

Career VIII. A Personal Story

Work brings a sense of self-worth and possibly immense personal satisfaction. Education not only makes certain types of work accessible, but it also allows one to see the world differently. Therefore, in addition to providing the possibility of making a living, education and work are important elements - albeit not exclusively - of citizenship and agency. I want to briefly share my story of a life in science and engineering. It is a story of conscious decisions, chance and circumstance.

I was born to an Iranian family who valued education. I think my father had imagined me as a university professor early in my life, even before he knew what might interest me or where I could develop any talents. His vision certainly opened some doors while closing others. Moreover, engineering and science were highly respected in the middle-class Iranian society, and having some facilities in math and science, it was a rational area of future studies for me.

But what specifically ignited my interest in physics were two books by George Gamov. Gamov, a citizen of the Soviet Union at first and then of the United States, was a premier physicist of his time. Through several books on nuclear and atomic theory, he intended to popularize science. At least two of those books, including "One, Two, Three...Infinity" and "Thirty Years That Shook Physics: The Story of Quantum Theory," were translated into Persian (my mother tongue). Having read these books in mid-high school years – while not necessarily having understood everything - led me to imagine myself as a nuclear physicist.

Upon finishing high school, with a sense of adventure and a desire for new experiences, and having parents who at great emotional and financial sacrifice supported my imagination, I came to the U.S. to study and to immerse myself in a new milieu. I started as a Physics student but soon realized that the more applied field of engineering was better suited to my person.

In 1979, as I was finishing my Bachelor of Science in Nuclear Engineering, the worst nuclear accident in US history, the Three Mile Island reactor failure, happened. Having realized the catastrophic possibilities of nuclear power, for graduate work I switched to Materials Science and Engineering and focused on corrosion of metals.

With the completion of a M.S. in that field, two things again changed the course of my studies: The tragic passing of my young advisor, and a developing interest in how atoms behave on the very outer surfaces of materials, led me to the field of Surface Science, where I completed both a PhD and post-doctoral work. Through the introduction of a former student who was then a scientist at PPG Industries, I was invited for an interview at PPG's Glass Research and Development Center, and that led to my next 33 years of work at PPG.

Therefore, a combination of conscious decisions, circumstance and chance led me to a life that I had not planned. I was lucky and also worked hard at it, but I do not believe

Published in the Penn-Franklin News on July 3, 2023.

that any one alone would have allowed me to have the rewarding career that gave me both personal satisfaction and the possibility to support my family.

In my early years in industry, I worked on technical problems in the laboratory and in the factory to invent and introduce new products. In later years, I assumed successive management responsibilities for science and technology, where I found immense satisfaction in working with other scientists and engineers, particularly the young people that we hired into our teams.

Thus went a life of one engineer after reading two very inspiring books by world renowned physicist George Gamov. It attests to the power of reading!

Mehran Arbab

PPG Collegium Colleague