



ESPI

European Space Policy Institute



CHINA'S POSTURE IN SPACE
IMPLICATIONS FOR EUROPE

Report 3, June 2007

coordinated by
Wolfgang Rathgeber, ESPI



This work has been made possible thanks to the following contributors:

- Joachim GLAUBITZ (formerly with Stiftung Wissenschaft und Politik, Berlin)
- Keith HAYWARD (Royal Aeronautical Society, London)
- Isabelle SOURBÈS-VERGER (Centre National de la Recherche Scientifique, Paris)

The texts about the regional perceptions of China in chapter 3 are based on contributions from Thomas KUNZE (Konrad Adenauer Foundation, Moscow), Ram JAKHU (McGill University, Montreal), Emmanuel PUIG (Institut d'Études Politiques de Bordeaux) and Kazuto SUZUKI (University of Tsukuba). In addition, competent advice was provided by Karl BERGQUIST (European Space Agency, Paris).

Short Title: ESPI Report 3, June 2007

Editor, Publisher: ESPI European Space Policy Institute

A-1030 Vienna, Schwarzenbergplatz 6

Austria

<http://www.espi.or.at>

Tel.: +43 1 718 11 18 - 0 Fax - 99

Copyright: ESPI, June 2007

This report was funded, in part, through a contract with the EUROPEAN SPACE AGENCY (ESA).

Rights reserved - No part of this report may be reproduced or transmitted in any form or for any purpose without permission from ESPI. Citations and extracts to be published by other means are subject to mentioning "source: ESPI Report 3, June 2007. All rights reserved" and sample transmission to ESPI before publishing.

Price: 11,00 EUR

Printed by ESA/ESTEC

Compilation, Layout and Design: M. A. Jakob/ESPI and Panthera.cc

TABLE OF CONTENTS

| | |
|---|-----------|
| Executive Summary | 3 |
| 1. Introduction | 7 |
| 2. China and Space | 9 |
| 2.1. China – the Geostrategic Frame | 9 |
| 2.2. Chinese Goals in Space..... | 24 |
| 2.3. Annex | 35 |
| 3. Foreign Perceptions of Chinese Space Activities | 39 |
| 3.1. The US Perception | 39 |
| 3.2. The Russian Perception | 44 |
| 3.3. The Japanese Perception | 49 |
| 3.4. The Indian Perception | 59 |
| 4. The European Perspective | 65 |
| 4.1. Background | 65 |
| 4.2. Sino-European Space Cooperation..... | 65 |
| 4.3. Chinese Galileo Involvement..... | 69 |
| 4.4. The Chinese ASAT Test..... | 71 |
| 4.5. The Arms Embargo and US Security Concerns..... | 72 |
| 4.6. Scenarios for China's and Europe's Development..... | 74 |
| 4.7. Consequences for Europe..... | 80 |
| Acronyms | 85 |
| Acknowledgements | 87 |
| References | 88 |



Executive Summary

This study treats China's posture in space and its implications for Europe. Chinese space activities, capacities and capabilities have been assessed before, both in public and in classified reports. Here, in contrast, the focus is not on Chinese space activities as such. Rather, attention is paid to an important secondary effect, namely to the **consequences of Chinese posture in space** with regard to China's global interaction, putting special **emphasis on Europe**.

China has a **rapidly evolving economy** that drives the country towards **superpower** status, changing the balance of power in the Asia-Pacific region. Its markets are relatively free, but the political system is still a one party rule **far from Western democracy standards**.

Regionally, China is competing for leadership with Japan, whereas its global rival is or will be the US. It's space programme is a matter of prestige as well as a tool to meet the needs of national development. Although official voices have repeatedly claimed that China strives for a peaceful rise, **concerns about the military dimension** of China's space programme remain, fuelled by the recent Chinese ASAT test.

Chinese space activities are also influenced by other nations. The **US** see China as a potential adversary and avoid any kind of cooperation in space matters in order to preserve the technology gap between the two nations.

Russia's relation to China has become quite close, as Russia seeks alliances with emerging countries to counter the dominant US position. In addition, it appreciates the possibility to sell various goods like oil or arms, although this has not translated into significant space cooperation with China yet.

To **Japan**, the economic aspect is also very important in its interaction with China, but a complex mixture of rivalry and historically interweaved fates has led to a relation between love and hate. The level of Japanese space cooperation with China is quite low. Relations between **India** and China are evolving strongly, again supported by a significant trade volume between both states. Cooperation in space matters has only materialized throughout the last years, not encompassing military aspects. The future of Indo-Chinese relations is hard to predict because of potential pitfalls on the global interaction level.

Europe so far concentrates on the economic aspect of China's rise as well. **Space cooperation has been undertaken for some time**, by ESA, the Member States and by industry. Galileo, being the most prominent example, can serve as a case study for different aspects, including the European decision process in space matters that still lacks transparency.



The **Chinese ASAT test** in January 2007 has caused a considerable amount of concern due to the significant increase in space debris objects it has caused. It will also impact on the boundary conditions for the international negotiations in space weaponization, increasing the **pressure on the US to decide** between continuing to seek **unchallenged dominance** and returning to a **spirit of cooperation**.

Whatever course China takes, Europe must not only react. It has to become proactive and take a place in the driver's seat. In any case, it will have to become more monolithic and coherent to better handle the challenges posed by an ever stronger China. Strengths, weaknesses, opportunities and threats can be graphically depicted in a SWOT analysis as follows.

Different (not necessarily exclusive) scenarios regarding China's and Europe's further development can be sketched.

| | |
|---|--|
| <p style="text-align: center;">Strengths</p> <p><i>overall:</i></p> <ul style="list-style-type: none"> continuous economic growth cheap labour force potential for coherent action long term policy dedication <p><i>space related:</i></p> <ul style="list-style-type: none"> wide range of programmes | <p style="text-align: center;">Weaknesses</p> <p><i>overall:</i></p> <ul style="list-style-type: none"> social inequality underdeveloped infrastructure lack of democracy environmental problems limited entrepreneurship human rights violation <p><i>space related:</i></p> <ul style="list-style-type: none"> no genuine High Tech dominance |
| <p style="text-align: center;">Opportunities</p> <p><i>overall:</i></p> <ul style="list-style-type: none"> huge market global economy enhancement diversification of strategic stakes control through cooperation <p><i>space related:</i></p> <ul style="list-style-type: none"> complementary capabilities and data | <p style="text-align: center;">Threats</p> <p><i>overall:</i></p> <ul style="list-style-type: none"> aggressive pursuit of leadership political vacuum after potential collapse persistent human rights violation ecologic degradation <p><i>space related:</i></p> <ul style="list-style-type: none"> competition in market sectors unwanted technology transfer |

Table 1: **SWOT Analysis China**



For the years to come, in a broader approach including security considerations, **Europe will have to decide** whether China as a space actor is to be considered a strategic partner, an ad-hoc-partner or an adversary. Each choice implies specific consequences in regard to cooperation agenda, regulatory framework and industrial policy.

A **strategic partnership** implies a long term alliance with mutual benefit and interdependence. The cooperation agenda would have to cover a broad range (possibly, but not necessarily including security issues like military aspects). For this choice, export controls and IPR questions would need to be geared to serve the overall cooperation goals. Industrial policy would need to encourage close cooperation and strategic partnerships on the company level as well. A prerequisite for this kind of partnership would be largely identical aims on the strategic scale. From the facts stated in this report and from the current geopolitical set up (i.e. global US dominance), this option does not seem to be desirable.

An **ad-hoc-partnership** is based on flexible decisions about cooperation whenever mutual interests happen to align. The cooperation agenda in this case could be defined according to the present needs and requirements without any commitment to follow up interaction. It could exclude certain topics like optics or Radar technology to accommodate for other strategic interests. Export controls and IPR questions could be handled in a suitably adapted way. Industrial policy

could be kept largely neutral, while safeguarding trade interest of other partners as well. This case by case approach allows for flexibility, taking maximum profit of emerging favourable conditions while not changing the geopolitical chessboard.

Considering **China as an adversary or a long term rival** results from an assessment that there are no common long term interests among China and Europe. Consequently, the cooperation agenda in this case would be zero to avoid any kind of knowledge or technology leakage. Export controls and IPR questions for this choice should be handled strictly, and industrial policy should discourage cooperation on a company level. Apart from the fact that it is not likely that there are no common interests for China and Europe, this approach is also problematic because it would force China into developing its own capabilities beyond the influence and control of the outside world.

From the present perspective, it seems reasonable for Europe to treat China as an ad-hoc-partner, carefully handling cooperation content and making sure that potentially detrimental long term effects do not outweigh the short term benefits. The three choices and the associated consequences are shown in the graph below.

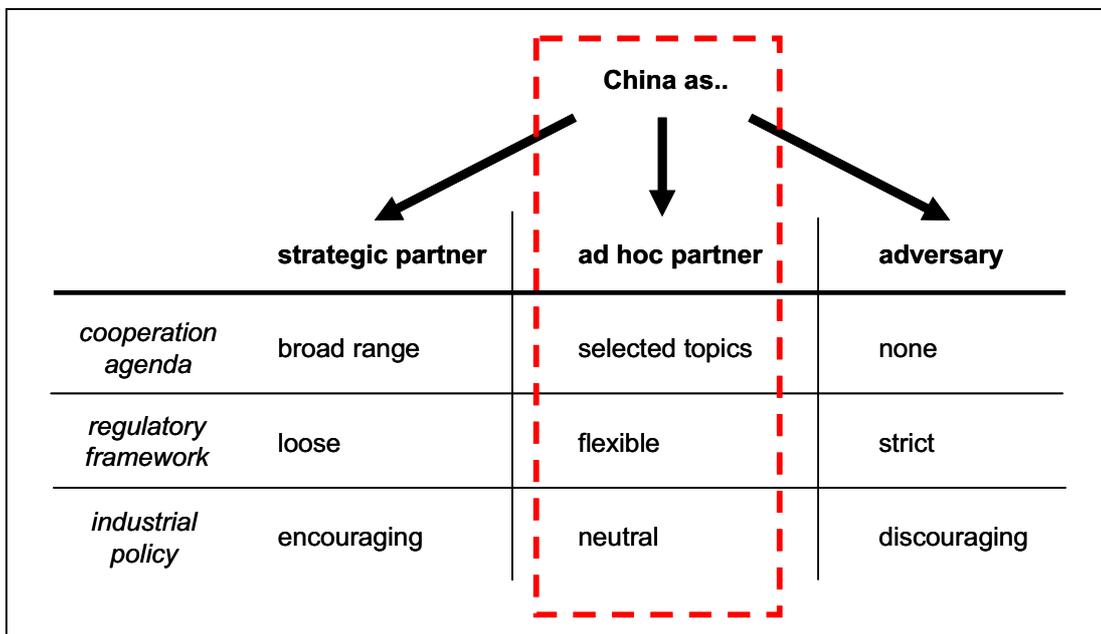


Figure 1: **Europe's Decision**



1. Introduction

The topic of China's rise receives a great deal of attention these days. Numerous books, reports and articles give information, pose questions and suggest strategies how to handle an important global player whose role remains to be defined.

An ever growing public interest is raised by the uncertainty of China's future course, the potentially dramatic geopolitical consequences, the fascination of a 5000 year old culture and the ambivalence of a nation that is both superpower and developing country.

The current situation encompasses chances and risks. China's massive economic growth will most likely continue throughout the next years. This might contribute to the global economic development, bringing about benefits for everybody. However, it might also result in conflict with the United States about world leadership. China's global weight was originally used as an internal prestige symbol. But meanwhile, China has used it in the UN Security Council as well. Alternatively, China might just collapse under its unsolved domestic problems like social and regional inequality or environmental degradation. This would create a power vacuum in the Asia-Pacific region with all the associated detrimental effects and impact on the global economy. In any case, today's China faces a complex mixture of processes that accompany a society in fundamental transformation.

Space activities are a subset of Chinese endeavours to secure and support the peaceful development that official statements have repeatedly claimed. Their roots date back to the 1950s when some 100 Chinese space scientists were expelled from the United States to China in the McCarthy era. Ever since, the Chinese quest for space has covered impressive grounds. Today, China is one of only three nations in history to have put humans into space.

This study treats China's posture in space and its implications for Europe. Chinese space activities, capacities and capabilities have been assessed before, both in public and in classified reports.

In the following, the focus will not be on Chinese space activities as such. Rather, attention will be paid to an important secondary effect, namely to the consequences of Chinese posture in space with regard to China's global interaction, putting special emphasis on Europe.

To this end and to supply looks from different perspectives, the report is structured as follows: As a start, chapter 2 treats the "Why" and "How" of Chinese space activities, with a look at the underlying geopolitical situation, China's general motives and aims as well as at its relation to different world regions. Also, a brief overview of the basic nature, the institutional set up, the state of the art and the potential challenges of the Chinese space programme is given. Chapter 3, then,



reverses the angle and highlights the perception of Chinese space activities by different regions – the US, Russia, Japan and India. This complements the descriptions from chapter 2 and exposes issues to be respected on the international stage when dealing with China. Chapter 4, finally, is dedicated to the consequences for Europe. The current situation of its space cooperation with China is addressed as well as issues like the recent ASAT test, the Chinese involvement in Galileo and the European arms embargo. Different scenarios about the future dynamics of Sino-European space relations are sketched. They are followed by possible ways Europe could act, wrapping up the considerations laid down before.

The core project group consisted of Joachim Glaubitz (formerly with Stiftung Wissenschaft und Politik SWP, Berlin), Keith Hayward (Royal Aeronautical Society RAeS, London), Isabelle Sourbès-Verger (Centre National de la Recherche Scientifique CNRS, Paris) and Wolfgang Rathgeber (European Space Policy Institute ESPI, Vienna), who also compiled the report. The texts about the regional perceptions of China in chapter 3 are based on contributions from Thomas Kunze (Konrad Adenauer Foundation, Moscow), Ram Jakhu (McGill University, Montreal), Emmanuel Puig (Institut d'Études Politiques de Bordeaux) and Kazuto Suzuki (University of Tsukuba).

In addition, competent advice was provided by Karl Bergquist (European Space Agency ESA, Paris). This mixture of experts with different backgrounds created synergies and allowed for bundling and unifying previously isolated concepts, resulting in better orientation for European decision makers and the interested public.



2. China and Space

2.1. China, the *Geostrategic Frame*

Today, the world faces the prospect of a new rapidly rising power: China. Its ascent is driven by its strong economic performance. With considerable unevenness and starting from a low base China's economy has been expanding at an average of 7-8 percent for nearly 20 years. This development is removing a substantial portion of humankind from the ranks of the poor and underdeveloped.

China's history of modernization is brief. The Chinese political elite repeatedly tried to change the country according to Western, particularly to American and European, ideas only since the beginning of the 20th century. Japan, the first non-Western military power, also served as a model of modernization. But all these early attempts did not succeed. Sun Yatsen, the first president of the Republic of China, failed as well as Chiang Kaishek, who followed him. When Mao Zedong in 1949 established the People's Republic the Chinese people believed in the ascending of a new modern China. However, when Mao died in 1976 China was even more backward than most of the developing economies in Southeast Asia, paralyzed among others by the so called Cultural Revolution.

Although the country accomplished important strategic achievements under Mao's rule – e.g. freeing China from Soviet hegemony, acquiring nuclear weapons and putting a satellite into orbit – Mao did not manage to modernize the economy at all. Furthermore, by overemphasizing revolutionary indoctrination and neglecting the development of productive forces he irresponsibly wasted China's intellectual potential.

Only Deng Xiaoping, after eliminating the ultra-left Maoist faction, began to give production priority over ideology in 1980. In a pragmatic shift from utopian illusions to realistic goals he profoundly changed the economic and social structures. In addition he opened China to the outside world. Foreign investments poured into the country, and tens of thousands of students went abroad in order to get educated at Western universities. These reforms are still going on. They are without precedence in the modern history of China.

Maybe for the first time in its history China is going to succeed in building a modern economy within a modern state.

What are the motives of this drive to modernize the country? Are there any principles behind China's guiding decisions? What about the tactics and long term strategies of China's international relations?



MOTIVES AND PRINCIPLES

China's experience with the Western world from the middle of the 19th century to 1949 was rather ambivalent. Most Chinese associate the West and Japan with aggression and exploitation. The period from the Opium Wars (in the 1840s) to the Communist takeover is regarded by the Chinese as a century of humiliation. The Communist Party used this wide-spread understanding and declared as its initial purpose the total ending of foreign privileges. Thus, Mao Zedong when founding the People's Republic of China (PRC) on 1 October 1949 proclaimed that "The Chinese people have stood up. They will never again be humiliated."

However, not everything the West and Japan did in China was unremittingly negative. There is no doubt that the Japanese invasion was brutal and China suffered many indignities under Western semi-colonization. But the West and Japan left also positive legacies. For the most part, China's leading universities and hospitals were established by foreign missionaries, foundations, and governments. Western financial institutions helped to create the foundations of a modern banking system. Many Chinese students who studied in the first half of the 20th century in Japan, Europe, and North America contributed to the modernization of their country. Under Communist rule, however, this hopeful development was ceased and discredited. The achievements of this non-socialist modernization were officially denied and denigrated as capitalistic.

The substance of politics in the PRC for a long time was dominated by continuous debate

over the selection of a proper strategy for economic development. Over decades the debate as to how much modernization or how much revolution was a strategic key question.

When Deng Xiaoping started his reforms in 1980 he emphasized the development of the economy

-notably agriculture- and encouraged private business; revolutionary goals, i.e. political education, were drastically reduced and almost abolished. In effect, this policy led to the re-establishment of capitalism - an authoritarian capitalism under the supervision of the Communist Party. This phenomenon is officially called "Socialism with Chinese characteristics".

One motive behind this change is national pride.

It is based on the conviction of the Chinese people that China in ancient times was one of the greatest civilizations, regarding itself as the centre of the civilized world; only from the 19th century the militarily superior foreign powers could conquer and subdue the country. This may be a distortion of history, but still, the Chinese believe in this simplification. And it is their perception that counts. Therefore they are convinced that China has to become strong and that the Chinese have to become the "master in their own house" in order to exclude further humiliation. As its leaders acknowledge China has to become wealthy and powerful.

In contrast to the former Soviet Union which had military power without economic strength, or Japan, which is economically powerful but militarily constrained, China is likely to emerge as a "comprehensive power",

with both economic and military strength. To realize this concept will take some time. But one should not doubt the determination of China's leaders – either today or in the future – to have a prominent and respected voice in shaping the world's and their region's destiny, and to acquire the weaponry and other strategic instruments that they believe will give added credibility to their voice.

There are impressive examples of China's self-determination and national pride. When in 1959 Khrushchev visited Beijing and discussed military cooperation between the Soviet Union and China asking Mao Zedong for "some sort of agreement so that our submarines might have a base in your country for refuelling, repairs, shore leaves and so on", Mao's blunt reply was No. And he continued: "We've had the British and other foreigners on our territories for years now, and we're not ever going to let anyone use our land for their own purposes again."¹

Years later, Margaret Thatcher, then UK Prime Minister, visited Beijing in 1982 to negotiate with the Chinese leaders the details about the return of Hong Kong to China, due in 1997. It was her negotiating aim "to exchange sovereignty over the island of Hong Kong in return for continued British administration of the entire Colony well into the future." However, from the very beginning of the negotiations Chinese leaders made it clear that, as Margaret Thatcher reported, "they would not compromise on sovereignty and that they intended to recover their sovereignty over the whole of Hong Kong – the island as well as the New Territories – in 1997 and no later". Margaret Thatcher warned the Chinese leaders that a loss of confidence

into the future of Hong Kong would have disastrous consequences for the Colony's economy. But China's Prime Minister replied, "that if it came to a choice between sovereignty on the one hand and prosperity and stability on the other, China would put sovereignty first."²

Closely related to the notion of national pride is the strife for independence.

It is the dominating principle of China's relations with foreign countries. Many decisions of the leaders in Beijing can be explained and understood out of this motivating force. For instance, the conflict with the Soviet Union beginning in the late 1950s and escalating in the 1960s was in its essence China's quest for independence from Soviet hegemony. By emancipating China from Soviet domination Mao Zedong wanted to establish a new China being free from foreign dominance as much as possible. China's refusal in recent years of a new alliance with Russia is an expression of this very principle: a fundamental opposition against alliances, since any formal commitment reduces the options of independent decision.

For decades, China's leaders have propagated the slogan "relying on one's own force" (zili gengsheng).

This, too, revealed the strong determination to be self-reliant and independent from foreign aid and to make China strong by its own efforts. One recalls that China has repeatedly refused to accept foreign aid, even in the case of natural disasters. In some ways, this has changed. Because of the



reforms and its policy of opening the country China has become dependent on ties to the outside world in various ways. This development, however, does not disprove the principle strife for independence. The post-Mao leaders clearly recognized that their country cannot modernize through its own efforts; they understood and are still aware that foreign support, investment of foreign capital and cooperation with foreign countries are indispensable. Nevertheless, the leaders in Beijing try to keep as many options open as possible for China in order to preserve a maximum of manoeuvrability and to avoid one-sided dependence. China's strategy to diversify the sources of energy and raw material is a case in point.

The foreign observer cannot but admire China's success in preserving a maximum of independence. Chinese leaders time and again successfully managed to play down or even cover up China's actual dependence on trade, investments and loans, on official aid and cooperation with foreign countries. They skilfully use the outside world's interest in the Chinese market and sometimes do not hesitate to demand a political price for access to this market always praised as huge and promising.

Besides striving for strategic independence there is also a strong demand for equality and mutual respect as principles of Chinese relations to foreign countries.

When the Chinese leaders decided in the early 1950s to build a nuclear weapon the motif of this strategically important decision was that China did not want to be in an inferior position to other powers, particularly the United States and the Soviet Union. Beijing fiercely opposed the Nuclear Test Ban Treaty of 1963 because it feared that both superpowers tried to impede China in developing nuclear weapons and to fix a system of two leading powers excluding China.

Equality also played an important role when China in the 1960s and 1970s discussed its borders with the Soviet Union. China argued that its border are based on "unequal treaties". These treaties, so the Chinese view, were forced in the 19th century upon a weak Chinese government and led to a considerable loss of territory to Czarist Russia. Today, Chinese politicians do not refer to the "unequal treaties" any more, although the recent delineation of the Sino-Russian border is in fact based on those treaties.

National pride, independence, prestige, equality and mutual respect – all these notions have one common basis, one historic root: the already mentioned history of humiliation and degradation of the once powerful China whose culture for centuries dominated the whole of East Asia. Since the founding of the PRC, this feeling of being humiliated is deliberately kept alive. The danger that strong nationalism and xenophobic outbursts could develop from these emotions is obvious. There have been occasions when China's leaders considered it appropriate to use nationalistic feelings as an instrument against foreign countries.

Finally, there is a principle that guides the leaders of any country with respect to the permanence and security of its borders: territorial integrity.

In the case of China, however, it has a special connotation. Ethnic China is divided into three parts – the PRC (or mainland), Hong Kong as a Special Administrative Region of the PRC and Taiwan (officially: Republic of China). Some observers use the term "Greater China" for this complex phenomenon. The government of the PRC maintains that there exists only one China and that the government in Beijing is the only legal government of the Chinese people. Any state that establishes diplomatic relations with the PRC has to sever official relations with Taiwan. The leaders in Beijing see Taiwan as a Chinese province which is not yet "liberated" or incorporated into the Peoples Republic. Any declaration of Taiwan's independence would – according to repeated announcements from Beijing – provoke military action of the PRC against Taiwan.

