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Reminiscences of Professor Abdus Salam, His Journey to the Nobel Prize. Aziza Rahman PhD

“No incongruity canst thou see in the creation of the Gracious God. Then look again: Seest thou any flaw? Aye, look again, and yet again, thy sight will only return unto thee confused and fatigued, having seen no incongruity.” (Holy Qur'an 67:4-5)

I have been asked to share some reminiscences of Father, Professor Sir Abdus Salam, and of his journey to the Nobel Prize. Father's journey to the Nobel Prize was so extraordinary, so multifaceted that I certainly cannot do justice to it in this brief time. His academic journey and achievements are very well documented and I'm sure most of you are familiar with them. Today, I will share some memories of growing up with this incredible person as a father, whom we called Abi Jan or Abi for short, and talk about some of his qualities and some facets of his life that contributed to the success of this journey.

The first and probably one of the most important facet was my Father's relationship with his Father, Chaudhry Muhammad Hussain. My Grandfather, Abba Ji, was himself a very remarkable person. He had developed a deep love for Allah and Islam at an early age, and was guided by prayers and true dreams to accept Ahmadiyyat at the hand of Hazrat Khalifatul Masih I (ra) in 1914, when he was only 23 years old.

It was in response to his fervent prayers for a child who would serve Ahmadiyyat, that he was granted the vision in which he was presented with a son who was named Abdus Salam. And later on, in another dream, my Grandfather saw a young boy climbing a very tall tree that disappeared high into the sky and when my Grandfather called him to stop, the child looked down and said smilingly, “Don't worry, Father” and continued climbing until he could not be seen any more.

My Grandfather recognized these dreams to be signs of this child's impending greatness, and acceptance of his prayers. Determined to see their fulfillment, he dedicated himself to nurturing Father's exceptional intelligence, as well as his religious training. It was he who cultivated Father's passion for learning and instilled in him the discipline of hard work, and he was undoubtedly the single greatest influence in Father's life and his greatest support, especially through his prayers. All the so-called coincidences and circumstances that were hugely instrumental in directing Father's path were without doubt connected to Abba ji's prayers. In fact, in his Friday Sermon of November 22, 1996, at the demise of Father, Hazrat Khalifatul Masih IV (rh), while advising those who are seeking awards, said:

“Pray like Dr. Abdus Salam Sahib's Father did for his son. Allah the Almighty accepted the prayers in this way that He then granted him His acceptance and His pleasure. This has been borne out by every moment of Dr. Abdus Salam Sahib's life.”

For his part, Father was completely devoted and obedient to him and followed his guidance implicitly. Even after he had become a Professor, and the recipient of several awards, I

remember how respectfully he would listen to whatever my Grandfather said and he showed the same respect to his mother, Hajrah Begum, daughter of Hafiz Nabi Baksh Sahib, a Sahabi of the Promised Messiah (as). She was a simple pious person who, whenever Father had an important exam or event, would take out her prayer mat and offer nawafil for him.

Sadly, neither one of my grandparents lived long enough to see Father receive the Nobel prize. However, he created the Muhammad and Hajrah Hussain Foundation for needy Pakistani students in their memory and endowed it with the entire monetary award that he received with his Nobel Prize.

The physicist Victor Weisskopf once said:

Human existence is based upon two pillars: Compassion and knowledge. Compassion without knowledge is ineffective; knowledge without compassion is inhuman.

I can surely say that knowledge and compassion, together with his deep faith in God were the basis of Father's life and work. It was his pursuit of knowledge that led him to seek unity in various phenomena in nature for which he was awarded the Nobel Prize; and it was compassion which led him to seek unity in mankind through promoting science in developing nations, which led to his crowning achievement, the creation of the International Centre for Theoretical Physics, ICTP, renamed the Abdus Salam International Centre for Theoretical Physics one year after his death.

Father's quest for knowledge was not limited to physics, his curiosity had no bounds. He was a voracious reader - a vast array of books lined the walls of his room, actually every room in the house including the bathroom; books on science, history, biography, philosophy, medicine, religions, many books on Islam on different sects and history. I thought I would be able to hold my own by studying biochemistry, but he was always a step ahead of me.

He loved buying books, new and old, and it would always be a treat to go with him to his favorite bookshop and buy as many books as we wanted. Actually, before physics his first love was literature; he was well versed in the poetry of Rumi, Faiz Ahmad Faiz and other great writers. He himself was an eloquent speaker and writer.

