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Scaling Mountains, Then Moving Them

Sam Shen overcame poverty, but he hasn't forgotten the needs of China's rural communities.

Professor Sam Shen with students from his climate change class. Photo and video: Ernesto Gonzalez

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***By* Coleen L. Geraghty**

His family nickname was starvation kid, and his most treasured toy was a simple rubber ball.

Though Sam Shen grew up in rural poverty in the years following the Great Chinese Famine, he knew he was one of the lucky ones.

Yes, he often craved a second bowl of rice at mealtime, but his parents' careful planning meant the family never went without food.

Yes, he hiked three hours to town every week with a heavy load of firewood to sell, but Shen's father allowed him to keep the profits to buy school books and supplies.

"The only time I felt poor was in town," Shen recalled. "There was a great disparity between rural and urban living. Only city people could hold government jobs, and I could see that their living conditions were much better than ours."

An early acquaintance from SDSU

Young Sam (his given name is Shanpu) inherited his father's intelligence and high regard for education. He was one of only three village boys to finish high school and the only student in his grade to attend college.

At Nanjing University of Science and Technology, he met American academic Hung Ta Ho, a guest professor in mathematics from San Diego State University. Their encounter foreshadowed a pivotal event in Shen's life.

Twenty four years later, he would leave his position as McCalla Professor of

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Mathematical and Statistical Sciences at the University of Alberta, Canada to become chair of SDSU's Department of Mathematics and Statistics.

"Mathematicians want to be relevant"

Shen's research expertise resides at the intersection of natural science and applied mathematics. He analyzes climate data and calculates the range of uncertainty in assessments of past global climate change and in projections of future climate.

"My research papers are full of errors," Shen chuckled before turning serious. "Mathematicians," he said, "want to be relevant to the future of the planet, and climate mathematics is a large emerging area of study. I am fortunate to be working in this field for many years."

As early as 2001, a theory of climate change uncertainty developed by Shen and collaborators was incorporated into global warming assessments published by the Intergovernmental Panel on Climate Change, the leading international organization of its kind and winner of the 2007 Nobel Peace Prize.

Quantifying the uncertainty of climate change predictions is crucial to decision-makers at the regional and national levels, said Linda Mearns, Ph.D., a senior scientist and director at the National Center for Atmospheric Research.

"If you are a water resource manager making plans for the next 50 years, it's important to understand the certainty of climate change predictions. Your decisions will be different if there is an 80 percent chance of an occurrence, such as severe drought, versus a 20 percent chance," Mearns said.

"Moreover, climate models indicating a great deal of uncertainty are guideposts to the particular fields of climate research that need further investment."

A country of riches

In 1982, the biggest uncertainty facing Shen was where to attend graduate school. Recruited by several U.S. universities, he accepted an offer from the University of Wisconsin, Madison.

Shen can still recall his excitement during the journey from China to a new life.

"As a child, I read Chinese news reports about poverty in America, but I did not experience that. I wrote to my parents that I could eat meat every day; chicken was 39 cents for a pound and celery was 19 cents. I enjoyed the hot water shower and the telephone in the room.

"I was earning 20 times as much as my peers in China. Life was good and the study was so interesting. In the library, I found all kinds of math and physics books and many books about China."

Moving mountains for rural education

Shen's academic success in North America anchored him to a life outside his native country. While teaching in Canada, he met and married Snow and the couple had two sons, Jackson and Edison. But Shen never cut ties with China or forgot about the villagers whose lives weren't as fortunate as his.

In 2001, he was honored as a Well-known Overseas Chinese Scholar and asked to take part in a government-appointed committee guiding China's development of science and technology education. Committee members met high ranking officials, including China's vice premier and the president of the Chinese Academy of Sciences.

Building on those acquaintances, Shen and other overseas Chinese academics successfully lobbied the government to invest billions in rural education—the equivalent of $50 billion from 2006 to 2011 and a commitment to add another $30 billion annually in the coming years. Shen personally purchased new desks and chairs for the one-room schoolhouse in his native village.

"More than 800 million people live in China's rural areas, and a quarter of them still live in poverty," Shen said. "That is a huge amount of human potential wasted."

Regional and global impacts

San Diego State students benefit directly from Shen's close ties to China. He leads the SDSU-Xiamen University collaborative, a program unique in bringing together U.S. and Chinese students to study climate change and sustainability issues and their impact on infectious disease.

Each summer since 2012, Shen has taken SDSU students to Xiamen, where they meet with Chinese students and researchers for several weeks of intensive academic and cultural interchange. He also hosts Chinese academics and students who visit San Diego.

"Chinese scientists and tourists all envy San Diego's fresh air and beautiful sky when they visit SDSU because China's cities are suffering serious air pollution after decades of high-rate economic growth," Shen said. "Recently, the Chinese government has dramatically increased its funding in climate and environmental research."

As co-director of SDSU's new Center for Climate and Sustainability Studies, Shen will be a key player in developing the center into a resource for predicting the global and regional impacts of climate change and educating policymakers, both in San Diego and internationally.

Given Shen's high-level contacts, SDSU researchers may become more involved in collaborations with China to address serious climate change issues in the world's most populous country.

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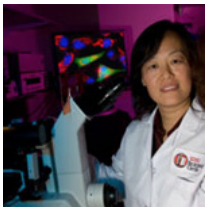

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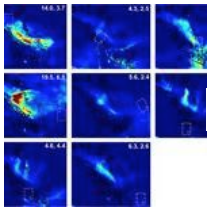

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