



Ask Professor Nescio

Editor's Note: Graduate students, early career faculty, and other mathematicians may have professional questions that they are reluctant to pose to colleagues, junior or senior. The *Notices* advice column, "Ask Professor Nescio", is a place to address such queries. Nomen Nescio is the pseudonym of a distinguished mathematician with wide experience in mathematics teaching, research, and service. Letters to Professor Nescio are redacted to eliminate any details that might identify the questioner. They are also edited, in some cases, to recast questions to be of more general interest and so that all questions are first person. Some letters may be edited composites of several submitted questions. Query letters should be sent to notices@math.ou.edu with the phrase "A question for Professor Nescio" in the subject line.

—Andy Magid

Dear Professor Nescio,

I am an undergraduate mathematics major considering where to go for graduate school. In a recent teatime discussion, one of the professors talked about how mathematics departments separate into different tiers according to their level of research excellence. He claimed that each tier likes to hire only students from other schools in the same tier, so that students from first-tier schools can actually have a hard time getting jobs in schools in the second and lower tiers. Is this true, and should it be a consideration for me in choosing a graduate school?

—Puzzled

Dear Puzzled,

This is not true, though there is a variation on this that is true. Nevertheless, there is no ironclad law like this. I know many mathematicians who have broken the tier ceiling, in both directions. They did this by their merit and the quality of their work.

Which graduate school you attend is indeed an important decision. In Professor Nescio's opinion, your Professor X did not do right by you. If what you report is accurate, this might reflect some insecurity on his part. I have run into several people who do not want to recruit new faculty from those who finish at a lower tiered institution than their own, but seldom the reverse. One can only conjecture why he would say such a thing, but I have seen such attitudes on hiring committees. Sometimes this is a defeatist attitude where they think hiring someone from a better institution is impossible; sometimes it is a fear of hiring mathematicians better than themselves. So understand a lesson it took me time to learn: having a Ph.D. in mathematics does not imply the possession of wisdom.

In fact statistics show that Professor X is dead wrong. A glance at AMS data shows that Group I Ph.D. programs (as defined by the AMS) produce far more mathematicians than they consume. (It is true, however, that most of those they hire are from similar institutions.) I guarantee you that their remaining students find employment in universities that are ranked lower, provided they do not go into government or private industry. In fact my experience is that the Ph.D.'s produced by Group I departments get tenure-track jobs at institutions covering the entire spectrum, including liberal arts colleges. Similar things happen with those produced by departments in Groups II and III, though few of their products make it as tenure-track faculty at Group I departments without first completing a successful postdoctoral appointment.

As you might guess, Professor Nescio's advice is to ignore this counsel from Professor X. Yes, when you get your degree there may be someone on a hiring committee at a department to which you apply whose attitude is precisely that expressed by him. But count yourself lucky that you will not have them as a colleague. There will be many more who look more closely at what you accomplish. Do good work and you will be appreciated, irrespective of where you get your degree—though that appreciation may be longer in coming the lower ranked your degree granting department.

Apply to a spectrum of institutions—some from at least two tiers. I would also advise you to forget about geography, proximity to home, and weather; your stay there will be for a limited time and you are not making a home. Focus on programs that offer a variety of courses and where you feel you can succeed. You should spend the first two years in graduate school taking courses in many different areas; this will be useful to you no matter what

your eventual path is. Large departments offer a wider variety of courses, but you are likely to receive less personal attention there than at a smaller one. Deciding which factor is more important to you is a matter where outside advice will be of limited value since no one knows your personal needs better than you do.

Do not decide on an area of mathematics that you will major in too soon. In fact my experience with students is that even those who start graduate school “knowing” what they want to specialize in eventually change their minds. But if there are some parts of mathematics that have intrigued you as an undergraduate, apply to some places that have strength in those areas. Talk to your professors (but not Professor X) about the schools you are considering. If it is possible, visit some of the schools that accept you and offer you support. (Many departments will help defray the cost of such a visit.) During the visit talk to professors and students (especially the students, who are likely to be more open and frank, even though they may express a self-centered view of their experience).

Good luck.

—*Respectfully,*
Professor N. N.

Dear Professor Nescio,

While your column is to be evaluated on the basis of the quality of the advice only, I was nonetheless astounded to find a mathematical mistake contained therein. In your response to a concern that in your opinion might be only a bagatelle, you counseled that “...every swell in that sea is not a...storm.” I will not embarrass you further by pointing out how this is incorrect. To be sure, the history of this mistake is long and storied, including no less an authority than Shakespeare, who thought that “all that glisters is not gold.” But I do not accept the suggestion that, as a logician, I’m overly sensitive to such errors. After all, that would be like saying that I don’t have to know what $1 + 1$ is, since I’m not a number theorist!