Over the last half century, time and again more or less serious tensions flared up over the so-called Taiwan problem. Despite of this intricate political situation the economic cooperation among the ethnic elements of „Greater China“ increased considerably during the last twenty years. Taiwanese companies heavily invested in plants on the mainland because of the low labour costs, and about one million Taiwanese live in the PRC. Nevertheless, direct trade, postal services and transportation are still forbidden; they have to be managed via Hong Kong.

Strategically, the PRC uses all instruments including military threats to put pressure on Taiwan or to isolate it within the international community. Numerous examples show that the leaders in Beijing do not hesitate to use all kinds of means in international relations, including crude pressure and blackmailing, in order to make a politically sovereign Taiwan appear as non-existent. If Western governments dare to speak up in favour of Taiwan suggesting a solely peaceful solution of the issue, Beijing refuses any comment referring to another principle: non-interference into internal affairs – a very convenient instrument. Whenever outside critics point to political or social deficiencies in China – e.g. suppression of human rights, lack of religious freedom – the Chinese government likes to quote the principle of non-interference into internal affairs. China's cooperation with governments of dubious reputation is also easily defended by referring to this principle. The same applies to Beijing's repeated threat against Taiwanese independence. Facing a compliant international community that likes to praise democracy Beijing has no difficulties with questionable methods to isolate a free and democratic part of China.

STRATEGIES AND TACTICS

China is surrounded by three strategically important powers: Japan, Russia and India. Besides these three there are – at the other side of the Pacific – the United States as a dominating world power which maintains a military presence in the Asia Pacific region and exercises strong influence there.



If one accepts the assumption that China in a long-term perspective strives for a dominating position not only in the Asia Pacific region but in the world as a whole, one has to ask for the strategies that could help to reach this goal. It will be noticed that the only serious rival on the road to this goal in Asia is Japan, in the global arena it is the United States.

Japan – utilizing its economic and technological strength but keeping it down

For the first time in history, China and Japan are exercising considerable power at the same time. In the past, it was always only one of them who was strong and influential. In ancient times, at least up to the 18th century, it was Japan that was inferior to China. At that time – according to a leading Japanese sinologist – “China was always the target of admiration and envy, the civilization of unsurpassed wisdom. Japanese suffered from a severe inferiority complex, but at the same time, they struggled with a strong sense of rivalry – they were determined not to be outdone by the Chinese. These two conflicting emotions were inextricably linked in the Japanese consciousness.”³ This is an excellent characteristic of a complex relationship between love and hate.

These two politically most important and spiritually most influential countries in East Asia share a long history of changing relations. This is true also for the 20th century. Little more than one hundred years ago, China experienced the overwhelming power of an imperialist Japan which raised claims and rights of sovereignty on Chinese territory.

As a result of the Sino-Japanese War in 1895, China was forced to cede Taiwan to Japan. For China the war was economically, politically and territorially disastrous, and the peace settlement paved the way for further encroachments by Japan and other powers. In 1937 Japan started an open war against China, four years later also against the US. As is well known, Japan lost the war. It formally surrendered to the United States on 2 September 1945 and seven days later also to Chiang Kai-shek.

Based on bad experience with Japan in the past, there is a deep-seated suspicion about the future development of this energetic neighbour in China. This suspicion helped to shape Beijing’s strategy vis-à-vis Tokyo: The Chinese leaders want Japan to confine itself to remain an economic power which could be utilized to support China in its process of modernization. But Tokyo’s political influence should be kept as small as possible. China wants to avoid that Japan becomes a militarily strong country capable of projecting its power beyond its vicinity. In other words, Japan must never again become a threat to Asia, notably to China.

In this context China is interested in keeping alive among other Asian countries the bad memories of Japanese imperialism and militarism. Since Japan so far was unable or unwilling to discuss publicly its past role in Asia, it plays into the hands of the Chinese. Short sighted Japanese politicians with irresponsible statements about Japan’s war time crimes and history textbooks for schools euphemizing the country’s aggression in Asia continue to irritate the Asian neighbours.

China skilfully uses Japan's past in order to shape its future, i.e. to keep Japan down.

However, to achieve its goals China needs an atmosphere of friendship and cooperation. China needs Japan for the modernization of its industry, of its economic system, for the construction of its underdeveloped infrastructure and for financing all these plans. What has been done so far demonstrates that Japan is the most important external factor of China's modernization.

The subtle Chinese diplomacy is very much able to create an atmosphere in which cooperation and friendship can grow. The Chinese invitation of the Japanese emperor in 1992 was an element of this strategy of tying Japan down to friendship. Tokyo has little choice than to respond. On the other hand, China uses the slightest indication of a revival of what it regards as Japanese militarism or nationalism to remind the Japanese of their past crimes. Because of these two characteristics – pursuit of maintaining a friendly or at least cooperative atmosphere and the permanent memory of the past – the Sino-Japanese relations show a certain unstableness. This unstableness is growing. Japan's relative decline from the position of one of the most successful economies in the world could have profound implications for the overall strategic situation in the Asia Pacific.

After 1945, Japan has never maintained the position of a strong political player. Its strength since then has consisted in its economy and its technology. These were the elements of Japan's political standing, not

leadership or even military potential. However, a Japan losing its importance will leave a political vacuum that may be filled by China. Its economic strength indicates particularly in Southeast Asia not only a greater economic influence but also a Chinese political clout in the region. This trend foreshadows the fading of an era when Japan and the United States were the only engines of Asian growth that mattered.

The rise of China presents Japan with its greatest challenge since the Second World War. Japan's concern over future Chinese hegemony is based on the enormous physical and political difference between both neighbours: China has ten times the population of Japan; it is rich in strategic resources although it has become a net importer of crude oil, it is armed with nuclear weapons and has large conventional forces at its disposal (although their modernity and readiness are questionable). Besides, Beijing is a permanent member of the UN Security Council. The Chinese military budget is growing by 10 to 15% per annum since 1989, and the modernization of the armed forces shows a tendency of great power interests: building up a blue-water navy, increasing the capability of medium range and long range missiles, expanding the range of the air force and improving its attacking power. Chinese purchase of Russian weapons systems also irritates Japan. Even if it will take a long time until China will gain the military dominating status in Asia, Japan already perceives China as an increasingly powerful neighbour. Some observers assume that China's military modernization is largely aimed at preparing for a conflict over Taiwan.



The Sino-Japanese relationship is one of the most important pillars of stability and peace in East Asia.

If both states are able to cooperate in a partnership-like manner the whole region, and not only the region, will benefit from it. However, one must not exclude that – as one consequence of China’s successful development – the rivalry between Japan and China will intensify. Here the question comes up whether Japan will accept China’s rise to a dominating power in the region and how it will react to this challenge. How will China react to an increasingly nationalistic Japan and vice versa? Notably it was Japan that recently became the first object of Chinese nationalistic outrage.

Another complex issue of considerable importance between China and Japan is Tokyo’s relationship to Washington. Beijing is aware that as long as the US-Japanese security alliance holds, Japan is less likely to embark on a military path. But if this alliance becomes uncertain, Japan may feel the need to build up an independent military capability. Since Beijing does not want Japan to play a major political or even a military role in the region, it can only wish that such a development will not come true. This might be the reason why China at present does not openly object the military presence of the United States in the Asia-Pacific region. Chinese politicians sometimes hint that they do not oppose the Japan-US security pact. But they usually add that in principle China does not agree with the stationing of troops on foreign soil. Beijing obviously hopes that the bilateral security pact will keep Japan from becoming a military power. However, for fear

of an expanded Japanese security role, China opposes any US efforts to reinforce the alliance.

Much of today’s geostrategic frame has developed a couple of decades ago. When in the late 1960s Sino-Soviet relations deteriorated and reached a serious phase with armed clashes at the Ussuri River in 1969, China began to show interest in reducing the tensions with the United States and its allies. This process reached its climax when on 15 July 1971 the announcement of Henry Kissinger’s hitherto secret trip to Beijing and President Nixon’s planned visit to China was made. Overnight the strategic map had completely changed. The Soviet threat to China was reduced considerably by Beijing’s decision to open dialogue with Washington.

Japan – not informed in advance – called this announcement the „Nixon shock“. Since the government in Tokyo had intended to act as a mediator between Washington and Beijing it now had to learn that neither Beijing nor Washington needed a mediator. The fear of being isolated enhanced the pressure on the Japanese government to normalize relations with China. In September 1972, after accepting Beijing’s conditions Japan recognized the Peoples Republic. At the same time, official relations between Japan and Taiwan were severed and the 1952 peace treaty with Chiang Kai-shek was declared null and void – an unprecedented decision. China had achieved an important strategic goal: a step towards the political isolation of Taiwan. To the present day this goal ranks highly on Beijing’s political agenda.

United States – selective cooperation but challenging its dominating position

The Taiwan issue played also a prominent role in the improving relations between Beijing and Washington. Taiwan was an ally of the US which guaranteed the security of the island with a respective treaty. Therefore, the issue was rather complex. Nevertheless, the Chinese side succeeded in 1972 to make President Nixon accept a formula which was an essential first step towards a final solution: "The United States acknowledges that all Chinese on either side of the Taiwan Strait maintain there is but one China and that Taiwan is part of China. The United States Government does not challenge that position. It reaffirms its interest in a peaceful settlement of the Taiwan question by the Chinese themselves." The diplomatic recognition of the PRC by the US – a strategic goal of high priority - was still far away. But the Chinese managed to force the US out of Taiwan by using a clever scheme.

During the 1970s China exercised an extremely anti-Soviet policy which was greeted enthusiastically by the West. Beijing adopted a hard-line policy towards Moscow, and supported all those military alliances directed against the Soviet threat, such as NATO and the US-Japan security alliance, as well as regional organizations aimed at countering Soviet influence like the European Community. Western conservative politicians known for their anti-Soviet views were received in Beijing with open arms. Chinese leaders warned them of the dangers of Soviet expansionism. They also lectured them on the importance of a strong NATO in order to deter the Soviet threat, about a strong unified

Europe and the need for a unified Germany. They even called upon Japan to double its defence budget in order to counter the "threat from the North" and they strongly supported Japan's claim of the Southern Kurile islands.

The West was euphoric about China's anti-Soviet stance, and considered the PRC as a member of an informal coalition aimed at containing the Soviet Union. The Chinese leaders succeeded in creating this image. They utilized this sentiment in order to achieve a key foreign policy goal: full diplomatic recognition by the United States. On 1 January 1979 President Carter recognized the government in Beijing as sole legal Chinese government, severed the official relations with Taiwan and abrogated the security treaty – a strategic victory of the PRC.

Having achieved that goal, China now turned a new page of relations to the Soviet Union. Shortly after Washington and Beijing had agreed to exchange ambassadors, the Chinese leadership signalled to Moscow that it was prepared to resume talks on political normalization without preconditions. China's anti-Soviet rhetoric was toned down and eventually disappeared. China strove for a position that permitted it to exercise normal relations to both superpowers. It wanted to be recognized and respected by both the United States and the Soviet Union as an equal partner. Beijing managed to achieve this aim during the 1980s.

A new strategic frame had come into existence: the bilateralism of the US and the Soviet Union had ceased to exist; instead it looked as if a trilateral structure would



emerge. However, within an unexpectedly short period not only the Soviet Union but also its whole empire of Communist led regimes collapsed. Although China, too, had to deal with serious internal disorder it succeeded to silence any demands for more democracy – in accordance with the brutal character of its regime – and to continue its policy of reforms.

At present China faces an international structure with only one dominating power – the United States.

However, the US is bogged down in costly wars in Iraq and in Afghanistan, has to deal with the delaying tactics of North Korea and Iran on the question of nuclear arms, faces a process of destabilization in the Near East and growing left-populist tendencies in Latin America.

The limitations of the only world power are visible. It would be too simple to conclude that China is a beneficiary of the situation but it is not particularly harmed by it.

Fruitful relations between the United States and China are of outmost strategic interest to the whole world. But Beijing noticed that for about a decade a discussion has been going on in the US about the economic and military rise of China and its consequences for the international relations and for US policy in particular. Intensive efforts to modernize the armed forces, the stipulation of a law against secession that legalizes a non-peaceful reaction to any quest of independence from China's sovereignty (aimed at Taiwan and Tibet), China's increasing global grasp at

energy resources, Beijing's continuous demand to abolish the European arms embargo of 1989, that has an impact on the transatlantic relations, and last but not least the dormant conflict between US and Europe about China's participation in Galileo (which will be treated in chapter 4) – all these elements are stimulating a debate on the future role of China in the US.

The rise of China will definitely change the Asia-Pacific region where the US has been heavily engaged for more than a century in order to avoid the hegemony of any other power. It will be a challenge to the US position within the region and beyond.

The leaders in Beijing time and again refuse any perceptions of a so-called China threat and stress their peaceful intentions. However, the region is full of uncertainties that are approached by the Chinese either with reluctance (North Korea) or without concessions (Taiwan or territorial claims in the Southern Chinese Sea).

How will China in the long run react to the US strategy to further integrate it into the international system and to engage it in cooperation with other big powers under the leadership of the US? How will China react if Washington exercises a policy which includes elements of containment? China's role as a member of the UN Security Council gives us some optimism. In the past, China was a passive, even defensive member, rarely seeking to shape the agenda and abstaining on most sensitive issues. These days, China's representatives act more confidently. China is increasingly willing to take the lead on issues and behave more like a normal great power –

and it is being treated as such by other council members, including the United States.⁴ But the picture is still mixed. Sometimes China pursues its narrowly drawn interests – energy security or the existential struggle with Taiwan – with an uncompromising resolve. If China truly wants to be perceived as a responsible power, it must conceive its interests more broadly than it has done in the past, and help to shape and support the international system it aspires to lead. The horrors occurring in the Darfur region of Sudan are a case in point. It is hard to escape the conclusion that China provides political protection to Khartoum in the Security Council in return for preferential access to oil. China has consistently resisted, diluted or abstained from resolutions that would have caused serious consequences for the government of Sudan. It is because of China's support that Sudan feels it can get away with genocide.

The US is still the main grantor of security and stability in the Asia Pacific region and will remain so for some time to come. Europe profits from this without sharing the burden. The leaders in Beijing are well aware of the fact that the interests of the US and of Europe in the Asia Pacific are only partially identical. And they try to use these differences. In this regard, the Europeans have to carefully observe China's tactics. The transatlantic relations are too vital for Europe to be risked for short term gains.

Europe – divide and use European skills

From the early days of the PRC, Europe has been of changing strategic value to China's leaders.

At present partially overlapping perceptions of a multipolar world seem to attract Beijing's interest in European affairs. Since the European Union has no direct security commitment in East Asia, the elements of tension are less obvious than in the case of the United States or Japan. Nevertheless, as elsewhere, the Taiwan issue has always been an essential part of China's relations to single European countries and to the European Union as a whole. Numerous examples show China's tactics of „divide et impera“ vis-à-vis a Europe that lacks a unified position on trade with Beijing.

When France sold six frigates and 60 fighter bombers to Taiwan in 1992 it had to close down the Consulate General in Canton and experienced disadvantages on the Chinese market. Germany, one year later, decided against the delivery of submarines to Taiwan and was rewarded for that with a contract to build the subway in Canton. When Macedonia established diplomatic relations with Taiwan in January 1999, Beijing was so incensed that it vetoed a six-month extension for the United Nations Preventive Deployment Force (UNPDF) mandate. A decision of international relevance had been dictated by narrow domestic political interests. These examples show the weakness of the EU and its members who are not afraid of kowtowing to Beijing for obtaining certain returns that can easily be revoked when the Chinese authorities want to do so.



For China, Europe is an additional important source of capital and technology besides the US and Japan. In 2004 the EU became China's largest trading partner and China became the EU's second largest.

Without doubt, both sides in various ways gain a lot from the intensity of their commercial relations. But the EU's inherent weakness is the diversity of its members' interests; China, on the other hand, speaks with one voice and often succeeds in playing one EU member state against the other.

There are a few thorny issues that need a careful handling by European politicians. First, there is China's demand to abolish the embargo on the delivery of military goods, decided upon by Brussels in 1989 as a reaction to the crashing of the Democracy Movement on Tiananmen Square. For China the matter is more or less a question of prestige. Not so for the EU. Since Washington strongly opposes the resumption of the export of arms to China, particularly because of Beijing's uncompromising stand on Taiwan, the EU by deciding upon this question has to be careful not to tarnish its transatlantic relationship. Another decision by Brussels could also become a sensitive issue with Washington: the EU-China agreement to let China participate in the European satellite navigation project „Galileo“. Although the project is planned as a non-military alternative to GPS, the Chinese participation implies a certain risk. Last but not least, there is the complex question of human rights. The continuing existence of an authoritarian political system in China brings about an obvious disregard of human rights according

to Western moral standards. Confronted with this problem Chinese officials will always point to the principle of non-interference into internal affairs as well as to the fact that their country's cultural and social traditions profoundly differ from Western standards and that a rapid change of their society would risk social stability – and an unstable China cannot be in the interest of the West. In a world of double standards and hypocrisy China has a strong position by trying to separate business from moral demands. This is illustrated by the situation in Africa, where China engages heavily without paying attention to human rights or democracy standards, putting itself ahead of Europe in the struggle for influence. The West has the obligation to support and encourage those segments of the Chinese society that want to develop an independent judiciary, increase justice and enjoy the freedom of information and of religious faith. The West must not give up its conviction that human rights are universal and that China has to abide by the declarations on these rights it has signed.

Russia – strategic partner and important source of energy

The geopolitical frame of Sino-Russian relations is shaped by the simple fact that both are neighbours and share a common border of more than 4000 km. During the centuries of relations the border has often played a central role since it was mainly fixed at a time when China was weak and unable to defend its position, especially in the second half of the 19th century. It is important to keep in mind that the Sino-Russian border which was agreed upon recently after lengthy negotiations is de facto based on the so-called

Unequal Treaties of the 18th and 19th centuries. Both sides appeared satisfied when after three decades of sharp conflict between the two Communist led countries the shattered relations were normalized. But it was President Gorbachev who had to go to Beijing in 1989 to settle the issue – notably after fulfilling harsh conditions demanded by the Chinese side.

The strategic situation has changed fundamentally. Russia has lost its status as a superpower. It is militarily weakened and poses less threat to China. China, on the other hand, is strongly interested not only in a peaceful border region but also in partnership-like relations. And it was China's initiative to bring together the so called Shanghai Group of China, Russia and three former Central Asian Soviet Republics Kazakhstan, Kyrgyzstan and Tajikistan in order to discuss confidence building measures. This group – tacitly dominated by China – seems to be of increasing importance in Central Asia.

Although trade relations do not play a significant role, China is very much interested in Russia as a stable source of crude oil, natural gas and other raw materials. Furthermore, China is keen on developing a military cooperation by purchasing Russian weaponry and obtaining licenses to produce Russian-designed systems. According to some reports there is an unknown number of Russian specialists working in China on the modernization of missile technology and other weapon systems. The fact that the Shenzhou spacecraft design follows the one of Russia's Soyuz spacecraft shows that there is some impact of Russian space technology on Chinese one.

It is obvious that a common interest in security matters and consensus on numerous global, regional as well as national political positions bring China and Russia closer together.

Both sides see each other as "strategic partners" whatever that means. One field of common interest is to promote multipolarity as the basis of a new world order and to oppose any activities in international relations that could strengthen US hegemony.

In general the Sino-Russian relations can be considered as stable. There are no serious sources of instability for the next five to ten years to come. Still, discomfort might be caused on the Russian side by reports mixed with rumours about a tacit flow of Chinese immigrants into the Russian Far East. Reliable figures are not published by the Russian side, probably because there aren't any. The demographic imbalance between both sides is well known. The governor of Khabarovsk region not long ago claimed that Beijing has "a well-defined programme to settle its surplus population in the Russian Far East." There is concern among the Russians that the peaceful and economically desirable immigration some day could lead to a clandestine revision of the border agreement. President Putin obviously is aware of the problem. A few years ago he stated: "If we do not take steps to develop the Far East soon then in a few decades time the local population which originally is Russian will in its majority speak Japanese, Chinese and Korean." It is not only the Russian president who holds this dim prospect, but for the time



being China is not interested to challenge a relationship that is profitable in all respects.

India – distant neighbour and awakening rival

Boundary disputes play a prominent role inhibiting the creation of trust and confidence. For decades a disputed territory in the Himalayan region was among the challenges to normal relations between China and India. Although in 1962, armed clashes occurred in this remote area, there were also other reasons for the deterioration of relations between the two largest and most populous countries in Asia. Some of these have to do with the two leaderships' views of evolving international order during the Cold War and the overall misperceptions of each others' policies and intentions.

Fortunately, the period of strained relations is a matter of the past. When India exploded its first "peaceful" nuclear device in 1974, no noticeable Chinese reaction occurred. China had already tested its own nuclear capability. By the 1980s the leaders of both governments came to the conclusion that all-round bilateral relations between the two countries should be encouraged. The visit of former Prime Minister Rajiv Gandhi to China in 1988 proved to be a landmark in this context. It set the norms for recent improvements in relations. Since force has been ruled out as a way of resolving the boundary dispute, both sides have repeatedly emphasized the maintenance of peace and tranquillity along the Line of Actual Control (LOAC), which emerged from the 1962 border conflict, pending an eventual solution. By signing agreements on the Maintenance of Peace and Tranquillity along the LOAC (1993) and on Confidence Building Measures in the

Military Field along the LOAC (1996), both sides are committed to implement a series of measures that will ensure military stability in all sectors of the border.

Apart from this bilateral issue China's relationship with Pakistan has played and will play a decisive role in shaping India's attitude towards China. China's support for Pakistan's nuclear weapons and missile development programme are matters of concern to India. The nuclear tests by India and Pakistan in 1998 added an extra difficult dimension to the triangular relationship.

A few years ago official and non-official Chinese voices have repeatedly referred to a readjustment in Sino-Pakistan relations after the end of the Cold War.

The decrease of India's links to the former Soviet Union and the end of China's close cooperation with the United States in containing Soviet influence in Asia and elsewhere brought about favourable conditions for improved Sino-Indian relations.

This readjustment became visible in China's strong verbal support to the success of the South Asian Association for Regional Cooperation (SAARC) and in its more disengaged attitude to the Kashmir dispute. From this, one could conclude that China is going to acknowledge India's predominance in South Asia.

China would not like to see a situation of permanent armed hostility between India and Pakistan, let alone actual conflicts where Beijing would be called upon to take sides. In the Kashmir dispute the Chinese side is now

taking a neutral position maintaining that only India and Pakistan can settle the dispute through bilateral dialogue without the use of force. China's interest in a peaceful development in South Asia is obvious. The recent visit of the Indian Minister of Defence to China (June 2006) is supporting this impression. Both sides agreed upon future cooperation between their military forces. As an exceptional gesture of good neighbourliness the Indian Minister of Defence was invited to visit the Space Control Centre in Beijing, which is usually closed to foreign visitors.

It is China's strategy to demonstrate to India and to other Asian countries that its rise as a great power must not be regarded as a threat to the region but offers attractive chances of cooperation. In this context it is interesting that India as well as Pakistan, Iran and Mongolia are holding observer status within the Shanghai Organisation of Cooperation. According to the Ministry of Foreign Affairs in Beijing, "many other" countries within and outside the region have applied for either the same privilege or even for formal membership.