As you all know, the book that was closest to Father's heart and mind was the Holy Qur'an. He had studied Arabic as a child and in college and was well-versed in the meanings of the Holy Book. He pondered deeply over it, especially those verses pertaining to science, and drew inspiration from them for his work. His lectures and speeches would always contain verses of the Holy Qur'an, such as the verses he quoted in his Nobel Banquet address, which I read in the beginning.

In his 1984 paper 'Islam and Science' he wrote:

"As a scientist, the Qur'an speaks to me in that it emphasizes reflection on the laws of nature, with examples drawn from cosmology, physics, biology and medicine, as signs for all men. Seven hundred and fifty verses of the Qur'an exhort believers to reflect, to make the best use of reason in their search for the ultimate and to make the acquiring of knowledge and scientific comprehension part of the community's life.

Addressing Muslims in particular, he went on to say:

This is the first premise on scientific knowledge with which any fundamentalist thinking in Islam must begin. Add to this the second premise – there is not a single verse in the Qur'an where natural phenomena are described and which contradicts what we know for certain from our discoveries in sciences. Add to this the third premise: in Islamic history, there has been no incident like that of Galileo; persecution unfortunately continues even today over doctrinal differences, but not to my knowledge, directly for scientific beliefs."

He loved to listen to recitation of the Holy Qur'an by Qari Abdul Basit. Once he was asked if he found the same sublimity in music which he found in the theories of physics. He replied, *"I would not say that. But I find the same sublimity in reading or listening to the Qur'an, because there I find, for example, after you have been listening to it for half an hour, you suddenly get captured in it in an elevating way."*

Another essential influence in Father's life was Khilafat. Throughout his life, he sought prayers and guidance from the Khalifa of the time. When he went to Cambridge University on a three-year scholarship after completing his degrees in Mathematics in Lahore, he completed the BA Honors in Maths in two years, and wanted to return to Pakistan to take care of his family. He sought the advice of Hazrat Khalifatul Masih II (ra) regarding this. Huzoor (ra) wrote back with prayers and said:

"In my opinion, it will be cowardly to proceed home abandoning a year's scholarship."

Thereupon, Father took up physics and completed the three-year degree in one year with first class honors, followed by a Ph.D. in theoretical physics, and as they say "the rest is history."

Had he not put his trust in Allah Almighty and followed the advice of Hazrat Khalifatul Masih, who knows if he would have achieved everything he did?

He had a close relationship with Hazrat Khalifatul Masih III (rh) who prayed constantly for his success in realizing the Nobel prize and indeed it was during his Khilafat that he was awarded it. Father and Hazrat Khalifatul Masih IV (rh) spent much time together discussing many topics, both in person and in correspondence. In his message to the Abdus Salam Memorial Meeting at ICTP in 1997, Huzoor (rh) describing one such meeting wrote:

"It was during that fascinating informal talk that I came to learn of the vastness of Dr Abdus Salam. It was in that unique vastness that his genius lay. Ever since that meeting, we were not really separated again. He continued to seek meetings with me to help him resolve various problems which confronted him from time to time and I never failed to make the best use of such meetings to enhance my personal knowledge."

Father had an incredible capacity for hard work, together with strong resolve and self-discipline, all of which contributed to achieving the Nobel. My grandmother used to tell us that even as a child, Father had his day planned; so many hours for study, so many hours for sleep, so many hours for recreation etc.; and would stick to his routine firmly.

His brain never seemed to switch off and there wasn't anywhere or any time that he wouldn't be working or scribbling some ideas. There is the delightful story of when he had lunch at Buckingham Palace with Queen Elizabeth II and Prince Philip. After her Majesty and the other guests had left, Father went back into the room to ask if he could have the napkin he used because he had written some notes on it. Interestingly, in one of those 'coincidences' I mentioned, it was actually Prince Philip who introduced Abi as a brilliant young Pakistani

scientist to President Ayub Khan of Pakistan on a State visit, who then appointed him as Chief Scientific Advisor.

At home, he would spend hours engrossed in study in his room, which was always kept very warm and filled with the aroma of incense, and with a cassette of Holy Qur'an recitation playing in the background. His routine was to sleep early, around 8.00 or 9.00 pm and get up in the very early hours to pray and work, sustained by a thermos of hot, sweet tea and some snacks that we would place by his bedside before sleeping. Everyone in the house knew not to disturb him during those hours; family and friends would be forewarned not to call in the evenings when he was home.

