

A small step for India¹

Indian politicians are not idiots; it is just that they are aware of what can bring them 'returns'; the Moon or Mars cannot. While Bharat Ratna awardee, C.N.R. Rao stated: "Why the hell these idiots have given so little for us", he missed this point, though he was right to add: "for that money we have got, we have performed. For the money we have been getting, it is not bad at all, after all this kind of money is nothing."

The fact that the Union Minister for Information and Broadcasting, Manish Tiwari denied Rao's allegation is irrelevant; India is indeed not doing too well in Research and Development (R&D) and technological innovations, mainly due the lack of serious interest (and funding) from the politicians ... and the babus.

The Minister mentioned Mangalyaan, the Mars mission and the Chandrayaan, the lunar which has been relatively successful; this however does not make India an innovative nation. These are just remarkable exceptions which confirm the rule.

The Mangalayan program is a case in point; though limited in scope (due to the 'low-cost' funding), it will hopefully make India proud.

ISRO has already successfully raised the orbit of the Mars Spacecraft 5 times since the Mars Orbiter was launched from Satish Dhawan Space Centre in Sriharikota on November 5 by the Polar Satellite Launch Vehicle (PSLV-C25). If everything goes well, the satellite should start orbiting Mars in September 2014, searching for methane and signs of minerals. A small step with a small budget!

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The South China Morning Post commented: "Amid the fireworks and lanterns of Diwali, one of India's most important festivals, the nation has embarked on its most ambitious space mission yet - sending a probe to Mars. Costing a fraction of the millions of firecrackers sent skyward during the five-day occasion, the US\$ 74 million rocket launched yesterday carries, along with its orbiter, pride and scientific prowess."

Rajeswari Pillai Rajagopalan of the Observer Research Foundation explained in the Chinese publication *Global Times*: "Space is a vital aspect of India's security. India does not live in a benign neighborhood and it has had to balance between its development and security needs. No major power can afford to ignore the importance of space technology for its military needs."

Jiao Weixin, a professor at the School of Earth and Space Sciences of Peking University is quoted by the same *Global Times*, saying: "With the mission launched within a very short period, India eyes the political influence hereby brought and intends to be the first one in Asia that orbits Mars."

But China is still far ahead in terms of 'innovation', simply because Beijing's leadership has the political will, while Delhi's politicians do not.

Even the recent Communist Party's Third Plenum reiterated 'the importance of innovation in terms of national defense and for the military'.

Very early in its history, the Chinese Communist leadership realized that the great renaissance of the Chinese nation was dependent on 'innovation with Chinese characteristics'. Beijing has now taken decisive actions to remedy some of the nation deficiencies in this field. India has not yet.

On June 22, 2013, *The South China Morning Post* affirmed that "China's top science advisers have listed 19 projects as the research priorities of the next decade. They include quantum telecommunications and a high-performance

jet engine that could drastically improve the capacity of its indigenous fighter jets.”

According to the Hong Kong newspaper, the report was prepared by more than 200 experts associated with the Chinese Academy of Sciences. It was a road map for breaking into the US dominance in domains as diverse as military, space, new materials, energy or agriculture.

Though not all the projects have a direct military implication, ultimately ALL the projects will help Chinese indigenous technology and for most of them, they will have a dual use (civilian and military).

Amongst the most prominent Chinese innovations in the pipeline is a new jet engine that promises to deliver thrust equivalent to 15 times its own weight. The thrust-to-weight ratio is a key indicator to measure a jet engine's performance; today, the engine used in the sophisticated US' F-22 raptor fighter has a thrust-to-weight ratio of eight.

Though China also has problems with its fossilized babus, the Communist Party's will to innovate is much stronger than in India, simply because it is the shorter way to dominate the world.

Can one day India catch up with China?

Especially in the defence sector, India depends in a large measure on imports. The main reason is the lack of a large-scale R&D program.

A few months ago, Dassault Aviation, the constructor of the Rafale selected in the MMRCA project, expressed some doubts about the capacity of Hindustan Aeronautics Ltd. (HAL) to absorb French technology; without even speaking about 'innovations', the question today is, can HAL 'digest' French technology?

Delhi needs to invest tremendous efforts in the domain of innovation if India is serious about catching up with China ...and the West in this domain. Mangalayan is a small step in this direction.

While India, like China, is suffering from bureaucratic deficiencies (politicians should be added in the Indian case), the leadership in Beijing has the political will and intelligence (and adequate economic means) to change this scenario in the years to come; it does not seem to be the case in India, at least under the current political equation.

For example, today HAL's design capabilities are very limited. Design engineers at the middle level are good with analytical ability, but the leaders are absent (perhaps because HAL is not ready to pay 'the price' to get them).

Take the case of the Trainer Pilatus PC 7 selected for training after the HAL's HPT 32 Deepak was discarded. The alternative proposal from HAL for the HTT 40 (Turbo-prop trainer) was also not considered as it was still at the initial design stage. The lack of good leadership in the Design Bureau is one major problem in DRDO as well as HAL.

After Apple's boss passed away, experts debated why China had not produced its own Steve Jobs. One contributor to *Forbes* explained that the emergence of such 'innovative' entrepreneurs "does not blend well with China's culture of Confucian conformity to existing norms."

There is some truth in this, but today the top leadership knows that in order to materialize the Chinese Dream, China needs to innovate.

The Indian Dream has unfortunately not even been formulated as yet.

It is a pity, because the ingredients (brains) are very much present. The politicians' brains need to be convinced; this is another story.