Unlocking the Math of Qi with Three Desks

Qi Qi is a female mathematician with a slim body that harbors enormous dreams and energy. Qi is now a tenured Associate Professor at the Gaoling School of Artificial Intelligence, Renmin University of China. She obtained her Ph.D. degree from the Department of Management Science and Engineering, Stanford University in 2012 before beginning her career. Her publications have appeared in Operations Research, Mathematics of Operations Research, Algorithmica, and so on. Qi's research interests lie generally in the areas of game theory and operations research, specifically in mechanism and auction design, revenue, and social welfare optimization. According to Qi, “Every person is born with an innate desire to change certain negative aspects of the world, and I hope for a fairer distribution of social resources and an enhanced level of efficiency built upon this foundation.”

There are three important desks in Qi’s life.

The first desk is a dinner table. Another identity for Qi, apart from being a mathematician, is that of a mother of four children. The large desk in her home is an important place for learning, parent-child interaction, and companionship, where the family enjoys happy times and encouragement from each other. Since having children, Qi, who usually ends her busy and demanding workday at 9 pm, has seldom had time to accompany her children during workdays. However, on weekends, no matter how urgent the task, Qi takes a whole day to play with her children like a friend, tutoring them in their homework and expanding their knowledge in mathematics.

The second desk was Qi's office desk. From 2008 to 2012, while Qi was studying Operations Research at Stanford, her mentor was Ye Yinyu. He is a tenured professor in the Department of Management Science and Engineering at Stanford and the only Chinese recipient of the Von Neumann Theory Prize. Ye's mentor was G.B. Dantzig, a founder of Operations Research and known as the father of Linear Programming. One day, while studying in the office assigned by Stanford, Qi stumbled upon G.B. Dantzig's name engraved on her desk, which made her realize that this was where he had worked and deeply motivated her. It was then that she decided to pass on the knowledge she had learned from the masters to her students.

10 years ago, in 2012, after graduating with a Ph.D. from Stanford, Qi returned to the city where she studied for her undergraduate degree, Hong Kong, and became an Assistant Professor of Industrial Engineering and Decision Analytics at the Hong Kong University of Science and Technology. A Shanghainese, Qi had thought the housing situation in her hometown was the tensest in China until she arrived in Hong Kong. The low-income people in Hong Kong living in public housing have an unsightly life, and Qi hoped to change the status quo by using her mathematical knowledge in operations and statistics combined with technology and other means. The poor living conditions of the lower-class people led Qi to embark on the path of researching and designing a more equitable public housing system. She and her team members consider the problem of allocating a set of homogeneous resources among multiple strategic players to balance efficiency and equality from a game-theoretic perspective.

Besides research, Qi's career is mainly focused on teaching. “I believe that my students and I have always had a mutually beneficial relationship, where we help each other and achieve our goals together,” she said. As a graduate supervisor at Hong Kong University of Science and Technology, Qi helped many students with their research. At that time, Qi often discussed various mathematical problems and troubles in their life with students at her office desk. The desk in the research institute not only carries profound knowledge but also the dreams of researchers.

The desk of study and work as a mathematician is vital to Qi's everyday life. Qi has worked at desks in many places, such as the desks at the Hong Kong University of Science and Technology, Stanford University, and Gaoling School of Artificial Intelligence. These desks have generated many of Qi's new ideas and achievements, which also give Qi the motivation and enthusiasm to move forward.

Last but not least, the third desk explains how she balances work and life well in the family. "Both family and work are essential, and I can obtain happiness from both aspects," as Qi said, "And I believe they are not fundamentally conflicting, which is what I learned from my father when I was a child."

Qi's father was an accountant and worked hard when Qi was a little girl. He had to handle many accounts every day and worked until midnight. Qi sat at the desk next to her father every night. After finishing her homework, she would do math problems to accompany her father, feeling happy and fulfilled. Her dad was a role model for little Qi then, who planted the seed of learning mathematics in her heart. More importantly, he let Qi know that a heavy workload is not an excuse for ignoring family. The memory of her father's desk always lingers in Qi's mind, inspiring her to pursue a career as a mathematician and have a family full of happiness.

Qi's life is made up of three desks thus far. These desks are not merely repositories of mathematical knowledge but also represent her love for family, dedication to math, and inspiration from her father. The desks have played an indelible role in Qi's journey of mathematics, witnessing the growth and transformation of Qi and many others who love math.