

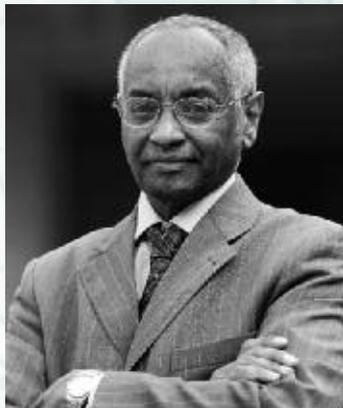
A VOICE FOR SCIENCE IN THE SOUTH

THIRTY YEARS AGO, THE FOUNDING OF TWAS WAS MET WITH UNCERTAINTY AND, IN SOME QUARTERS, SKEPTICISM. BUT FOUNDER ABDUS SALAM HAD A DREAM THAT COULD NOT BE HELD BACK. REFLECTING ON THE ACADEMY'S BIRTH AND EARLY GROWTH, MOHAMED H.A. HASSAN, TWAS'S LONG-TIME EXECUTIVE DIRECTOR, EXPLORES KEY CHALLENGES – AND SUCCESSES – IN THOSE YEARS.

Working as a young mathematician at the University of Khartoum in Sudan in the early 1970s, I certainly knew about Abdus Salam. Virtually every physicist did. As a pre-eminent researcher and an untiring advocate for science, Salam was an iconic figure – the personification of what a scientist could and should be. He was not, however, someone whom I ever thought I would meet.

But that's exactly what happened in 1974, when during a trip to Europe, on behalf of my father, I travelled to Trieste, Italy, to visit the International Centre for Theoretical Physics (ICTP), the renowned physics research and training institute that Salam had created in the early 1960s.

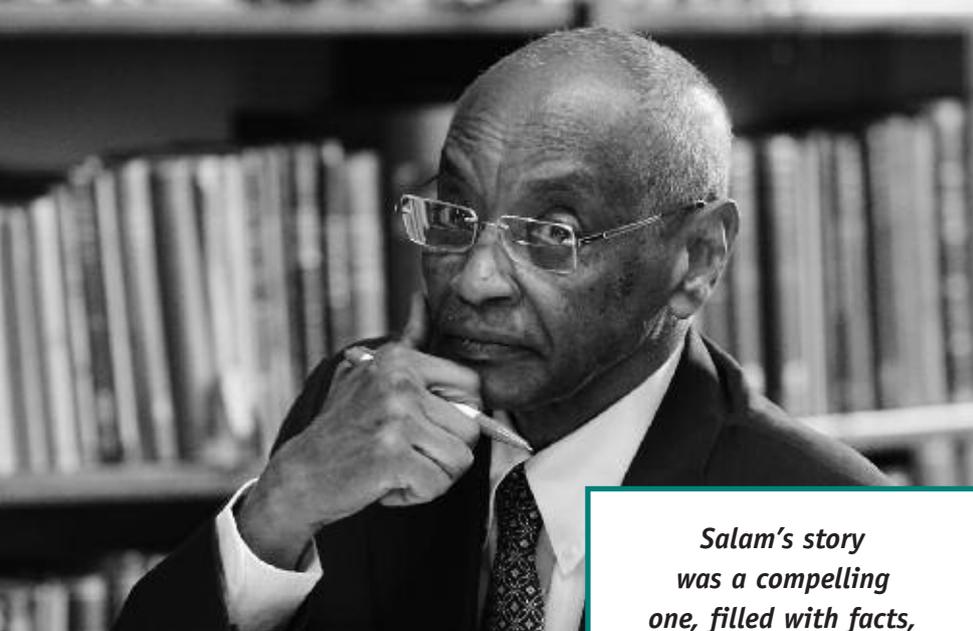
I arrived at the ICTP at about 5:30 in the afternoon.



The staff had left for the day. The campus was virtually empty. I entered the main building, took the staircase to the second floor and turned towards the director's office. The door was ajar. To my surprise, I saw Salam sitting at his desk. He looked up, said hello and motioned for me to come in.

At the time, I was a lecturer of mathematics at the University of Khartoum in Sudan. I had received a doctorate degree from Oxford University in the UK in 1973 and had returned home to begin what I hoped would be a rewarding career as a teacher and researcher. However, like many other young researchers in the developing world, I soon felt a discouraging sense of isolation.

Growing doubts about my future had prompted my trip to Europe. My father was a successful businessman



Mohamed H.A. Hassan in his current role as TWAS treasurer during the TWAS Steering Committee meeting in February 2013.

Salam's story was a compelling one, filled with facts, figures and, most importantly, people.

in Sudan. He had asked me to go to Europe to purchase machinery for his soap factory in Khartoum. I was fortunate because working with my father was always an option if I did not succeed as a university research professor. In my mind, discussions at the ICTP would likely be my best last hope to remain in science.

Salam and I spoke for more than an hour that afternoon. We continued our conversation the next morning. I was astonished by the amount of time that Salam gave me. Surely, I thought, he had more important things to do. I subsequently discovered that his deep concern for others was not only a reflection of the person he was but also one of his greatest attributes. He never forgot the difficulties that he had faced as a young researcher: The professional isolation he experienced in Pakistan, the loneliness he endured in the UK, and the need to choose between his dedication and love for his family and his dedication and love for science.