Anyway, what my question is has to do with my Math for Liberal Arts (“math for poets”) class. I often try to sensitize them to issues having to deal with the standard quantifiers (for all / there exists), by discussing just the topic above (including the Shakespeare quote). (As well as my other favorite, from another authority, this one King James, or Pete Seeger I suppose. They said “there is...a time for every purpose under heaven,” whereas they really meant “for every purpose under heaven there is a time.” But I digress.) So I would like to know, if as distinguished a mathematician as Professor Nescio can make this mistake, and get it by the editorial staff of the *Notices*, is there any value in bringing this to the attention of my introductory students?

—*Dr. R. K.*

Dear Dr. R. K.,

In answer to your question, No.

—*Respectfully,*
Professor N. N.

P.S. I am flattered being placed in the same category as Shakespeare.

Dear Professor Nescio,

I am a young faculty member who has had only one graduate student so far. When he finished his Ph.D. and applied for jobs, he asked me to write a letter of recommendation. I was happy to do so—until I got a set of guidelines from one of the institutions he is applying to. These guidelines warned me that any applicant for a job at that institution has a right to see his or her letters of recommendation. I feel uncomfortable knowing that my former student would read my frankest assessment of him. Is this a common policy in universities nowadays? Do you have any advice about how I can handle this situation?

—*Perplexed*

Dear Perplexed,

This is a common policy, but not a universal one. My sense of the situation is that at most private universities the letters are still confidential, but not so at almost all public ones. Usually the state institutions have this imposed on them by state law, which does not apply to private entities. I don’t know exactly when this started or why, but I believe it has been with us for quite some time. I have the impression that it was believed that a totally confidential letter might allow misinformation (from honest errors to slander) to affect someone’s future. It is, I think, a question of where you want to draw the line between civil liberties and privacy.

In the abstract it is a bad idea; in practical terms it seldom leads to problems. I know of no cases where a job applicant has asked to see their letters. I know of a few cases where promotion or tenure was the issue and the candidate read the letters, and in all these cases they had been denied the promotion. A more prevalent problem, one that can occur at all types of institutions, is where someone who has legitimate access to the letters or phone conversations or email reveals the content of that communication to the candidate. Professor Nescio himself was the victim of such an incident when comments he made during a phone conversation about an unsuccessful candidate for a position were revealed to the candidate. (Professor Nescio, when confronted by the candidate, adopted the position of the Godfather and said that it was nothing personal, just business. I then informed the dean that someone in his mathematics department violated my confidence.)

In most cases where confidentiality is not honored, the applicant has to follow a procedure of asking to see the letters. There is enough social pressure not to do this that it seldom happens.

So what to do? Given some of what I have already said and the fact that policies vary from one university to another, my advice is to ignore these things. The one exception I would make would be when a form has a space for the candidate to surrender the right to read the letter and he/she hasn't agreed to that. This has never happened to me, but if it did I would not write the letter. I would think the candidate has asked me for a favor and is refusing to reciprocate.

If you really don't want someone to know what you are saying, don't say it (especially in email). If you feel the candidate is a mangy cur, don't agree to write the letter. This could lead to unpleasantness, but, frankly, do you care what a mangy cur thinks of you? If they never speak to you again, is that so bad? Besides, their bark is probably worse than their bite.

When you write, give an honest, candid, professional assessment. This is something you can always defend and feel comfortable about. After you have read enough letters you will come to appreciate the phrase "damned by faint praise". A letter to a research department that does not greatly extol the research accomplishments of your student will not get him/her a position there. Anyone reading a phrase such as, "He/She is a sincere researcher," will know exactly what you are saying.

As a final piece of advice, take a look at Steve Krantz's *A Primer of Mathematical Writing* (published by the AMS). It contains a section on writing reference letters.

—Respectfully,
Professor N. N.

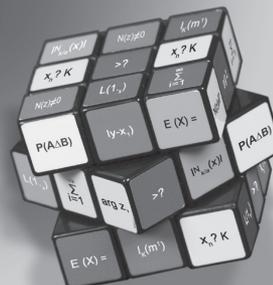
NATIONAL SECURITY AGENCY

NSA

There are
43,252,003,274,489,856,000
possible positions.



If you want to make a career out of solving complex mathematical challenges, join NSA as a Mathematician.



At NSA you can bring the power of Mathematics to bear on today's most distinctive challenges and problems. We identify structure within the chaotic, and discover patterns among the arbitrary. You will work with the finest minds and the most powerful technology.

Make the move that puts your math intelligence to work. Apply online to NSA.



WHERE INTELLIGENCE GOES TO WORK®

DISCIPLINES

- > Number Theory
- > Probability Theory
- > Group Theory
- > Mathematical Statistics
- > Finite Field Theory
- > Combinatorics
- > Linear Algebra
- > And More

Visit our Web site for a complete list of current career opportunities.

U.S. citizenship is required. NSA is an Equal Opportunity Employer and abides by applicable employment laws and regulations. Rubik's Cube® is used by permission of Seven Towns Ltd. www.rubiks.com



www.NSA.gov/Careers