Korea – test of China's willingness to cooperate

Korea, divided since 1950, is not a particularly comfortable neighbour: the non-Communist Republic of Korea (ROK) is an ally of the United States that guarantees its security and keeps military forces on its soil; the Democratic Peoples Republic of Korea (DPRK) in the North is ruled with brutal Stalinist methods but very much dependent on China's material support, e.g. energy and food. It is

Beijing's dilemma that, on the one hand, North Korea's strife for nuclear arms is strongly against Chinese interests, however, on the other hand, it is in fact impossible to force the DPRK to give up its nuclear ambitions. By cutting off any aid to Pyongyang China would risk the North Korean regime to collapse with incalculable consequences like millions of refugees, or acts of military adventurism.

Neither a unified non-nuclear Korea under US influence nor a divided Korea with nuclear arms in the North setting off an arms race in the Asia Pacific region is something Beijing could wish for. At present, it is completely open how things will develop.

China's commitment in handling the crisis on the Korean Peninsula and in cooperating with Washington and Tokyo will prove whether and how much the leaders in Beijing are able and willing to contribute to the stability of East Asia.

CONCLUDING REMARKS

The issue of relations between the Chinese Communist Party (CCP) and the military, i.e. the People's Liberation Army (PLA) remains ambiguous. Since ancient times the Chinese military has been subordinated to the political leadership. This tradition seems to have survived up to the present day: the People's Liberation Army is under the control of the Central Military Commission (CMC), the leading organ of the armed forces within the Chinese Communist Party. The CMC consists of ten members including its chairman and three Vice-chairmen. The fact that Hu Jintao,



the Chairman of the Chinese Communist Party and President of China also holds the position of chairman of the CMC shows not only the importance of the CMC but also proves the close connection between Party and Army. The first Vice-chairman of the CMC simultaneously holds the post of Defence Minister. There is, however, still another organ, the State Council (under the Prime Minister), that also has some authority over military affairs. But its actual influence on the army is not quite clear. Within the CMC the personal representation of the military – and this means expertise – is obvious. Therefore the outside observer could assume that the commanding authority in military affairs belongs to the CMC. Because of the close personal and organizational connection between the CCP and the PLA it seems highly improbable that important decisions concerning national defence as well as space activities like the recent ASAT test (deliberate hitting of an old Chinese weather satellite by a Chinese missile) could happen without knowledge and approval by the CMC.

All in all, a critical look on China's international conduct produces a rather mixed picture:

- One major Chinese yardstick of political success is the enhancement of its national well-being. The country seems to be driven by narrow selfish interests, nationalism, an obsession with prestige and the strong desire to become one of the two powers governing the planet.
- Disregarding environmental necessities, China's main objective is to acquire access to any kind of resources,

including intellectual capabilities. Its obvious reluctance to fight piracy of products and its lack of attention to intellectual property rights is another aspect of this approach.

Since there is little hope that there will be a fundamental change, China for a long time to come will remain a difficult negotiating partner who will use any device to get away as a winner. This will be the case particularly vis-à-vis a rather divided European Union.

There is no reason to doubt that the leaders in Beijing would like to see their nation to become a global power. China is energetically building various elements that are constitutive of this goal. The development of a space program is only one of these elements. This aspect will be highlighted in the following subchapter.

2.2 Chinese Goals in Space

Since the beginning of the Space Age, it has clearly appeared to people in power all around the world that being active in space considerably enhances a country's national and international image. Considering the Chinese situation at the time of the Cold War, the conquest of Space represented a real challenge for them.

China desperately needed international recognition and at the same time wanted to encourage domestic efforts to contribute to national pride.

It is characteristic to read in the latest Chinese White Paper on Space (published October 2006)⁵ that 1956 is still given as the starting point of the Chinese Space Conquest. By the way, President Mao Zedong made this decision at the start of the International Geophysical Year, well before the launch of the first artificial Soviet Sputnik satellite in October 1957.

This interest in Space as a way for Chinese leaders to advertise for their country and for their respective ideological choices has never stopped since then. Thirty two years later after launching the first Chinese satellite DFH in 1971, the successful launchings of the Shenzhou-5 and Shenzhou-6 manned flights in 2003 and 2005 illustrated how permanent and relevant this analysis is. The very large media coverage of these events, not only inside China but also all over the world, gave an impressive even if sometimes overestimated picture of Chinese achievements.

However, it would be unfair to limit the Chinese space programme to this aspect. The specific development needs of the country are also a good reason to invest in Space capabilities.

The lack of infrastructure, the need for means of telecommunication or remote sensing observation tools for cartography and management of the natural resources also contribute to the justification of the Space programmes. However, China had and still has to overcome serious obstacles to reach its targets.

Finally, the military dimension of the Chinese space programme has to be considered. This point is one of the most common issues raised in US literature because of the American strategic national issues involved and because the lack of transparency in the Chinese decision making process. Obviously Space is part of national interest, in China as everywhere else in the world, so one has to deal with the strategic issues of future Chinese space systems, taking into account both the dual nature of space technologies and the potential of the different space uses – from a diplomatic tool to an effective military capability. If nowadays the level of Chinese military satellites does not represent a real threat, the recent ASAT test carried out on 11 January 2007 opened a wide debate about the strategic posture of China.

CONTINUOUS INTEREST IN SPACE OF CHINESE LEADERS

Since 1956, Chinese leaders have indicated permanent interest in catching up with the first space powers.⁶ The current space potential is the legacy of 50 years of continuous political support and national efforts but with different priorities. Moreover, China had to fulfil ambitious programmes in the difficult technological and industrial context of a developing country with a specific status on the international scene.

The space sector has been strongly shaped by four main ideological influences that may be recalled through the political slogans of each period:



- The central concept of Mao's era "to rely on one's own strengths", is a part of the backbone of the Chinese space industry. The space leaders still have in mind the demand to contribute to the sovereignty and the independence of China. Despite the delays due to the troubles of the Great Leap Forward or even more seriously of the Cultural Revolution, during which science, technology and intellectuals were considered with suspicion and hostility, space activities were never completely interrupted. It is commonly acknowledged now that the political turmoil has postponed the programmes for about 8-10 years even if the core of the space community and installations had been transferred under State control, i.e. inside the PLA structure to protect them against the excesses of the Red Guards. In 1971, the success of the first Chinese satellite DFH-1 reinforced the political support and the Gang of Four made very ambitious announcements.

- During Deng Xiaoping's leadership, the space industry became part of "the Four Modernizations". At that time, the space sector experimented new foreign cooperation with Europe, Japan and the United States. This marks a new step in a closed activity's sector. At the same time, the main efforts were put upon application satellites, especially on the telecommunications programme DFH-2 and on Earth Observation capabilities. However, the limited financial support and technological skills did not allow developing these application systems quickly. In parallel, the decreasing level of funding of some military programmes led China, in 1986, to offer Long March launchers on the international commercial market. This enhanced the interface between some parts of

the Chinese space industry and their foreign counterparts. In that period, the Chinese space sector lost political support for prestige programmes but began to modernize and to reach new Western standards.

- The Jiang Zemin period, illustrated by the "Three Represents" formula reinforced this pragmatic approach of space activities but also came back to a more ambitious project with the decision upon the new manned space programme called 921. At that time, space as an element of Science and Education had to contribute to the strengthening of the Chinese economy. The civil space development programmes, mentioned in a specific subsection of the 10th National Five Year Plan (2001-2005) illustrated that point. However, the White Paper on Space published in November 2000 represents the main reference. In a brief comment, one should insist on the quite bureaucratic and non political language used in the Paper with three broad aims: exploration, application and promotion of economic development with short term and long terms priorities. The main idea is to concentrate the efforts on a limited number of areas and to combine self-reliance and cooperation. From this point of view, the manned space programme may appear as giving a new image of Chinese achievement and national consensus at a time when China is isolated from international programmes like the International Space Station.

- The current period offers quite similar views. Under Hu Jintao's leadership, space has to contribute to the "Harmonious Society" and to the "Peaceful rise of China". In this context, the official insistence on space potential as a tool for developing remote

areas by offering communication means for tele-education, medicine or by providing Earth images for the management of natural and human resources looks quite logical. At the same time, the new steps for the Shenzhou programme and the new ambition in space exploration mentioned in the new White Paper on Space released in October 2006 showed that political aspects are coming back. In fact, compared with the first White Paper, this new document considers a concept such as interdependence but also envisions in parallel the two levels of space activity: the integration into the 11th National Five Year Plan for Economy in adequacy with the orientations for the scientific and technological plans and the new and prestigious programmes such as Shenzhou and lunar exploration with Chang'E. On the other hand, the leaders continued to refer to a market oriented economy. This will certainly imply competition between the Chinese and foreign actors in the near future.

In brief, space competence still perfectly meets the most important objectives of the political actors. At present, space appears as a good tool to make China a modern country with high tech competence. It can contribute to a more balanced development of the country and to improve the potential of Chinese science and technology. At the political level, space achievements reinforce national pride, put the country at the forefront of the international scene and contribute to its image as a major player also at the regional scale. As such, they are part of the support to the Communist Party leadership by illustrating the relevance of its choices.

PRESENT CHINESE SPACE CAPABILITIES

The current conditions of the space programmes have to be analysed according to the different approaches described above. There are roughly three kinds of approaches.

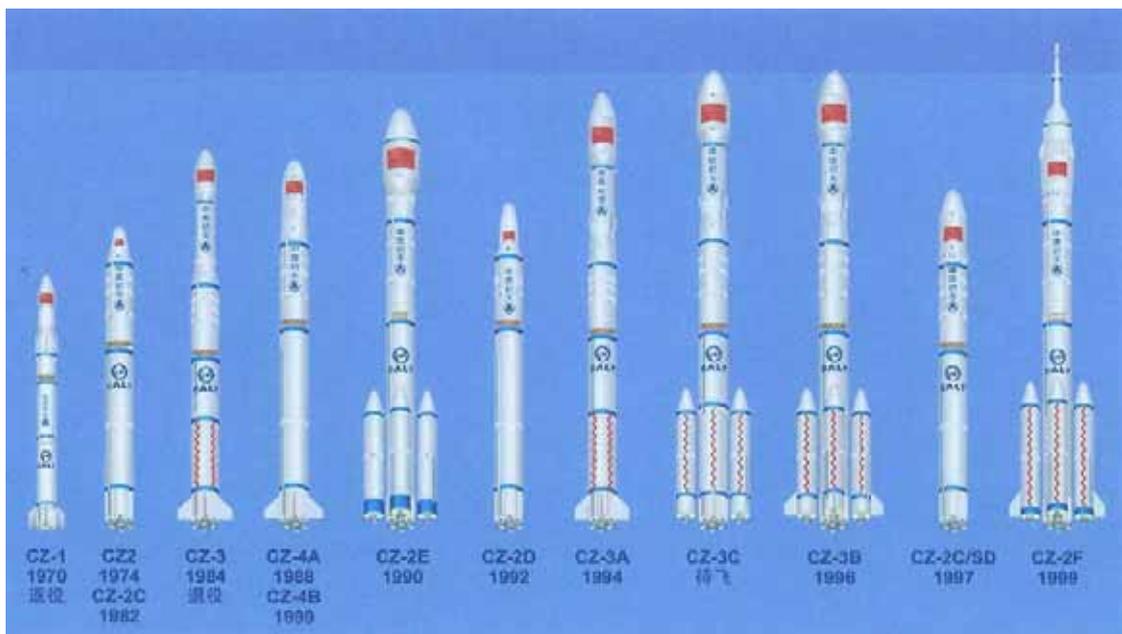


Figure 2: **Past and Present Chinese Launchers** (Source: CSIS)

The first aim is political and deals mainly with image and prestige: manned spaceflights and to some extent exploration issues belong to this category. The second aim is more bureaucratic, but important as well. It is part of the internal logic of the space sector. Science and applications programmes are part of it. The third aim is different in nature because it refers to the specifically military part of space activity.

Keeping in mind this general presentation, a quick presentation of Chinese skills in each field of the space industry will be given subsequently.

In 2007 China has mastered two main sectors: launchers and manned space flights. The first one is the prerequisite of an independent access to space while the second one's main purpose is to demonstrate Chinese presence in a field of high competence and technology. It has certainly also begun to display significant military capabilities with the execution of a successful ASAT test in January 2007.

China offers a large range of reliable and efficient launchers as shown by the last almost 60 consecutive successful launches it has carried out (as of beginning 2007). The capacity of the most powerful model CZ-3B is nearly half the one of Ariane 5-ECA, and the development of the new launcher family CZ-NGLV is underway. Some critical technologies have to be implemented because of the development of the new cryogenic stages and because of new propulsion devices for the future engines.

In parallel, the great variety of orbits reached by the satellites shows the high level of accuracy of the Chinese TT&C network (Xi'an control centre). This basic competence is fundamental for the follow-up of space programmes including "rendezvous" or ASAT capabilities. The Shenzhou programme is being implemented at a steady rate.

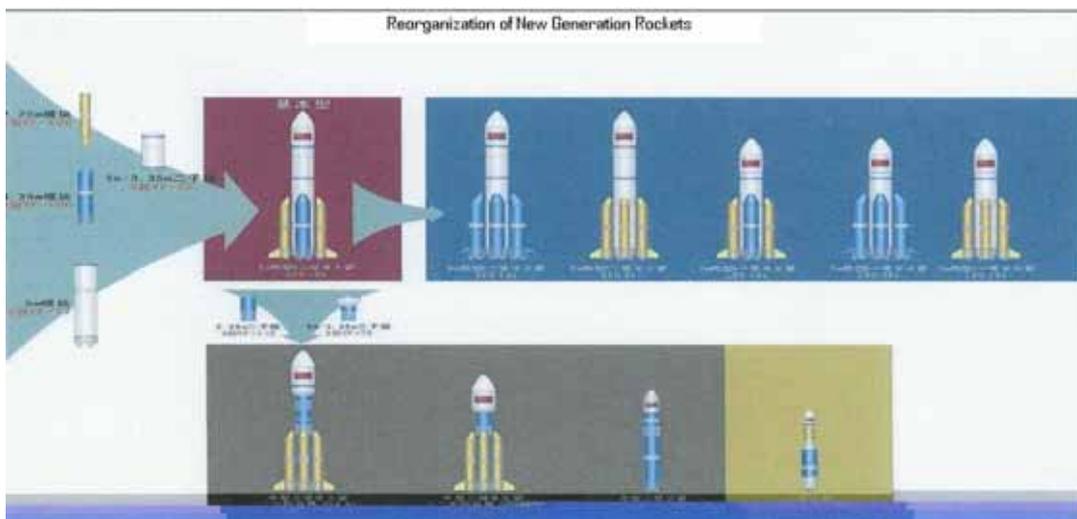


Figure 3: **Future Chinese Launchers** (Source: CSIS)

The final step is a Chinese space station but the future of the programme may evolve according to the international context and the competition of Moon programmes. The assessment of Chinese satellites capabilities is more difficult. The whole range of civilian applications is covered. The 75 satellites launched by China since 1970, belong to 6 different families : Earth observation (CBERS, Zi Yuan, Hai Yang), recoverable capsules (FSW, Fanhui Shi Weixing), telecommunications (DFH), meteorology (Feng Yun), navigation (Beidou/Compass), scientific and technological (Shi Jian).

programmes show the strong interest of the Chinese community to acquire new skills. At the same time, the attitude of Western countries concerning the transfers of technologies is a key point for Chinese systems in the near future. The Chinese efforts to overcome the current problems may be appreciated via the diversification of their programmes, including microsatellites.

As far as *meteorology* is concerned, the Chinese participation to the Meteorological World Watch gives a good idea of the current level of Chinese skills in this field. The

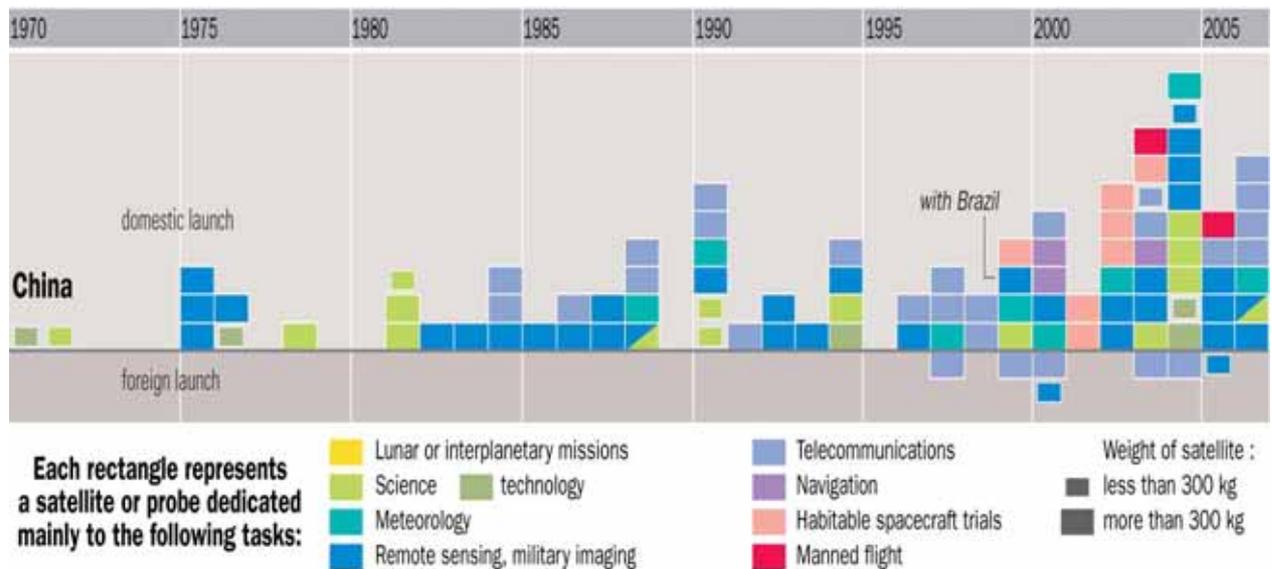


Figure 4: **Chinese Satellite Launches up to 2006** (Source: Isabelle Sourbès-Verger)

According to the official statements and the last White Paper (2006), there is a clear will to develop application satellites. One of the most sensitive fields is represented by *Earth observation* systems whose capabilities are still behind European, Indian or Japanese counterparts, not to mention the US. The projects mentioned in the White paper and the multiplication of the cooperative

characteristics of the new generation of FY-3 are supposed to meet international standards.

The *telecommunications* sector is in progress. While China is still dependent on purchasing foreign satellite for its own needs, the commercialization of two systems for Nigeria and Venezuela using the new DFH-4 platform represent a noticeable event even if the



international position of these customers and their relations with China are quite specific. However, it appears that the problems of the last Sinosat-2 satellite launched at the end of 2006 and out of service may be seen as worrisome.

Science is also driven following a double strategy. China is involved in improving Space Science by using both large scale cooperation and national programmes. The national programme includes many different missions and systems, from the huge FSW capsule to

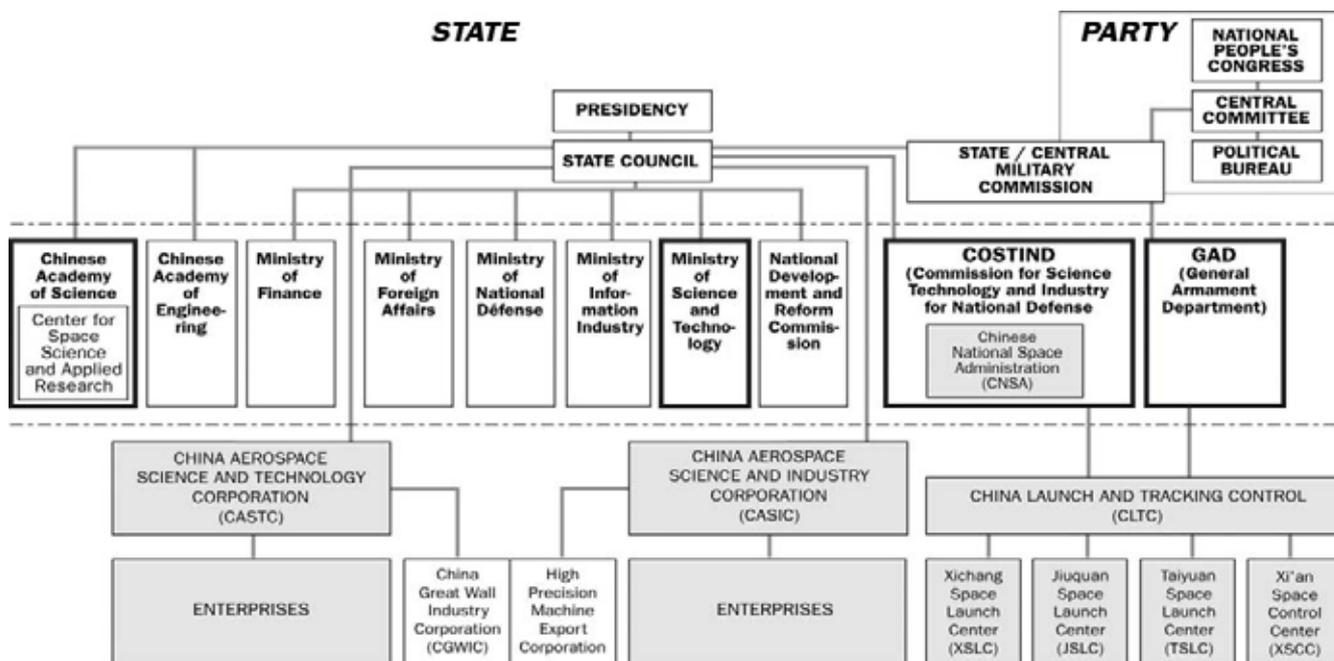


Figure 5: **Chinese Space Actors** (Source: Isabelle Sourbès-Verger)

Navigation is a strategic domain for China. Different policies are conducted in parallel such as cooperation with the European Union on Galileo and development of a national programme known as Beidou and Compass. If one considers that the potential offered by navigation is a key element for China, these two ways may be considered as a kind of guarantee. In the same time, cooperation on Galileo offers the opportunity to test the system and may be to keep it for civilian needs leaving Beidou apart for more "governmental" missions.

small platforms. This large range allows for many opportunities and explains the impressive number of projects. At the same time, some more "political" projects like Chang'E keep their national label and appear as key elements of the Chinese image – with "national" not necessarily being understood as being equivalent to "homemade".

CURRENT AND FUTURE AMBITIONS

Presentation of the actors and their relative role and influence

Space is clearly considered as a strategic domain and, at the upper level of the political organization, the Central Military Commission (CMC) plays a crucial role in the decision making process on space issues as well as in the management of the space sector. However, the main orientations given by the CMC on the development of space competences do not indicate that there is a clear priority given to the military space satellites.

As for the bureaucratic organization, two main administrative bodies play a central role in the Chinese space sector: the COSTIND (Commission on Science, Technology and Industry for National Defence) via the CNSA (Chinese National Space Administration) and the GAD (General Armament Department) under the auspices of the CMC.

Since the 1998 reform, the COSTIND is headed by non-military leaders and was formed by a combination of three bureaucratic authorities: the national defense departments of the Ministry of Finance and of the State Planning Commission and the administrative offices of the five defence industrial ministries (aviation, aerospace, shipbuilding, nuclear, and ordnance). The new COSTIND appears to be tasked with implementing defence production guidelines and with continuing to oversee and enhance the civilian production output of the defence plants. Apparently, the COSTIND has become the administrative and regulatory hub of China's defence industries.

