

S. Chandrasekhar: A personal portrait

I had the good fortune of knowing Professor Chandrasekhar—known to his students and colleagues simply as 'Chandra'—for 24 years. Throughout this period, he was primarily interested in general relativity and, since this is the field in which I specialize, I came to know him quite well. The President of the Indian Physics Association therefore asked me to write about my own impressions and memories. I thought this was an excellent suggestion because, while much has been written about Chandra's scientific work and the impact it has had on the Science of this century, not enough is known about Chandra as a person. In spite of Wali's insightful biography, to most Indian physicists, Chandra remains somewhat distant, shrouded in mysteries. I hope personal accounts such as this will help dispel some of the mystery and provide a fuller portrait of Chandra's rich personality.

I first met Chandra when I arrived at the University of Chicago as a green graduate student in 1971. He had just turned sixty. I had done my undergraduate work in India and to me—as to most other Indian students in science—Chandra's stature was god-like. We had heard of the innumerable discoveries he had made whose meaning and scope we understood only in the vaguest terms. But there was a feeling of awe and admiration and a conviction that for a single person to accomplish all this, he had to be super-human. And so, I was very surprised when I first met him. Yes, he did have that pristine air about him, and yes, everything he did—the way he dressed, the way he sat in seminars, even the hard-backed chairs he chose to sit on—everything had an aura about it that set him apart. One immediately sensed a refined, dignified and austere personality, just of the type one would expect of a legendary figure like him. Yet, when it came to science, there was unexpected openness. He treated us, students in then newly formed relativity group at Chicago, as if we were his colleagues, his equals. He would come to all seminars, including the ones given by students. He would ask us technical questions with genuine

interest. When discussions began, he seemed to become genuinely young, almost one of us. I still remember the smile that would light up his face in the middle of a talk when he heard a beautiful result. Sometimes, when we had cracked a hard problem, something that he found truly satisfying, he would tell us about it. The joy he experienced was so manifest and so contagious! His active interest in the progress made by students and post-docs is illustrated in the following incident. Once, Basilis Xanthopoulos—a student in the group—and I solved a problem on permissible symmetries of isolated systems in general relativity. It was not a particularly difficult problem and it took us only a week. Chandra stayed after the seminar where results were presented, and asked us: 'How does it feel to solve a problem so quickly?' He was genuinely interested and spent quite some time with us. I could hardly believe that someone of his stature, who had worked on infinitely more difficult and central problems would be so interested! At such moments, he did not seem god-like, high above us. He became one of us. There was direct communication.

Chandra was a master story teller; I have yet to encounter his equal. He had such a fantastic memory for dates and details that in the anecdotes he recounted, everything became alive. And his anecdotes ranged from incidents that took place in the lofty halls of the Trinity College in Cambridge to his small cabin in the ship he took across the North sea when he went to Russia. He would recount the events as if they had happened yesterday. We would later shake our heads in disbelief. For, here was Chandra telling us about a storm he encountered during the North sea passage in 1934, or his interesting meetings with the then President of the University of Chicago in 1946, with such clarity and in such detail that we could not have matched in describing an event that took place in our own lives just a couple of years before!

I still vividly recall the first time that I heard him tell a story. The students and post-docs in the relativity group had organized a pot-luck dinner. Chandra and his wife Lalitha came with a delicious vegetarian casserole. When it came to coffee time, there was some unease about

how the event was going to end. Do we just say good-bye and leave? Students had planned the menu well but had not thought of anything specific as an after-dinner activity. So, there was some unease. Chandra got up spontaneously and told us some wonderful ghost stories—one, told to him by Dirac! They were short, dry and crisp and we all gasped when the punch line came and then laughed. Then other people got up to tell other stories and the evening ended in a relaxed and friendly mood.

It turned out that, although we both worked in general relativity, the specific problems I chose were quite different both in style and detail from the ones Chandra was primarily interested in. Yet, Chandra was always generous with his time for students like me. After I left Chicago, I saw him about once a year and each meeting lasted for several hours. I listened to Chandra with full attention. He had so many anecdotes, and ideas and comments on a wide variety of topics from each of which I could learn so much. The first few times, what he said sounded very intriguing and interesting but it did not really sink in. One of these early conversations took place after he had given his famous Ryerson lecture: Shakespeare, Newton, and Beethoven, or patterns of creativity. During this conversation, he was talking about why it is that in the arts and literature, the quality of work improves with age and experience while in science, generally, it does not. He felt that we often do science in isolation, focus narrowly on our immediate goals and that we are not sufficiently broad in our interests and pursuits. He said he thought one would do better science if one read Shakespeare, particularly his penultimate play, *The Tempest*. I had read the play as a teenager and could not see Chandra's point. So, I resolved to go back and re-read it. This I did—once and then again a second time. I still did not see the point! I could not understand how it would make my science richer. So, the next time we met, I told him what had happened. He merely said: 'Oh really?' and smiled.

But then as years passed, I began to understand more. In the middle of doing something quite unrelated—perhaps giving a seminar—I would suddenly recall

something that Chandra had said and understand it for the first time. Invariably, I would perceive the depth of his remark and its multi-layered meaning. And then, as years passed, slowly I realized how close all this was to what we generally call scriptures. His remarks were 'wise' in the *true* meaning of the word. One often hears that the scriptures have a deep meaning and the deeper one looks, richer and multi-faceted they seem. I have not had this experience with any of the religious texts. The closest I have come is with Chandra's remarks. Again and again, I thought I understood what he meant only to discover another, deeper layer later. And there remain great many things that I still do not understand even 'to first order', so to say. I have still to appreciate that remark about the *The Tempest* for example. But I have not given up. One day, it may suddenly become clear!

As years passed by, I looked forward to these meetings with Chandra with ever greater anticipation. After each of these meetings, I felt elated, inspired, ennobled. Sometimes, the conversation would go on till what I thought were late hours, for I knew that he was an early riser. But as the hours passed, Chandra's voice would often become brighter, his eyes shinier. It was just fascinating to listen to him and to watch him. When the last of these long conversations took place, Chandra was deeply involved with Newton's *Principia*. He had one anecdote after another to tell about Newton, about his own experience with *Principia*. He wanted to share his views on what sets great science apart from just good science. His passion for exploring issues, for understanding things deeply, his constant quest, his extremely high standards especially with regard to himself, were all there. It was at the same time very hum-

bling and very inspiring to see Chandra in the role of the 'Man on the ladder'-photograph he kept in his office, which is reproduced and described in the opening pages of Wali's biography. Chandra reached such great heights and yet wanted to climb further, to see greater vistas, to understand things more deeply not because it would elevate him further in the eyes of the others, but simply because that was his nature. I feel so fortunate that not only did someone like Chandra actually exist in flesh and blood during my lifetime but I had the chance to know him and to learn from him.

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