Indian Prime Minister: Science Can Unify the World and Advance Peace

by Ramtanu Maitra

Delivering the inaugural address on Jan. 3 to the 102nd Indian Science Congress at the University of Mumbai, Indian Prime Minister Narendra Modi said he has placed science and technology at the forefront of his diplomatic engagement with other nations, because "a nation's progress and its human development are linked to science and technology."

Identifying science and technology as the key ingredients for India's much-needed economic development, Modi told thousands of research scientists, technologists, and administrators who were assembled at the Congress, and the millions of youth who were listening to a broadcast of his address: "Let me say, for a safe, sustainable, prosperous future for India; or global leadership in a knowledge- -and technology-intensive world, we need to put science, technology, and innovation at the top of national priorities. I am confident that we can do it."

Placing the scientists at the center of India's future, Modi said: "Above all, we must restore the pride and prestige of science and scientists in our nation; revive the romance for science in society; rekindle the love for it in our children; and, encourage our scientists to dream, imagine, and explore."

Modi's association with the scientific community, since he assumed power last May, has been wide-ranging. He was at the ISRO (Indian Space Research Organization) Telemetry Tracking and Command Network (Istrac) on Sept. 24 to witness the insertion of India's Mars Orbiter into the Mars orbit and to congratulate the scientists. In July, he visited India's prime nuclear research center, Bhabha Atomic Research Center (BARC) at Trombay near Mumbai, and had assured the Department of Atomic Energy (DAE) of his full support in the implementation of its ambitious expansion program. During his visit, he urged the DAE scientists to meet the target of tripling India's nuclear power generation capacity, from the current 5,780 MW, by 2023-24.

It was only natural that India's scientific community as well as its citizens, were expecting new directions from the premier in his inaugural speech at the 102nd Science Congress. Modi made clear that he puts India's science and technology at the heart of diplomatic engagement with neighboring nations in particular, and considers it an essential ingredient in his plan to make India one of the world's manufacturing centers.
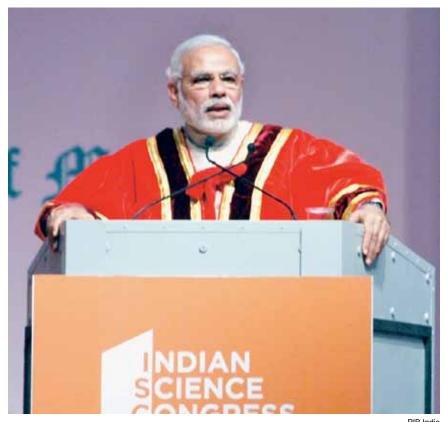
An Old Institution

The Indian Science Congress is an annual event in which the researchers and science- and technology-related policymakers assemble to discuss the progress made, or their visions for the future, in the areas of their work. While for many years, this annual event often turned into a mere a mark on the calendar, the 2015 event was expected to be especially important because of Prime Minister's earlier exultations about science and technology, and the promises that he had made to the hundreds of millions of youth about making India a manufacturing hub, and thus ensuring them a productive and innovative future.

The first Congress took place in 1914 during British Raj days at the Asiatic Society, Kolkata (then known as Calcutta), with Sir Asutosh Mukherjee, the then vice-chancellor of Calcutta University, as president. The organization, a professional body under Department of Science & Technology, Ministry of Science & Technology, Government of India, owed its origin to two British chemists, Prof. J.L. Simonsen and Prof. P.S. MacMahon.

At the 1914 session, 105 scientists from different parts of India and abroad attended, and the papers represented six areas of scientific work: botany, chemistry, ethnography, geology, physics, and zoology. The five-day (Jan. 3-7) 102nd Congress session, whose theme was "Science and Technology for Human Development," saw 12,000 delegates attending the sessions, and thousands of papers presented by the Indian

Prime Minister Modi told the Indian Science Congress in Mumbia Jan. 3 that "a nation's progress and its human development are linked to science and technology," and that India must develop quickly in order to provide a productive future to its hundreds of millions of young people.

researchers and the scientific fraternity from across the globe. A large science exhibition was organized at the nearby Bandra-Kurla Complex, which showcased various science and technology innovations by Indian firms and organizations. ISRO and the Defense Research and Development Organization (DRDO) also participated in this exhibition. In addition, the Government of India mounted a major exhibition on the "Make in India" initiative laid out by Prime Minister Modi last August.

Modi's Theme: Science and Technology To Build India

While every Science Congress has tried to establish a new theme which could be carried forward in the coming days, the 102nd session centered on new developmental initiatives already launched by the Modi Administration. While addressing the scientific community at the session, Modi kept in mind that his principal objective is to lay the foundation for what he proposed in his Aug. 15 Independence Day speech, delivered from the ramparts of Delhi's Red Fort.

