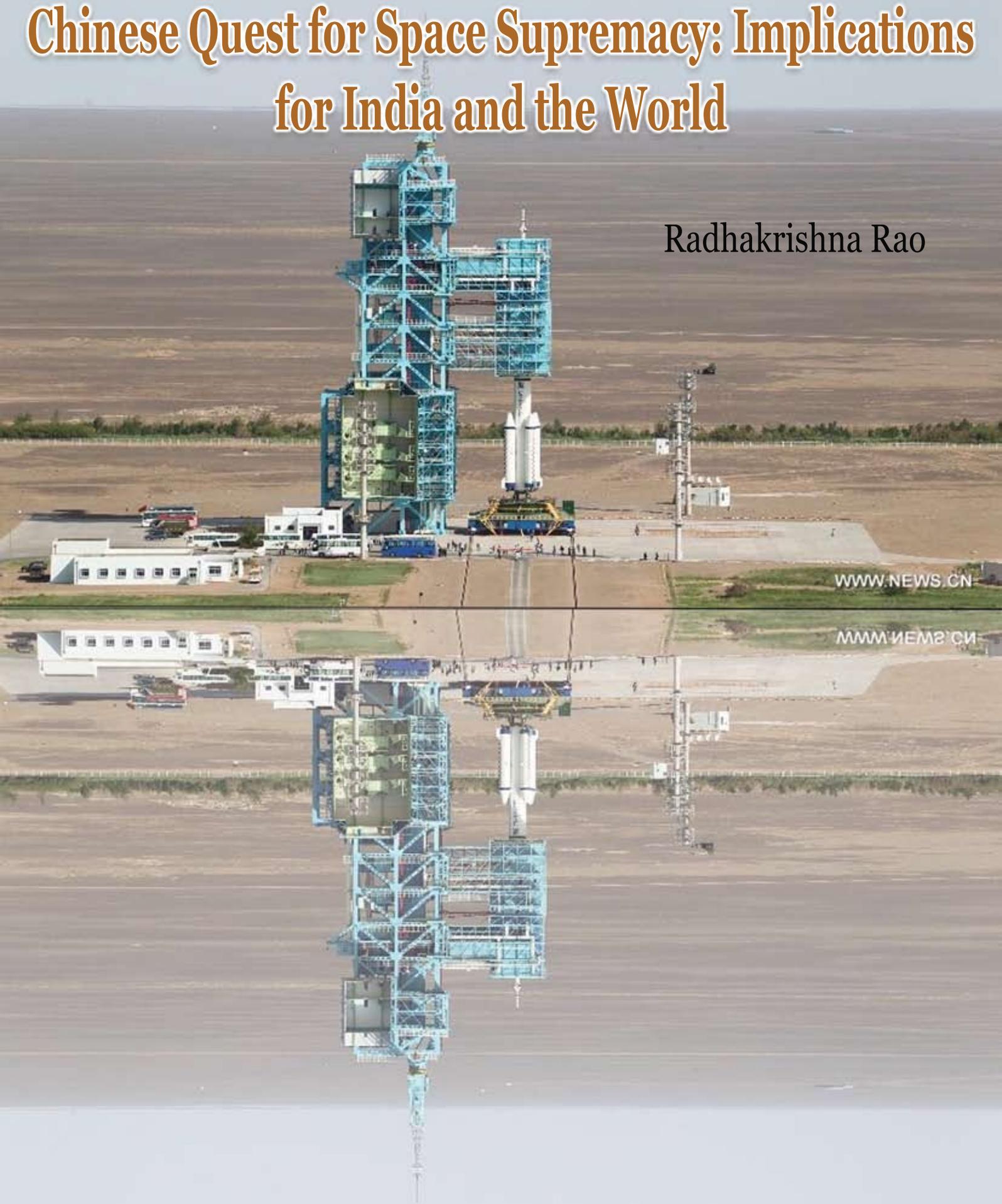




# Chinese Quest for Space Supremacy: Implications for India and the World

Radhakrishna Rao



## **About The Author**



Mr. Radhakrishna Rao has worked in the documentation and publications division of ISRO for about twenty years after obtaining a degree in science from Calicut University in Kerala. For nearly two decades, he has been writing extensively on issues concerning outer space, defence, aerospace, computers and communications. He has contributed to a number of national newspapers and international media including The Tribune, DNA, International Aerospace, Flight International, Air and Cosmos and Military Technology. He is a Visiting Fellow at the Vivekananda International Foundation.