In the same way, CNSA is the coordinating body for the civilian space programmes and the cooperation with foreign space agencies. It is also the official organization in charge of export products, licences for technological transfers.

The GAD runs the military space programmes, the launching infrastructure and the human spaceflights. It was formed in April 1998 during the restructuring of China's military industrial complex initiated at the 9th National People's Congress meeting where the new COSTIND was set up. The GAD is currently under the control of the Central Military Commission and has many of the responsibilities of the former COSTIND. This new PLA general staff-level department draws together the uniformed military from the former COSTIND with the General Staff Department's Equipment Directorate, as well as with other military equipment-related offices from other parts of the General Staff system. The GAD's main role is to oversee the development, procurement, supply, maintenance and the life-cycle management of the military's weapons systems. However, the management of space enterprises involved in military programmes is supervised by the COSTIND as well. The GAD was also tasked with overseeing the PLA's testing and training bases such as the Xichang satellite launch centre.

Among the ministries, three different statuses can be identified according to their respective role: executive partners, secondary actors and users.

- Some ministries, mainly the Ministry of Finance (MoF) and the Ministry of Foreign



Affairs (MoFA) are directly involved as executive partners because of their specific missions. The MoF has the responsibility to attribute the State resources to the enterprises and to put the reforms into

force. In its own sphere, the MoFA represents the Chinese national positions on the international scene (space negotiations, agreements, ..).

- At the decision level, the Ministry of Science and Technology (MoST) and the Ministry of Telecommunication and Information Technology, being secondary actors, play a specific role by intervening in the discussion of programme requirements and implementation. For instance, the MoST through the National Remote Sensing Center of China (NRSCC) is the Chinese partner in the discussion about Galileo with the European Union.
- Last, many ministries, commissions and agencies are in the position of space systems users with a limited influence.

Beside the ministries, the Chinese Academy of Science (CAS) has a specific status and role. The CAS runs the research programmes and the elaboration of the National Programmes. It also manages its internal reform, a very heavy task which started in 2000. Even if space research represents a small part of the CAS responsibility, its role is reinforced by its independence from the ministries and its direct links to the Party authorities.

At the industrial level, the *China Aerospace Science and Technology Corporation* (CASTC) and the *China Aerospace Science and Industry*

Corporation (CASIC) are two main huge organizations with a wide range of subcontractors and both market their own products through specific company like the *China Great Wall Corporation* (CGWC). For some time, CASTC and CASIC have been concerned by the reform of the state enterprises. The place given to the space sector within the range of national priorities is one of the most relevant indications of the political involvement. From this point of view, the quest for more efficient space industries in order to compete more successfully on the international market, as well as the will for a better integration of space systems to fulfil the needs of a more balanced national development, corresponds to the main orientations that were discussed during the 17th National Congress of the Chinese Communist Party in March 2007.

Budget

There is no official figure about the Chinese budget and this lack of information raises different questions. Different hypothesis may be formulated to explain it but the explanation is probably not unique.

It is not satisfactory to explain the lack of an official budget figure by a strong desire for secrecy. Of course, the Chinese space sector has long been a closed field but the existence of an official defence budget, a very sensitive domain, demonstrates that the reason cannot be so simple. Maybe one has to accept that a space budget does not exist *stricto sensu* in China.

This hypothesis would explain the declaration of many space officials explaining that they are not aware of the global budget and that the question has to be asked to the Ministry of Finance. The known figures are 1 billion yuans (120 million US dollar) for the Shenzhou V programme until 2003 and 18 billion yuans (2.15 billion US dollar) for the manned spaceflight programme since it started in 1992. The value of 2 billion yuans (240 million US dollar) of expenses in the (civilian) space industry can also be found in official speeches of the CNSA leader, Sun Laiyan, in 2005.

The question is rather to have a relative idea of the global investment in the space sector. One has to take into account the many methodological difficulties to compare the exchange rate, the national living conditions and the market prices, see for instance the works carried out in the specialized economic literature on PPP (Purchasing Power Parity). So, it appears more fruitful to compare the different current estimations with for instance the Gross National Product. The figures given by experts cover a large range from 1 to 5 billion US US dollar and more often converge on 1.5 to 2.5 billion US dollar according to the place given to military space programmes. Compared to the global revenues of the country, this investment looks moderate and comparable to the other space faring nations. In the same way, and more interestingly, it appears that the increase in the space budget is directly linked to the growth of the Chinese economy and does not show a deeper political and financial involvement in space during the last five years.

The adaptation to more classical budget rules through the World Trade Organization will

give us a better understanding of the money spent in the space sector in the near future. However, the differences in the technological culture and organization will still exist for a long time and should be kept in mind.

FUTURE OF CHINA IN SPACE AND OF SPACE IN CHINA

Some points can be underlined. Chinese space achievements play an important role as advertisement in a very broad understanding of the word. The Chinese potential in space (scientific level, quality of products...) has to contribute to the building up of national consensus, regional influence and international image. In the same vein, space products may be used to reinforce regional cooperation, as well as to reach global agreements with the suppliers of raw material and natural resources. As such, its national independent capabilities place China in a position not to depend on the ITAR regulation. However, some very important questions still remain.

First of all, the analysis of the context leads to the question which direct and indirect benefits from space may be expected in a market oriented economy. In how far can Chinese space products attract customers on the international market? It is clear that space is pulled by public funding and governmental programmes. If the Chinese space sector has to provide its own benefits for future investments, its future is quite uncertain. Some commercial opportunities may exist but it is impossible to place Chinese space technologies at the international level without a constant amount of public money



investment far from the political leitmotiv of an economy driven by its market capability.

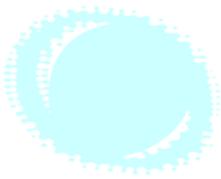
If China decides to become one of the primary space faring nations it means that the sector will keep the status of a strategic field of activity.

This position may be reinforced by considering space as an efficient mean to drive high tech culture. But to which extent is this argument valid? For many scientists, a Nobel Prize will be a more definitive achievement than Chinese people travelling to space. However, the American Apollo experience has shown that the space conquest has a strong attractive potential useful to develop an increasing interest for science. Moreover, space science offers the opportunity for Chinese laboratories to participate in international programmes and thereby to be recognized as an equal partner.

In parallel, one of the more positive trends is to use space systems as a tool to meet the needs of a developing country. The Indian case is one of the world's best examples of an efficient and increasing use of space in the every day life of millions of people. However, the story of Space in India shows how far the motivation and the build up of space competences have been different. The much easier access to sophisticated technology from the USSR and western countries has been invaluable for India to reach international standards and to use space systems with a true benefit for developing needs. The same approach for China will call for a more open

international attitude towards technology transfers.

This perspective looked more credible some months ago, because the recent ASAT test may create a more reluctant attitude among potential cooperation partners in the future and thereby delay the development of new efficient systems in sensitive fields like telecommunications and remote sensing.



2.3 Annex

| Year | Satellite | Launcher | Mission |
|------|--------------|----------|--------------------------------|
| 2000 | ZX 22 | CZ3 A | Communication |
| | FY 2 | CZ 3 | Meteorology |
| | Tsinghua 1 | | Observation |
| | Zi Yuan 2A | CZ 4B | Observation |
| 2001 | Beidou 1A | CZ 3A | Navigation |
| | Beidou 2A | CZ 3A | Navigation |
| | Shenzhou 2 | CZ-2F | Human flight testing |
| 2002 | Shenzhou 3 | CZ-2F | Human flight testing |
| | Fen Yung 1-D | CZ-4B | Meteorology |
| | Hai Yang 1 | | Oceanography |
| | Zi Yuan 2B | CZ 4B | Observation |
| | Shenzhou 4 | CZ-2F | Human flight testing |
| 2003 | Beidou 2A | CZ-3A | Navigation |
| | Shenzhou 5 | CZ-2F | Manned spaceflight |
| | CBERS 2 | CZ-4B | Observation (with Brazil) |
| | CX 1 | | Communication (experimental) |
| | FSW 2-4 | CZ-2D | Observation (recoverable) |
| | Zhongxing 20 | CZ-3A | Communication |
| | Tan Ce 1 | CZ-2C | Science (with Europe, Cluster) |
| 2004 | SW 1 | CZ-2C | Observation |
| | Naxing | | Technology |
| | Tan Ce 2 | CZ-2C | Science (with Europe, Cluster) |
| | FSW 19 | CZ-2C | Observation (recoverable) |



| <i>Year</i> | <i>Satellite</i> | <i>Launcher</i> | <i>Mission</i> |
|----------------|--------------------|-----------------|-------------------------------------|
| 2004 (ctd.) | SJ-6A SJ-6B | CZ-4B | Science |
| | FSW-20 | CZ-2D | Observation (recoverable) |
| | Feng Yun | CZ-3A | Meteorology |
| | Zi Yuan 2 3 | CZ-4B | Observation |
| | SW 2 | CZ-2C | Technology |
| 2005 | Apstar VI | CZ-3B | Communication |
| | SJ 7 | CZ-2D | Observation |
| | FSW 21 | CZ-2C | Observation (recoverable) |
| | FSW 22 | CZ-2D | Observation (recoverable) |
| | Shenzhou 6 | CZ-2F | Manned spaceflight |
| 2006 | Yaogan B | CZ-4B | Observation |
| | SJ 8 | CZ-2C | Science |
| | Zhongxing 22A | CZ-3A | Communication |
| | SJ 6-2A SJ 6-2B | CZ-4B | Science/Electronic intelligence? |
| | Sinosat-2 | CZ-3B | Communication (solar panel failure) |
| | Feng Yun 2D | CZ-3A | Meteorology |

Table 2: **Satellites launched by China since 2000**



| <i>Satellite</i> | <i>Launch year</i> | <i>Mission</i> |
|-------------------------------------|--------------------|--|
| SJ (Shi Jian) 1 | 1971 | Particle detection |
| SJ 2A SJ 2B SJ 2C | 1981 | Ionosphere study |
| SJ 3A /DQ (Da Qi) 1A SJ 3B/DQ 1B | 1990 | Atmosphere study |
| SJ 4 | 1994 | Particle detection |
| SJ 5 | 1999 | Microgravity |
| SJ 6A SJ 6B | 2004 | Space radiation |
| SJ 7 | 2005 | Space environment |
| SJ 8 SJ 6-2A SJ 6-2B | 2006 | Microgravity Space environment (?) Space environment (?) |

Table 3: **Chinese Science Satellites**

| <i>Satellite</i> | <i>Launch Year</i> | <i>Resolution</i> | <i>Status</i> |
|------------------|--------------------|--------------------------------------|------------------------------|
| CBERS 1 | 1999 | 20 to 200 m according to the sensors | end of transmission 2003 |
| Zi Yuan 2A | 2000 | ? | probably no more operational |
| Zi Yuan 2B | 2002 | ? | ? |
| CBERS 2A | 2003 | 20 to 200 m according to the sensors | operational |
| Zi Yuan 2 3 | 2004 | 1 m? | operational |
| CBERS 2B | 2007 | + HRV sensor 2 m | planned |
| CBERS 3-4 | 2008 | 5 m PAN | planned |

Table 4: **Chinese Observation Satellites (non recoverable)**





3. Foreign Perceptions of Chinese Space Activities

As seen before, the current level of Chinese space achievements and the different roads to develop new capabilities will be largely dependent on the attitude of other space faring nations. Chinese people very often insist on the fact that the isolation of China was the best incentive to the development of indigenous capabilities. The cases of China's car or aircraft industry are quoted as the best opposite examples. With no incentive from abroad to develop its own potential, China is still dependent on purchases in the West. From this point of view, the different perceptions of other members of the Space Club, that is US, Russia, Japan, India and Europe may play a crucial role in shaping the future Chinese space activities. Accordingly, they will be described in the following.

3.1 The US Perception

The demise of the Cold War has left only China as a potential rival to the supremacy of the US. Even though officials of both countries have persistently underscored its cordial nature, the relationship between the US and China has remained quite wary. Some disagreements are still pending and mutual suspicion about future capabilities and intentions has lingered *vis-à-vis* China's nuclear and space programmes. Under the Bush administration the US launched a

twofold strategy combining elements of the alternatives of "containment" and "engagement" which had dominated the debate over US foreign policy during the Cold War. As Avery Goldstein pointed out: "*Current [US] policy hedges against substantial uncertainty about China's future capabilities and intention (the concern of those who advocated straightforward containment) while seeking to avoid an unfortunate self-fulfilling prophecy of mutual hostility (the fear of those who had argued for engagement).*"⁷.

Since the United States have been the leading Power in space exploration for the last fifteen years, US government considers space as vital to its national interest. Consistent with this view, the new national space policy of the US released on 6 October 2006 clearly restates the will to preserve America's capabilities against competing powers⁸. As regards the China issue, this policy is explicitly aimed at preserving the capability gap between China and the US in space. That goal is reinforced by the 1999 Congress' so called Cox report on national security concerns with China. There, China was described as an US adversary clearly pursuing the acquisition of military technology. The report recommended severing technical ties with China, especially in the space domain. As a consequence of this report, various administrative and legislative reforms were initiated. This included the area of export



controls, namely new ITAR regulations giving the lead role to the Department of State.

There is a strong determination of American leaders to maintain the contemporary balance of power between the two countries. Two options would allow the US to uphold this balance: “engaging” or “containing” China.

In the field of international relations, the strategy of “containment” is associated to the realist school of thinking whereas the strategy of “engagement” draws its principles from the liberal view of world policy. Broadly speaking, these two approaches of international politics concur on the fact that since no authority governs nation states (because of their sovereignty), the latter are placed in an “anarchical system”. Based on this common assumption, realist thinkers believe that in order to maintain their security and increase their power, states should follow “self-help” policies that create “security dilemmas” and perpetrate the “state of war” in international relations. On the other hand, liberals believe that in order to avoid conflicts under an anarchical system, states ought to cooperate and institutionalize. In other terms, there are two main ways of dealing with the Chinese question in the US, the first (which largely prevails in security studies) is pessimistic realism, and the second is optimistic liberalism.

CONTAINING OR ENGAGING CHINA: THE SPACE SECURITY DILEMMA

The proponents of containment see trouble emerging from the conflicting interest between an hegemon (the US) and a rising power (China). Based on the hegemonic cycles theory, they believe that China will grow as an unsatisfied power and will eventually break the international status quo. In order to avoid the disruptive effects of a powerful China in the international order, the US intends to contain this growth to restrain it. With regard to China’s space policy, that means forbidding any military or technology sale that could improve China’s power. The purpose of this policy is to ensure the dominance of the US and the prevalent world order. The theory of the “balance of power” equally sustains this necessity of containing China. According to this theory, China is expected to worry about US power and to seek means to offset the threat such power might pose to its own interests by increasing its military capabilities. This increase would then trigger a reaction among its neighbours – especially Japan and Taiwan – that could lead to an arms race in the logic of a security dilemma. As Avery Goldstein outlined, the logic of balancing fuels the idea that the perception of China as a rapidly rising power could lead to military conflict⁹. These perceptions are well shared among US analysts of China space policy. Authors like Larry Wortzel or Joan Johnson-Freese openly regard China as a potential enemy¹⁰.

Confronted to the difficulty of interpreting China's capabilities and intentions, these authors, following the logic of the security dilemma, try to imagine the worst-case scenario. In doing so, the authors are promoting the enhancement of US capabilities which could work as a self-fulfilling prophecy and trigger a real enhancement of China's capabilities in return.

According to the liberals, the only solution to escape the unavoidable logic of the security dilemma is to foster institutionalization and interdependence between China and the US. Like the realists, liberals think that China is a potential threat indeed, but they also consider that there is no inescapability in that threat. It could be overcome through cooperation and economic interdependence. Thus, the concept of engagement was defined as follows: "*The use of non-coercive methods to ameliorate the non-status-quo elements of a rising power's behaviour. The goal is to ensure that this growing power is used in ways that are consistent with peaceful change in regional and global order*"¹¹. This concept is a perfect synthesis between the main approaches of the liberal theory which are institutionalization, interdependence and democratic peace theory. The logic of engagement could be summarized as follows: the main objective is to protect the interest of the US, its allies and strategic partners in Asia, to secure American domestic and international economic interests and to protect the existing American-led international economic and security regimes. The opening of the Chinese economy, the entrance of China into the WTO, as well as the growing regional institutionalization through the ARF and the APEC could be interpreted as

signs of improvement. As the liberals usually think, the more China is tied into the global economy, the more it will be peaceful. Because of the economic interdependence, China will contain its future international disputes because the costs of a military conflict will be far greater than the benefits. By fostering cooperation and institutionalization, the liberals hope that China will be constrained and peaceful. That is why liberals don't see Chinese space policy as leading to a militarization but still to a new technological and trading partner in space technologies¹². Thus, the meeting during an informal visit to NASA headquarters in Washington, 3 April 2006, between Luo Ge, vice administrator of the China National Space Administration, and Michael F. O'Brien, NASA associate administrator for external relations¹³, could have paved the way for dialogue, but because of the latest ASAT test, this chance will be lost for some time.

CHINA'S SPACE AMBITIONS AND ITS IMPLICATIONS FOR US SECURITY

As stated in the unclassified document on US National Space Policy: "*the United States considers space capabilities – including the ground and space segments and supporting links – vital to its national interests. Consistent with this policy, the United States will: preserve its rights, capabilities, and freedom of action in space; dissuade or deter others from either impeding those rights or developing capabilities intended to do so; take those actions necessary to protect its space capabilities; respond to interference; and deny, if necessary, adversaries the use of space capabilities hostile to US national*



interest."¹⁴ This is a clear statement that the US won't let any power interfere with their space policy and with their national interest in space. But notwithstanding the wary tone of the statement, the key notion remains largely undefined: What are US national interests in space? A careful reading of the document does not help answering this question. At first sight, the position of the US could be interpreted as directly aimed toward China space ambitions. But once again, the broad meaning of "national interest" refutes this kind of interpretation. Since the US national interest is not forever given but depends on the domestic political power, it evolves according to the political struggles in Washington. Thus, the recent victory of Democrats in Congress could foster a new appraisal of Chinese space ambitions. During the last 6 years, the hawkish views of the Bush administration favoured "self-help" policies and reluctant apprehensions of cooperation, especially with China in such domains as space and missile technologies.

Even if China has cooperative space programs with many countries, cooperation between China and the US is still difficult to achieve. Moreover, the US remains suspicious about some cooperations, as the one between EU and China in the Galileo Navigation Satellite Project.

Even if China has its own plan to build an independent capability, it'll be eager to cooperate with the US. But the reluctance of US militaries and containment promoters is still overweighting the need for cooperation. As James Lewis showed, China's plans fit well with Michael Griffin's description of how he

envisions the cooperation between the two countries: each nation will build its own highway to the moon and then they will cooperate when they'll get there¹⁵. But this view clearly demonstrates that the US is ready to cooperate only if they don't substantially improve China's capabilities in doing so. This is precisely the inescapable paradox of the US position toward China. On one hand, cooperation will increase American influence over China's space program and capabilities. This could foster economic ties and mutual comprehension. But on the other hand, this will fill the technological gap between the two countries which means that the relative power of the US will decrease in the benefit of China. Thus, the possibility of cooperation between China and the US still depends on how both countries conceive their national interests. The close economic interdependence between both countries has not yet been followed by any great increase in trust and dialogue.

The recent definition of America's national interest as preserving technological supremacy in space won't facilitate any step toward cooperation with China.

And at the same time, the intertwining of civil and military programs as well as the lack of a clear-cut definition of China's space ambitions will worry the promoters of engagement and motivate those of containment.

The Chinese anti-satellite test of 11 January 2007 has clearly shown the divide between those two strategies toward China.

The hit of a seven-year old Chinese satellite (Feng-Yun 1C) in polar orbit at an altitude of 848 kilometres by a missile launched from the Xichang Space Centre stirred up the media, the congressmen and the political analysts, but not always for the same reasons. While hardliners such as California Republican Senator Duncan Hunter called upon the United States to increase its anti-missile capabilities immediately, analysts like Philip E. Coyle and Theresa Hitchens outlined the need for cooperation after the event¹⁶.

Through the lenses of power politics and balance of power theory, the test has largely been interpreted as a sign of China's aggressiveness. Even if the United States and Soviet Union have conducted anti-satellite tests from the early 60's, the January test seemed to have clearly demonstrated the increase of China's capabilities and its challenging behaviour. Thus, facing the new Chinese capabilities, the US has no choice but to increase its capabilities in order to ensure its security. Corresponding to the idea of international politics as *Realpolitik*, this view has been held by the promoters of US leadership in space. Since the *Rumsfeld Commission Report* of 2001, the US government devoted significant resources to establish military space control and the Chinese test seems to challenge this goal. But in the meantime, it raises questions about the legitimacy of the current US strategy.

For example, if Theresa Hitchens considers the test as "provocative" and "irresponsible", this was not because it could trigger a militarization of space but because it created persistent space debris in a highly used orbit. Challenging the realist common-sense

assumptions and denouncing the aggressive unilateral path in space being trod by the Bush administration during the past 5 years, Hitchens – consistent with her liberal views – believes that China's efforts to become a peer competitor in space could have positive implications (like cooperation on civil space programs). So does Phillip Coyle when he states that an arms race in space does not necessarily need to follow from the Chinese test. Far from being an aggressive act, this test could be interpreted as a signal to open the difficult discussion leading to a treaty freeing space from militarization. Thus, as Theresa Hitchens stated, this test signifies that the US has a "rapidly disappearing window" within which it can construct a cooperative atmosphere with China and all the space-faring powers. Therefore, even if China should be criticized for the material consequences of its act, it should not be condemned for its political implications.

CONCLUSION

American perceptions of China space program will remain distrustful in the years to come. Since American strategists are considering the improvement of their space capabilities as vital to the national interest, there will be little room for cooperation between China and the US. Griffin's visit to China in 2006 has explored some potential cooperation avenues that had been unexplored before, but the Chinese ASAT test has brought the American willingness back to zero again. Chinese participation in the ISS, of which the US is the major stakeholder, will remain impossible for the years to come. The evolution of Chinese space policy and the increase of its capabilities will consistently be perceived as a



potential threat to US interests. The lack of cooperation could be used by the US as leverage in order to maintain the technological gap between the two countries. Even if China's space activities are perceived as non-military, the US will still be reluctant to cooperate in order to preserve the contemporary balance of power.

Since the US does not see any interest in cooperating with China, American experts will globally remain suspicious toward every improvement of China's capabilities. Moreover, the inherent duality of space technologies will always fuel the arguments for containment. The only change in this situation could be triggered by the lobbying of American space technology industries and economic actors in Congress. If American industries are prone to sell space technologies to China, they will try to influence decision-makers in order to gain political support. But this logic of engagement won't prevail soon. The Bush administration is still reluctant to cooperate with China in every dimension related to US national interest and its political legacy will last for the next few years.

The Chinese government seems ready to invest in its space programme to increase its prestige and influence. It does not seek to start any arms race and does not feel the necessity to do so. Space policy for the Chinese government is a means to create a "brand effect" and to legitimize its international status. Facing profound socioeconomic changes, Chinese government needs symbolic leverage in order to ensure the political cohesion of the country. Sustaining a coherent space policy is

necessary to entrench this image of a prosperous and ambitious China.

As regards the US, the question will be how long they can refuse to cooperate with China? Chinese government might need some help in managing the socio-political transition, and it could be in the interest of the US to help the Chinese government in sustaining its space policy to ensure its political legitimacy. On the other hand, China might not care about the US attitude anyways.

