

So the only way is to find a way to negotiate, to try to find a solution before it comes to this. And for this, I think the crucial thing is the change in the Western policies. The Global Majority doesn't want to accept the policy of dominance, of dictate, of sanctions, of interference into internal affairs, of de facto robbery when the national assets are being confiscated voluntarily and unilaterally.

The BRICS Is Open to Cooperation with the West

So it's not Russia and China which are isolated, which I hear often in different Western-sponsored forums, it's rather the Western countries that are isolated. And BRICS, during this summit meeting, has shown its desire to accommodate the West. BRICS is not anti-Western. It's not against the U.S. as a country. It's not against the Western civilization. It's not against Europe. BRICS has open arms to cooperate with these

countries, to include them: BRICS is an inclusive structure. And so it's open to dialogue, it's open to cooperation, but not on the terms of "master and servant," but on equal terms. And that's what all of us should work for.

And, especially, I think that the U.S. is important in this area: The U.S. is a country with a rich history, with great natural resources, technology, finance, a land-rich population. And of course, this country plays a major role in this world, and may be very important for the future of mankind: But on equal terms, on terms of cooperation, with the newly emerging BRICS union, and Global Majority.

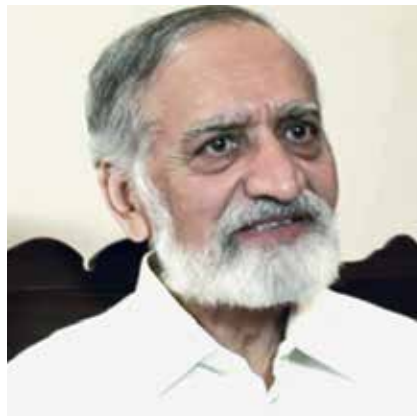
I wish I would see it happen. I've waited for 13 years to see the BRICS to become a real force in international relations. I hope that the next step, when the West would be included and involved into this process, can come sooner than that.

And good luck to everybody. Thank you.

Kiran Karnik

India and Chandrayaan-3: The Global South as Protagonist

This is the edited transcript of the video presentation of Kiran Karnik, delivered to Panel 2, "A New Paradigm in the History of Mankind Is Taking Shape" of the Schiller Institute's Sept. 9, 2023 conference, "Let Us Join Hands with the Global Majority!" Mr. Karnik is the former President of the National Association of Software and Service Companies (NASSCOM) and worked for 20 years at the Indian Space Research Organisation (ISRO). Subheads have been added.



Kiran Karnik

Schiller Institute

where the whole space adventure is going.

A lot of this has been triggered, and particularly recent interest, most certainly in India, but around the world, by in some sense what you might call it, the return to the Moon.

After the heady days of the '60s and '70s when there was a lot of competition between the then Soviet Union and the U.S., of getting to the Moon, landing there, planting your flag so to say, and those were driven a great deal by the Cold War, as we all know. But there was a lot of excitement about space and new discoveries, a lot of science was being done. After that, there was a break for quite some years, when the Moon and space did not appear as much in the public mind, or in exciting people about what is happening. But in recent years, they're back again for a number of reasons, which I will touch on.

But most recently, as I said earlier, those who are in India, we've had an active space program, and figured a few weeks ago by a soft landing on the Moon of an

Indian lander, and then a rover which has rolled down, and as many of you will be familiar, broke ground a little bit in the Moon's surface, took some pictures, did some scientific experiments. It's now in a sense gone to sleep, as it waits for sunlight to reappear. And after that, we don't know if it will live on or not: It has not been designed for more than one lunar day, which extends about 14 days on Earth. And after that, because it doesn't get direct sunshine, there's not enough source of power, but we'll see what happens. Meanwhile, it's collected a lot of data and many, many scientific findings from what happened, there.

But back to the beginning of it: The Indian space program, and I do want to say a few words on this, began in the early '60s, with really an interest with looking at the science of space. It was driven by people who had an interest in observing cosmic rays coming out from space, and therefore, of space itself. It was an ambitious program for a country of India's economic size, particularly in those days. It was mounted to launch sounding rockets, and being on the magnetic equator, India had special advantages from a science point of view. Many of these collected invaluable scientific data, which have gone into a lot of research papers, built on what others did, and others have built on it.

But the program very soon began to take a different kind of shape, driven by a philosophy which was also different from what drove many programs elsewhere.

As I said earlier, the space activities in those days were driven, really, by the Cold War rivalry between the West and the Soviet Union. And space technology was almost completely derived from military uses. It came from the missiles, beginning from World War II in a small way, and then evolved as missiles grew: They became rockets that could take satellites into space. And yes, there was a lot of science, a lot of interest, exploration, but the driving force was something else.

How Might Space Be Used for the Benefit of All?