## Chinese Quest for Space Supremacy: Implications for India and the World

In a stunning demonstration of its growing prowess in the cutting edge space research and technology, on June 11, a Chinese Long March-2F rocket successfully launched the longest ever manned Chinese mission with its second woman astronaut among the crew. The three member crew Shenzhou-10 (meaning Divine Vessel) manned ship, which had a smooth lift off from Jiuquan launch centre in the Gobi desert, is designed to accomplish a series of exercises and tests, aimed at acquiring the necessary level of expertise for developing and operating a full fledged, manned Chinese orbital laboratory by 2020. In particular, the Shenzhou -10 mission will evaluate the life support system of the Tiangong-1 target space station. The 8.5 ton Tiangong -1(meaning Heavenly Palace) launched in September 2011 is essentially meant to serve as a platform to test rendezvous and docking techniques. Tiangong-1 features a pressurized experimental module where the visiting crew can live and work. In the ultimate analysis, the three astronauts on a 15 day "celestial journey," – which constitutes the fifth Chinese manned mission-- will prepare the ground for giving a fresh thrust and new direction to the Chinese manned space programme.<sup>(1)</sup>

### Source of Pride and Prestige

All said and done, China would need to cover much ground before it catches up with USA and Russia in the conquest of the final frontiers. Significantly, rendezvous and docking techniques such as those, which China is now mastering, were perfected by US and the former Soviet Union decades ago. Even so, China considers a high profile space mission such as this as a source of

huge national pride and international prestige. Chinese President Xi Jinping who met the astronaut trio at the launch site remarked, “You made Chinese people feel proud of ourselves.” Leaving apart the emotional upsurge, and on a more practical plane, this latest space journey has been described as a challenging exercise that marks the last of the three planned missions to master the rendezvous and docking techniques that holds the key to the operations of a permanent, manned orbiting station.<sup>(2)</sup>

Referring to Shenzhou-10 mission, a spokesperson of the Chinese manned space programme pointed out that it will carry out one manual and one automatic docking. “So far we only conducted three automatic docking tests and a manned one. More tests are needed. We also need to further prove that our astronauts are fit for a longer stay in space and the orbiters are able to support their life and work”.<sup>(3)</sup> After the Shenzhou -10 returns back to earth on completion of the mission, curtain will come down on the two years mission of the relatively small Tiangong-1 space module. China is already working on realizing a vastly improved Tiangong-II as a replacement to Tiangong-1. As envisaged now, Tiangong-II will be launched in 2015. According to Zhou Jianping, Chief designer of China’s manned space program, a freighter will be launched soon after Tiangong-II goes into orbit. Interestingly, Tiangong-1 weighs half of the world’s first space station, Salyut-1 launched by the former Soviet Union in 1971. And in comparison, the currently operational International Space Station (ISS) weighs 400-ton.

### **White Paper Focus on Space Strides**

A 17-Page White Paper issued by the Chinese Government in Dec.2011 outlines the course and contours of the Chinese space programme over a period of five years. According to this document, the priorities of Chinese

space venture would include developing three new generation heavy lift launch vehicles, mitigating the problem of space debris and expanding the scope of lunar exploration. The report observes in clear cut terms, “In the next five years, China will strengthen its basic capabilities of space industry, accelerate research on leading edge technology and continue to implement important space scientific and technological projects including human space flight, lunar exploration, high resolution earth observation systems, satellite navigation and positioning systems, new generation launch vehicles and other priority projects in key fields. China will develop a comprehensive plan for construction of space infrastructure, promote its satellites and satellite application industry, further conduct space science research and push forward the comprehensive, coordinated and sustainable development of China’s space industry”.