His ability to weave his own personal narrative – replicated in the experience of others – into a broad tapestry about trends in science in the developing world helps to explain why he was able to succeed on so many levels. His story was a compelling one, filled with facts, figures and, most importantly, people. Despite his enormous intellect, Salam spoke from the heart.

Drawing on his detailed knowledge of university conditions throughout the developing world, Salam said I had two options if I wanted to continue my career in science: I could change my field from plasma physics to high energy physics and transfer to the physics department at the University of Khartoum,

which had retained an excellent reputation in high energy physics, or I could remain a member of the mathematics faculty.

Regardless of the path I chose, Salam strongly suggested that I should apply to be an ICTP Associate, which would enable me to visit the centre on a regular basis.

As an ICTP Associate, I traveled to Trieste several times over the next few years – breaking my isolation at home and introducing me to a larger

network of scientists abroad. Salam's intervention at this critical juncture in my career steered me from my father's business ventures. To Salam's delight (and mine as well), I would not be lost to the business world.

In 1982, I joined several other faculty members in convincing the University of Khartoum to give Salam an honorary degree. This gave me another chance to see and speak with him. While day-to-day activities at the university remained dreary and difficult, my ties to the ICTP gave me a lifeline to the international research community.

It was during Salam's visit to Sudan that he told me about his plans to create an academy for scientists from the developing world. He mentioned that he had presented the idea at a lunchtime gathering of eminent scientists from the South at the Pontifical Academy of Sciences in Rome, Italy, which had taken place the year before.

Salam then surprised me by asking if I would be interested in helping him launch the academy. Without hesitation, I said yes. The truth is that I didn't have an inkling about what I was getting myself into. I barely knew what a science academy was.

A few weeks after Salam had returned to Trieste, he sent me a letter asking if I would come to ICTP for six months to help organize the 'foundation meeting' of the Third World Academy of Science (TWAS) and to begin drafting the organization's mission and statutes. Again, without hesitation, I said yes.

The first order of business was to learn about the mission, purpose and structure of other science academies so that their experience could be applied to our efforts at TWAS. During those early months I spent a great deal of time reading about academies, examining three academies in particular: the Pontifical Academy of Sciences, the UK's Royal Society and the Soviet Union Academy of Sciences.

Each sought to honour and reward scientific excellence. But each differed significantly in how it conducted its business.

Like the Pontifical Academy of Sciences, TWAS would assemble a broad international membership and engage in issues well beyond the conventional roster of in-country concerns that largely characterized national academies. Like the Royal Society, TWAS would be interested in issues related to global progress and would harbour ambitions to gain a presence on the world stage. And, while TWAS had neither the resources nor the intentions to be directly involved in the management of scientific facilities, like the Academy of Sciences of the USSR, it would be concerned about the administration of day-to-day scientific activities, seeking to draw strong links between scientific activities and economic policies.

During TWAS's first years, we all recognized that the future of the Academy depended on quickly grow-

ing its membership beyond the 42 eminent scientists who constituted its inaugural class. We soon discovered, however, that this would not be an easy task. Relatively few world-class scientists worked in the South and those who did were dispersed over an enormous area. Scientists, including those doing excellent work, were often not well-known within their own countries, let alone by scientists elsewhere. Communications in this pre-Internet age were difficult and slow. Interactions among scientists in the developing world were often scarce and sporadic.

Given these obstacles, we devised several inter-related strategies to build the Academy's membership. We asked the founding members to help us identify potential candidates. We reached out to visitors at ICTP who may have known scientists back home who were worthy of consideration. We contacted science academies across the globe, especially the largest and most active science academies in the developing world – in Argentina, Brazil, China and India – for suggestions about potential candidates. We identified eminent scientists in the North with ties to the South.

Our relentless efforts paid off. At the inaugural meeting of TWAS, held in Trieste in 1985, 39 scientists were elected as members, raising the total membership to 92.

TWAS's membership was rapidly increasing. Yet, to illustrate how difficult it was to fill the academy's ranks, it should be noted that, while the majority of the earliest members were born in the developing world, nearly half lived and worked in the North.

During its formative years, the Academy also encountered difficulties in gaining recognition from international organizations. Many advocates for inter-

Left: The ICTP Arab Friends Society presents a plaque to Abdus Salam in 1984; Mohamed Hassan is third from the left. Centre: Founding ceremony of TWAS in 1983 at the University of Trieste; from left: Mohamed Hassan, Antonino Zichichi, Paolo Budinich, Abdus Salam, Paolo Fusaroli. Right: Mohamed Hassan and Abdus Salam in conversation with participants in a workshop on biotechnology and industrial commodities in 1986.



national science did not see the need for an organization like TWAS. Their reasoning was that respected institutions were already in place to speak for international science. Confusion and duplication of effort, they contended, might follow if additional organizations, with largely the same mandates, were created. They also maintained that science was a global enterprise and dividing scientific interests into developed and developing world spheres could jeopardize the universality of the enterprise. And they expressed concerns that an institution dedicated to the interests of scientists in the developing world would have neither the expertise nor resources to abide by the scientific community's dedication to excellence.