Father lived by the maxim “time and tide wait for no man.” To him, time was a precious gift and he would not tolerate anything that he considered a waste of time. As television fell into this category, there was no TV in our home through most of our childhood. However, when the first Indo-Pakistan conflict erupted, he was persuaded to rent a TV for a few months for news. I’m embarrassed to admit that when a couple of years later a second conflict erupted, we children cared more about the TV coming back! As adults, of course we appreciated his wisdom, as we all developed an enduring love for books. I shudder to think what he would have thought of smart phones and the time spent or rather ‘wasted’ on social media, though he might have tolerated Google as a source of information.

As I mentioned earlier, Father had great compassion for his fellow beings, both on a personal level and for mankind in general. He was extremely generous and would help anyone who reached out to him, including students, especially Pakistani students, orphans and widows, or any needy person.

Father’s desire to serve humanity was part of his faith, and was expressed not just in encouraging and promoting education in less developed nations in general, but also in urging Muslim nations to reclaim their lost status in learning and science.

When Father returned to Pakistan from Cambridge after getting his doctorate in theoretical physics, he found himself isolated from the world of research as there was no interest or facility for him to continue with his research in Pakistan. This led to making the very difficult decision to leave his beloved country and family, and so in 1953 he returned to Cambridge to continue his career. This experience created and fueled a deep desire to help fellow physicists in developing countries so they wouldn’t have to make the choice that he had been obliged to make himself.

So, in 1960, at the age of 34, he launched this huge undertaking by presenting a proposal for an international center for theoretical physics to the General Conference of the International Atomic Energy Agency. It was certainly not an easy task, nothing like this had existed before, and Father had to fight diplomatic battles to induce the wealthy big countries (USA, USSR, UK, France and some others) to vote in favor of the resolution, and had to mobilize every one of the smaller nations outside the Iron Curtain so that the big ones were defeated by sheer numbers. Finally, after much struggle, the center was instituted in 1964 in Trieste, Italy, a picturesque city and an important port on the edge of the Adriatic Sea.

Having established the Centre, Father then dedicated himself to nurturing and fine-tuning it to become the first-class institution that it now is. He would invite Nobel Laureates and persuade them to come to the Centre to mentor students from underdeveloped areas of Asia, Africa and

South America; who would then return to their countries to continue their work, but with a support network that enabled them to stay connected to the international research community. We often spent our summers in Trieste and even as a non-physicist, it was exciting to have the opportunity to meet some of physics' great minds such as Werner Heisenberg and Father's mentor, Paul Dirac and their families.

At present, more than 5000 scientists from 140 countries visit ICTP every year, with around 60 conferences being held. It has expanded to include Departments of Earth Systems Physics, Quantitative Life Sciences and Science Technology. Alhamdulillah, the Centre continues to fulfill much of Father's dream.

He also founded The World Academy of Sciences (TWAS) for advancement of science in developing countries, which was inaugurated officially in 1985 during a ceremony attended by United Nations Secretary-General Javier Pérez de Cuéllar.

One of Father's gifts was that he could be very persuasive, and he used this quality very effectively, especially during the initial stages of establishing the Centre and for other projects. One of his contemporaries, Professor John Ziman, described him thus:

"Salam's charisma, his power, was a power to persuade. It was an irresistible passion in him that created passion. This was perhaps because one always felt that what was to be done was something worthwhile in itself and not something that he just wanted to do. It was a cause, a true cause."

There were not many people who could say no to Father when he set his mind on something. He was even able to persuade the Nobel officials to allow my sister and myself to bring our very young children to the Nobel Ceremony, the first time in the ceremony's history. The next day, some newspapers ran the headline "Toddlers play at the feet of Nobel Laureates."

Father had to face his share of difficulties and obstacles throughout his journey to the Nobel, but he always showed great resilience and maintained his trust in Allah. In 1956, at age 30, he developed an idea to explain the behavior of neutrinos, the two-component neutrino theory, but was discouraged to publish by Wolfgang Pauli, the father of neutrinos. A few months later, three other researchers came to the same conclusion and took the Nobel Prize. While greatly disappointed, he moved on, having learnt the value of relying on his own judgement rather than someone else's.

Another great disappointment was the Government of Pakistan's refusal to nominate him for the post of Director General of UNESCO in 1986. His nomination would have been supported by England, Italy and several influential nations, including the USA who had pulled out of UNESCO but had intimated rejoining if he was elected; however, his patriotism to his homeland would not permit him to accept another country's nomination.

In spite of this he remained loyal to the country of his birth and he remained committed to the huge task of convincing Islamic countries that the only way that they could lift themselves out of poverty and achieve parity with the West was to raise the standards of science and technology in their countries. He was very proud of and appreciated the Golden Age of Islam, but was always troubled about its decline and the difficulty in trying to revive it. One of his colleagues called this passion "Salam's cosmic anger,"

He referred to this in his speech at the Nobel Banquet, when after reciting verses 4-5 of Surah Al Mulk, he said:

This in effect is, the faith of all physicists; the deeper we seek, the more is our wonder excited, the more our gaze is dazzled. I am saying this, not only to remind those here tonight of this, but also for those in the Third World, who feel they have lost out in the pursuit of scientific knowledge for lack of opportunity and resource.