The White Paper also reveals China’s more than usual interest in space science research involving the deployment of astrophysical and astronomy satellite probes to study the properties of black holes and explore properties of dark matter particles and test basic theories of quantum mechanics .Of course, this fact filled White Paper also provides a clear pointer to Beijing’s determination to emerge as truly global space faring nation at par with USA. In addition, the White Paper reveals that China’s three men crew space station will become operational by 2020 when the 17-nations ISS will go into oblivion. Going ahead, the White Paper lays stress on “exploration and utilization of outer space for peaceful purposes” and space cooperation in the Asia Pacific region. It says, “The Chinese Government holds that each and every country in the world enjoys equal rights to freely explore, develop, utilize outer space and its celestial bodies”.<sup>(4)</sup>

But then, China seems to be blowing hot and cold in so far as its stand on the peaceful uses of outer space is concerned. For while strongly espousing the need for an international treaty banning the weaponization of outer space, China nonchalantly continues with the plans to master anti satellite techniques to help it remain prepared for the possibility of a space war. As such, the Chinese space venture is considered far from transparent.

### **Space Route to Super Power Status**

The political leadership and military set up of China views its rapid space forays as a springboard to showcase its technological and economic prowess, further its military and strategic goals, strengthen its diplomatic and political clout and expand its business interests by offering assistance to the third world countries keen on entering the space age. Further, in the long run, the well conceived and systematically implemented Chinese space activities, are also designed to replace USA as a global space supremo and use the vantage position in outer space to challenge the US military might<sup>(5)</sup>. China is also keen to project its soft power and diplomatic clout by making available space services—by way of building custom made satellites followed by their in-orbit delivery —on reasonable terms to the developing countries. According to Morris Jones, an Australian expert on global space issues, "If it(China) wants to be a super power class nation, then developing a very strong space programme is one way it can project that image both internally and externally to the outside world."<sup>(6)</sup>

And for the Chinese defence forces, a range of satellites built and put into operation by Beijing for the purposes such as surveillance and reconnaissance, navigation, communications and broadcasting as well as weather watch and ocean monitoring , serve as "force multiplier" by acting as "eyes" and "ears" in space on round the clock basis. In fact, the satellite resources would prove to

be valuable assets in the strategy of network centric warfare envisaged by the People's Liberation Army (PLA). Indeed, China has observed with a great deal of interest as to how US led allied forces made use of "space birds" to meet the strategic goals during the operations in Afghanistan and Iraq.

### **Momentum Towards Space Station**

Today, China happens to be the only space power to sustain human space exploration with both USA and Russia showing a clear dis-interest in this crucial area of space research. The orbital complex that China is planning to put in place by 2020 would make this dragon country the only power to have a permanent presence in outer space. According to Ming Li of the China Academy of Space Technology, China eventually plans to build a Soviet era Mir class multi module space station weighing around 80-tonne as a follow up to its first orbital station. Though the first Chinese orbital complex weighing around 60-tonne will be much smaller than ISS and Mir, it would provide China with the necessary level of expertise to place in orbit larger space stations with a longer life span<sup>(7)</sup>. Indeed, an autonomous orbital complex, besides helping China further its space science research, can bolster its space war efforts by serving as a strategic outpost in outer space. It is now a part of history that China was not allowed to participate in ISS, mainly following objections by US which was not receptive to the idea of Chinese participation on account of the political differences and military edge of the Chinese space programme

