

# Abdus Salam -- Past And Present

by Dr Pervez Hoodbhoy

The News International (Pakistan), 29 January, 1996

*"Dear Abdus, On 29 January, 1996 you will celebrate your 70th birthday and I should like to send to you the best wishes in the name of your European colleagues.....I would like to remember the day when I first met you. It was in December 1956 when you gave a talk at the Rutherford Laboratory about your two-component theory in a colloquium which was chaired by Wolfgang Pauli and when at the end he publicly apologized that he had discouraged you to publish this fundamentally new theory... Apart from your scientific successes, the foundation of ICTP in Trieste was one of the greatest achievements in this century."*

In the above lines Herwig Schopper, President of the European Physical Society, pays tribute to one of the most remarkable men of science of the 20th century, Professor Abdus Salam. In alluding to Salam's unpublished 1956 two-component theory of the neutrino, Schopper reminds us that Salam had narrowly missed credit for a fundamental scientific discovery and for which, instead, two American physicists shared the Nobel Prize in 1958. Had Salam not made an unfortunate error of judgment, he would have had not one but two Nobel Prizes today.

Tragically, the numerous congratulatory messages from the world's prominent scientists might be incomprehensible to the man to whom they have been sent. Now confined to his wheelchair, he is the victim of a mysterious neurological disorder leading to a gradual loss of control over body functions. Visitors who have met him in recent months bring back little good news. Today it is hard to recognize in him the Salam of yesteryears -- enthusiastic, vibrant, bluntly authoritarian, and with a mind sharper than a razor's edge.

The Salam of days gone by was a man visibly possessed by two passions. First, an urge to understand the nature of physical reality using the tools of mathematical physics. Second, the desire to put Pakistan on the high road to prosperity through science.

Salam's first passion brought him fame and recognition. In 1949 this young prodigy, born in a very ordinary lower middle class family in Jhang, earned a first-class degree in physics from Cambridge University in just a year. Then in 1950 he solved an important problem in renormalisation theory and instantly became a minor celebrity. In 1951 he returned to Government College, Lahore, but found to his disappointment

that research was not encouraged, even frowned upon. Without a library or colleagues to talk to, he reluctantly went back to Britain in 1954.

By the early '60s, Salam was already one of the world's top particle physicists with an enviable reputation in this most difficult and fundamental area of science. But Salam was a political animal as well. He skillfully used his growing reputation to push his European and American colleagues into supporting his dream of a major centre for physicists from the developing world. With his unhappy period at Government College at the back of his mind, Salam wanted a place where third world physicists could practise the advanced science of the West without being forced to become part of the brain drain, as he himself had been.

In 1964, supported by the International Atomic Energy Agency, Salam succeeded in setting up the International Centre for Theoretical Physics (ICTP) in Trieste, Italy. Why Italy and not Pakistan? The reason was simple: Pakistan showed no interest, but Italy wanted the centre and was willing to put down a lot of money for it. Today the ICTP is a sprawling complex of buildings regularly visited by scientists engaged in research from over 50 developing countries. There have been over a thousand visits by Pakistani scientists.

Combining administration with research is never simple. But over a period of four decades, Salam won about 20 international awards which, apart from the 1979 Nobel Prize, includes the Hopkins Prize of Cambridge University for the most outstanding contribution to physics in 1957-1958, the Hughes Medal of the Royal Society, the Oppenheimer Memorial Prize, the Adam's Prize, and many others. But more than a winner of prestigious prizes, posterity will record Salam, together with Steven Weinberg, as one of the unifiers of the apparently different fundamental forces which govern the universe.

In recent years, Salam's unified electroweak theory has been elevated to the status of a touchstone. Now generally called the Standard Model of particle physics, it has been tested in dozens of clever experiments and has passed with flying colours in each. Today the search for the "Higgs" particle, predicted by Salam, is considered the number one priority in the world of physics. Billions of dollars continue to be spent on building accelerators with energies high enough to produce this highly elusive particle.

With prizes, awards, seminars and meetings, the world of physics has paid its due to Salam. But what about his country?

Under Ayub Khan, Salam wielded considerable influence. As the chief scientific adviser to the President, he was instrumental in launching a massive training

programme for scientists, in setting up PINSTECH as a high quality research institution, and in creating the space agency SUPARCO. His influence continued, albeit to a lesser extent, in the Yahya and early Bhutto years.

