student to have a limited scope of knowledge. Write about the things you know and leave it at that. People can tell when you expand beyond your limit of knowledge.
- Emphasize your accomplishments in the field.

It's all in the details:

- Write your name on your statement & everything in your packet. That way if anything gets separated you won't be confused with a different applicant.
- Limit of 3 pages. You can write more but be aware they won't read too much.
- Be concise, clear, and convincing.
- Make sure it is well-written: proofread, use spell check, check spell check, have someone else read it. Why does this matter? Having a well-written statement demonstrates that you care and are interested/serious about the application process. People (hiring committees) care about the details.

Keep your audience in mind:

Your research statement should be written for a general audience (think student seminar). Even if you are applying for a position at a research school you must realize that the hiring committee (those that are reading your application) may be less specialized than your thesis committee. This is going to be the most important when you don't have a personal contact at the location and can't assume that you have someone speaking on your behalf. They are reading A LOT of applications don't give them the excuse to pass by yours.

To do this:

- Provide context – explain some historical perspectives (1 paragraph at the most) and emphasize your personal contribution.
- Introduce basic notation, avoid being overly technical, and avoid providing basic definitions (you can assume basic mathematical knowledge).

Research Statements change based on the institution you are applying to

- It's possible that you may want to write multiple statements. Different institutions will want different things emphasized.
- When you are looking at a school with less research emphasis you must keep in mind that the hiring committee might be more distant from the research experience. Be aware of this and make efforts to not alienate yourself from the committee.
- If you are applying for a specific lab/mentor then your statement may be more specific and addressed to the individual. In this case then you should also attempt to contact this individual and establish more personal contact. They may be able to move you up onto the short list.
- 4-year colleges want to see research activity that involves undergraduates. Gear your plan towards how your work could be done in short segments by undergraduates. This is where your teaching and research statement may overlap. It's ok to discuss mentoring and teaching undergrad research in your research statement.

Future Plans:

- It's ok to continue current work, but demonstrate ability to move forward.
- It's ok to plan on new work but you need to demonstrate a knowledge of the subject and show ability to make progress
- Plan of attack: Don't share too much because you don't want to leave it open for others to pick it up and do your idea. You can mention if you've made any progress and be prepared to discuss more details in the interview.
- Balance ambitious long-term goals with outrageous plans (don't propose to solve the Riemann hypothesis). Think about the timing aspect. Are you providing an idea that's too big or too small for a postdoc? Do you have enough work (or too much) to ensure tenure.
- Distinguish yourself and don't propose something that everyone else is proposing. Discuss your specific/unique perspective on how to help in the field. It doesn't have to be revolutionary. (Ex. everyone's applying for gene therapy general grants but a more specific idea might help the field more).
- It is common to propose something that is $\frac{1}{2}$ done (that you are more or less sure you can do). But in mathematics people also want to see if you can step beyond the safe zone. Math doesn't involve a big money risk for equipment to try new ideas (Unlike equipment needed to do experimental biology lab work). In general there is less financial cost so the grant culture is more willing to try new ideas. With this in mind, it's ok to try a new direction without the promise of it working out.

Application Process:

- Give yourself enough time!
- Deadlines:
 - o It's ok to send it earlier: They may start looking at applications 1 month in advance.
 - o It's ok to send it later than the deadline: They may not have found who they were looking for. Send it and maybe it'll work out.
 - o In general, it's better to be early. If you're waiting for a preprint, send your application and then send an update after the preprint is archived.
- There is a LONG recruitment (November -> March).
- Applying works differently at each institution, each place publicizes differently (Notices, websites, etc.).
 - o Look at old versions of the Notices, they may advertise only once early in the recruitment stages
 - o Check out institution websites: some institutions only post their job openings on their institutions website (and don't advertise beyond that at all).
- Every good thing is a good thing – if you've had other experiences and expertise that are relevant and not covered in your thesis, think of a way to include it in your teaching or research statement.
- Contact the institution:
 - o This makes you not anonymous- it makes you stand out.
 - o Don't be shy, write them directly and let them know that you're seriously interested in their program. If they're trying to make final decisions and know that you want to be there then you're likely to be bumped up the list.
 - o Contact others who have similar research interests in that department before or as you turn in your application to highlight yourself. This may lead these individuals to let the hiring committee know that they would be happy to mentor you and include you in their program.
 - o Have your adviser send personal emails to people.
 - o Email is good, don't try to call.
- Realize hiring is difficult too! There are lots of applications and everybody applies to a lot of places.