As it is, Shenzhou-9 mission carried out in June 2012 had clearly demonstrated China's prowess in direct docking and undocking. This manned space mission spread over thirteen days reinforced China's claim to being an emerging global space power. Incidentally, the Shenzou-9 crew hooked up with Tiangong-1 for nearly ten hours. According to space experts, the high point of Shenzhou-9

mission was the successful accomplishment of the China's first ever manual docking .According to Dean Cheng, a research fellow at the Heritage Foundation's Asian Studies Centre in Washington DC." The most important point is that developing docking techniques and technology, which, in turn, means precision controls for thrusters and the like which has obvious military/anti satellite implications". Incidentally, the Tiangong -1 launch came within a couple of months of the phasing out of the US space shuttle programme. "This is a powerful signal that China is ascendant and the US is descendent," says Chang<sup>(8)</sup>. Indeed, after the US Space Shuttle Atlantis made its final touch down at Kennedy Space Centre for the last time in July 2011, US has been left without a manned space vehicle for the first time in five decades. As it is, the ISS is sustained by the Soviet era Soyuz spaceship which regularly carries the crew and supplies to this orbital complex. "Over the past decade, China has arguably gone further, faster than any other space faring nations," says an analysis by the technology consulting firm Futron Corp. Incidentally, China has succeeded to a large extent in improving its launch and success rates. And during 2011, this Communist giant for the first time accomplished more space missions than USA.<sup>(9)</sup>

China has also dropped clues about its plan to create the ground work towards landing a man on the moon—a feat so far only achieved by USA most recently in 1972.However, China has not given any timeframe for such a space spectacular. China has also hinted at exploring the Red Planet Mars. According to Chinese media reports, the country spent around US\$6.1-billion on its manned space programme since it began two decades back. The successful accomplishment of China's first manned mission in 2003 was followed by the second human flight in 2005 along with "space walk" performed in 2008. These three missions paved the way for putting in place Tiangong-1 orbital module

aimed at carrying out a range of experiments. And in Nov.2011, China accomplished its first unmanned space docking when Shenzhou-8 capsule coupled with Tiangong-1 by remote control. But all said and done, the construction of its orbiting space complex by 2020 will only bring the Chinese space programme at the same level as that of the USA and erstwhile Soviet Union in 1970s.

According to Chinese space officials, the first flight of Long March-5 capable of placing a 25-tonne class payload into the near earth orbit is expected in 2014. It would be China's most powerful rocket. Beyond Long March-5, China has plans to develop far more heavier class Long March-6 and 7 vehicles<sup>(10)</sup>. As pointed out by Gerry Webb of Commercial Space Technologies, "The Long March heavy lift vehicle would give China new capabilities to build larger spacecraft or space stations." He also believes that this new generation space vehicle would invest China with a vastly enhanced capability for deep space and military space missions.

'I believe that we can achieve the goal of realizing a space station by 2020, because we already have the basic technological capability," says Zhou Jianping, Chief designer of China's manned space engineering project. As pointed out by Joan Johnson Freese, an expert on the Chinese space programme at the US Naval War College in Rhode Island, "The Shenzhou-9 mission demonstrated China's commitment to the long term human space flight and marked a test of the technological capabilities required for a future permanent space station". Observers drive home the point that it was the refusal to accommodate China in ISS project that nudged this Communist giant to develop home grown capabilities in various types of technologies required to build and operate a space station. And space analysts in US believe that USA

could indeed slip behind China if Obama administration fails to support the US space programme with a greater level of funding and a heightened commitment to sustain the US lead position in space with a particular focus on manned missions. "China is in space for long haul. The US ignoring that and refusing to work with China will neither stop them nor slow them down," says Freese.<sup>(11)</sup>

### **Closing Gaps with USA and Russia**

Meanwhile, the perception in US is that China is making vigorous efforts to close its gaps with Russia and USA, the two space front runners. Building of an orbital complex is one of the objectives to realise this ambition. Other areas of focus envisaged to sustain and take forward China's leadership position in space are : a sample return mission to the moon and lunar landing mission, boosting launch capability and development of a global navigation satellite network to rival American GPS system and pushing forward with the exploration of planets, asteroids and sun.

