Young Mathematicians & COVID-19

Stemming from my own personal worries, I've compiled a list of things that *you* personally could do, as a young mathematician soon to enter an uncertain job market. There seems to be advice floating around for senior people in the field but not much actionable advice for young people themselves.

The reality of the situation is that a big part of our futures will be in the hands of established mathematicians. We will have to hope that they advocate for us in the coming years. *However*, if you are unwilling to sit around waiting and hoping that happens, here are some things to consider doing. I've compiled this list based off of conversations with many helpful people, particularly Bianca Viray, Sarah Frei, Vance Blankers, and Andrew Kobin.

Not all of this advice will be applicable to everyone. Please, read from the lens of *what could help you*, take what works, and leave what doesn't.

1. Have honest conversations with your advisor/mentor (or unofficial mentors) about:
   (a) Your concerns about the current situation.
   (b) The possibility of extending current positions for additional years.
   (c) Applying for postdocs or special positions at your current institution.
   (d) Applying for second postdocs versus tenure track jobs.
   (e) What you should be doing right now to help be successful in the future.
2. Keep doing research, if you can. If you are struggling to be a productive researcher (although, honestly, what does that even mean?) here are some research-related things you can do:
   (a) Attend seminars: there are so many happening and new ones may spark your interest or highlight a new question. See mathseminars.org for a list. (Caveat: it's hard not to be overwhelmed looking at the list.)
   (b) Organize or participate in a learning seminar with your peers. Some ideas:
      - Choose a topic that you'd like to learn about and ask around for a good reference. Find interested people (perhaps your classmates or fellow postdocs) and assign weekly talks on different sections of the reference.
      - Have a weekly seminar where members present older, short papers in the field that they find interesting.
      - Have a weekly seminar where members present their current research ideas or problems that they're currently thinking about. (When I was a graduate student, we had a version of this where each person presented 3 examples relevant to their problem: (1) a simple introduction that everyone could understand, (2) a example that highlights some of the subtlety or difficulty of the problem, and (3) a more difficult example indicating what you're thinking about and why it's important.)
   (c) Work on expository aspects of your current research. Think about how to motivate your results, write an introduction to a paper or a job talk, summarize the problems that you've already done or you're currently thinking about and their relationships to other problems. *(Bonus: if you do this well, you'll have a research statement mostly written by the time job applications come around.)*

(d) Consider having or participating in Zoom office hours or Discord channels to bounce around current ideas, ask questions about certain topics, etc. I have links for some algebraic geometry specific versions, and am happy to pass them along if you would like. These are unique opportunities to informally discuss mathematical ideas with your peers!

3. Do miscellaneous things that may help you be successful in the future, especially if you are having a difficult time being a "productive researcher." Here are some suggestions:

   (a) Update your CV, and include any talks, conferences, or workshops that you were planning to participate in but were cancelled due to COVID-19.

   (b) Update your website.

   (c) As the semester/quarter wraps up, summarize your thoughts on remote instruction if you taught a class (or even if you took one). What went well?/what would you change?/create a teaching portfolio with what you made for remote instruction/etc. *(Bonus: this will help you when you need to write a teaching statement.)*

   (d) If possible, take what you're struggling with and turn it into positive changes that you could make, given the chance. Think about specific ways that you could contribute to a department as a faculty member. For example:

   - Are you struggling with the lack of in-person connection from your mentors? Think about what you would ideally get from a mentor, write it down, and be prepared to be that person when you are given the chance. This is something actionable that you could write about in a cover letter.
   - Are you worried about apathy from senior members in the field? Think about what you would do in that position in the current situation and write it down. This is also something actionable that you could write about in a cover letter.

   (e) Consider ways that you can have small, tangible impacts on those around you. This may be by strengthening mentor/mentee relationships, organizing a seminar for the younger graduate students in your area (not necessarily on research; it could be something like "How to Give a Good Talk"), hosting brown-bag lunches on topics like diversity or outreach, hosting virtual community building meetings for your department, etc.

4. Use this time to think about what you like about this profession. If you are having a hard time coming up with any answers, know that there are so many other great options out there! The unfortunate reality (even in the absence of COVID-19) is that the number of people wanting academic jobs is larger than the number of academic jobs. No matter how abstract your work, it could be beneficial to use this time to develop marketable skills, like: coding/programming, technical writing, teaching skills, or even incorporating art into your work. This is *not* a suggestion to develop these skills at the expense of your research, particularly if you want to pursue an academic career, but it may be reassuring to have other options.

5. Know that, in the midst of a GLOBAL PANDEMIC, it is OKAY to be struggling. It is OKAY to get less work done than you would otherwise. Be gentle on yourself.