3.2 The Russian Perception

GENERAL RELATIONSHIP AND ITS RECENT EVOLUTION

In the 60s, there have been growing tensions and finally even a breach within the relations between the Soviet Union and China. However, in the 80s, a *rapprochement* between the two countries could be observed that was further pursued by the Russian Federation after the breakdown of the Soviet Union. Russia currently perceives China as an emerging world power with whose help it wants to achieve a multipolar world order.

President Vladimir Putin makes it clear since 2005 at the latest that his country is willing to regain a status of superpower. After a period of weakness in the 90s, Russia longs for a determination of its position in a global world. As a means of strengthening its position, Russia aims at short and medium term alliances with countries "that are emerging as important geopolitical players"¹⁷

One of the most important states with whom Russia strengthens ties is China. The relations between China and Russia at present are the best they have been for some years. This may, Putin travelled to Beijing with a delegation 900 people strong and was received like a czar. This state visit has been the climax of the Sino-Russian *rapprochement*.

After China having recognized the Russian Federation as self-contained state on 27 October 1991, the Shanghai agreement between Russia and China was signed in 1996, substantiating the cooperation in the field of armament industry. On grounds of this agreement, a "minimally militarized zone" of 100 kilometres length was established between Russia and China.

The Sino-Russian friendship treaty in 2001 reinforced the cooperation of both countries in all sectors. Additionally, mutual territorial claims were renounced and the respect for the territorial integrity of both parties was agreed upon. With that, Russia is on China's side in the Taiwan controversy. Further on, common

abatement of terrorism, separatism and religious fanaticism was stipulated.

One of the remaining sources of Sino-Russian tensions were border disputes in the eastern part (region of Tschita/China) of the 4300 kilometre common border. In 2005, after ratification by the parliaments an agreement on common borders entered into force that had already been signed in October 2004 at a visit of Vladimir Putin in Beijing¹⁸. According to the Russian foreign ministry, the "border problem has been solved for good"¹⁹ by this agreement.

An important manifestation of the aspired multipolar world order can be seen in the founding of the "Shanghai Cooperation Organisation" (SCO) in 2001. It was preceded by the "Shanghai Five" group, comprising Kazakhstan, Tajikistan and Kyrgyzstan along the dominating powers Russia and China. In 2001, also Uzbekistan was included into the treaties of the "Shanghai Five". In the founding document, the members denominated multipolarity as a common development trend in the modern world that is supposed to guarantee long term stability internationally²⁰. The SCO might soon rise to become a new global actor on the geopolitical stage, the more so as India, Pakistan, Iran and Mongolia hold an observer status. In this federation, Russia and China have the chance to be perceived no longer as single players but as part of an important union of states and thus to increase their international influence.



Russia has regained enough political self confidence to consider China not only as a partner for the aspired formation of a new world order. It also perceives China as a country that is dependent on cooperation with Russia.

Russia sees the growing need for energy as main reason for the Chinese interest in enhanced cooperation. The energy demand of China will continue to increase throughout the next years. If China's gross domestic product will continue to grow as fast as it has done recently, its oil consumption will match the current US one within less than 20 years²¹. China aims at a diversification of its energy sources that is supposed to make the country independent of energy shipments over the Chinese Sea. In the case of a harbour blockage in the Southern Chinese Sea, overland supply - through Russia or CIS states like Turkmenistan - is the only alternative. Therefore, energy imports from Russia are part of China's vital interest.

When China destroyed one of its own satellites by a ballistic missile in January 2007, the Russian reaction was unambiguous: President Putin, while stating that similar space tests were nothing new and China not the first country to carry out such tests, pointed out that Russia was principally against the deployment of any weapons in space: "the genie shouldn't be let out of the bottle". This, however, was primarily directed against the United States, whom Putin accused of constantly scheming to militarize space.

PRESENT STATE AND MOTIVES OF RUSSIAN COOPERATION WITH CHINA IN SPACE

The Sino-Russian space cooperation is in a stage of development. In the past, it has been embossed by the export of Russian products (including Soyuz components) to China. Apart from that, Chinese taikonauts were trained at the Russian Star City complex in the 1990s. Now, a phase of planning and developing common projects starts. For example, cooperation of Russian enterprises with CASIC regarding navigation and information technologies is foreseen²². Still, the space cooperation between China and Russia is not yet substantial. After a meeting of the Sino-Russian Commission on space research on 31 October 2005 in Sania (China), Roscosmos deputy director Jurij Nosenko stated that a closer cooperation between China and Russia in space matters is planned²³. Common projects might include the Russian unmanned probe mission to Mars moon Phobos²⁴.

For Russia, competitiveness in the space sector is of utmost timeliness for the imminent accession to the WTO. The Russian government considers the space industry as the economical sector that plays a key role in the aspired doubling of the gross national product within the next ten years. Nevertheless, it is aware of the economical and technical obstacles. Currently, Russia still holds a leading position within the launch market, but it is threatened by increasing competition. Moreover, the US, China and Europe are sustainably pursuing research about the implementation of manned missions to the Moon and to Mars. A technological breakthrough is to be expected, and Russia is

at danger to lose its cutting edge position in manned spaceflight, thereby also falling behind in other science sectors.

For this reason, an enhanced international cooperation is indispensable for the Russian side. China can be seen as ideal partner for Russia.

There are a lot of cooperation projects in the space sector with the US and Europe. However, these are not apt to realize the ambitious Russian plans and to eliminate competitors. Quite in the contrary, Russia might become a junior partner of the Americans or Europeans in the future.

China is in favour of cooperation with Russia because currently there is no chance to cooperate with the US. Besides, China is also interested in weakening the US position.

A research partnership with China, on the other hand, is coupled to a long term leadership position for Russia and it will also prevent China from catching up with the Russian space programme, which has been suffering from financial shortcomings so far. An area where Russia and China have not come to terms is space based navigation. Since 2000 there were speculations of China and Russia being interested in cooperating in the development and use of the GLONASS system. The visit of the Russian Prime Minister Mikhail Kassyanov to Beijing in November 2000 was expected to result in the signing of a contract concerning the Chinese involvement in GLONASS, with the Russian side especially interested in the financial

contribution of its prospective Chinese partner²⁵. No accord was signed, though. In 2004 the Chinese launched their own positioning system "Beidou".

As late as May 2006 there was a meeting between the Lieutenant-General Vladimir Popovkin, Commander of the Space Forces, and the Chief of Staff of the Chinese People's Liberation Army, Lieutenant-General Lyan Guanle, where the Chinese representatives were informed about various aspects of the GLONASS system²⁶. The Russians eventually gave up on China as their preferred partner and reinforced cooperation with India instead. First talks about making the GLONASS system available to India started in 2004²⁷. In January 2006, The Russian Minister of defence, Sergei Ivanov, declared India Russia's only cooperation partner in GLONASS²⁸.

RUSSIAN APPRAISAL OF CHINESE SPACE DEVELOPMENT

With the first manned Chinese spaceflight on 15 October 2003, China has established itself as economical and technological world power for good. Russia was following the event with great attention. President Putin sent a congratulating telegram to the Chinese head of state Hu Jintao. Roscosmos speaker Sergej Gorbunow stated "China, after Russia and the US, has become the third full-fledged space faring power, which is favourable for the conquest of space in general"²⁹. Russian media pointed to the fact that the Chinese carrier rocket "Long March 2 F" and saggar "Shenzhou 5" ("divine ship") are state of the art by all means. Nevertheless, Gorbunow noted that the Chinese still had to catch up a



lot to make par with the pioneer space faring nations. This shows that Roscosmos still categorizes the Chinese development in space as backward. Neither did Gorbunow forget to mention that the first Chinese space farers had been trained in "Star City" close to Moscow. It was not without second thoughts that the first Chinese "taikonaut" Lang Liwei was awarded the Gagarin medal.

For Russia, the manned spaceflight of the Chinese was more than just a scientific event in a neighbouring state. It directly touched Russia's interests. Ever since, the Chinese development in space is perceived as very capable.

The planned future cooperation indicates that Russia assumes a high speed of development in China and that it sees the Middle Kingdom rise to become a nearly equal partner within the next five years. The creation of a common platform for close cooperation in the space sector seems to become a Russian long term strategy.

CURRENT RELATIONS BETWEEN RUSSIA AND CHINA AND POSSIBLE TRENDS

Russia seems to consciously utilize China's geopolitical and economic situation for Russian interests in space research. However, this partnership is only a fraction of the wide cooperation spectrum whose increase can be observed in many areas:

Military cooperation

The solution of border conflicts between China and Russia through the friendship treaty from 2001 and the border agreement from 2005

allowed for the withdrawal of large troop amounts that had been based on both sides of the common border. The era of confrontation thus eventually gave way to a military cooperation. In 2005, the first common field exercise of the Russian and the Chinese army took place on the Chinese peninsula of Shandong. In the process, airborne troops and navy infantry trained the invasion of a coastline. Observers were concerned that the manoeuvre was to simulate the occupation of Taiwan.

Furthermore, Russia is the biggest armament supplier of China, while China is the biggest purchaser of Russian weapons. Wladimir Putin in June 2006 argued for keeping stable the amount of military technological cooperation with China, adding to "several billion US dollar"³⁰. Russian armament exports in 2005 amounted to 6.126 billion US dollar, which is the highest figure in post soviet history. Two thirds of these exports consist of weapon deliveries to China and India³¹. Following the yearly report of the Russian Federation to the "United Nations Register of Conventional Arms" (UNROCA), Russia delivered seven warships and 196 rockets/rocket launchers to China³². One can expect that Russia will continue to rely on China as the main customer for its armament exports, although the Kremlin strives for a diversification of its arms delivery destinations (e.g. to South East Asia, North Africa and South America).

Economic cooperation

The trade volume between Russia and China has substantially increased in the last years. Russian trade secretary German Gref indicated it as 29.1 billion US dollar for the

year 2005³³, the Russian Federal Service for State Statistics specified it as 20.3 billion US dollar. Accordingly, China's share of Russian exports was 5.4 per cent and the share of Chinese exports to Russia was 7.4 per cent³⁴. Altogether, between 1995 and 2005, the exports to China rose by 4 times and the imports from China rose by 8 times³⁵.

Cooperation in the energy sector

Russia mainly furnishes China with crude oil. In the first 6 months of 2006, Russia exported 8.347 million tons of crude oil and hence is China's fourth biggest oil supplier (following Angola, Saudi-Arabia and Iran)³⁶. In March 2006, construction of the so called East-West-Pipeline was begun. It is foreseen to transport 80 million tons of Siberian oil per year from Tajschet (Irkutsk region) to Skoworodino (border area to China), and 30 million tons directly into Northern Chinese Dazin via a branch³⁷. From 2015 on, China is also scheduled to be supplied with Russian natural gas. To this end, another two pipelines are planned.

Cultural exchange

2006 was declared the "Russian year" in China. According to the Chinese news agency Xinhua, 207 events were planned, including an festival or Russian culture, a "Moscow week" in Beijing and "St. Petersburg week" in Shanghai. In 2007, a "Chinese year" will be held in Russia.

CONCLUSION

All in all, the Russian government is very keen on emphasizing the cooperation with China.

From Moscow's and Beijing's view, it is in the mutual interest and therefore is likely to be continued. Both countries follow the goal of staying or making themselves independent from the economic, military and political influence of the US and the European Union. When Chinese head of state Hu Jintao visited Moscow in July 2006, China and Russia signed a "common declaration on the international order in the 21st century" that clarifies once more what both states target at. Russia and China herein not only stipulated an enhanced cooperation in the sector of international relations and a closer collaboration in international organizations, but also argued for multilateralism and a stronger role of the United Nations³⁸. This clearly defines the objective of confining the worldwide impact of the US. The European Union in this context is seen as a partner of the US in both Russia and China. As for a potentially closer cooperation between China and Europe, Russia would certainly not welcome it, but its concerns would surely not be as significant as the American ones.

3.3 The Japanese Perception

As a neighbouring country, Japan has serious concerns about the development of Chinese strategic space capability. Although astonishing, the success of manned space flight had little impact on the Japanese perception of Chinese activities. Rather, the application of the image of a successful space faring nation to China's diplomatic activities is a serious issue for Japan.



GENERAL RELATIONSHIP AND ITS RECENT EVOLUTION

In general, there are a lot of ties between Japan and China. China is the largest trading partner next to the United States, and the number one destination of Japanese foreign direct investment. But at the same time, the "rise of China" is quite worrisome for Japan. First of all, China is becoming an economic competitor to Japan. Although the quality of Chinese products is not comparable to that of Japanese ones, there are some industries where Japanese products are now losing competitiveness against Chinese products. The development of Chinese space technology, notably the success of the manned space programme, would provide an image that Chinese producers are capable of producing high-tech goods. In fact, there are some commercial advertisements showing that Chinese home appliances (such as washing machines) are as good as Chinese manned space rockets. This means that sooner rather than later Chinese products will catch up with the quality and technology of Japanese ones.

Secondly, the rise of China would imply that it would consume a lot of energy and food which Japan also needs.

Japan as a small island country depends on importing 60% of its food and 99% of its crude oil demand. This naturally means that the increase of Chinese consumption will shift the balance of demand and supply for food and energy, and that it will undermine a stable flow of imports.

Chinese government and industry would take advantage of the development of space technology for strengthening the capability for crop monitoring and resource management for sure. It may ease the tension in the market, but it would also improve the position of China in the market vis-à-vis Japan.

Thirdly, following the second point, increasing energy demand in China would eventually raise tension between Japan and China over territorial disputes. Both Japan and China sharply put focus on Senkaku Islands (Diaoyu Islands in Chinese) where natural gas is embedded nearby. Currently Japan effectively occupies these islands, but China also claims its territorial rights. It seems that the Chinese claim has a weaker base of argument, but it is important for China to maintain the claim in order to secure the access to the natural gas in the seabed. Although it is unlikely that this dispute would escalate the tension to a military conflict, it will be a consistent headache for Japan. The development of an accurate satellite positioning and navigation system (Beidou) as well as the naval forces of China are a deep concern for Japan.

Fourthly, constant tension between China and Taiwan is a significant issue not only for Japan but also for the Japan-US alliance. The sudden declaration of the anti-cession law in 2003 was a surprising move of China to take a harsh stance towards Taiwan. In response to that, the US-Japan strategic dialogue issued a statement that the alliance would pay close attention to the development of the Taiwan Strait situation. It is becoming the interest of the US-Japan alliance to develop modern space equipment for meeting the needs of securing the surrounding region of Japan.

Finally, as a consequence of the fourth point, Chinese naval power is increasing. Chinese navy has been a "Brown Water Navy" which means the naval force projection capability was limited to the coastal area.

But because of its interest in securing the route of energy supply and preventing foreign (i.e. United States) intervention into Taiwan affairs, its navy is becoming a "Blue Sea Navy" with long range force projection through aircraft carriers. This shift is accelerated by the development of Chinese space capability, particularly in the positioning and remote sensing domain.

Although these concerns are imminent, the Japanese government is taking a cautious approach to China. During the Koizumi premiership, the visit to the Yasukuni shrine was a real damage to the relationship to China. However, the economic relationship was stronger than ever. So the new Abe administration shifted the course towards a friendlier relationship by letting the Yasukuni issue ambivalent. This was a painful decision for the Prime Minister because he was personally very enthusiastic to visit Yasukuni, but for the sake of re-establishing a good relationship to China, he swallowed a bitter pill and held his personal emotion aside. His visit to Beijing in early October 2006 was an ice breaker, and largely due to the North Korean nuclear issue, Japanese and Chinese governments are strategically coordinating their policies. Thus, for a moment, the concerns over China would be set in the background. Nevertheless, this does not mean that Japan has an optimistic view of China's growing influence.

LEVEL AND MOTIVES OF COOPERATION WITH CHINA IN SPACE

The potential and motivation for Japan to cooperate with China in space are quite low. As described below, Japan's government and politicians are carefully observing the increasing influence of China in the Asia-Pacific region. As it would undermine Japanese leadership, Japan has little incentive to cooperate and to assist Chinese technological development.

Furthermore, the pride of Japan to be the most advanced country in this region prevents JAXA and industry to cooperate with China. The Japanese space community perceives that Chinese technology is the Soviet one from the 1960s, so that there would not be much to learn from China.

Thus, the motivation for cooperation with China is restricted to the field of science, but there are little opportunities for Japan since Chinese science seems to focus on lunar exploration which is politically touchy. There is only one project that JAXA conducts with China, namely to set up a team of researchers analyzing remote sensing data (JERS-1) for the assessment of geographical change.

This project, in fact, is promoted by the Ministry of Economy, Trade and Industry (METI)³⁹ instead of JAXA or Ministry of Education, Science and Technology (MEXT). Since METI has much stake in relation to Chinese economy, this cooperative project was driven not only by scientific or technological motivations but also by economic and diplomatic interests.



EVALUATION OF CHINESE SPACE POSTURE

Chinese space posture from the Japanese point of view can be evaluated in two regards: diplomacy and prestige. As discussed above, Japan regards China as an emerging regional leader, but not as a global player yet. Although the importance of China is getting stronger, China is still in the process of learning the rules of the game of international politics. Thus, Japan does not regard China as competing against the United States space capability or expressing its intention for expanding its influence throughout the globe. Instead, Japan regards China as a rational and self-centred actor whose commitment to international interaction is based on its narrow national interests, for example, securing the access to resources, preventing intervention from other countries, and extending the market for Chinese products in the Asia-Pacific region.

Space as a tool of diplomacy

One of the serious concerns for Japan is the emerging role of China as a leader in Asia. For a long time, Japan has played an active space role in this region despite the legacy of World War II. Japan has led a multilateral conference called Asia-Pacific Regional Space Agency Forum (APRSAF) for regional cooperation. This, however, is limited to the dialogue among space agencies under the leadership of JAXA (formerly NASDA), and has not been used as a strategic tool for Japanese foreign policy.

On the other hand, under Chinese leadership, the Asia-Pacific Multilateral Cooperation in Space Technology and Applications (AP-MCSTA) has been established with small- and medium-sized countries in the Asia-Pacific. This is an organization among Asia-Pacific nations for cooperative research and development of space technology and applications as social infrastructure, established in 1992, with the China National Space Administration (CNSA) playing a leading role. The 15 participating countries are as follows: China, Mongolia, Malaysia, Iran, Indonesia, Chile, Ukraine, Thailand, South Korea, Bangladesh, the Philippines, Pakistan, Peru, Argentina, and Russia. However, since attitude towards AP-MCSTA differs among the participating countries, only about 10 of them are working actively. One of the major programmes of AP-MCSTA is called SMMS, Small Multi-Mission Satellite, where CNSA invites engineers from Member States to develop small satellites, originally inspired by Surrey Satellite Technology Limited (SSTL). This has been highly appreciated by the Member States since

the programmes of AP-MCSTA are useful for relatively poor countries and are meeting their demands. They have not only paved the road for Chinese leadership in this region but they have also increased the demand for launching satellites through Chinese Long March rockets, whose launch opportunity is severely limited by US restrictions.

Following the success of AP-MCSTA, the Chinese government (in fact the initiative came from the Ministry of Foreign Affairs, not

from CNSA) launched a new, more institutionalized cooperation scheme called APSCO, Asia-Pacific Space Cooperation Organization (APSCO). The entire vision of APSCO is not yet clear, but nine members signed the treaty for establishing APSCO (Bangladesh, Indonesia, Iran, Mongolia, Pakistan, Peru, Thailand, Turkey and China). Among them, at least five Member States' ratification is needed for the treaty to enter into force. Four countries, namely, China, Pakistan, Thailand and Peru have ratified, and Argentina is considering joining it. Brazil and Ukraine are applying as semi-member countries.

It is evident from the Japanese perspective that China is deliberately using space as a diplomatic tool. The success of the manned space programme gives a clear image that Chinese space technology is proven and affordable. The barriers for developing countries to enter the club of space faring nations are extremely high, but through cooperation with China, it is possible to gain access to space technology and affordable launch service by Long March. This is a very attractive offer for those countries, and China is taking advantage of it. In fact, when the launch of APSCO was announced, many developing countries expressed their gratefulness to China in the UNCOPUOS meetings and the UN General Assembly regarding the question of weaponization of space. The Chinese approach is clearly delivering diplomatic benefits for China.

Furthermore, China is using space development as a tool of its resource diplomacy, not necessarily focusing on the Asia-Pacific. President Hu Jintao visited Brazil in 2004 to establish a cooperative relationship concerning space development and extending the cooperation framework of CBERS (China Brazil Earth Resource Satellite). Brazil is unlikely to gain launch capacity in the near future due to its failure in its launcher development, thus gaining access to Chinese launch capacity in exchange for providing its ethanol fuel technology (blended gasoline using sugar cane) is an alternative.

In addition, in 2005, China has gained an order for the development of a complete space system – from development, manufacturing, to launching – from Nigeria, and it is continuing its cooperation with Venezuela. Until recently it was difficult for developing countries to join space development and utilization because the cost of launching was high. Furthermore, even if they wanted to use reasonably priced Chinese launchers, they could not do so due to the restrictions of ITAR. However, this is changing as China is becoming responsible for the entire process of both development and launch of commercial satellites using its own technology. At the same time, it can be perceived that China has taken a step to secure access to natural resources by establishing a strategic relationship with Nigeria and Venezuela, which are major oil producers.



Chinese space development is more than a development of space technology. It is effectively used as a means to promote its policy and objectives in foreign affairs.

As it is stated in the Chinese White Paper on Space in 2006, China is aiming for "reinforcing space cooperation with developing countries", but the Chinese intention is not just reinforcing the cooperation but also enhancing Chinese strategic relationship with these countries. Even manned space flight is a means to achieve a policy goal internally and externally. It is important for Japan to carefully follow these developments in order to secure Japan's leadership in this region.

Space as prestige matter

It is obvious that the success of manned space flight by Shenzhou spacecraft improved the image of China, not only in space but also as a global power. Following plans such as the exploration of the Moon and the development of a manned space station seem to reflect the Chinese aspiration to be the global player. Indeed, China is becoming a global player, but as discussed above, at this point Chinese ambition is to become a regional leader – it is still in a process of learning how to play in the global arena.

So why did China invest heavily in its manned space programme? From the Japanese perspective, there are three reasons to explain this. First, as discussed above, a manned space programme was the best way to demonstrate the industrial competence and reliability.

The manned space programme was re-launched in the early 1990s when Chinese government was trying to break through the sanctions and the bad image caused by the Tiananmen Square events. Also it was a time when Chinese economy was dynamically shifting towards more market oriented approach.

So, there are some reasons to believe that the manned space programme was a demonstration of Chinese technology.

Second, again as discussed above, a manned space programme would provide opportunities for the Chinese government to utilize space as a diplomatic tool. For a long time, China identified itself as an "outstanding developing country" which means China would provide a role model for other developing countries. The success of manned space flight was a case for demonstrating the possibility that even developing countries could be able to catch up with the most advanced countries like the United States. The manned space programme was an ideal example because both the Soviet Union (Russia) and the United States were no longer interested in developing manned space capability beyond the Apollo era, and Europe and Japan were not committed. So China could go beyond European nations and Japan and join the league of the superpowers.

Third, and perhaps most importantly, the Chinese government needed a source of legitimization its "one party dictatorship" governance. In the past, Marxism, Leninism and Maoism were the ideological foundation for the Communist Party to govern China and for rejecting the claims to extend democracy.