Chinese space programme suffered a minor setback when its Mars probe Yinghuo-1 came a cropper as it formed a part of the doomed Russian Phobos Grunt mission launched in 2011. Undeterred, China says it would go ahead with its lunar and planetary exploration missions. Moon has remained a major focus of the Chinese space programme. Chang'e-1, the first Chinese lunar orbiter was launched in 2007. This was followed by Change'e-2 launch in 2010. Meanwhile, China is now preparing for the launch of its robotic mission designed to explore the lunar surface<sup>(12)</sup>. However, the launch of India's Chandrayaan-II probe, with somewhat similar features as Chinese robotic lunar mission, that was originally envisaged for 2014, stands postponed on account of the delay in getting the Russian original lander for the mission.

## Space for Militaristic Advantages

As it is, China's human space flight programme reveals a steady and systematic endeavour with a strong political support and robust funding to develop newer technologies with a focus on sustaining its advances in exploration of the final frontiers. In contrast to the US, where space activities are diffused and distributed across several, separate entities, the Chinese space programme is well co-ordinated and highly focussed under the overall supervision of People's Liberation Army (PLA) with strong militaristic ambitions. Not long back, the chief of Air Force wing of PLA had said that a military race in space is inevitable, thereby underpinning China's growing interest in building space war capabilities. In fact, a most recent 92-pages Pentagon report on China's defence capabilities says, "China is developing a multi dimensional programme to improve its capabilities to limit or prevent the use of space based assets during the times of crisis or conflict".<sup>(13)</sup>

China continues to downplay the possible strategic and militaristic advantages it could derive from its manned space programme. China's manned programme has never been for military purposes, is the refrain of the ruling elite in Beijing. As pointed out by Ashley Tellis, a senior associate at the Carnegie Endowment for International Peace, China sees space as a vital platform to effectively use its armed forces against adversaries. In the ultimate analysis, space stands out as a centrepiece of China's long term geo- strategic ambitions. Defence experts believe China's increasing number of satellites help PLA in improving the tracking and targeting systems for its missiles.

In a development of strategic significance to its manned mission, China has announced that it has plans to grow fresh vegetables in extra-terrestrial bases on Moon or Mars in the future with a view to provide food and oxygen

supplies to its astronauts. Of course, China has hinted at setting up bases in Moon and Mars as and when technological advances become robust enough to realize this ambition. Deng Yibing, Deputy Director of the Beijing based Chinese Astronaut Research and Training Centre, said that the recent experiment focussed on a dynamic balanced mechanism of oxygen, carbon dioxide and water between people and plants in a closed system. The experiment, the first of its kind in China, is extremely important for the long term development of the country's manned space programme, Deng added.

### **China Ahead of India**

While Chinese manned space exploration programme is gathering momentum, the Indian Government is yet to give its final go ahead for India's manned space flight mission which was proposed by Indian Space Research Organisation (ISRO) more than five years back. However, now with the priority of ISRO shifting to Mars probe, the human space flight mission has taken a back seat. Indeed, sometime back, ISRO Chairman K Radhakrishnan told media persons in Bangalore that India will not undertake a human space flight before 2017. Failure to get the budgetary approval for this nationally important space project along with the challenges ahead of ISRO in terms of developing and qualifying a man rated high performance cryogenic fuel driven launch vehicle have conspired to put the Indian human flight programme on the backburner. Indeed, the Indian Government seems to be totally unaware of the importance of an Indian manned flight programme and the benefits and advantages it could bring to the country on a variety of fronts. Significantly, the historic 1969 US human landing mission to moon not only electrified the nation by giving a big thrust to its psyche but also helped boost the prospects of science, technology and industry.<sup>(14)</sup>

The Achilles heel of the Indian space programme is that it has to make do with a single operational launch vehicle in the form of the four stage space workhorse PSLV (Polar Satellite Launch Vehicle), the most powerful version of which can deliver a 1850-kg payload into a polar/sun-synchronous orbit. All said and done, ISRO is yet to operationalize the country's first cryogenic fuel driven carrier rocket ,the three stage Geosynchronous Satellite Launch Vehicle(GSLV). The hitches in the home grown upper cryogenic engine stage of this vehicle has resulted in inordinate delay in operationalizing GSLV. ISRO can hope to develop more powerful launch vehicles only after GSLV is put to the regular operational use.

