

Reading Guide:

Part I, II, and III cover experiences that strongly shaped my personality

Part IV covers barriers I had in college and how it affected my academic journey.

Part V covers my commitment to physics (optional to read)

I > A unique experience that transformed me - a curse, a gift.

The night of Sept. 30th, 2014, it was the saddest moment of my life, and the moment that empowered me every single day ever since. “Your dog is gone”, said my aunt so casually after a month I was forced to send my son to their house because my parents refused to keep him in the family as I started high school, just because he was a wolfdog grabbed from the street, an inferior monster to them, and to the culture. I knew his fate was not so-called missing, but was killed/stolen for appetites. I turned vegetarian a year after and was the only one people around me knew for years. In those formative years, I received so many voices calling me mindless, hypocritic, and telling me I was wrong based on their “reasonable” logics like “animals’ fate is to be killed to better reproduce/maintain the food chain”, “meat-free diet makes you weak and unhealthy”, and a hundred more variations. I could show their thoughts were not any conclusion they have critically thought through, but stemmed from the beliefs ingrained from what everyone around is doing. I knew it because I was one of them, and I realized how dangerous it would be if I allow myself to form a belief without justifying it on my own, despite how dominant it seems. In fact, there would be no breakthroughs in fundamental physics (e.g., quantum and relativity) if those famous guys took for granted on the physics they have been told.

II > An alone fight against injustice and what I learned from it

It would sound ingenuine if I claimed that I do physics out of pure passion without a thirst for any fame; after all, it has become human nature to desire good reputations since verbal approvals are the cheapest protection of ego - a layer of protection that prevails due to evolutionary edges. I am grateful that much of this desire had been suppressed in my late formative ages. In 2016 summer, the Bureau of Education in my province issued a mandate to prohibit high schools from making mid-summer classes mandatory for health concerns. However, my high school, which is the best in the city, certainly wanted to use this time to raise the competence of its students, and they texted our parents to “voluntarily” approve of those classes. Parents in China are rarely expected to refuse such a good opportunity to make their children “better”. Consequently, the classes continued. Students, however, were aware that a breakless study in those scorching weeks would do no good. The knowledge that reporting this behavior would only be ignored spurred me to gather a few classmates with a plan to put it on the news. As all I received was emotional support with refusals to join the action, I did it alone - their deeds with those texts as the evidence was exposed to a famous news press, and the school board called off the classes immediately after the publication. I saw many social media posts from my cohort thanking this mysterious “hero”, and I was very proud that I had it in me. Inevitably, the spread of the identity of this reporter went too fast to be contained, making me the most notorious person among hundreds of parents. I used to believe a good reputation is the most joyful indication of one’s achievement; I was wrong - standing up for what I believe is right feels even better.

III > Realization of the prevalence of prejudice

“Knowing enough about a subject to think you are right, but not enough about it to know you are wrong - one of the biggest challenge in the world” -- Neil Tyson

Once washing plates in the dining hall as a part-timer, a 50-year-old-ish man came over to me asking things like “what would you do if they talk about you with words you don’t understand?”

“Go home! Do you understand this?”. Of course I did, and I also understood how despicable the

ignorance of being a racist could be. Experiences like this surely help me relate to other minority groups' extra burdens, as I thought I was a victim too, until I realized I was a culprit. I took a course in women's and gender study internationally over a summer just to fulfill a course requirement. I dismissed the class a lot as I thought it would not make a difference to me and that I already understood enough about inequity. Nothing was further from the truth - in my self-introduction where our genders were asked, I said "I am a man, obviously". Insular thoughts like that had been strongly built in me, for instance, "women are statistically weaker than men, so we should 'protect' them by ..." and "only white people can be racists". It was usually experiences that changed my mind, but the carefully presented logics, which had become the only thing I fully trusted from past experience, in the textbook quickly made me aware of the real meaning of those "-isms". How ironic, I was not much different from that patronizing man from the dining hall. This realization also made me aware of the fact that a large number of people sharing my cultural background never realized that they are also infectees of these problems, but it is just that they did not get enough chance to see their symptoms. I had never been more obsessed to find out objective truth. I then extended my study to try recognizing further prejudices I might have by studying the root of all of them using the most critical tool - logical derivation. I have made proud progress with the help of an excellent partner and solutions that anyone may benefit from are on the way. See CV - Independent Research.

IV > Economic barriers and their influences on my academic journey.

I was born in a rural area in Anhui, China. My father completed his master's degree at 39 while my mother did not finish middle school. I am aware that they have to borrow a terrible amount of money to support me so I also did many part-time jobs in college (see CV - Work Experience), but it was not enough. I had to finish my BS-Physics within two years. It was the passion in physics that made it happen, for which I also took many courses inter-university-ly over the summers and winters. Then, after three times being declined, I eventually made it to borrow a student loan from MPOWER to lessen my parents' economic pressure and to finish my pursuit in a math major. However, an unexpected pandemic put more burden on their pockets and I had to withdraw math and stayed as a master with the research to finish what I started, where I get good-looking paychecks from the stipend. I never stopped studying math on my own as I have also been conducting independent research in math described in the previous section.

V > Why I pursue a graduate degree in physics.

I do not remember what first triggered me to love physics, because it must be as early as I could remember things. None of my parents or relatives had a career/education related to science, but I guess it was a present for me because I could discover the world and find out answers without much interference. At 12, I built a telescope with a 125 time magnification to discover the sky; at 13, I conducted a experiment with a printer to confirm my "theory" of transparency; and at 16, I deducted a theory of E&M based on my postulates, and with the help of specific magnets, I successfully verified it (then in college, I learned someone named Maxwell). I hardly gave in to my curiosity as I constantly felt the adrenaline to find out the answer; and when I made it, the dopamine rewarded me for going for more. My study with physics has benefited me to grow as a person in finding out truths in life, and the life experiences aforementioned have sharpened my eyes assessing myself. This may not seem to answer the title/question but, to me, it says everything: physics has always been an integral part of me, and I never see myself ever stop doing it. - college, master, PhD, and then life-long research scientist, for the quest of truth.