In India, the driving force from the beginning has been, How can space be used to benefit the country in economic and social terms? That was in addition to the scientific venture, as I said that started earlier on, so you might say it stood on two legs: first, scientific exploration, on a continuing basis, looking at the many unknowns and trying to find out the many things that space hides, you might say, and reveals as we go up there. And importantly, how can we use space and space

technology to do things that will benefit people on Earth?

And this in many ways was very well summarized and articulated by someone who has long been recognized as the founder of India's space program, Dr. Vikram Sarabhai. One of the things he said, and I quote now, is that:

We are convinced that if we are to play a meaningful role nationally and in the community of nations, we must be second to none in the application of advanced technologies to the real problems of man and society.

And that was his focus and the focus of the space program: What do we need to do that will help man and society, as he put it. And as well, he said, in a sense, as a specific counterpoint to this, that this—that is, talking about the Indian space program and what we were trying to do—and again, I'm quoting,

... should not be confused with embarking on grandiose schemes, whose primary impact is for show; schemes which do not progress man's benefits as measured in hard economic and social terms.

So he was very clear that the program was looking at economic and social benefits on the ground, and not the vanity projects or who gets there first.

Times have changed, competitiveness has changed, India has changed, the world has changed. And we come back to some of these thoughts later, in a moment, but that's been [words indistinct]. I wanted to begin at the beginning, to say that the program is really looking at applications of space technology, and earlier on, we began with communication; then turned to remote sensing, which is used for all kinds of applications—earlier on for agriculture, which is very critical to India, as it should be; for land use, mapping, soil, water, looking at mountains. And then, for weather prediction, again, a very, very critical factor in India, where even today, but especially decades ago, we were very dependent on the monsoon rains, and therefore needed to learn the weather very precisely, in order to forecast what is going to happen, know what is happening, and what needs to be done.

So these factors built the program in a very big way. And the program has come together along those

lines. You might show parallel tracks of scientific exploration in many ways, the *Chandrayaan* or the Moon landing way, which is exploring new things outside the Earth, trying to move science on, and understand better what were the things that drove the early formation of the universe, what exists, what doesn't, what is outside, looking at maybe a scientific phenomenon.

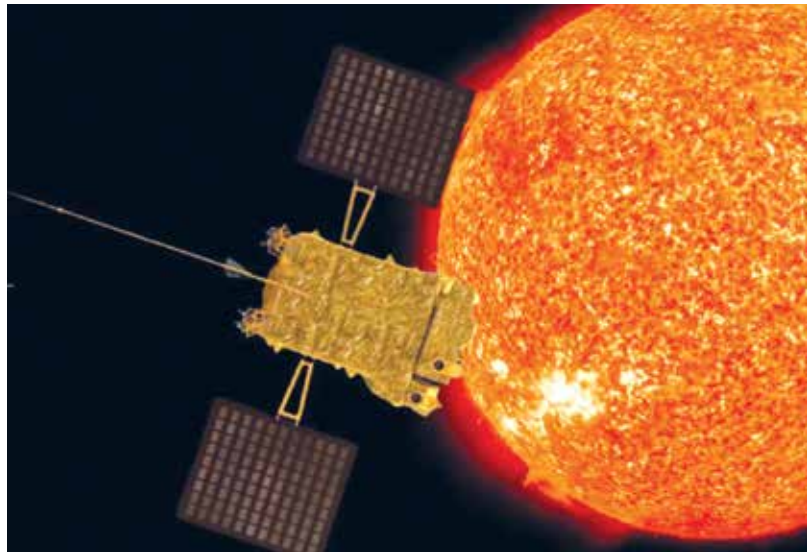
And the other track which continues also today very strongly is aspects which relate to day-to-day use, whether that is for communication or it is space imagery for a whole host of applications, or it is weather forecasting, position location, disaster warning, a whole host of other areas.

I don't want to speak very much more on the Indian program. I was involved for more than two decades, but I've been out of touch for almost equally long. I stay in some contact, and keep aware of it, but I'm not an expert, and I don't have details of exactly what and where.

Mostly recently—and I want to close my discussion of the Indian program with this—just a few days back, literally, a new probe has been launched [Aditya-L1], a satellite that will orbit the Earth at the so-called Lagrange point, which is a stable point, to study the Sun. And this will complement and add data to what has already been done by ESA and the U.S.—in particular the European Space Agency and NASA—in studying the Sun. So this should provide interesting data.

The Common Heritage of Mankind

If we move to a distant aspect of space—and I want to take some time on this, too, to leave some thoughts on this: You know, in early years, again, when the Indian program was nascent, India took a very active part in the United Nations' organizations, and was a very major player in trying to put together a number of treaties and conventions. Even at the peak of the Cold War, it's a very, very good sign that the Russians—the Soviet Union, then—and the West cooperated and were able to get through some very exciting talks and treaties, like the Outer Space Treaty and the Moon Treaty; both of these are very important because they do two or three important things: One is, they prohibit the use of space for deploying weapons of mass destruction. Well, in



ISRO/Robert Lea

From its founding by Dr. Vikram Sarabhai, India's space program was looking for economic and social benefits on the ground, and not vanity projects or who gets there first. Shown, an artist's rendering of India's Aditya-L1 mission to study the Sun from Lagrange Point 1, launched Sept. 2, 2023. Aditya in Sanskrit is an appellation of the Sun god Surya.

retrospect, you might say it's a pity to forbid access to weapons of mass destruction and not to other weapons, but yet, that in itself was progress. So deploying any weapons of mass destruction in space is prohibited.