The rise of a middle class in China threatens the legitimacy of Communist Party rule. This has invited the tragic event of Tiananmen Square in 1989. The more the Chinese leaders encourage market economy, the less the Communist Party loses its legitimacy. In order to regain the legitimacy of governance, the Communist Party needed something to substitute the ideological foundation that was badly damaged by the widening social inequality and the gap of income. Furthermore, the gap between the regions, particularly the coastal and the inland regions, is widening, and there was danger that China would break up. The local and regional authorities were becoming more and more autonomous (see the case of the Shanghai group), and Beijing lost its grip on the local authorities. What the Communist Party focused upon was to stimulate nationalism as a source of binding the society together. For example, the territorial disputes with other countries such as Japan, Russia and India, as well as the issues of Tibet, were used to increase insecurity of people and strengthen the control from Beijing. From the Japanese point of view, this was very worrisome because Japan was an easy target for encouraging nationalism. The historical trauma of World War II and the Yasukuni Shrine became symbols for China needing to be united and to encounter the threat from outside. For the Chinese, Japan is an easy target because they do not have to worry about military conflict since Japan has little capability to attack. If there are no security threats and so many issues to encourage the promotion of nationalism, there is no reason for Chinese government not to use Japan as a "bad guy". The manned space programme has to be understood in this context.

The Chinese government took full advantage of the success of manned space flight and encouraged the Chinese people to be confident as a member of the league of superpowers. However, this does not mean that China wants to act as a superpower in international arena. What the Chinese government intended was to convince people that the Communist Party rule brings pride and prestige to China, thus it is still legitimate to govern China without democracy.

From these two aspects – diplomacy and prestige – it can be concluded that Chinese space posture is driven by the national strategy vis-à-vis the international community. China wants to use the advantage of being a space faring nation to be the leader in the Asia-Pacific region and in resource diplomacy, while providing a source of confidence to Chinese people and strengthening the legitimacy of Communist Party rule. In other words, Chinese government is using space as a useful tool for its strategic policy, but not for competing with other superpowers such as the United States.

CURRENT RELATIONS TO CHINA AND POSSIBLE TRENDS

Since Junichiro Koizumi has left the Prime Minister office, the relationship to China has been improving. New Prime Minister, Shinzo Abe, visited Beijing in early October 2006 and launched an initiative to develop a "strategic cooperation" with China. However, this does not mean that cooperation in space will take



place near future. As discussed above, there are a lot of concerns about the current development of Chinese space capability that would imply further competition and potential increase of security threats.

Thus, for Japan, it is imperative to maintain a positive relationship with China while reducing the potential that China becomes a regional superpower.

Therefore, as stated before, the incentive for cooperation with China is quite small in Japan. The Japanese government predicts that the prime objective of Chinese space policy is to develop an autonomous capability. As clearly stated in the White Paper in 2006, the Chinese government focuses on the development of autonomous capability due to the strict technology transfer restrictions. ITAR has caused a lot of problems for them, and it is imperative for the Chinese government to autonomously promote a space programme without interference from other countries. In Japanese view, China would achieve its goal quicker if China joined international cooperation schemes like the ISS. The Japanese government is also paying close attention to the recent visit of Michael Griffith, NASA Administrator, to Beijing for enhancing cooperation between CNSA and NASA. What Japan wants to see is a delay in the development of Chinese autonomous capability.

Part of the reason why Japan does not want China to acquire autonomous technology is the contested leadership in the Asia-Pacific region, but another reason is the concern that China could use space capability to enhance its military strategy.

At this moment, Japan does not regard Chinese military space to be at a threatening level. Chinese People's Liberation Army (PLA) has access to a positioning satellite system (Beidou), but its capability for telecommunications and remote sensing is not as threatening yet. Application programmes, both civilian and military, are not developed to the full extent because of the shift of resources to the manned space programme. It would be a grave concern for Japan if Chinese government would be able to acquire military grade telecom and Earth observation technology through international cooperation or by autonomous endeavour.

Thus, for the attitude that Japan will take vis-à-vis the Chinese space programme, the options are limited. The first possible basis of the relationship would be "peaceful coexistence". China is an economic partner and it would be extremely damaging for Japan to increase political and military tension. Thus, Prime Minister Abe has decided to set the destination of his first visit as Prime Minister to Beijing, instead of the traditional destination Washington. Together with the changes in the situation of Korean Peninsula, Japan and China reconfirmed the importance of dialogue and coordination of their strategic decisions. Because of this visit, several problems such as trade frictions and territorial disputes were put aside, and superficially things seem to work very well.

However, this temporarily peaceful relationship does not secure the future relationship. Because of the North Korean missiles and nuclear tests, there is an intense Japanese debate over Japan's guiding

diplomatic principle of being a pacifist nation. This would imply that there is a second scenario of "aggressive competition in security field". If Japan takes a harder approach towards the North Korean situation, possibly conflicting with Chinese policy, Chinese government would find the Japanese change of security posture very threatening. For China, the US-Japan alliance is one of the biggest obstacles to its policy towards Taiwan. It is certain that China would try to stop Japan from taking an aggressive posture, and this might lead to a serious conflict. However, this scenario is quite unlikely since most of Japanese decision-makers are denouncing the possibility of Japan to take an aggressive posture.

The third possible and most likely scenario is "peaceful coexistence with a competition for leadership". As discussed above, China is clearly taking steps towards enhancing its leadership in the Asia-Pacific region, and the Japanese government is taking measures to regain the hearts and minds of Asian countries. The first of these attempts is the launch of the Sentinel-Asia project. This is the first multilateral application programme in the APRSAF under Japanese initiative. The Sentinel-Asia programme is a regional disaster monitoring and disaster relief support system using satellite imageries. JAXA is taking the lead by distributing ALOS images and establishing ground stations for image processing in the Asian region. This initiative is a clear cut case for the Japanese response towards the Chinese quest for leadership.

The current political debate over establishing a Basic Law for Space Activities in Japan focuses on the role of space for Japanese leadership in this region.

This law aims at improving coordination of decision-making in various ministries, including the Ministry of Foreign Affairs (MoFA). Toshiyuki Kawai, former Deputy Vice-Minister for Foreign Affairs, emphasized the necessity to coordinate the policy of JAXA and that of MoFA, so that probably there will be a strong message in the text of the Basic Law that MoFA should take space as a diplomatic tool serious.

Anti-Satellite capability

China's exercise of 11 January 2007 to shoot down an own meteorological satellite (FY-1C) raised serious concerns in Japan about Chinese intention and capability in various ways. First, it raised the concern of space debris. The exercise itself obviously creates tens of thousands elements of space debris, and Chinese government has not announced or officially recognized the responsibility for endangering the space environment. In fact, the first reaction of the Japanese government expressed concern about space debris.

However, the position of Japanese government has shifted more towards concerns about security issues on the ground. In particular, the exercise coincided with the timing of Chinese missile deployment in the Taiwan Strait.



Although Taiwan's pro-independent government is losing support from its people, China is actively engaging with anti-independent Kwomintang, and the presidential election is approaching. So, the Japanese government is concerned that the ASAT exercise is aimed at deterring American intervention to Taiwan issues and at taking the freedom of American action in this region. As a close ally to the United States, this is a serious matter for Japan. If the US forces are constrained and degraded by Chinese ASAT attacks, it would be a significant sea change for Japanese defence policy, because Japan's constitution prohibits the Japanese government to exercise military power outside its territory and accordingly, it crucially depends on the US forces for offensive action.

If US capability is undermined, this undermines the Japanese position in the security situation of this region as well. A direct use of Chinese ASAT capabilities against Japanese space assets, however, is not considered very likely by Japan's leaders.

Furthermore, concern is raised by the timing of the new space policy of Japan. As discussed above, a group of powerful politicians is preparing to submit a Basic Law for encouraging the Japanese government to utilize space – instead of developing space technology – and to extend its defence capability by actively using space. If China develops ASAT capability, the momentum for promoting the utilization of space would be undermined. Particularly the opposition parties, such as Social Democrats and Communists (although small parties, their rhetoric is still strong among people and popular newspapers), are strongly opposing

the new Basic Law because of the uncertainty of the limits of space utilization for defence purposes. They claim that space should be kept for "exclusively peaceful purposes". These parties are also pro-Communist China whereas LDP, the ruling party, is anti-Communist China or pro-Taiwan.

Thus, the chairman of the LDP's committee on space, Fukushima Nukaga, former Minister of Defence, visited Beijing in early February 2006 and discussed with various important persons from the Communist party/government of China. Nukaga reported that the Chinese government claimed that the exercise was only for science and technology purposes, and that there is no intention to attack foreign satellites. The Chinese government also said it is still committed to de-weaponization of space and it will support any discussion to prevent deploying weaponized satellites or attacks from the ground. Japanese government does not take these words for face value, but still they comfort some concerned people in Japan. In addition, it could re-launch the mood for submitting the new Basic Law.

In sum, the Japanese government has strong concerns about Chinese ASAT capability. But at this moment, there is a little to do for Japan. It still relies on the US forces, and it will promote utilization of space for defence purposes. However, this would change dramatically if there is another ASAT attack on non-Chinese satellites. So, the main course of action for Japan is to put strong international pressure on China not to repeat this kind of action and to keep on monitoring Chinese missile and space activities from space.

CONCLUSION

There are many uncertainties between Japan and China, but for the foreseeable future, it seems likely that there will be competition for leadership. This would make the interaction between Japan, China and the whole region quite complex. One possibility is that this intensive competition over leadership in space would strengthen the interaction and eventually form a ground for further cooperation. This would make both Japan and China strong space faring nations, which may lead to the establishment of more institutionalized cooperation scheme such as ESA. If either Japan or China remains as a sole powerful country, the institution for regional cooperation would work as a mechanism for maintaining the hegemonic power.

One of the reasons why there is certain reluctance among Asian nations to join APSCO or to strengthen the cooperation in APRSAF is the overwhelming Chinese and Japanese influence. It would be difficult for other Asian countries to subordinate to China or Japan, but it would be acceptable if there is a framework which includes both Japan and China in a joint leadership.

Both Japan and China should learn from the experience in Europe where major countries such as France, Germany, Italy and the UK cooperate in a single framework. However, the possibility of cooperation seems to be further away since China launched the ASAT test, which will change the balance of power in Asia. Nevertheless, it is also certain that other Asian countries are not in favour of

Chinese ASAT action. Thus, it does not push the Chinese position in front of Japan's one in the leadership contest, but at least it gave an impression that China is catching up with Japan. This image could have a significant effect on the Japanese position in the region, and certainly on the public opinion as well as on politicians' opinions about space.

3.4 *The Indian Perception*

GENERAL RELATIONSHIP AND ITS RECENT EVOLUTION

Though both India and China enjoyed a cordial relationship for centuries, for the last 45 years their bilateral relations have gone through a few ups and significant downs. "Since the 1962 border clash, which saw bilateral relations enter the abyss, Beijing and New Delhi had for many years made sluggish progress in the process of contacts and misgivings"⁴⁰. The first visit by India's head of government to China came in the year 1988 (Rajiv Gandhi's visit) after a gap of 34 years since Nehru's visit in 1955. However, the full story of Rajiv Gandhi's visit to Beijing remains to be told⁴¹ and it could be seen more as an attempt towards establishing confidence in the minds of both the States. Subsequently, Indian Prime Minister Atal Behari Vajpayee visited China in June 2003. This year could be treated as the watershed year in the evolving relationship among both the States. During this visit the two countries vowed to promote a long-term constructive and co-operative partnership. This visit brought the bilateral



ties back on the way of rapid restoration and improvement.

Against the background of the global environment and the realities described below, it could be said that

the Sino-India relations are currently at the crossroads, but are showing the shades of cautious optimism.

Both are not enemies in the literal sense any more, but are competing for natural resources as well as for regional and global geopolitical positions, and are striving to be partners for bilateral (and occasionally global) trade.

LEVEL AND MOTIVES OF COOPERATION WITH CHINA IN SPACE

On the science and technology front, space is an important area for both India and China and they are making vast investments in this field. Undoubtedly, both states are likely to leave their mark on the global space settings in years to come.

Since the dawn of space era, outer space has often been used as a political and diplomatic tool for asserting a nation's scientific and military strength or for showing and enhancing friendly relations with other nations. "Space is a visible and symbolic area of cooperation that is often used for political purposes ... and specific foreign policy initiatives."⁴² Since 2003, the 'usage of outer space' has remained an important aspect in Indo-Chinese deliberations. During Prime Minister Vajpayee's June 2003 visit to China, a joint declaration on bilateral ties was signed that clearly mentioned that both the States "are firmly opposed to introduction of

weapons in outer space, use or threat of force against space-based objects and support cooperation in development of space technology for peaceful purposes"⁴³.

Chinese Premier Wen Jiabao visited India's premier space facility Indian Space Research Organisation (ISRO) at Bangalore during his April 2005 India visit.⁴⁴ This visit played an important role in establishing confidence among the two States about each other's space programmes. ISRO has an agreement with the Chinese National Space Administration (CNSA) on cooperation in the application of space for peaceful uses⁴⁵. However,

India is not a member of the Asia Pacific Space Cooperation Organization (APSCO),

which is essentially an organization conceived by China and designed to promote use of space resources and space applications in the Asia-Pacific region⁴⁶.

For last three to four years, many encouraging statements have emerged from both political and technical leaders to take cooperation in space to a higher level. Wu Ji, the chief scientist for Chinese space science research and Director of the Centre for Space Science and Applied Research (CSSAR) in Beijing states the opinion that India and China should team up in space⁴⁷. Hu Jintao during his November 2006 State visit to India signed a joint declaration covering six main issues for cooperation in which 'space exploration' was one of the key issues. Here both the sides reiterated their commitment to the use of outer space for peaceful purposes. They also agreed to strengthen their cooperation in the

use of space-based technologies for peaceful and developmental applications, including satellite remote sensing, satellite communications, satellite meteorology and satellite launch services. It was also decided that cooperation in practical applications of space technology, such as those related to disaster management and distance education, should also be actively explored⁴⁸.

The tangible efforts towards normalization of the relationship between India and China have materialized only during the last three to four years. The efforts have mainly concentrated on gauging each other's strengths in the area of space technologies.

The visits by political leaders to space establishments could be looked upon more as an exercise towards confidence building. Both states understand that they may not compete with the Americans or Russians in this area but at the same time they could not be treated as minor players hence there appears to be a sense of healthy competition/cooperation between them. It appears that China is using its space programme to develop a strong vein of techno-nationalism among its population. So far there has been no talk of any military collaboration in the space area between both states.

However, the promising relationship in this field has received some sort of setback when during January 2007 China carried out an anti-satellite (ASAT) test by firing a kinetic kill vehicle on one of its own satellites. This has raised concerns in the minds of the Indian

establishment and India's defence community. Also, the external affairs minister has issued statements condemning this act.

EVALUATION OF CHINESE SPACE POSTURE

Chinese space activities have largely been guided and dominated by its military aspirations, though recently the civilian and commercial motivations in this area are becoming important. It has correctly been pointed that "China's entire space infrastructure is controlled by the People's Liberation Army."⁴⁹ On the other hand, the Indian space programme has been exclusively civilian in nature and scope. It is only very recently that India started making use of space for military purposes. With its military-oriented space programme, China seems to have gained an edge in launch capability over India. India appears to perceive the Chinese posture in space as a threat, both militarily and strategically. Perhaps that is why India has raised concerns about the Chinese testing of anti-satellite weapons and states the opinion that this act may lead to the weaponization of outer space.⁵⁰

However, in general India appears to match China's space capability. It is believed that "in almost all scientific and engineering aspects of satellite technology barring the military satellite area, India is clearly ahead even though the Chinese have launched more satellites than India has. ... It is generally not known that while China's space programme started a good decade and a half earlier than India's, India had very quickly narrowed the time gap. China launched its first satellite in



1970 while India did so in 1975. The momentum has been kept up. This Indian leadership in satellite technology is acknowledged by the Chinese themselves."⁵¹ The Chairman of the Indian Space Research Organisation, G. Madhavan Nair, also believes that India and China are "on par (with each other) as far as rocket technology is concerned," and India is actually "a step ahead of China in satellite technology."⁵²

India is actively striving to catch-up with its northerly neighbour in areas where it believes to be lagging behind, particularly in military uses of space.

In 2007, India will launch its "first dedicated military satellite for surveillance and reconnaissance."⁵³

There is a sharp disparity between India and China in overall scientific and technological capabilities. In India, currently there are merely 110 scientists per one million people and the country spends only \$3.53 per capita on research and development in science and technology. On the other hand, China spends \$12.15 per capita and has 633 scientists per million – about six times more than India.⁵⁴ In order to bridge that gap, at least in the space technology sector, ISRO is planning a space university in India.⁵⁵

Chinese space capability is essentially indigenous, though it did receive significant technology from the Soviet Union at early stages. The Indian expertise in space science and technology has also become mostly home-grown, primarily because of numerous international sanctions, mainly by the US.

However, with the recent positive developments in the Indo-US relationship both in nuclear and space technologies, India stands to gain space technological help not only from the US, but also from other states like France, the UK, Japan, and Russia. If the Indo-US relations continue to flourish, this could put India way ahead of China, at least in the civilian and commercial space sector.

CURRENT RELATIONS TO CHINA AND POSSIBLE TRENDS

Since 2003, political leaders from both sides have given very encouraging signals about bringing their relationships to a new high. Indian Defence Minister George Fernandes visited China and since then a new era of cooperation among the States has started, including cooperation in the defence area, particularly for the conduct of joint military exercises.⁵⁶ India-China held their first round of "strategic dialogue"⁵⁷ during January 2005 which has given impetus for improving their bilateral relationship despite long-existing border disputes. The "strategic dialogue" is also perceived to "overcome the old mindset that two key regional players would inevitably compete and struggle for 'scope of influence' and 'geopolitical interests'."⁵⁸ During the November 2006 visit by President Hu Jintao to India, he and Prime Minister Manmohan Singh have agreed, "to expand their coordination within regional organizations and explore a new architecture for closer regional cooperation in Asia." Seeking to allay latent suspicions about each other's role in the emerging patchwork of organizations that have sprung up across the continent in the past few years, the two countries said they 'positively view each other's participation in

Asian inter-regional, regional and sub-regional cooperation processes".⁵⁹

Both states are engaging each other in various areas of cooperation, which include commercial business and defence as well as science and technology. A growing trade relationship between these two of the world's

fastest growing economies is challenging traditional mindsets and is encouraging vastly improved ties. Trade between the two countries is expected to grow from \$18 billion in 2005 to \$30 billion by 2010.⁶⁰ This is a huge increase as compared to the 1990s when it lingered around the \$250 million mark. Many analysts view this emerging economic relationship between the two as complementary.⁶¹

However, while during last few years the economic relationship between India and China is on the upswing, the same cannot be said about their relationship at the strategic level. Still there appears to be some amount of ambiguity and inconsistency in the foreign policies of both states.

Few incidences indicate that in all likelihood China is using the 'Pakistan factor' to keep India engaged in the region. Retired Indian Army General V.P. Malik in his book on Kargil has revealed that China did make threatening military moves in 1999 when Pakistan had engaged India in a fierce battle by undertaking intrusions from the Kargil area⁶². After A.Q. Khan (founder of the Pakistan nuclear programme) revelations it is now an open secret that nuclear Pakistan is reality because of China.

India is concerned about alleged Chinese deployment of missiles in the Tibetan plateau and other areas that could potentially target India.⁶³ China has established an electronic listening post on Coco Island in collaboration with Myanmar and built facilities in the Indian Ocean littoral in Myanmar and Gwadar in Pakistan.

There are several indicators that the Chinese are following a policy of containment towards India¹ by extending its sphere of influence over all of South Asia.

This is particularly clear from China's forceful and close strategic and economic ties with all of India's neighbours (i.e. Nepal, Bhutan, Myanmar, Bangladesh, Sri Lanka, the Maldives and Pakistan) and its somewhat anti-India stands in entities like the SAARC.⁶⁴ China also opposes India's bid for permanent membership in the UN Security Council.

Since the independence of India from the United Kingdom in 1947, the US has developed close strategic ties with Pakistan, the arch enemy of India, and has not treated India as an ally. However, it all changed with the demise of the Soviet Union and the American perception of China as a new threat to US interests and hegemony in Asia and globally. Under the George W. Bush Administration, the "United States has undertaken a transformation in its bilateral relationship with India based on a conviction that U.S. interests require a strong relationship with India."⁶⁵ A concrete example of the implementation of this new policy is the success of the Indo-US nuclear deal. This deal has encouraged other States like Britain, Russia and France to expand their nuclear



assistance to India.⁶⁶ Similarly, in 2004 the US agreed to expand its space technology cooperation with India⁶⁷ and thereby started removing barriers for sale and transfer of space technology to the Indian Space Research Organisation (ISRO).⁶⁸ China believes that the US is engaging India to counterbalance the 'China factor' in their foreign policy. China opposes the Indo-US nuclear deal saying that it could do the same by helping its allies (e.g. Pakistan, Bangladesh and Myanmar) with nuclear technology.⁶⁹ Mona Lisa Tucker is of the opinion that "although India is cautiously proceeding with cooperative efforts with the Chinese, it sees China as a major threat, and that the United States welcomes this view as a means of counterbalancing China as its only near-term strategic competitor."⁷⁰ Any serious shift in the China-US relations might have important implications for India-US relations. Therefore, the sustainability of the yet fragile relationship between India and China still largely depends upon the Sino-US relations.

For many decades India and China have had few boundary disputes. However, during last few years, there have been baringly aggressive statements from both sides. These have not come in a way to harmonize the relations. Both states, though, have learnt to work around these disputes and currently efforts are on to resolve them with greater vigour and innovation.

Presently India and China are gauging each other's positions and are trying to emerge out as independent players both regionally and globally. They are fully aware about their strengths and weaknesses.

Apart from border issues, Indian policy regarding the Tibet Autonomous Region may increase tensions between them but may not reach the conflict level. Both states will probably increase their presence in Indian Ocean. Industrialization is likely to remain a driving force for both nations and this is going to create additional demands of energy. How these States will handle their ever-increasing energy demands needs to be watched carefully.



4. The European Perspective

4.1 Background

Although China is distant in geo-political terms and is unlikely to represent a direct threat to Europe's security over the next 20 years, Europe has a major political and economic stake in supporting China's full and successful transition into a prosperous, stable and open country, embracing the rule of law and free market principles. The EU-China Summit in Helsinki on 9 September 2006 agreed to launch negotiations on a comprehensive new Partnership and Co-operation Agreement which aims to encompass the full scope of EU-China relationship, including enhanced co-operation in political matters.

The Commission's strategy towards China reflects the need to respond to China's re-emergence as a global economic and political power. However, as will be seen in the scenario part of subchapter 4.6, it is not just a matter of reacting to China. For Europe, it is also a matter of being proactive – Europe can have a place in the driver's seat if it wants to.

The EU's fundamental approach to China remains one of engagement and partnership. This entails support for China's transition towards a more open and plural society, sustainable development, including co-operation with China on energy issues, climate change and international development; trade and economic relations;

strengthening bilateral co-operation, and of course science and technology.

The EU will also promote international security, in East Asia as well as beyond and more broadly on non-proliferation issues. However,

the EU has made it clear that improved trading relations go hand in hand with improvements in Chinese human rights and embracing the rules of international trade enshrined in WTO membership.

This includes appropriate policies towards intellectual property rights and open and fair trade.