In contrast, China has a range of vehicles under the Long March family that could be deployed to launch satellites of different weight class into a variety of orbital slots. Unlike China, which already boasts of three land-locked launch centres with the fourth ultra modern coastal launch complex at Wenchang in Hainan Island expected to take off in 2014, India has only a solitary space port, Satish Dhawan Space Centre in Sriharikota island on India's eastern coast.

Meanwhile, ISRO is looking at the possibility of building a second launch complex, for a second/alternative launch centre could lend a strategic edge to the country's space programme in addition to helping it expand its presence in the global market for launching commercial satellites.

The strategic location of the well equipped Chinese launch complex in Hainan Island, surrounded by sea in three directions, could help this Asian Communist giant step up the frequency of space missions and attract more customers to the Chinese space launch service. As it is, this launch complex fits well within the Chinese strategy of cornering 15% share of the global market for launching satellites. The current Chinese share in the global market for launching

satellites is just 3%.The first launch from this site is planned for 2014-.It will handle as many as 12 space missions a year. This launch complex will be primarily used for launching heavier class communications satellites. Further, it would fully support the lunar sample return mission in 2017 and the construction of the space station in 2020.Interestingly, the Hainan Island's proximity to the equator gives the new launch centre distinct advantage over the existing three land locked launch centres. Additionally, as the new launch centre faces the sea on three sides, there is no danger of debris of the exhausted stages of the space vehicle hitting thickly populated areas. However the Jiuquan launch centre will continue to be the nerve centre for the manned missions.<sup>(15)</sup>

All said and done, right from the outset, Chinese space venture enjoyed many clear cut advantages over the Indian space programme. To begin with, during its formative days, it was guided by Hsue Shen Tein, a US trained aerospace engineer with a sound background in rocketry and missile systems .On the top of this, Russians made available vital elements of missile technology to China which was imaginatively exploited by Chinese space scientists to build civilian launch vehicles. A strategic missile and a civilian launch vehicle have many common technological elements including electronics ,materials, control and guidance package and propulsion. And with the Chinese military set up being closely associated with the space activities, the expertise available at various institutions under PLA were utilized to support the Chinese space enterprise to the hilt.

On the other hand, India's peace oriented, civilian space programme had to start virtually from scratch without any outside assistance. Moreover, it did not get the kind of funding and autonomy that was available to the Chinese space

programme. Being a fully civilian venture operating in a democratic set up, the Indian space programme is subject to parliamentary scrutiny and public criticism. On the other hand, the far from transparent Chinese space programme with its pronounced militaristic ambitions is free to pursue its goals without being subject to either public scrutiny or budgetary constraint.

### **Expanding Frontiers of Commercial Space**

Indeed, China's impressive forays into space provides it with a platform to expand its soft power in the third world by making available its knowhow and expertise for building and launching satellites on reasonable terms. China has already built and launched satellites for Pakistan, Nigeria and Venezuela in addition to providing launch support to the Indonesian domestic spacecraft Palapa. The China Great Wall Industries Corporation (CGWIC) set up in 1980, as the commercial arm of the Chinese space enterprise to provide commercial space services to worldwide customers, has also signed satellite and ground systems export contracts with Bolivia and Laos. In 2012, CGWIC signed an agreement with the Colombo based SupremeSAT, the Sri Lankan satellite technology enterprise, for building and launching a satellite in 2015. An official of the SupremeSAT was quoted by the Chinese Xinhua news agency as saying, "By 2015, we hope for the launch of our own satellite which will be Sri Lanka's first." Meanwhile, Supremesat-1 satellite built by the West European aerospace enterprise Thales Alenia, was launched by means of a Chinese Long March rocket in Nov.2011. Supemesat-1 is considered Sri Lanka's first co-branded satellite. As it is, SupremeSAT in a joint venture with China Satellite Communications Company will operate the satellite.<sup>(16)</sup>

