

Advice for SAMBa students on choosing your PhD supervisor

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Introduction. Before the end of Semester 2, you will have to choose your PhD supervisor (or supervisory team). The choice of who will supervise you is *probably the most important choice you will make in your PhD*, so it's important to give it careful thought. ¹

The goal of this document is to highlight some of the things you should bear in mind whilst making this choice. It's important to emphasise that this is a very individual choice; *the same supervisor might be seen as both great by one of their students and terrible by another*. The most important thing is to put enough time into your choice so that you *know what you're getting yourself into* by choosing Dr X/Prof. Y.

Why is your supervisor important? Most students coming into a maths PhD programme have had no experience of doing research and no experience of how to choose a doable-but-interesting research problem. The first year of SAMBa, with its SLSs, ITTs, and Thesis Formulation Report, will start to give you experience in these areas, but your supervisor will have much more experience in them than you do, and so *you will usually be almost-entirely dependent on your supervisor to select the problems you work on in your PhD* (at least at the beginning, but usually for the duration of your PhD).

The two main factors to consider.

1. Match in mathematical interests.
2. Match in style of working/supervising.

For your PhD to run smoothly, you ideally want to get a good match in both of these categories.

Different supervisory styles. Different supervisors have different styles of supervision; these are dictated both by their personalities, and by their other commitments. It's important to know ahead of time what being supervised by each of your "candidate supervisors" is like.

- *Factor 1: Career stage and other commitments* (usually these two factors are related).

The following examples are two ends of the spectrum.

Example 1: "Big-shot" supervisor who is well-established in research, has lots of PhD students and Postdocs. Possible pros and cons:

- + Supervisor has been successful in research, will hopefully have lots of exciting and tractable problems for you to tackle.
- + You can talk to the other PhD students and Postdocs about your research and get advice/help from them.
- Time is a finite resource, if they have lots of other commitments then you might not get that much one-to-one time with them.

Example 2: Supervisor at relatively early stage in their career, maybe only supervised a couple of students before. Possible pros and cons:

¹SAMBa students have an advantage here over students taking a PhD via a non-CDT route, since these students usually have much less time and information to make this decision (especially if they didn't do their previous year of studying at Bath).

- + Supervisor will probably be able to spend more time with you than a more-senior academic with more commitments.
- Supervisor has less experience at supervising students than a more-established researcher.
- *Factor 2: Communication and working style.* The department guidelines state that supervisors and students should meet at least once every two weeks (and recommend that meetings occur more often in the first 6-12 months), but these still leave room for a variety of different working patterns. Some supervisors want to keep to a regular schedule of weekly meetings at a set time; some want to meet only when the student has a great idea or has gotten stuck.

How to make an informed choice of PhD supervisor.

- *Invest time in researching the specific areas of maths that each of your candidate supervisors works in.* Ask them for research papers to read and, after you've read these, go back and ask questions. Ask them what mathematical tools, out of the maths you've learned so far, will you be using most often in the project. Ask them if there are any seminars going on in the department that would introduce you to this area of research. Find the PhD theses from previous students they've supervised and read them; ask the supervisor whether your project will be related to any of these previous projects.
- *Ask your candidate supervisors questions about the day-to-day arrangements of how the supervision will work.* Point 4 on the Doctoral College's checklist for the first meeting between a supervisor and a PhD student (once the student has started working under that supervisor) ² says

Expectations – Be clear what is expected of the student and of the supervisory team. Set expectations in regards to the level of support and feedback that will be provided, supervision style and whether the student will be expected to publish or undertake teaching during their doctorate.

This is good advice, but it's too late to discuss these points with Dr X at the first meeting when you're officially their student – you need find out the answers before making your choice!

Questions to ask your candidate supervisor: How often do you meet your students? Do you meet them one-to-one or in a group? How often do you give written feedback on students' work? How many PhD students have you had? What have your past students done after they graduated?

- *Talk to their current and previous PhD students.* When you meet your candidate supervisor, ask them for the contact details of their current and previous PhD students³. If they don't give them to you, this is information in itself⁴. When you meet the students, ask them what their experiences are/have been of being supervised by Dr X. Remember, the last few months of writing a PhD thesis is usually a stressful time, even for the most organised and hard-working students, and responses from students in this situation should be interpreted with this in mind. However, negative comments from first- or second-year PhD students or from graduated PhD students should be given careful thought, especially if the same comments are made by several different students.

²https://www.bath.ac.uk/publications/checklist-for-first-meetings-between-supervisor-and-doctoral-student/attachments/First_meeting_checklist_FINAL_June_2018.pdf

³If you're nervous about doing this, tell them that I told you to!

⁴Many supervisors will have a list of past PhD students on their website. The website <https://www.genealogy.math.ndsu.nodak.edu/> is a good way to find out how many previous students your potential supervisor has had (as long as they've recorded them on this site).