

Finding your path

My remarks, more or less, at the Zürich Graduate School event about becoming an independent researcher (organized by A. Cannas, E. Kowalski, B. Schlein, and C. Ulcigrai):

Finding your own path is not easy. There is a strong pull to work on problems and in frameworks and collaborations set by other people. When you start, especially as a student, these routes are natural to follow, since it takes time and effort to reach the active frontier of a subject (where you can prove something interesting and new). But once you are at the frontier, it is much easier to move horizontally along the border, so you will have more freedom there to find your own path.

At some point, or maybe all the time, as a young mathematician you should think about why you study mathematics. There is a reason (or else you could have been perhaps a poet or a painter or an MMA fighter), and in some sense, when you find this reason, you will be an independent researcher following your own path.

A simpler piece of advice is to be very sensitive to your own curiosity. If you are curious about something, do not let it go. For example, if you are at the airport and your flight is delayed for a few hours, and you start thinking about something mathematical (I hope you think about math in such situations), work on that idea.

There are more than 2000 years of philosophical history on the topic of finding your own path. An essay which I recommend to my students is *On thinking for oneself* by Arthur Schopenhauer. Another place to look is *Letters to a young poet* by Rainer Maria Rilke. Some students are independent from the first day they walk into my office, others can take a decade. People have very different developments.

A topic that is important to discuss here is the fear of failure. Failure is everywhere: most efforts fail many times before anything good emerges. Moreover, a standard sign that you are on your own path is that other people are not immediately convinced of the direction, strategy, or goals – which makes the fear even more significant. It is impossible to become an independent researcher without controlling your fear of failure. For inspiration, I recommend watching Alex Honnold's free solo of El Capitan: he is someone who has complete control of his fear of failure (and in a much more perilous endeavor).

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