The relationship that China has forged with Sri Lanka in the strategic area of space cannot but be a matter of concern for India. For Sri Lanka already forms

a link in China's 'String of Pearls' policy meant to encircle India. China, which provides economic, military and technical assistance to Sri Lanka through its investment in Hambantota port has gained toehold in the Indian Ocean region close to India. Antrix Corp, the Bangalore based commercial arm of the Indian space programme, is yet to build and launch a satellite under a package deal for a third world country. For undertaking the launch of commercial class communications satellites, India would need to qualify and operationalize its three stage cryogenic fuel driven Geosynchronous Satellite Launch Vehicle(GSLV).

### **Thrust on Space Industrialization**

China has also hinted at the setting up of a base on the lunar surface as part of its long term vision of staying ahead in the "space industrialization race". One of the key objectives of the proposed Chinese lunar base would be the extraction of Helium-3, considered a clear and abundant source of energy and its transportation back to the earth. To realize this challenging mission, China has started concentrating on developing rockets capable of generating massive thrust. 'The lunar probe is the starting point for the deep space exploration. We first need to do a good job for exploring the moon and work out the rocket transportation technology that can be used for planetary exploration" says a leading Chinese space scientist. And eventually Beijing looks at its multi billion dollar space programme as a symbol of its rising global stature, growing technical expertise and the Communist Party's success in turning around the fortunes of the once poverty stricken nation.

Another high profile space project from which China can draw tremendous strategic and economic advantages happens to be its home grown Beidou space navigation system designed to provide a global coverage with a

constellation of 35 satellites by 2020. China wants to position Beidou system as a serious competitor to the GPS, the American satellite navigation system by boosting its capability in a phased manner. The navigation capability of Beidou could also act as a force multiplier for Chinese defence forces. In particular, Beidou capability could come in handy for delivering long range missiles with a high degree of precision and accuracy to the pre-determined targets. China is fully well aware that GPS is one of the key elements for the successful implementation net-centric battlefield strategy. Pakistan is among the countries which are tipped to make use of the commercial potentials of Beidou. China has left none in doubt that it would commercially promote the capabilities of Beidou across the world.<sup>(17)</sup>

### **Challenging USA in Space Defence**

There is no denying the fact that Chinese space strides have serious implications for American strategic interests and defence agenda. For a fact filled study brought out by Project 2049 Institute, a research group on Asia Pacific security issues, says that China's growing capabilities in space could undercut any US military response in the event of Beijing deciding to take over Taiwan into its fold by force. China has claimed Taiwan as its own since the end of the Chinese civil war in 1949 and has repeatedly vowed to bring the island under its control if required by forceful means. Giving details, the study says that China's growing push in military space projects "may complicate US freedom of action in the Asia Pacific region". For instance, Beijing can deploy its satellite eyes in the sky to track US aircraft carriers and target them with anti ship ballistic missiles. Incidentally, the PLA is all set to substantially improve its ability to monitor events in Asia Pacific region through a rapidly expanding network of space based remote sensing, communications and

navigation satellites. Such space assets could help China threaten an expanding number of targets throughout Western Pacific, South China Sea and elsewhere around its periphery, says the study by Project 2049 Institute.

Similarly, a well documented national security report on revising US export controls on satellites by the US State Department and Department of Defence (DOD) reflects the concern that rapidly expanding Chinese space capabilities could hurt the long term national security and geostrategic interests of US. "China's modernized military and especially its space related capabilities could be put to use in ways that increases China's ability to gain diplomatic advantages for resolving dispute in its favour and possibly against the US national interests," says the report.