4.2 Sino-European Space Cooperation

Europe is the only space actor cooperating with all other space actors worldwide. It considers China as an important partner in space.

Historically, either ESA multilaterally or EU Member States bilaterally have taken the lead in developing formal cooperative relations with China in the space domain. The most important exception is Galileo – an EU-ESA programme which now involves China. Additionally, there has been space cooperation at the industry level. Cooperation in the space sector under EU auspices may grow in future years, as reflected by the meeting organized by Commissioner Philippe



Busquin in February 2003 in Beijing with the Chinese space authorities and European industry.

SPACE COOPERATION BETWEEN ESA AND CHINA

In 1993 ESA signed an agreement with the CAS/CSSAR on the setting up of the Chinese CLUSTER Data Centre in Beijing, one of the ten centres which are part of the CLUSTER Science Data System. The relationship between the CAS/CSSAR and ESA has been positive. Based on this initial collaboration, the Chinese started to plan for their own national project that would provide complementary data to the CLUSTER mission. In 1997 the Chinese invited ESA to cooperate on this project by providing spare instruments to be flown on the Chinese mission called Double Star Programme. European scientists were enthusiastic, requesting ESA to act as the formal interface. Finally, it was decided to sign an agreement between ESA and the CNSA where the CAS/CSSAR and the CNSA would have joint responsibility for this cooperative project on the Chinese side. The division of work assigns responsibility for industrial architecture to CNSA, covering overall development of the satellite bus, and designates CSSAR/CAS as responsible for integration of the European instruments. The ESA-CNSA Agreement was signed in July 2001 and the two satellites were launched in December 2003 and July 2004.

In 1994 the Chinese Academy of Science signed an agreement with ESA on the

reception and processing of ERS data and two years later, discussions began with the MoST with a view to set up pilot projects demonstrating the utility of ERS data to Chinese users (including flood monitoring, land use, rice cultivation, oceanography and later monitoring forest cover). The ESA-MoST projects have included assistance to the Beijing Ground Receiving Station with processing of ERS data. The results of these projects have been very positive.

ESA and NRSCC are also cooperating within the DRAGON Programme - a research project linking 15 University teams from Europe and 15 University teams in China working together on different themes using data from ESA's ENVISAT and ERS missions. They include agricultural monitoring, forest mapping, forest fire monitoring, terrain measurement, seismic activity, chemistry/climate change, drought monitoring, south east Asia monsoon, flood monitoring, rice monitoring, oceanography, landslides, air quality monitoring, forest information from INSAR and water resources and hydrology. Recently another project was added relating to the preparations for the Olympic Games.

In 2001 ESA was invited by the European Commission to take part in the first informal exploratory discussions concerning Galileo, which led to the foundation of the common Galileo Joint Undertaking (GJU). The GJU-NRSCC Implementing Arrangement for Galileo describes the areas where cooperation is possible with China. A more detailed examination of Chinese participation in Galileo follows.

SPACE COOPERATION BETWEEN EUROPEAN STATES AND CHINA

There are also a number of space cooperation projects between single European States and China. France has signed a space cooperation agreement with China. The French space agency CNES has identified various topics of common interest with CNSA under the mechanism of the Sino-French Joint Committee of Space Cooperation. Within life sciences, cooperation in parabolic zero g flights and common studies on spatial cell biology as well as on the effects of radiation and microgravity on human tissue is conducted. Potential cooperation perspectives also exist in satellite TT&C and applications for Earth sciences, for example in oceanography, environmental surveillance and atmospheric chemistry. The common micro satellite mission SMESE (Small Explorer for the Study of Solar Eruptions) for studying coronal mass ejections and flares is on its way.

The German Aerospace Center (DLR) has been involved in the Joint Coal Fire Research project with NRSCC (National Remote Sensing Center of China). This project used data from different sources like satellites to understand the processes causing and influencing coal seam fires. An agency agreement between DLR and CNSA on research under space conditions for peaceful purposes has been negotiated in 1995. DLR together with EADS has offered assistance in the field of testing small satellite engines in a simulated space environment to China. In 2005, a MoU regarding future cooperation in the field of atmospheric research by LIDAR instruments was signed.

Potential future projects include utilization of German instruments and tracking antennas for Chinese lunar missions as well as a common solar telescope to examine and attenuate harmful radiation effects on space platforms. In addition, more than 100 Chinese aeronautics and space scientists and engineers have been hosted at DLR institutes throughout the last years.

Other European States have been conducting space cooperation with China as well, both at institutional and industrial level. The latter will be addressed below. Those states without a dedicated space agency have executed common projects through other entities like universities. Probably the earliest to cooperate with China was Sweden, which launched the Freja satellite piggyback on a Chinese Long March 2C rocket in 1992 and also offered China the utilization of Swedish Ground Stations.

SINO-EUROPEAN SPACE COOPERATION AT INDUSTRY LEVEL

A number of European companies has delivered goods or provided services to China. They have also established different collaboration models. British Surrey Satellite Technology Ltd. (SSTL), for example, has developed the Beijing-1 Earth Observation satellite with and for the Beijing Landview Mapping Information Technology Company (BLMIT). This satellite is used within the DMC (Disaster Monitoring Constellation), an international Earth imagery consortium led by SSTL, comprising partners from Algeria, China, Nigeria, Turkey and the UK.



One of China's biggest suppliers and partners in the space domain is Alcatel Alenia Space. Its cooperation with China dates back to 1984 when it supplied subassemblies for the Chinasat 1 satellite. After that, it delivered Sinosat 1. Boosted by the change of US technology export policy in 1999, it also acquired the deal for the Apstar VI and Chinasat 9 satellites. The most recent success for Alcatel Alenia Space is the contract to design and manufacture the communication and broadcast satellite Chinasat 6B. In addition, it will provide Earth Observation data acquisition systems for satellite data reception stations operated by the China State Radio Monitoring Center (CSRMC).

Conditions for EADS have been less favourable. Having even been blacklisted for some time because of sales to Taiwan, EADS Astrium and EurasSpace, its joint venture with CAST, have been involved in designing various components for the Chinese weather satellite FY-3. Before, EurasSpace had also been part of the procurement process for the Chinese telecommunications satellite Sinosat 1. Besides, EurasSpace has delivered an antenna measuring range to China. Infoterra France as EADS Astrium subsidiary has announced to set up a permanent presence in

Beijing to account for its success in the Asia Pacific region. EADS subsidiary Airbus is planning a Chinese location for A 320 assembly as the basis for a wide-ranging collaborative agreement with the Chinese aerospace industry. This deal, though set outside the space sector, illustrates the necessity of a trade off between using cheap labour force and sharing technology and know-how when dealing with the Chinese.

Beijing Spot Image is a joint venture between Spot Image and the China Remote Sensing Ground Station (RSGS) that was opened in 1998. There has been strong demand for its products and services. Other companies have plans to enter the space market and to establish partnerships in China as well. Thales has set up a joint venture with China Spacesat (controlled by CASC) to develop telematics solutions based on satellite navigation systems. Thales and TeSat have also signed a strategic cooperation agreement with CAST (Chinese Academy of Space Technology) on the development and production of communication satellite components.

German Ifen participates in the China Galileo Test Range (CGTR) that had been procured by NRSCC in the framework of its cooperation with GJU in Galileo.

4.3 Chinese Galileo Involvement

Chinese participation in the Galileo navigation and positioning satellite system is one of the most important elements in current EU-China space cooperation.

| Space Cooperation with China at... | Project Names or Contents |
|---|--|
| European Level | |
| ESA | <i>Dragon, Double Star</i> |
| ESA with EU | <i>Galileo</i> |
| Member State (Agency) Level | |
| France | Life Sciences, Earth Sciences, Satellite Applications and TT&C, Space Science (planned) |
| Germany | <i>Joint Coal Fire Research Project</i> , Staff Hosting, Satellite Engine Testing (planned), Atmospheric Research (planned), Support for Chinese Lunar Missions (planned), Solar Telescope (planned) |
| Sweden | <i>Freja Piggyback Launch</i> , Ground Station Use |
| Other States | Common Research Agreements, Cooperation between various Entities |
| Industrial level | |
| SSTL | <i>Hangtian Qinhua-1, Beijing-1, DMC</i> |
| Alcatel Alenia Space | <i>Chinasat, Apstar, Data Acquisition Systems</i> |
| EADS (Astrium)/ EurasSpace | <i>FY-3, FY-4 (planned), Sinosat, Antenna Measuring Range</i> |
| Spot Image | <i>Beijing Spot Image</i> |
| Thales/ (+ TeSat) | Telematics/ Strategic Cooperation Agreement |
| Ifen | <i>CGTR</i> |

Table 5: Selected Sino-European Cooperation Projects



It has also been at the root of a significant dispute with the US over the EU's determination to acquire an autonomous positioning network to complement the US GPS system. While formally a civilian only system, in its most accurate mode, Galileo promises levels of precision as good as if not better than the US GPS. Initially, this was the main US concern, and negotiations led to an agreement to limit access to the highest level of encryption. But following an agreement negotiated in June 2004, the US and NATO forces will be able to locally jam other satellite navigation signals (GPS civil codes, GLONASS and all Galileo signals) while preserving the GPS military code.⁷¹

Represented by the national remote sensing centre, NRSCC, China became a member of the Galileo Joint Undertaking in October 2004. To date, the Galileo Joint Undertaking has let 12 contracts relating to the manufacture of Galileo infrastructure elements in China and the development of navigation applications. China is directly contributing to the Galileo in-orbit validation phase by developing the search and rescue transponder and the satellite laser retro-reflector. In 2003 Chinese and European engineers began working together on a satellite navigation demonstration, which showed the potential of Galileo applications for waterway navigation. The establishment of a joint cooperation centre – the China-Europe Technical Training and Cooperation Centre – located at Beijing University, followed this. This centre promotes Galileo initiatives, supports increasing awareness of the benefits of Galileo in China, and constitutes a means of helping Chinese industry in the field of satellite navigation

applications. To assist in the implementation of the cooperation, the European side has detached an ESA expert to the centre for a limited period of time.

Chinese participation in Galileo has not been well received by the US.

The American government remains unconvinced by assurances from the EU that the Chinese would not have access to the most accurate signals⁷². This has been exacerbated by reports that the EU may consider using Galileo for military uses to recover escalating costs of development. Even if this will require ratification by the Member States, such a proposal may in any case regularize what has long been regarded as an implicit military market. While the EU might claim that this could be limited to European and other approved defence forces, longer term US worries about satellite positioning technology remain.⁷³ These uncertainties are increased the Chinese considering to expand their own positional satellite network, the Beidou. As laid down before, Chinese space policy tends to be implemented by independent agencies and there doesn't have to be a direct link between the NRSCC and the Chinese military responsible for Beidou, but external perceptions based on threat models (e.g. among the US defence establishment) tend to assume a high risk of potential technology leakage.

Another question to be asked in this context is about the transparency of the European decision making process concerning China's participation in Galileo and its communication to the public. It is not clear by what goals the political will to engage China was driven and whether possibly detrimental effects upon the

US-European relations have been adequately accounted for.

With Galileo being its first space project, the European Commission will have to build up expertise regarding the corresponding security aspects and considerations.

4.4 The Chinese ASAT Test

China's international relations have been seriously strained by its test of an anti-satellite (ASAT) device on 11 January 2007. The exact nature of this event and the Chinese motivation remain unclear. Explanations have ranged from a warning to the US that it could not take for granted the security of its space-based assets in the event of conflict over Taiwan to putting pressure on the US to sign the draft treaty on banning weapons in space. Described in terms of political science and game theory, the test is likely to mark the transition between a "Rambo scenario" where a dominant player (i.e. the US) can act freely to reach optimal results for himself to a prisoners' dilemma situation where all players [the US and China] have to cooperate to achieve individual albeit suboptimal benefit.

In any case, the destruction of an obsolete weather satellite by a missile was the cause of alarm and great concern on the part of China's neighbours and Western governments, many of whom are afraid of an arms race in space.

The US government, feeling challenged and provoked, was especially energized by the Chinese test. There might be danger that the ASAT affair will lead to further pressure from the US on Europe to limit its cooperation with China in the space sector. On top, incoherencies in official Chinese statements about the event have raised fears that Chinese president Hu Jintao is not in full command over the military part of the government.

Europe has reason to be upset beyond the transatlantic relation aspect. The test created a significant debris increase in orbits densely occupied by commercial, scientific and military satellites, including many European ones.

Hits by debris particles can have disastrous effects on space assets with heavy financial consequences. The fact that ESA had to conduct a short notice debris avoidance manoeuvre for ENVISAT at the end of January 2007⁷⁴ shows that these risks are real.

As a formal reaction, the EU presidency, being held by Germany at the time, issued a statement saying that the "test of an anti-satellite weapon is inconsistent with international efforts to avert an arms race in outer space and undermines security in outer space"⁷⁵. The UK also expressed its concerns about the impact of debris in space and the lack of consultation. It said that "the manner in which this test was conducted is inconsistent with the spirit of China's statements to the UN and other bodies on the military use of space". However, it added that



"we don't believe this [the test] does contravene international law"⁷⁶.

China is to be blamed not only for the test's consequences, but also for its tight lipped and reluctant communication policy. The exact circumstances of the test and its rationale have to be fully explored.

It underlines the need for caution in developing specific collaborative programmes that may have particular security sensitivities which must be examined on a case-by-case basis. It may also reinforce the need for independent European means of tracking and evaluating such events.

4.5 The Arms Embargo and US Security Concerns

One of the key caveats affecting EU-China relations and, by implicating many aspects of technological cooperation, especially in the area of dual technology, is China's record on human rights and the continuing effects of the Tiananmen Square repression.

Since 1989, the EU has imposed an embargo on arms sales to China. Although the embargo is more symbolic than real (the EU code on arms exports as well as various national control regimes have long prevented most direct arms sales to China), the political impact of raising the embargo has become a big issue, especially in EU-US relations.

The December 2004 Council announcement that the EU would work towards lifting the embargo set off a firestorm reaction in the US, especially amongst Congressional hawks.

Even though the EU Code of Conduct on arms sales generally would still apply to individual cases, the US interpreted the EU's move as threatening fundamentally to relax controls over the transfer of sensitive technology. Congress' reaction was uniformly hostile. The House of Representatives passed overwhelmingly a resolution condemning the EU's position and the damage spread rapidly to the Senate. A Senate resolution warned that lifting the embargo "would potentially adversely affect transatlantic defence co-operation, including future transfers of United States military technology, services, and equipment to European Union countries".

It called on the EU to "more carefully regulate and monitor the end-use of exports of sensitive military and dual-use technology"⁷⁷.

Even if the Americans seemed ill-informed of the details of the EU's procedures and overestimated the relevance of the embargo to EU arms sales to China, what mattered was the perception that the EU seemed on the verge of opening the door to uncontrolled arms sales to China and that US security interests (especially in respect to Taiwan) would be seriously compromised.

US Senators also believed that the EU was also lifting the arms embargo for the crudest of commercial reasons such as selling European commercial aircraft and other industrial products⁷⁸.

The Bush Administration reiterated its opposition to the EU's actions. Senior US officials warned that the US would regulate US technologies more closely and implement more restrictive rules on co-operation with EU entities that traded with China. The Administration said it would not stand in the way of Congress enacting punitive legislation that would not necessarily distinguish between EU members who did not engage in defence trade with Beijing and those that did.⁷⁹ This was a hint that the US would take a more stringent view of cooperation in general if there were any chance of US technology turning up in the wrong hands⁸⁰.

EU governments appeared divided over the issue. The UK government was strongly opposed to lifting the embargo without an adequate alternative.⁸¹ With perhaps less to lose from provoking the US and more to gain generally from demonstrating warmth towards the Chinese, the French government was less inclined to compromise. According to French Foreign Minister Michel Barnier, there was a strict arms export regime in place and the embargo made little real difference to trading with China. Threats from the US would not help to improve transatlantic relations.⁸² European companies, especially those with interests in the American defence market, tended to take the British government position.⁸³ While some of the heat has gone out of this issue as the EU decided to shelve

any further action, the heat it generated, and the warnings still emanating from the US government underline the difficulties of normalising relations with China without arousing negative US responses.

European industry has frequently stated the need for a more pragmatic approach to export restrictions to China.

While multilateral expressions of concern such as the European arms embargo are largely of symbolic value, there are more stringent policies at both national and European levels governing the transfer of sensitive technologies, especially defence equipment. Still, there are ambiguous areas where a European policy would be advantageous. In principle, the rules governing the export of sensitive technology should be developed and administered by a European body and not by Member States as they are at the moment. However, this would require major changes on the part of most European governments and attempts through avenues such as the Letter of Intent process, and despite several years of effort, there has been limited progress.

Space technology is one of the most sensitive aspects of the US technology transfer control regime, generally summarized under the ITAR regulations.

The ITAR system has been a major irritant in EU-US defence industrial relations, even for the UK which has particularly close links with the US.⁸⁴ The US is eminently concerned to protect its lead in defence-related technology especially in those areas that might neutralize



its high-level military networks or provide an adversary with an enhanced capability to wage asymmetric warfare. These fears tend to reinforce the significance of space-based systems for communications, reconnaissance and surveillance and, of course, precise location and strike.

US ITAR restrictions apply to US technology imbedded and incorporated in foreign equipment such as satellites. This has led to US prohibition on some satellite launches involving Russian vehicles. As a result, some EU states have begun to design-out US technology in order to evade US controls on dual technology. This has included an ESA-led programme in key satellite components and other space equipment.

While the overall direction of Chinese defence strategy may not embrace networking in the short to medium term, there is sufficient evidence to assume that the Chinese military is well aware of the so-called Revolution in Military Affairs and can observe the US military in action. Even if the Chinese do not adopt even a limited networked approach to strategy (comparable to the UK for example), the use of space to enhance security is a defined Chinese defence goal. Generally, the US sees a clear link between investment in science and technology, inward investment in the Chinese civil industrial base, joint ventures and collaboration, as well as returning students and opportunities for industrial espionage and the upgrading of Chinese military capabilities. From this

perspective, US sensitivities in relation to the Galileo programme and other EU-China space programmes with dual technology implications are understandable, even if unreasonable and an unacceptable constraint on European autonomy.

Paradoxically, the ITAR system and other manifestations of American protectionism could drive the EU and China closer together.

Providing an incentive to expand technological cooperation to overcome mutual deficiencies or improve the economies of scale in the development and production of space equipment. This delicate trilateral is clearly demonstrated by the US response to China's association with the Galileo programme.

4.6 Scenarios for China's and Europe's Development

In order fully to answer the question what Chinese space policy means for Europe, and the corollary what strategic responses might be required either to maximize benefit for Europe or to mitigate the dangers Chinese space developments pose, three general scenarios regarding future Chinese development can be formulated to guide thinking.

These are not designed to be detailed prognostications but merely devices to pin point the key dynamic elements in a complex

Two different possible developments can be summarized as

| | | Europe regarding space as... | |
|---------------------|-------------------------|------------------------------|---------------|
| | | (A) important | (B) strategic |
| Scenarios for China | (1) globalized economy | | |
| | (2) regional superpower | | |
| | (3) faltering growth | | |

Table 6: Scenario interaction pattern

and rapidly evolving context. Nor are they necessarily mutually exclusive. Certainly the confirmation of Chinese regional importance is predicated on continued strong economic growth which in many respects may depend upon closer ties with the major world economies. They look forward to the period roughly from 2015-2020.

1. China – a globalized economy
2. China – a regional superpower
3. China – faltering growth and internal dissent

To complete the picture and to illustrate that **Europe does not only have to react to developments beyond its reach, but can also shape the course of events by own action**, one can give options for Europe's future posture in space as well.

- A: Europe considers space as important, continuing its present way
- B: Europe considers space as strategic, aspiring leadership in it

By combining the various scenarios for China and Europe, it is then possible to discern different types of interaction consequences in a next step. These can be entered into a matrix as table 6.

POSSIBLE TRENDS FOR CHINA

1. Globalized economy

At current rates of economic growth, China will match the EU GDP soon. This will power Chinese space policy as well as its military capabilities. However, this scenario assumes a largely benign, outward looking China that has successfully integrated into the global



economy, with largely non-aggressive relations with its regional neighbours. Indeed, one may even assume the evolution of an extensive regional economic free trading system. China has signed up to all of the key trading regimes, including respect for intellectual property rights. It has an active, dual purpose space policy and has achieved world class standing in most of the key space technologies, including manned space flight. As a continental economy, with continuing ecological challenge, space remains a vital economic and societal enabler. Equally, while one might be entitled to assume a more equitable distribution of income and some enhancement of non coercive social and political controls, space-based systems will be vital to maintain internal security. However, a more secure China with greater respect for open accountable institutions may pose fewer human rights problems and hence be a more acceptable partner in international space ventures. From a European perspective a Chinese economic super power could be an uncomfortable prospect. In this respect, slightly slower rates of growth - perhaps even a cycle of recession - would enable Europe to maintain a more equal relationship with China, retaining its value as a partner.

2. Regional superpower

In some respects, the second scenario depends upon China maintaining the rate of economic growth implied in the first. But this future focuses on the effects of a China not only allocating a significant proportion of its new wealth to military preparedness, but assuming a more active, even aggressive posture. This would differ from Europe's

response to economic growth which, with some members excepted, has tended to eschew the creation of active power projection.

China is already a major regional power - and with a missile force possibly capable of hitting targets on the West Coast of the US - with some elements of a global reach. However, its armed forces generally lack even the regional power projection of Japan or for that matter India. Nevertheless, it is evident that Chinese defence spending if sustained at the current level will turn China into a Regional Superpower by the early 2010s. Projecting Chinese space plans this is likely to include an autonomous navigation and positioning system, extensive military communications, and multi-spectral sensing and surveillance capabilities. It might also possess some rudimentary anti-satellite devices. This poses perhaps the most challenging scenario for Europe, and perhaps the least desirable. It would imply careful examination of current trends in EU-Chinese cooperation, especially the degree to which the EU should allow Chinese access to sensitive technologies.

3. Faltering growth and internal dissent

This scenario posits a China that has encountered major internal problems - perhaps triggered by faltering economic growth. This is an insecure and potentially repressive China. It might also pose localized threats to its neighbours as it seeks to maintain territorial integrity or to distract its people from domestic problems - a North Korean strategy. A more benign version of this future reflects lower economic growth but

without the internal problems. This alternative would, in some respects, enable Europe to hold a stronger relative position to China as in many respects this would reflect a simple evolution of the current relationship.

Any large scale breakdown of internal order would be even more challenging. Space based systems would be essential tools for a Chinese government hoping to defend its position and to constrain potential break-away territories or conduct operations comparable to the "invasion" of Tibet. Under such circumstances, especially if operations posed threats to neighbours such as Japan and India – or even an attempt to seize control of Taiwan – cooperation with China would become increasingly untenable. It would exacerbate US hostility to European links with China.

POSSIBLE TRENDS FOR EUROPE

A: Europe continues its present role in space

Europe will have to make up its mind with regard to the space role it wants to play in the long run. **One choice** could be to stay a "normal" space actor. This would mean that Europe considers **space as an important topic** (as it has done so far) but not as a strategic one. For this case, space funding would be kept roughly at current level. In the long run, though, this could mean falling behind other space players since some of these pursue an expansion of their role.