Once ICTP had been established, Father would spend three weeks of every month in Trieste, and one week in London, as he was still holding his Professorship at Imperial College, London. This, of course, meant a lot of sacrifice, both for him living away on his own for most of the time, and for us and our Mother as we saw very little of him. I would like to pay tribute here to my Mother, an extraordinary person in her own right, whose contribution to her husband's success was tremendous; her unflinching support and sacrifice allowed him to pursue his goals wherever his work took him.

Before ICTP, in spite of his busy workload and frequent trips abroad, Abi Jan always made time to supervise our education. Even our school holidays were always filled with schedules of study and workbooks to be done. He set very high standards and whenever he returned from a trip, we would be called into his room for the "dreaded" check on our grades and progress. Anything less than an 'A' grade would be met with a question, but mostly he would be encouraging and say, "Do your best and leave the rest to Allah."

Sometimes, he would take us on trips to historical places or visits to museums, but true to his nature, even recreation had to have some educational value. Once, to our surprise and delight, he decided to take us to see the film "Lawrence of Arabia". It was the first time we had ever been to a movie theatre. However, at the intermission he decided that enough time had been spent on it and that we should go home. Terribly disappointed, we begged him to let us see the rest. He agreed, but he himself left and waited in the car for us, where we found him deeply engrossed in work. When we got home, we had to write essays about the film's protagonist, T.E. Lawrence, to show what we had learnt.

I cannot end without mentioning another great quality of Father, and indeed of my Mother too, that is their utter humility. In spite of all the honors and successes he achieved, Father never showed any signs of pride. He never thought of himself as a great man, and he never, ever forgot his humble beginnings. He treated everyone the same; be they royalty, high level officials, his fellow scientists, his tailor, the gardener, his drivers, or humble, unlettered persons.

Most of all, he never forgot that all he achieved was due only to the Favor and Grace of God.

Hazrat Khalifatul Masih IV (rh) referred to this quality when he said:

So, in this way he had that humility, that courage, that a person who does not even know the ABC of science, and who had no status in comparison to his knowledge of science; he was discussing these complex issues with him and trying to make him understand things; and when an argument was given to him which should have been accepted in accordance to his faith, he would accept it. So, this too, is a sign of greatness that is humility.

There is so much more to be said, but I hope I have been able to communicate a little of Father's incredible journey and the qualities that allowed him to reach the great heights that he did.

Abdus Salam's academic achievements number over 30 medals and awards for physics and for service to peace, including the Hughes Medal, Atoms for Peace Prize, the Einstein Medal; 275 plus scientific papers; several books, membership in over 45 Science Academies and Societies

worldwide and around 40 honorary degrees and more. In addition to this were his immense humanitarian efforts which brought about change on a global level. It is an astonishing record.

If and when someone may be able to equal this record, only Allah knows. This Abdus Salam's exceptional intellect and genius was without doubt a gift bestowed on him by Allah. But there is no reason to suppose that those who follow cannot become an Abdus Salam, if Allah Almighty wills.

To be an Abdus Salam may not necessarily require the winning of a Nobel Prize and high secular honors, but what it does require is relentless pursuit of knowledge and academic success with the purpose of proving the existence and unity of Allah and of serving humanity, as Hazrat Khalifatul Masih V (aba) has mentioned in his address.

The essential tools needed for this task are a deep faith in Allah, an abiding love for the Holy Qur'an, obedience to Khilafat, constant fervent prayers, a thirst for knowledge and the unwavering determination and diligence to pursue it, and last but certainly not least, a deep-seated desire to help mankind; all the qualities that came together in Abdus Salam, whom I have been truly blessed to call my Father.

In the end, I will share with you his own words, which have not been shared before - an entry in his diary, dated Sunday October 22nd, 1972, which sums up the very essence of who he was. He wrote:

On Friday morning, Bardum, Schieffer and Cooper shared the Nobel Prize for Physics. I prayed to Allah to honor me when I deserve it, so that it shall be a nishan (a sign) to His greatness; a nishan not empty. He will hear.

And indeed, Allah did. Alhamdulillah

May Allah enable all Ahmadi Muslim scientists to follow in Abdus Salam's footsteps and achieve success in their journeys. Ameen.