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A Profession Made For Women

"I was always last at finishing math tests," Ms. Shihoko Ishii tells me.

As one of the five female professors among sixty male math professors at the University of Tokyo, the most prestigious university in Japan, that was one of the last things I expected her to say.

Shihoko Ishii grew up in Toyama Prefecture, Japan and initially hated math. She was weak at simple arithmetic problems, and always finished last at tests in her elementary school class. This all changed when one day the teacher gave a problem that required the application of math. Taking the test, Shihoko found herself riveted by the problem. When she walked up to the class to turn her test in, she found that she had been the first to finish.

From there, her interest only grew. In high school, she read a popular book on the theory of relativity and learned about the Lorentz transformation. The Lorentz transformation was initially used to observe the speed of light in reference to space and concerns the transformation between two coordinate frames moving at constant velocity. This was when she realized that math wasn't only about solving arithmetic. It was a tool that could model a phenomenon in nature and reveal hidden truths in the world. She was hooked.

Her decision to become a mathematician wasn't without resistance from her parents. She grew up in a rural area, and her parents worried that their daughter would become different; they tried to convince her to change her mind by citing the scarce number of Japanese mathematicians who succeeded in maintaining a career. That's without the disadvantage of being a woman, they said. Although no one supported her dream of becoming a mathematician when she was young, she persevered with her role model, Marie Curie, in mind.

As of January 2017, she's authored 47 papers and published two books about singularities of algebraic varieties. She graduated from Tokyo Woman's Christian University with a bachelor's degree in 1973, received her masters from Waseda University in 1975, and in 1987 completed her PhD at Tokyo Metropolitan University. Today, she's a professor emeritus at the University of Tokyo and at Tokyo Woman's Christian University.

Sadly, at her current position as professor at the University of Tokyo, she does feel that there are still gender biases. One of the inconveniences that she feels is the scarce number of women's bathrooms in the math department classroom buildings. Unlike the male restrooms located on every floor, the female restrooms are every other floor.

But there has been effort to increase the number of women in the mathematics field. In 2016, the University of Tokyo, one of the leading universities in employing women, employed two more female math professors to make the total count of female math professors five.

Shihoko feels hopeful about this change, as small as it is. Her position

today is hard earned. She struggled with her career when she married and had a child- Japanese universities were not willing to hire a female mathematician with "baggage". But she persevered, continued to publish papers in research journals, and became a professor at the leading university in Japan. She loves math because it is about figuring out the unknown, about solving problems where the answer is not already known. Perhaps that's why Shihoko was able to find her own path to becoming a female mathematician in Japan- even with almost no role models to follow. She continues to support females by also teaching at all-women colleges in Japan like her alma mater, the Tokyo Woman's Christian University. She realizes that the problem lies in the traditional, stereotypical views of mathematics, especially among parents. Because of many factors, young women in Japan tend not to be interested in STEM fields, but she intends to change that. She hopes that she's become a role model for future Japanese females interested in STEM, much like how Marie Curie was for her.

In the end, she gave advice to aspiring female mathematicians and scientists. Laughing, she tells me, "In mathematics, females are equal to males. A big difference between males and females is physical ability; but math doesn't involve that! Compared to other professions, there's no handicap. It's a profession made for women!"