Interview with Prof. Yuan Tseh Lee, Academia Sinica

It was a sunny day in the early afternoon of September 22, 2014. I visited Prof. Lee at his office in the modern, high-rise building of the Genomic Research Center. Through the large windows of the spacious office, sitting over high-quality Oolong tea, I could enjoy the magnificent view of the Academia Sinica campus.

PROFESSOR LEE, THE world knows much about your scientific achievements, particularly after winning the 1986 Nobel Prize in Chemistry with Dudley Herschbach and John Polanyi. Most chemists know about your work on the use of advanced chemical kinetics and crossed molecular beams to investigate and manipulate the behavior of chemical reactions. Since many youngsters, particularly in Asia, take you as a role model, I wish to focus on the very beginning of your life journey and talk about your childhood. If these Asian kids could understand what has attracted you to science, we may gain new generations of excellent scientists. My first question is, how early in your life has science triggered your curiosity?

I was born in Hsinchu in 1936 and started my elementary school during WWII before the American Airforce started bombing Taiwan daily. That experience contributed much to my resilience. To avoid the American bombing of Hsinchu, my mother, myself, younger brother, and sister ran away to the mountains and stayed there as refugees for two years. That period in the mountains was the happiest time of my life. I learned how to live with the farmers, working very hard to survive without electricity and running water. I didn't go to school in those two years. I am number 3 of nine siblings, five brothers and four sisters. My older brothers and my father remained in the city because the Japanese authorities did not allow them to go to the mountains. They had to help as firefighters when needed and do other services. Much of the time, they lived in a shelter. Life was not easy in the mountains. I was seven years old at that time, and my elder sister, who was nine, had to carry the water from the bottom of the hill up several trips every day and helped the farmers planting, fishing, etc. It was a wonderful time for me, and I remember the change of seasons with birds nesting and us catching eggs, and I was puzzled by the wonders of nature, things that young children these days don't have a chance to experience.

When and why did you consider becoming a scientist?

When I lived in the mountains during the extensive US bombing, the US Airforce didn't know that the Japanese didn't have radar systems, so they always distributed tin foil
flakes, and we, as kids, used to collect boxes of tin foil. I was asking myself when it was safe for me to go out and collect the tin foil. I learned that because of the principle of conservation of momentum, when the plane is already above you, it is safe, and the bombs cannot reach you. Also, the bombs technology attracted me to learn chemistry.

I can say that war technology stirred in me much interest, and already in Junior school, I decided to become a scientist. My science teacher was impressed by me and told me, “you are hopeful.” Already in 5th grade, I was reading many things. I remember one cartoon that impressed me very much: a little sheep goes to a chemistry lab, talking to a chemist wearing a lab coat, asking, “can you change my wool into nylon?” I was impressed because it demonstrated that scientists could make artificial things better than those existing in nature. After WWII, nylon stockings became so popular among women, symbolizing the triumph of science.

When I finished 5th grade, I read a book on how the Soviet Union, under a 5-year plan, changed a very backward agricultural society into an advanced industrial society, highlighting the benefits of science and technology. When I was in 6th grade, my mother gave me a red envelope with some money on the Chinese Lunar new year, as most other Chinese kids received. My brother went to the bookstore to buy books with this money, and I went with him. There I found magazines for elementary school, published in Shanghai. I read an article named “blue carpet,” describing Russia’s social revolution, describing how a slave on the farm became a master of his land. I was so excited that people could change society if they worked hard, which gave me much hope that our society could be improved. In high school, when I read the biography of Marie Curie, written by her daughter, I realized that a scientist’s life could be beautiful and exciting and full of discoveries, so I wanted to become a scientist.

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Brain drain has been a notoriously known problem in Taiwan. Are you trying to remedy this problem?

It has not only been a Taiwanese issue but an Asian problem. In the 1960s and 70s, we suffered a significant brain drain. Many young people, including myself, went to America and stayed there. But now, during the last two decades, many established scientists, including members of the National Academy of Sciences, have returned to Taiwan. I prefer not to use the term brain drain because scientists need to go to other countries to complement their education. A more appropriate term would be brain circulation. Young people go out to learn something and get new experience and then come back.

As Taiwan's situation keeps improving, more and more students like to stay at home rather than abroad. We still support them with scholarships and send them out to foreign countries because they need to see the world before developing their independent career. We can see many Asian scholars returning to their native countries and make a real difference by boosting their development. It is no longer a one-way brain drain, but rather brain circulation.

Did you ever fulfill your desire to make the world a better place?

I think I was lucky to be able to do some good things, at least for my own country.
China. I have established several new organizations that support education and research activities, etc. In general, I have done everything I could to revamp the Taiwanese education system and to enhance creativity and innovation.

Did you manage to influence other parts of the world as well?

My goal of working with idealistic people to make the world a better place stayed unchanged over the years. I have always been interested in higher education’s direction and responsibilities, the development of creative scientists in Asia, the future of humankind, the futility of war, and environmental challenges, such as global warming. We all live in a global village, and we need to join forces to meet global challenges. To advance these ideas, I served on the International Council for Science (ICS), first as President-elect and (2008-2011) and then as President (2011-2014). I also served as President of the Tan Kah Kee International Society, a significant foundation based in Singapore, dedicated to promoting education as a means of advancing democracy and development. In many of my public lectures, I try to raise public awareness of environmental issues. I think that the greatest danger to humanity is climate change, which is even more alarming than a nuclear war. For the first time, human civilization can change the environment to the point where it can no longer support life. Since we are facing a global problem, neither a single country nor scientists can solve it alone. Suppose we learn to connect knowledge to action, establish better international institutions, and coordinate all global efforts. In that case, we may save the world from global warming before the middle of this century.

I am happy to realize that both of us share optimistic views concerning the future of science and development in Asia. Thank you very much for sharing your experience and opinions with the readers of AsiaChem.

EPILOGUE: THIS INTERVIEW took place in September 2014. Now, six years later, I reminded Prof. Lee of that interview. After looking at it, he responded, “Although almost six years passed, the content is still fresh in my mind. I would not answer any of your questions differently. I will be delighted to see this article published in AsiaChem and would like to express my admiration for taking up such a major responsibility. I do believe that your efforts will strongly impact students in Asia.”