On the other hand, researchers at the Washington based World Security Institute drive home the point that "Starting from almost no live surveillance capability ten years ago, today China's PLA has equalled the US ability to observe targets from space for real time operations". The dominant view in Washington is that PLA has built up capabilities aimed not only at Taiwan but also to deter, delay or out-rightly deny possible US or allied intervention in any cross strait conflict.<sup>(18)</sup>

### **Preparing for Space War**

US think tanks believe China is also active in preparing the ground for space war by engineering and testing anti satellite systems and building weapons based on laser beams and directed energy devices for use in space. The perception in US political and strategic circles is that China's anti satellite programme has significant implications for anti access/area denial efforts against the US in Taiwan Strait contingencies.

Providing a clear pointer to the Chinese plan to use the “high grounds” of final frontiers to further its “military interests”, China in early 2007 successfully accomplished an anti satellite test. The Chinese anti satellite test, which involved the destruction of an aging weather watch satellite in the middle earth orbit by means of a ground based ballistic missile, sent shock waves throughout the world. But then one cannot brand China as the original sinner in so far as the endeavours to turn outer space into the battlefield of the future is concerned. For the former Soviet Union gave rise to the spectre of space war by carrying out what has been described as bizarre, “hunter killer satellite tests” in 1960s. In these tests, a target satellite would be chased and destroyed by a so called killer satellite. In those days of Cold War between the two super powers, it was but natural for USA to respond with redoubled vigour to expand the scope and sweep of the “space war”.

Indeed, the tremors of Chinese anti satellite tests were also felt in India in the context of the security of Indian space assets. And naturally there was a strident clamour in the country for ensuring the security of space assets by putting in place killer satellites to take care of rogue satellites. There was also a clamour to speed up the process of setting up a tri service Indian aerospace command that would serve as the focus of Indian space war efforts. In fact, while addressing the United Commanders Conference in New Delhi in mid-2008, Indian Defence Minister A.K. Antony had pointed out to the threat faced by the ‘Indian space assets’ from the developments in the neighbouring country. Antony was clear in his perception that India is very much concerned about the emergence of “anti satellite weaponry, a new class of heavy lift off boosters and an improved array of military space devices in our neighbourhood.” Rightly, he wondered as to how long India can “remain

committed to the policy of non weaponization of outer space even as offensive counter space systems are emerging in our neighbourhood.”<sup>(19)</sup>

Meanwhile, a section of the Western space defence experts believe that the so called space exploration rocket firing carried out by China in May this year is a camouflage for the test aimed at expanding the scope of its anti satellite capability. As it is, the missile fired from Xichang launch centre has been identified as Dong Ning-2 anti satellite system. However, in this test there was no target satellite. There are also reports to suggest that China is all preparing the ground for yet another full fledged anti satellite test. However, the details of the test are not known.

## **Conclusion**

By all means, India cannot afford to remain complacent over the Chinese advances in developing space war capabilities. The possibility of India, which fought a bitter war with China in 1962 in the Himalayan heights, once again confronting this Asian giant in the celestial heights cannot be ruled out. As such, strategic experts stress the need for the political dispensation in New Delhi to give a green signal to an Indian space security plan with both defensive and offensive components .Of course, the Defence Research and Development Organisation (DRDO) has already made it clear that it has a technological base resurgent enough to realize various components of space war including anti satellite devices.

Will the Chinese advances in space, which would be a major contributor to its military build up , pose a threat to the world peace in years ahead would depend upon how its political leadership shapes the course of its space exploration in the future with particular reference to preventing the

weaponization of the final frontiers. But for now, China is keen to not only position itself as a global military power drawing heavily from its space strides but also challenge the American strategic supremacy across the world. And in this quest lays the seeds of Chinese space war efforts.<sup>(20)</sup>

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### VIVEKANANDA INTERNATIONAL FOUNDATION

3, San Martin Marg, Chanakyapuri, New Delhi – 110021

Tel: 011-24121764, Fax: 011- 24106698

Email: [info@vifindia.org](mailto:info@vifindia.org), Website: <http://www.vifindia.org>