On that occasion, he said:

"My dear countrymen, the world has changed. Now India cannot decide its future by remaining isolated and sitting alone in a corner. The economics of the world have changed and, therefore, we will have to act accordingly. Government has taken many decisions recently, made some announcements on the budget, and I call upon the world, and call upon the Indians to tell the world that if we have to provide more and more employment to the youth, we will have to promote the manufacturing sector. If we have to develop a balance between imports and exports, we will have to strengthen the manufacturing sector. If we have to put to use the education, the capability of youth, we will have to go for the manufacturing sector, and for this, Hindustan also will have to lend its full strength; but we also invite world powers.

"Therefore I want to appeal to all the people the world over, from the ramparts of the Red Fort, 'Come, make in India,' 'Come, manufacture in India.' Sell in any country of the world, but manufacture here. We have got skill, talent, discipline, and determination to do something. We want to give the world a favorable opportunity to come here: 'Come, Make in India.' And we will say to the world, from electrical to electronics, 'Come, Make in India'; from automobiles to agricultural value, 'Come, Make in India'; paper or plastic, 'Come, Make in India'; satellite or submarines, "Come, Make in India'; our country is powerful. 'Come, I am giving you an invitation.'"

In the Science Congress speech, Modi praised the successes attained by Indian scientists, mentioning ISRO's great success putting into Mars's orbit the Mangalyaan (Mars orbiter) in September, on the first attempt. He said: "I must congratulate [then-ISRO chairman K.] Radhakrishnan's team—and its accurate prediction of Cyclone Hudhud, which saved thousands

of lives; our nuclear scientists who work for our energy security, and who have also placed India at the Asian forefront in cancer research and treatment. Our achievements give us pride, but they do not blind us to the enormous challenges that we face in India. We are at yet another moment of expectation and excitement, as we were at the birth of independent India."

Broadening India's Quality Manpower

However, Modi is also aware that India's scientific and technological excellence remains primarily confined within a few sectors, and needs to be broadened. Indian scientists have achieved a high level of excellence in the space, nuclear power, agricultural, and medical sciences, and, to a certain extent, in the information technology sector. But, this is still a very thin band on a larger spectrum, and it has prevented India's manufacturing sector from becoming an engine of growth, and participating in what Modi called "another moment of expectation and excitement," i.e., the development of India's ability to bring hundreds of millions of youth into the workforce to realize his "Make in India" campaign. That requires arming the nation's young people with the knowledge and productive skills that will make them innovative. That also means the immediate necessity to set the stage for a large-scale and long-term development of manpower grounded on imparting scientific and technological skill.

This is what he addressed when he pointed out to the audience of the Science Congress that "a nation's progress and its human development are linked to science and technology. In more recent times, China's emergence as the second-biggest global economy is in parallel to its rise to second place in science and technology activities. Science and technology can also remove national barriers, unify the world, and advance peace. It can bring nations, rich and poor, into a shared effort to address global challenges."

He cited India's first Prime Minister, Jawaharlal Nehru (1947-64), who launched India's quest to master nuclear power and space at a time when India, coming out of the 200 years of looting by the British Raj, and with a partitioned subcontinent, was financially weak and virtually isolated from the world. Modi pointed out that it was Nehru who had "placed science and technology at the heart of national development." "Our scientists launched pioneering research and built outstand-

ing institutions with modest resources that continue to serve us well," he added.

He continued: "So, when we speak of science and human development, we cannot divorce it from the questions of political decisions; social choices; and of equity, ethics, and access. Human development has been the larger purpose and the driving force of Indian scientific pursuits. And, science has helped shape modern India."

Building a Future for the Millions of Youth

Addressing India's youth, he said: "But, the dreams we all share for India will depend as much on science and technology as it will on policy and resources, to make our agriculture more resilient and yield more; to develop appropriate and affordable technologies for rural areas; to do more from every drop of water; and, explore the potential of marine resources. To preserve our biodiversity; and keep our environment clean. To improve health care and develop medicines and medical devices that are within the reach of the poorest. To make clean energy affordable and its use more efficient. To use technology to realize our dream of housing and sanitation for all. To find our own solutions to make our cities cleaner and more habitable. To turn waste into wealth and resources for sustainable infrastructure of the future; to use the Internet to improve human development; to make India a leading manufacturing nation and a hub for knowledge- and technology-intensive industries."

This was indeed the crux of his speech. He said his thinking is based on what ancient India taught him. "Human civilization has advanced because of the basic human spirit of inquiry and quest for understanding our universe and world," he said. "It is a search driven by the belief in what our Vedas described as, Satye Sarvam Pratisthanam: 'Everything is established in Truth.'"

That truth, he said, is: "Science and technology have helped reduce poverty and advance prosperity; fight hunger and improve nutrition; conquer diseases, improve health, and give a child a better chance to survive; connect us to our loved ones and the world; spread education and awareness; and, given us clean energy that can make our habitat more sustainable." The other part of that truth, Modi pointed out, is: "Science may be the product of the human brain. But, it is also driven by the compassion of the human heart—the desire to make human life better."