1974 marked the turning point in Salam's life. By a decision of the National Assembly, the Ahmedis were excommunicated from Islam. Salam resigned from his official position as chief scientific adviser in protest. On Bhutto's request, he agreed to help informally. But from then onwards his involvement with the Bhutto government was more symbolic than substantial.

Somewhat paradoxically, Salam enjoyed better relations with General Zia, who received him as a state guest and awarded him the Nishan-i-Imtiaz in 1979. However, Salam was carefully excluded from exercising any real influence over scientific matters. Benazir Bhutto, on the other hand, during her first term as Prime Minister, felt no need to accede to Salam's request for an audience with her. And Nawaz Sharif, at a Government College function, topped it all by reading from a list of college alumni who had achieved distinction and failed to mention the most distinguished one of them all.

Why did the leaders of government in Pakistan choose to drive out the single Pakistani scientist who put this country on the scientific map of the world? The answer is obvious. Our leaders have always acquiesced, and even pandered to, the growth of intolerance in the country. Salam was but an incidental victim; to defend him was considered not worth the political risk.

In 1979, when Salam visited Islamabad at General Zia's invitation, the physics department at Quaid-i-Azam University wanted Salam to give a lecture on his Nobel Prize winning theory. But, because of threats from a student group with a penchant for violence, this invitation was never conveyed to him by the university authorities. There are other examples: a cover story in the weekly Takbeer accused Salam of selling out Pakistan's nuclear secrets. This perverted concoction would have been amusing, rather than simply disgusting, had it not been so laced with crude insults and abuse.

Fearful of being attacked, many admirers of Salam's achievements have chosen to remain silent. Consequently, unlike India which has science institutions named after men like Saha, Raman, Bose and Bhabha, Pakistan does not have any institution named after its one and only great scientist. Nor is his name made known to children through their text-books, or through television and radio, even though the names of far lesser persons are. Had Salam been an Indian, there is little doubt that he would have been in the ranks of his equals.

Prejudices against Salam are not simply a matter of the past. Some months ago the government created a committee which would set up a new centre for physics in Islamabad. Reportedly after a brief internal debate, the committee decided against naming the centre after Salam. No reason was given.

And so it puzzles me why, in spite of all this, Salam remained committed to Pakistan. Was it just plain stubbornness? Or was it that certain beliefs acquired in one's early years remain, no matter what? Whatever the reasons, this commitment was transparent. Salam kept his Pakistani citizenship, spurning British and Italian offers. At his Trieste centre, all Pakistanis -- including staunch anti-Ahmedis -- got preferential treatment and had easier access to the director. Sometimes visitors from other countries resented this. I also think Salam's favouritism was wrong as a matter of principle, but it is a clear indication of his deep attachment to his land of birth.

More importantly, for over a decade, Salam has quietly been supporting needy science students throughout Pakistan with his Nobel Prize money. The money has also been used to purchase scientific equipment for half a dozen Pakistani colleges, and to support an annually awarded prize for scientific research.

Life's long journey, and debilitating illness, made Salam deeply sensitive to estrangement from his country. How much so, I saw from close at a 3 day conference held in Trieste to honour his retirement from Imperial College, London. Professor Ghulam Murtaza and I had been invited from the physics department of Quaid-e-Azam University to attend this veritable feast for the intellect. The world's top physicists deliberated upon startling new clues to the birth of the universe, down to relatively more mundane matters like quarks and superconductivity.

One the third day of the conference, Salam was presented an honorary doctoral degree by the University of Petersburg. The conference hall was full. Flanked on his left by Nobel Prize winners C.N. Yang and J. Schrieffer, and on his right by the rector of the University, Salam listened from his wheelchair but made no attempt to speak. At the end of the formal proceedings, a multitude of people from the international scientific community thronged forward and stood patiently in line to offer congratulations.

As I watched, it was the turn of a nervous young Pakistani visitor to the ICTP. "Sir, I am a student from Pakistan. We are very proud of you..." The rest I was unable to hear clearly. Salam's shoulders shook and tears coursed silently down his face.

A feeling of deep sadness overcame me. Nature has chosen to be cruel to Salam. But nature is to be forgiven because it is blind, both in its gifts and its punishments. Much less easy to forgive is the treatment that we in Pakistan have given to our best.