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Infinite Perfectibility

The pursuit of “infinite perfectibility” has been the inspiration and driving force behind Alexandra Schmidt’s career path and life. This philosophy was introduced to her by her math teacher and role model, who taught Ms. Schmidt that you can always become better at what you do. She feels that teamwork and collaboration are key to accomplishing anything and everything. In fact, it was the absence of a sense of group purpose that led Ms. Schmidt to change careers about a decade ago.

Originally, her “fascination with how things worked,” led her to major in electrical engineering at Stanford University in her home state of California. Working in Silicon Valley and then at GE’s Global Research Center in upstate New York, Ms. Schmidt enjoyed creating solutions to technical problems but did not find a very connected community. “I liked solving pieces of bigger problems, and pieces of interesting problems that required a lot of people to do different parts. One thing that I realized was that I might make something work, but it was such a small piece of a larger thing that there wasn’t always as much shared delight.” Though she was excited about solving problems, she missed the special satisfaction that comes with collaborative problem solving.

Fifteen years and three children later, Ms. Schmidt thought of her own math teacher’s mantra that you can always become better at what you do. Although she always liked teaching informally, she had not previously considered it as a career path. A year of teaching and the realization that she loved it led her to Union Graduate College, where she received her M.A.T. in mathematics, and, later, her National Board Certification. She often found that being a teacher involved more than just the subject at hand. When she was working as a teacher at the local Jewish day school, the students would occasionally ask her if she believed in God. “I wasn’t particularly interested in providing a pat answer to that question,” she said. “But what I do believe, and what I was willing to tell them, is that there are wonderful, beautiful mathematical patterns that exist, whether or not they’re obvious to you, and we are here to discover them. And if you understand mathematics, you speak a little of the language of the universe.”

While teaching math may seem to be a potentially repetitive and therefore dull career to some, Ms. Schmidt sees it as the opposite. “There is always a student who comes up with a new solution, so I have the opportunity to see the problem in a new way. Everyone handles questions differently, so

a hands-on approach is very important to learning mathematics.” This is where Ms. Schmidt’s role model comes in (again). “She taught me that there is always a better way of doing things, whether it is a new in-class demonstration or finding a better way to explain a problem.” Ms. Schmidt then gestured to the bin of materials by her desk, which contained string, cardboard, markers, scissors, and silk flowers and a toy boat. Her pursuit of constant improvement motivates her to create engaging and interesting new demonstrations and explanations with these objects to help students understand complicated topics. As one of her previous students, I was able to see this in action when we calculated the maximum surface area and then edge area of varying-sized pans of brownies, given a constant volume of batter. This was then followed by the hands-on experience of eating brownies. Though she always has plenty to do as she strives to become a better teacher, she is able to combine her work and home life through activities such as grading in her tree house and inviting students to celebrate Jewish holidays with her family.

As a mentor at the local math circle, Ms. Schmidt highly values teamwork, since others often think of different or more efficient solutions. The feeling of triumph she finds in mathematics is similar to engineering, but the culture is friendlier, and she loves seeing the students encourage each other and work through problems themselves. “One idea I really try to communicate is that if you mentor or help another person, who may be more innately gifted, but less experienced in a particular area than you are, you share some part in that person’s success.”

Ms. Schmidt faced very few roadblocks as a woman pursuing mathematics as a result of her flexibility and drive to find joy through constant improvement. However, she does have advice for girls who want to pursue high-level math: “sometimes you have to hang out with the boys. But remember that they’re not a different species, and many of them are wonderful and will appreciate that you are there. If there are other girls, great, but the most important part is finding a nice group of people who are interested in working together to solve complex math problems.”

Math consumes Ms. Schmidt in many ways. “I find it interesting to track the mean and standard deviation of my drive time to work.” She has a variety of hobbies and interests, all of which can be connected to both math and her positive demeanor. “I fly airplanes, and I always find it both grounding and liberating, in a sense, to see everything from a completely fresh perspective. Once you have been in the air, you never look at something as simple as a flag in the breeze in quite the same way.” She

also loves to bake, simply because it starts with simple materials and makes people happy.

By continuing to strive for excellence and being open to new solutions, Ms. Schmidt is able to keep her career very interesting and engaging. With every future mathematician she inspires, we come one step closer to solving all of the mathematical patterns put on Earth for us to discover.