Second, it put forth the concept of the common heritage of mankind, the concept that's used for the Open Seas and for Antarctica. Then, interpretations of that may vary—somewhat unfortunately according to me—but it recognizes that outer space and the planets, including the Moon, are in some way a common heritage of mankind, and whatever is done there must benefit humanity as a whole. It is in a sense part of what you might call the “global commons” and this very concept of what is global commons and what is the common heritage of mankind is implanted there. But, as I said, interpretations vary, and a few comments on that in just a moment.

But these treaties were important, and they took forward cooperation in space between nations, cooperation in terms of a whole host of scientific and other factors, despite the continuing competition, particularly in the military arena.

In recent years, this kind of cooperation has vastly decreased. I spoke earlier about the Moon and exploration of the Moon—scientific missions there—and you know, already you begin to see this, that there are two parallel, you might say groups or camps emerging. There is an Artemis agreement, which the U.S. has

initiated, which has been signed by a number of countries, mainly Western countries. India has recently become a member of that. The other is mainly a Russia- and China-driven attempt, called the International Lunar Space Station. The idea is again a cooperative space station on the Moon, for exploration and science.

So we are already beginning to see that even in science, unlike in the past, where examples like the International Space Station were outstanding examples of international cooperation, and the continuation we have today incidentally, where both the Russians and Americans work together—there have been some recent problems but they continue nevertheless—these seem to be increasingly falling by the wayside, and a much more competitive spirit is taking hold of things, where people are beginning to compete even within science.

A Global Consortium for Space Exploration

In this area, a positive development very recently has been the BRICS meeting in Johannesburg, where there was some discussion of space, and where India put forth the concept of the possibility of a consortium for space exploration, starting with a BRICS cooperative arrangement, but hopefully expanding much wider than that. As many of you would know, BRICS itself is expanding beyond the five countries whose initials give it the name it carries. Already six more have been added. Many more are waiting to join. So it *can* become something substantial, where a consortium for space exploration can become a truly global effort once more.

And that's something I find very exciting.

There are other attempts to try and bring greater cooperation and collaboration, but we have to see where they go.

In the midst of this, what is concerning is the increasing role of space and so-called “space assets” for military purposes. In the Ukraine war, we have seen a tremendous amount of the use of space technology for doing all kinds of things—some reported, some unreported, some quoting sources from here and there. But it is a problem, and it's something we will have to face as we go forward.

The other point I want to flag—and given the time, this will be my last major point—is the increasing role of the private sector. In some ways it's very welcome. The private sector has taken on a lot—as a matter of fact they're making even development of systems for space.

But what could be of concern is very big companies,

big tech companies in particular, that are becoming dominant even in space, and in some ways, the role of the governmental space agencies is decreasing. So these private agencies will doubtless have interests in early—many of them are talking about mining on the Moon, mining asteroids for minerals. Space tourism may be fine, but going beyond that to mining things on the Moon or on asteroids, given the context, which as I have mentioned it, of using outer space [being regarded as] strictly under the concept of the common heritage of mankind, where is this going to take us? Where is it going to lead us? And what kinds of safeguards might there be, to prevent or to provide guidelines for private sector involvement in providing military assistance, military help, to one country or the other, when countries are at war.

As we know, space has become a major domain of contention, now. It's the two new areas, as I said, cyberspace and outer space, and both have become very powerful tools, and very contentious tools. And in both, companies and the private sector have an increasing role. And this could be of great concern, because we talk today sometimes of “rogue states” and each country has its own definition, of course, of who is a “rogue state.” But you may very soon have “rogue companies”! And they may be far more difficult to control, to inhibit, and even to impose sanctions on, than rogue nations, and that's something we have to watch for.

Finally, let me end, again at the point where I was starting, in terms of man and his adventure into space: You know, for eons, from the beginning of human species, you might say, humans have looked up into space and wondered “What is there?” “What is out there?” “Can I go there? Can I not?” You've crossed that barrier. Now, we're out there, we begin to see what is there, we begin to know what is there. To what extent can we work together cooperatively and as humanity, as a common human species? What can we do together, to look at this great adventure of understanding something which is beyond us, understanding the cost for us, of understanding what, in many ways, was the beginning of the universe and the formation of it? What are the great scientific things out there to discover?

Hopefully, that is the direction human beings will begin to take, nations will begin to take, where we work together and cooperate, rather than use space as one more realm for military ventures.

Let me end there, and maybe there'll be some discussion and questions we'll have later.

Thank you very much.