"Fail" is not just another four letter word

Michael R. Meyer, Professor of Astronomy, Ann Arbor, Michigan April 28, 2020

The Oxford English Dictionary describes "to fail" as "to be unsuccessful in achieving one's goal". That covers a lot. And it distracts from the beauty of failure in creating opportunities for us to learn what we need to in order to be the people we are striving to become. One parenting fail that people make today is to not allow children enough opportunities to fail. Another is to make them afraid of failure. If you are only presented with challenges that you can easily overcome, you never learn how to succeed. At some point in your life, a challenge will appear which is beyond the limit of what you can do. You can learn how to succeed. But it requires repeated experience at trying, hopefully with a useful manual or mentor around. In short, it requires failure. Given the amount of failure in my academic past, I should be an expert at success! But I am still trying to figure out what I want to be when I grow up (what sort of scholar, what I am best at, how to be a better teacher, and where to have the greatest impact in service to our community, state, nation, and world). Here are two examples from my long list of fails, that might be relevant to you now.

Exhibit A - failure to get into my favorite graduate schools upon graduation.

My CV as an undergraduate was not stellar. My high school preparation had some serious gaps, and I did not really know how to learn. I also choice to take a leave of absence from my university to save money by attending a cheaper program for three semesters during my sophomore and junior years. I had some modest research experience, but did not get into any programs I wanted to attend for my PhD. I ended up enrolling in a terminal Master's degree program in physics at a nearby university, taught for the first time, obtained additional research experience, and enjoyed a wonderful supportive environment. In preparing for my repeat of the Physics GRE, I significantly increased my percentage score after months of preparation. I reapplied, and was admitted to multiple schools, fortunate to have a range of good choices. I knew what I should have done, in retrospect, but for many reasons, some I understood, and some I did not, I was unable to do what was necessary to be successful the first time around. I got a second chance. Part of that is due to my privilege. I should note that there were few women in physics where I studied and no people of color at the time. I did not come from a very wealthy family or one that was well educated. However, I knew that I could always rely on them for help if I needed it. And this enabled me to take chances others might not.

Exhibit B - barely getting a job after receiving my PhD.

I did not publish as many papers as a graduate student compared to some of my peers. I only made one short-list for a post-doctoral research position, interviewed for it, and did not get the job. The only job offer I received was to work in Germany for a supervisor that I only met because I self-funded a trip to a conference the year before. In fact, there was not even a job advertised! I sent my CV to this person unsolicited and received a job offer in return. After two years overseas, I published a few papers, and got better at writing research proposals. I was

able to turn a successful Hubble Space Telescope observing proposal into a successful Hubble Fellowship proposal and return to the US as a prize fellow in a top astronomy program (another second chance). I am happy to share the two fellowship proposals and see if you can guess which was which (to me now, the stinker is quite obvious). I surely should have written more papers in graduate school and I would have benefitted from more consistent mentoring, particularly regarding professional development. I learned a great deal in graduate school, was exposed to excellence at many levels, absorbed a tremendous amount in my topic area, and was introduced to a way of doing science through telling stories and engaging a community that resonated with me. In my first post-doctoral research position, it was clear that I needed to be more productive as a requirement of my employment. I was also exposed to a different mentoring environment that focused more on practical elements of the research enterprise, including management. I came away from these two experiences with more than twice the education, as well as exposure to the diverse ways scientific research is approached in Europe compared to the United States. Again, my privilege played a role in how I was able to react to adversity in the form of uncertain employment prospects.

Let me offer a few perspectives as we enter this uncertain time. When I was applying to graduate schools (for the second time), the United States was going through a recession. One of my mentors told me explicitly not to try to make a career in astronomy! A provocative article published at the time was not very motivational (H. A. Thronson, 1991, PASP, V103, 90). As a graduate student, I would sometimes look through the job advertisements in the newspaper, searching for options. I did not expect to have a professional career in astronomy and certainly not as a professor at a research-intensive university. In the end I was fortunate to always find a good job doing something I enjoyed, in a position where I was rewarded for things that came easy to me as well as presenting me with challenges that enabled me to grow in new directions. I tried to make sure I had options so that I could decide for myself which I preferred for how I wanted to live my life at that time. There are costs and benefits associated with any career. I wanted to make sure that I could make my choices without regret. It is also very clear to me that some of my former mentees who left astronomy to pursue other interests are extremely successful and contributing to society in ways I could only dream about. Sometimes the economy is doing better, and sometimes worse. This will fluctuate throughout your professional lifetime. And this clearly has implications for the job market overall, and astronomy related options in particular. No one can predict the challenges that lie ahead. These are truly extraordinary times. I hope that you feel you have gained specific content knowledge in astronomy, as well as related and non-related topics that you will value your whole life. More importantly, I hope you have learned how to learn, and how to think such that you will be able to contribute in multiple, flexible ways to society. I hope these skills will help you chose a career path that works for you, now, as well as in the future.

The Oxford English Dictionary defines success as "the accomplishment of an aim or purpose". There are as many ways to do that as there are ways to fail which lead us there. Feel free to reach out to me with questions or comments about this article. I hope you, your family, and friends stay healthy and as well as can be expected during these trying times.