Today, TWAS works closely with other international scientific organizations and is widely recognized as a key player in efforts to promote and advance both scientific capacity and scientific excellence in the developing world. However, during those early years, it was not clear – at least to circumspect observers – whether TWAS could shoulder any meaningful responsibilities in the arenas where it intended to operate, particularly responsibilities that were seemingly being shouldered by other organizations.

Looking back, it is clear that scientific issues of critical importance to the South were not being adequately addressed. The problem was not due to willful neglect. Instead it was the consequence of a lack of awareness. International scientific institutions simply did not have a sufficient number of scientists from the developing

world among their membership to ensure that the voices of the South were being heard.

From the Academy's perspective, the issue was how to devise and implement a series of concrete programmes to address issues of critical importance to scientists in the developing world. Contrary to the view of wary critics, the Academy did not have to thread a needle within a dense fabric of competing and overlapping programmes. Instead, it had to envision a different pattern of support for a constituency that others had failed to acknowledge.

To advance this goal, TWAS organized international conferences that were meant, among other things, to promote South-South cooperation at a time when meetings and activities focusing exclusively on the concerns of scientists from the developing world rarely took place. The Academy also created an awards programme for scientific excellence in the South that was designed to recognize scientists who had received virtually no recognition for their accomplishments. And it sponsored research grants for scientists from the South, particularly young scientists, who were hard pressed to find funds.

Trifling support for science on the part of national governments and the absence of private foundations in the South left scientists in most developing countries desperate for money to sponsor their research. The TWAS research programme, supported with funds from the Italian government and later the Swedish International Development Cooperation Agency (sida), has been the

To mark its 30th anniversary, TWAS is assembling a series of oral histories from some of its most influential leaders and members. Their recollections will be published in a book next year.

Left: Abdus Salam and Mohamed H.A. Hassan in the early 1980s. Right: Abdus Salam with Chinese president Li Xiannian (left) at the opening ceremony of TWAS's Second General Conference in Beijing in 1987.



Abdus Salam welcomes UN secretary general Javier Pérez de Cuéllar to TWAS's inaugural conference on 'South-South and South-North Cooperation in Sciences' in Trieste, Italy, in 1985.



Today, South-South collaboration is a defining element in a new era of global science.

primary plank in the Academy's efforts to build scientific capacity. No other programme more clearly represents what Salam hoped to accomplish through TWAS and no other programme more clearly conveys the success it has achieved.

None of the Academy's early initiatives, which have come to define TWAS over time, could be found at other international scientific organizations. In this sense, TWAS was complementing the work of others by serving a constituency that had been largely ignored. In the process, the Academy was helping to build scientific capacity worldwide, a contribution to international science that the global scientific community came to quickly recognize and appreciate.

The Academy was also careful to complement, not duplicate, the work of ICTP, whose long-standing initiatives for scientific capacity provided the template for many TWAS programmes. For example, while ICTP focused its capacity-building efforts in physics, mathematics and related fields, the Academy encompassed the full spectrum of scientific disciplines, including biology, chemistry, environmental science and medical research. Later in its evolution, TWAS opened its membership to social scientists, too.

In a similar vein, ICTP's Training and Research in Italian Laboratories (TRIL) programme brought scientists from the developing world to research institutions in Italy – an effort that proved to be a sterling example of North-South cooperation in science. TWAS, in turn, grafted the TRIL concept onto a programme for South-South cooperation in science by partnering with pre-eminent research institutions in the developing world to sponsor research and training programmes for scientists from countries with lagging scientific capabilities.

Identifying centres of scientific excellence in the South during TWAS's early years posed enormous challenges. Convincing scientists from developing countries

to travel to these institutions for training and collaborative research was even more difficult. In the

1980s, most scientists in the developing world desired to travel to the North for collaboration (a preference that persists to this day, but to a far lesser degree). They neither trusted the level of education and training they would receive in developing-world institutions nor believed that pursuing South-South collaboration in science would enhance their career prospects.

As a consequence, the Academy's initial efforts at South-South cooperation in the 1980s resulted in less than 30 participants annually. Today, the Academy, together with its partnering countries, offer more than 500 South-South research and training opportunities each year. In the 1980s, South-South cooperation was largely an abstraction – or, when viewed from Salam's perspective, a dream. Thirty years later, it is a reality and one of the defining elements of the new paradigm that is emerging in global science.

The progress that has taken place in science in the developing world over the past 30 years is cause for celebration. TWAS should be proud of the contributions it has made to this effort. Yet, as we all know, much remains to be done to ensure that all countries have the scientific capacity that they need to succeed and prosper.

Happy 30th anniversary TWAS, and many more. May the Academy continue its good work in the years ahead, both in service to the developing world and as a tribute to its founding president, Abdus Salam. ■

❖❖❖ **Mohamed H.A. Hassan**, as told to **Daniel Schaffer**, former TWAS public information officer

TWAS Newsletter, Vol. 25 No. 2, 2013