

Inside Story

Circles of light: a physicist's tale

Thinker or artisan?

Lalit Sehgal on the link between his career in physics and a tailor he saw long ago in Lahore.



When I was four years old, my grandfather, who was a respected citizen of Lahore, came to our home in his horse-drawn carriage to take me along on a drive through the city. He was known to

be a person of temper, so I decided not to say or do anything that might risk his ire. The drive proceeded in complete silence, but I was aware that he was observing me intently. At the end, when we returned to his spacious house, he announced to the whole family: "This young man is going to be a philosopher."

There were peals of laughter from all sides. Not knowing what the word "philosopher" meant, I hung my head in shame. A relative, seeing me crestfallen, took me aside and explained: "A philosopher is someone who thinks a lot. Your grandfather probably noticed that you were absorbed in your own thoughts." "But why did they laugh?" I asked. She said: "People assume that a person who spends too much time thinking, instead of doing something practical, will never earn enough to support himself." I had received my first lesson of life. Too much thinking is not good, and is likely to leave you poor.

Some days later, I accompanied my parents to Anarkali, a popular shopping area and meeting point for Lahore residents, after sundown. I happened to be standing next to a tailor's shop. A man seated in the doorway was working assiduously with needle and coloured thread, doing embroidery, and between stitches his hand executed a circular arc. The thimble that he wore flashed during each circular movement, reflecting the light of a lamp in the porch. As dusk turned to darkness, the tailor's face and body receded into the shadows. The only sign of his presence was the periodic flash of his



Lalit Sehgal. (Image credit: Anand Sehgal.)

thimble. The flashes appeared to merge into a circle of light, suspended in air against the dark background. It was a beautiful sight.

When I next visited my grandfather's house, I hastened to tell everyone that I had decided on my future occupation: I would be a tailor. To my surprise the statement evoked as much hilarity as on the previous occasion. Somebody remarked that a tailor's job was that of a "Karigar" (a craftsman or artisan), who worked with his hands and did not have much education, and that I should be aspiring to something higher. I protested that I had seen a tailor doing embroidery and found his work interesting. In reply, someone cautioned me that a tailor did not earn much money. It began to appear that regardless of whether I chose to be a thinker or an artisan, my future would be one of penury.

Fortunately, my parents gave me freedom to find my own way in life. I studied physics and entered a career of research and teaching. Today, in the tranquillity of retirement, I find myself recalling that childhood encounter in my grandfather's house 70 years ago. My grandfather had prophesied that I would be a philosopher. He was not far off the mark. My PhD certificate says "...Doctor of Philosophy in the field of Physics...".

My relatives had expressed apprehension that by choosing to be a thinker or artisan, I would end up in a job that was low in esteem as well as in income. It turned out that the field I chose was elementary-particle phenomenology. It allowed me to combine my propensity for thinking with the more prosaic task of analysing data and

performing calculations using the theoretical tools of particle physics. In this respect, my occupation combined the traits of a thinker with those of an artisan.

Did the work bring me fame and fortune? A modicum of recognition, perhaps, but certainly no great wealth. The main reward was the joy of working with scientists, and sharing in the exhilaration of search and discovery. Was the work I did held in esteem? Here I have to be guarded in my reply. The field of elementary-particle physics tends to divide itself into groups with varying ideas about the important issues, priorities and ultimate goals. To put it crassly, some people believe that their task is to try to read the mind of God, who is a thinker. This group is convinced that the truth will be found in mathematical equations. Others believe that God is an artisan, whose blueprint will be discovered in the careful observation of the phenomena of nature. The two groups regard each other with polite tolerance, at best, and studied indifference, at worst. To the best of my judgement, the people I care for did appreciate my work.

Finally, I return to the "circle of light" that captivated me at the tailor's shop. Years later, I had a similar sense of awe when, looking down into a valley after a shower of rain, I saw a magnificent set of rainbows, both primary and secondary, against a clear blue sky. At that time I had learned enough physics to know that a rainbow was caused by the refraction and reflection of light in raindrops. A similar phenomenon that impressed me, one winter night, was a ring around the Moon, which, I learned later, was caused by ice crystals in the upper atmosphere. And finally, once I was immersed in the fast-moving world of particle physics, an image that never failed to enthral me was of the rings of light created by charged particles in a Cherenkov detector, such as in the Super-Kamiokande experiment.

As Richard Feynman once remarked, the fact that a mysterious phenomenon can be explained in physical terms does not take away from its beauty and allure. Even today, the sight of a rainbow brings to my mind an imaginary weaver, weaving a pattern with coloured threads, while the rays of the sun dance off the thimble on his moving hand.

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