B: Europe strives for more

Another choice for Europe is to aspire leadership in space. This would mean considering **space as a strategic asset** and as a decisive element of Europe's political will. Within this scenario, space would have to be flanked and supported by other European policies. At the same time, it would serve other policies (e.g. foreign affairs) as a tool without becoming dependent on them. All of this would require a significant increase in funding for space. The European Commission would have to play a strong role, providing guidance and orientation. To complement the setting, a high degree of space activity communication at European level and a streamlined industry sector would have to be achieved.

RESULTING INTERACTION MODELS

1 A/B: Relation of China as globalized economy to Europe

In this combination, China as a non-aggressive state would be more able to cooperate with all the major space powers, including the US, especially on ambitious manned missions. Indeed, a key issue for Europe is whether China views it as a useful or valued space partner.



| | | Europe regarding space as... | |
|---------------------|--------------------------------|-------------------------------------|-------------------------------------|
| | | (A) important | (B) strategic |
| Scenarios for China | (1) <i>globalized economy</i> | Europe as a junior partner of China | competition for global leadership |
| | (2) <i>regional superpower</i> | cooperation on equal grounds | competition for regional leadership |
| | (3) <i>faltering growth</i> | China as supplier for Europe | strong position of Europe |

Table 7: **Scenario interaction consequences**

If Europe continues its present way, it might become a junior partner and a supplier for China (corresponding to a switch of role with regard to the present situation). It is not inconceivable that Europe would become a key customer of Chinese space products and services. On the other hand, a more economically powerful China might be emerging as a major competitor to the US and as such Europe may retain a position as a key partner in major space programmes. At the same time, Europe would compete with China over global leadership in space if it tries to be the dominant space player.

2 A/B: Relation of China as regional superpower to Europe

In this constellation, China will have achieved its space capabilities largely through its own efforts, but aided in key areas by collaboration and technology transfer, either openly or illicitly. For this case, Chinese access to European space technology (or possibly Russian sources following the lines of Sino-Russian relations in arms procurement) would have a vital route. Certainly, this would be likely to be assessed by American intelligence – a perception which might further complicate US-European cooperation and technology transfer issues.

The more aggressive China is to assert its regional presence, the more problematic the EU's relations with China will be in general, leading to difficult choices between other partnerships with India or Japan, especially if the dynamics of regional power politics lead to increasingly adversarial and arms-racing behaviour. Also, China might have less interest in collaborating with a perhaps inferior space power. If Europe continues its present way, a cooperation on equal grounds might evolve, including the danger for Europe to be exploited by ways of technology leakage. If Europe tries to be the dominant space player, it would compete with China over leadership as well – this time, at the regional level.

3 A/B Relation of a China with internal dissent to Europe

In this possibility, if Europe continues its present way, China might be willing and able to devote more resources to space than Europe following the momentum and direction of current commitments. Still, Europe would have attractions as a partner, particularly if the US and Russia remained indifferent or hostile. China could become an important supplier of Europe. However, if this version of the scenario for China implied continued Human Rights violations, Europe would face an increasingly difficult political challenge in working with China, especially on the more security related aspects of space. If Europe aspires leadership in space, though, it could preserve or re-establish the capability gap to China and act from a position of strength, using space as a means of control and influence through cooperation. Table 7

contains entries to the interaction scheme of table 6.

In reality, the evolution of the EU-China relationship will clearly be affected by a complex of economic, technological, political and security themes well beyond the simple projections implied by these crude scenarios. The future is likely to contain elements of all of them. In any case, **Europe will be able to influence its further fate in regard to China and the corresponding space cooperation by its own decision.**



4.7 *Consequences for Europe*

In order to improve the basis on which it cooperates with China, **Europe must increase the coherence of its space activities and strive to be perceived as an entity abroad.** Currently, European states sustain national activities in space and these are perceived as such by the Chinese. Different national approaches to China should be coordinated or unified by a European “space” institution. As a minimum requirement, Europe should formulate and follow a consistent European Space Strategy, implying a closer relationship between EU and ESA. Europe must finally settle the question of who represents Europe in space matters so that foreign nations such as China have “one European phone number to call”.

To become more attractive in terms of space cooperation, **Europe must also show more commitment to space matters and dedicate more funds to the sector.** Priority should be given to projects that enhance Europe’s ability to act autonomously, leading to independence in the long run. For example, developing a European space surveillance system would enable Europe to avoid reliance on data from external sources, as in the case of the latest Chinese ASAT experiment where Europe had to accept US data and evaluation.

Better coordination of scientific research and university cooperation is needed as well. Most international academic contacts nowadays result from accidental acquaintances and usually do not outlive the

retirement of the people involved. This calls for a strategically planned European approach to establish long-term bridges in the academic domain, on a personal as well as on an institutional level.

Regarding the question whether and to what extent Europe should cooperate with China in space, a careful cost-benefit-analysis has to be performed. The benefits of space cooperation are manifold. Funds and programmes can be combined to achieve a critical mass. Complementary data, capabilities, facilities and technology become more readily available. Europe can also diversify its strategic interests, fostering greater independence from the US. Furthermore, China will keep on developing economically and Europe can profit from this growth, possibly gaining access to a huge market by engaging in a true and solid partnership with China. Finally, cooperation - as an end in itself - has always been a European political tool for influencing events and other political entities. Cooperation is a powerful tool for monitoring activities, seeding long-term confidence and creating mutual interdependence. This latter aspect is of particular importance to Europe as it is in its interest to tie China more closely to the global community.

There are potential costs to consider. These centre on increasing the stress in the EU-US relationship.

This, in turn, centres on the risk of unwanted knowledge and technology transfers to the Chinese that have caused the increasing US concern. Yet one must ask what has Europe

gained from following the US lead in technology controls? To date, Europe has failed to win concessions from the US in respect of an ITAR regime that still relies on an obsolete list of critical technologies. While attention must be paid to limit the flow of clearly sensitive technology and carefully to review all areas of dual technology, Chinese-European space relations should not be unnecessarily obstructed by a blanket imposition of controls and restrictions. Relations with the US are important, but so are developing links with China that facilitate peace and security through interdependence.

If Europe opts for cooperation, **procedures need to be established** as well. And this again raises the question of who represents Europe? Equally, who is to be addressed on the Chinese side? Chinese space policy may seem coherent at first sight, but it is not easy for foreigners to understand the (sometimes even conflicting) roles of individual institutions within the complex set up of Chinese space policy-making. Last but not least, cooperation **enabling and facilitating mechanisms** need to be created. For example, special European university courses and programmes for Chinese students could be set up. In the academic domain, Europe, being outside the constraints of US restrictions, could be especially attractive to Chinese students. Once these students return home they would be a good contact basis for further Sino-European interaction. To the time being, only national programmes exist and many European universities insist on actual *exchange* of students – as a first step, this prerequisite should be dropped.

It should be noted that the favourable conditions for closer cooperation with China in space will not last forever – **there is a window of opportunity that is to be used before Russia squeezes in, or before the US becomes more open towards China.** It can be contended that China would not hesitate to swap cooperation with Europe for cooperation with the US. China does not seek cooperation with Europe because of its unique achievements in space. Bluntly, Europe is the best option for China today simply because it has no other choice as long as the US keeps the door shut and is unwilling to cooperate with China. Besides, this window of opportunity is also to be used to get European launchers market proof, before the Chinese ones become serious competitors.

All in all, in a broader approach including security considerations, **Europe will have to decide whether China as a space actor is to be considered a strategic partner, an ad-hoc-partner or an adversary.** Each choice implies specific consequences in regard to cooperation agenda, regulatory framework and industrial policy. In this context, the regulatory framework is understood to comprise the actual norm setting, like export control guidelines or Intellectual Property Rights (IPR) questions. Industrial policy, then is seen as the operative implementation of these norms for the industrial sector. Both regulatory framework and industrial policy need to be unified at European level and also to be geared to fit into the overall cooperation model.



A **strategic partnership** implies a long term (but not necessarily exclusive) alliance with mutual interdependence. This interdependence should be seen as an asset. In fact, if it doesn't exist *per se*, it can be deliberately created. The cooperation agenda for this choice would have to cover a broad range of topics like Earth Observation, Navigation, Space Exploration and launchers. It could also include manned spaceflight and even touch upon elements of military spaceflight. These activities should be based on strategic goals that are shared by China and Europe and that would have to be laid down – possibly in a common space policy document.

In the case of a strategic partnership, the regulatory framework should be loose enough to allow for trading off legally justified European claims against benefits gained by a close cooperation. While Europe would have to avoid nitpicking in this scenario, it must insist on China abiding by WTO rules to ensure an easy flow of trade. Even if it had to be generous in certain respects within a strategic partnership, Europe must never give up its standards and principles in core areas like the human rights issue.

Industrial policy would need to encourage close cooperation and strategic partnerships on the company level as well. It could do so by facilitating mergers, friendly takeovers or other cooperation models. These measures could be flanked by offering tax advantages to companies operating in both China and Europe. It should be kept in mind, though, that the best way to stimulate industry cooperation is to set up new space

programmes between China and Europe and to provide sufficient funding. Companies will go where money is available, and money in the space sector comes from institutions.

From the facts stated in this report and from the current geopolitical set up (i.e. global US dominance), **the option of a strategic partnership does not seem to be desirable.**

An ad-hoc-partnership is based on short term decisions about cooperation whenever mutual interests happen to align. The cooperation agenda in this case could be defined according to the present needs and requirements, picked from the topics mentioned above without any commitment to follow up interaction. One approach could consist of applications for sustainable development, which would pay off for both sides. Cooperation could exclude certain topics like optics or Radar technology to prevent unwanted technology transfer and to accommodate other strategic interests, e.g. other international partnerships that should not be harmed.

Within this option, the regulatory framework would need to be flexible enough so that export controls and IPR questions can be handled in an adapted way. Europe could insist on its claims and take appropriate legal or administrative action in areas where it has no interest or need to cooperate with China. On the other hand, it could be generous in areas where the benefits from non insistence

on claims outweigh the detrimental effects of not strictly enforcing standards and principles.

Industrial policy in the case of an ad-hoc-partnership could be kept largely neutral. It should make sure that cooperation between companies runs smoothly in those cases where it is wanted by politics. However, it should safeguard trade interests of other partners as well.

This case by case approach allows for adapted decisions, taking maximum profit of emerging favourable conditions while not changing the geopolitical chessboard.

Considering **China as an adversary** would result from an assessment that there are no common long term interests among China and Europe. Consequently, the cooperation agenda in this case would be zero to avoid any kind of knowledge or technology leakage. The regulatory framework for this option would have to be strict and would need to be thoroughly enforced. Export control guidelines should block any trade of potentially sensitive goods and a firm stand should be taken on IPR issues.

Industrial policy within this option should discourage cooperation on a company level. This could involve the use of financial and tax tools. However, as stated above, the surest way to keep companies from cooperating is to dry out the corresponding market by not providing funds and not setting up common space programmes.

So from the present perspective, it seems reasonable for Europe to treat China as an ad-hoc-partner, carefully handling cooperation content and making sure that potentially negative long term effects do not outweigh the short term benefits.

Apart from the fact that it is unlikely that there are no common interests for China and Europe, this approach is problematic because it would force China into developing its own capabilities beyond the influence and control of the outside world. It will be important for European states to take this case by case approach on a coordinated basis to avoid divergent behaviour that can be exploited by China in a "divide et impera" manner. It should be kept in mind that space is only part of a wider cooperation portfolio; it is just one of several High Tech fields, albeit an important one, that Europe will seek to develop with an increasingly powerful China. In this respect, space can act as a catalyst for other forms of technological and economic cooperation.

The attractions of working with China should not blind Europe to the potential cost of an indiscriminate approach to cooperation. In the final analysis, Europe also has to look to other partners – the US as well as Russia, India and Japan – who may be, or become alarmed by the threat posed by China.



One can conclude that **European interests**, as well as those of the wider international community **will be best served by a case by case approach to China** mentioned above, establishing an ad-hoc-partnership. Space provides more areas of positive contact than dangers and should remain a key element in developing a fruitful relationship with China.

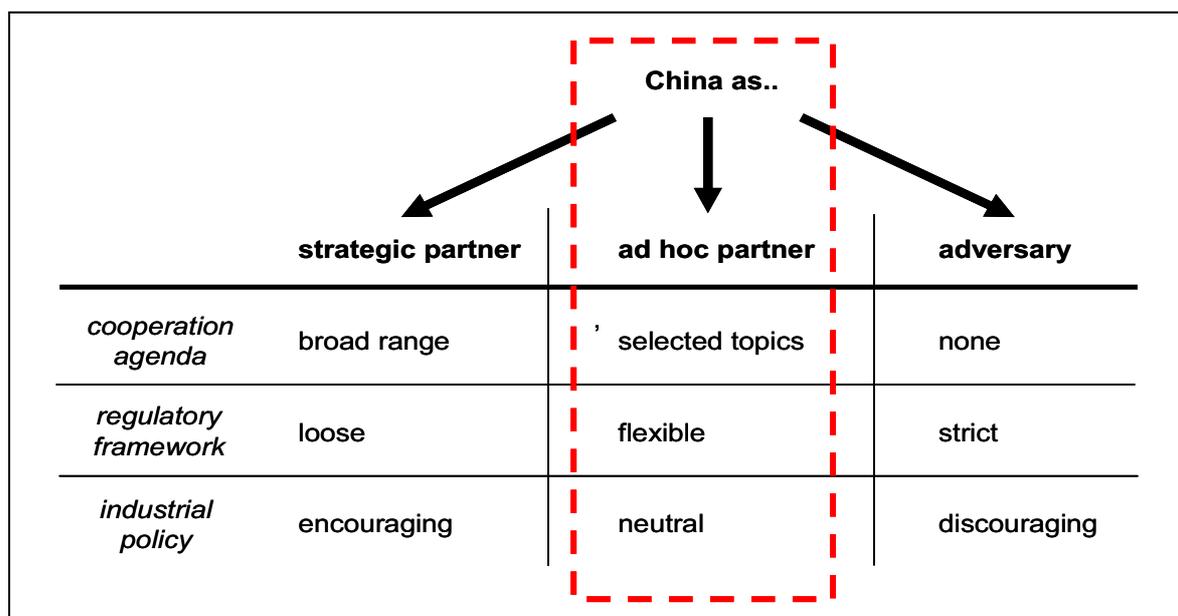


Figure 6: **Europe's Decision**



Acronyms

| | |
|---------|--|
| ALOS | Advanced Earth Observing Satellite |
| APEC | Asia-Pacific Economic Cooperation |
| APMCSTA | Asia-Pacific Multilateral Cooperation in Space Technology and Applications |
| APRSAF | Asia-Pacific Regional Space Agency Forum |
| APSCO | Asia-Pacific Space Cooperation Organization |
| ARF | ASEAN Regional Forum |
| ASAT | Anti Satellite |
| ASEAN | Association of Southeast Asian Nations |
| BLMIT | Beijing Landview Mapping Information Technology |
| CAS | Chinese Academy of Science |
| CASIC | China Aerospace Science and Industry Corporation |
| CAST | Chinese Academy of Space Technology |
| CASTC | China Aerospace Science and Technology Corporation |
| CBERS | China Brazil Earth Resource Satellite |
| CCP | Chinese Communist Party |
| CGTR | China Galileo Test Range |
| CGWC | China Great Wall Corporation |
| CMC | Central Military Commission |
| CNES | Centre National d'Etudes Spatiales |
| CNRS | Centre National de la Recherche Scientifique |
| CNSA | Chinese National Space Administration |
| COSTIND | Commission on Science, Technology and Industry for National Defence |
| CSRMC | China State Radio Monitoring Center |
| CSSAR | Center for Space Science and Applied Research |
| CZ | Chang Zhen ("Long March") |
| DFH | Dong Fang Hong ("The East is red") |
| DLR | Deutsches Zentrum für Luft- und Raumfahrt |
| DMC | Disaster Monitoring Constellation |
| DPRK | Democratic People's Republic of Korea |
| EADS | European Aeronautic Defence and Space Company |
| ECA | Evolution Cryotechnique Type A |
| ERS | European Remote Sensing Satellite |
| ESA | European Space Agency |
| ESPI | European Space Policy Institute |
| EU | European Union |
| FSW | Fanhui Shi Weixing ("recoverable satellite") |
| GDP | Gross Domestic Product |
| GAD | General Armament Department |
| GJU | Galileo Joint Undertaking |
| GLONASS | Globalnaja Nawigazionnaja Sputnikowaja Sistema |



| | |
|----------|--|
| GPS | Global Positioning System |
| INSAR | Interferometric Synthetic Aperture Radar |
| IPR | Intellectual Property Rights |
| ISRO | Indian Space Research Organisation |
| ISS | International Space Station |
| ITAR | International Traffic in Arms Regulation |
| JAXA | Japan Aerospace Exploration Agency |
| JERS | Japanese Earth Resources Satellite |
| LDP | Liberal Democratic Party (of Japan) |
| LIDAR | Light Detection and Ranging |
| LOAC | Line of Actual Control |
| METI | Ministry of Economy, Trade and Industry (of Japan) |
| MEXT | Ministry of Education, Science and Technology (of Japan) |
| MoF | Ministry of Finance |
| MoFA | Ministry of Foreign Affairs |
| MoST | Ministry of Science and Technology |
| MoU | Memorandum of Understanding |
| NASDA | National Space Development Agency |
| NATO | North Atlantic Treaty Organization |
| NGLV | Next Generation Launch Vehicle |
| NRSCC | National Remote Sensing Center of China |
| PLA | People's Liberation Army |
| PPP | Purchasing Power Parity |
| PRC | People's Republic of China |
| RAeS | Royal Aeronautical Society |
| ROK | Republic of Korea |
| RSGS | (China) Remote Sensing Ground Station |
| SAARC | South Asian Association for Regional Cooperation |
| SCO | Shanghai Cooperation Organisation |
| SMESE | Small Explorer for the Study of Solar Eruptions |
| SMMS | Small Multi-Mission Satellite |
| SSTL | Surrey Satellite Technology Limited |
| SWP | Stiftung Wissenschaft und Politik |
| TT&C | Telemetry, Tracking and Command |
| UK | United Kingdom |
| UN | United Nations |
| UNCOPUOS | United Nations Committee on the Peaceful Uses of Outer Space |
| UNPDF | United Nations Preventive Deployment Force |
| UNROCA | United Nations Register of Conventional Arms |
| US | United States |
| USSR | Union of Soviet Socialist Republics |
| WTO | World Trade Organization |

Acknowledgements

ESPI thanks the members of the project group – Isabelle Sourbès-Verger (CNRS, Paris), Joachim Glaubitz (formerly with SWP, Berlin) and Keith Hayward (RAeS, London). This report would not have been possible without them. In addition, the valuable advice provided by Karl Bergquist (ESA, Paris) throughout the project duration is appreciated very much.

Many thanks are also due to Thomas Kunze (Konrad Adenauer Foundation, Moscow), Ram Jakhu (McGill University, Montreal), Emmanuel Puig (Institut d'Études Politiques de Bordeaux) and Kazuto Suzuki (University of Tsukuba). The texts from chapter 3 are based on their contributions.

Last not least, special thanks go to the ESPI colleagues Serge Plattard and Kai-Uwe Schrogl, who provided guidance and helped to bring the report into its final shape, as well as to Nicolas Peter, who brought added value to it through fruitful discussions.



References

- 1 Khrushchev Remembers. Boston, Toronto 1970, pp. 472-473
- 2 Margaret Thatcher, *The Downing Street Years*. London 1993, pp. 260-261
- 3 Eto Shinkichi, *Continuity and Discontinuity in Postwar Japan*. In: *The Japan Foundation Newsletter*, Tokyo, Vol. XXIII/No.2, September 1995, p.3
- 4 *International Herald Tribune*, 24 August 2006
- 5 “China’s Space Activities in 2006”, Information Office of the State Council of the People’s Republic of China, Beijing, 2006
- 6 *Cambridge Encyclopedia of Space*, F. Verger, I. Sourbès-Verger, R. Ghirardi, Cambridge University Press, 2003
- 7 Avery Goldstein, *Rising to the Challenge. China’s Grand Strategy and International Security*, Stanford, Stanford University Press, 2005, p. 11.
- 8 US National Space Policy : <http://www.ostp.gov/html/US%20National%20Space%20Policy.pdf>
- 9 Avery Goldstein, *Rising to the Challenge*, p. 87.
- 10 See Larry Wortzel, «China and the Battlefield in Space», Heritage Foundation, WebMemo #346, 15 October 2003. [<http://www.heritage.org/Research/AsiaandthePacific/wm346.cfm>]; Joan Johnson-Freese & Andrew Erickson, «A Geotechnological Balancer: The Emerging China-EU Space Axis», *Space Policy*, vol. 22, n° 1, 2006, p. 12-22; Baker Spring, «Slipping the Surly Bonds of the Real World: The Unworkable Effort to Prevent the Weaponization of Space», *Heritage Lectures*, n° 877, 14 April 2005.
- 11 Alastair I. Johnston and Robert S. Ross (eds), *Engaging China. The Management of an emerging superpower*, London, Routledge, 1999, p. xiv.
- 12 See Gao Xiaobing, « US Regulatory Policies on Space Technology Exports to China », *China Security*, « China’s Space Ambitions », n° 2, 2006, p. 73-83; as well as Eric Hagt, « Mutually Assured Vulnerabilities », p. 84-106 and Wu Chunsi, « Development Goals of China’s Space Program », p. 107-115.
- 13 But it is far to soon to talk about cooperation. As Loin Rains pointed out: “A US congressional delegation—Rep. Mark Kirk (R-Ill.), Rep. Rick Larsen (D-Wash.) and Rep. Tom Feeny (R-Fla.) visited China in January. Feeny said in an interview that the most immediate area of cooperation ought to be a joint docking device that would permit Chinese spacecraft to dock with the future US Crew Exploration Vehicle, the planned replacement for the shuttle, either for cooperative visits or rescue missions. Feeny also said future US spacecraft should be able to dock at the space station China is planning”. Loin Rains, « NASA Chief Michael Griffin Invited to China », *Space News*, 5 April 2006. [http://www.space.com/news/060405_nss_griffin.html].
- 14 US National Space Policy, p. 2.
- 15 James A. Lewis, *Surmounting the Peak: China’s Space Program*, American Astronautical Society National Conference and 52nd Annual Meeting, 16 November 2005, p. 5. [http://www.csis.org/media/csis/pubs/051116_china_space_program.pdf]
- 16 See Philip E. Coyle, « The Chinese Satellite destruction : What’s Next ? », 12 February 2007. [<http://www.cdi.org/friendlyversion/printversion.cfm?documentID=3835>]. Theresa Hitchens, « Analysis :

- Chinese Anti-Satellite Weapons Test in Space is Provocative and Irresponsible », 22 January 2007.
[<http://www.cdi.org/friendlyversion/printversion.cfm?documentID=3800>].
- 17 Power and Interest News Report (PINR): Intelligence Brief: Russia in the S.C.O.
- 18 cf. Kommerstant, 30 May 2005
- 19 Ministry of Foreign Affairs of the Russian Federation, Department for Information and Press, Eastern Orientation of Russian Foreign Policy (of the year 2005)
- 20 cf. Wolkow, Vladimir, 31 August 1999, www.wsw.org
- 21 <http://www.time.com/time/magazine/article/0,9171,501041025-725174,00.html>
- 22 ARMS-TASS, 10 November 2004
- 23 RIA-Novosti, 31 October 2005
- 24 Associated Press, 12 March 2007
- 25 cf. [www.government.ru/government/presscenter/pressroundup/archive/2000/11/03;](http://www.government.ru/government/presscenter/pressroundup/archive/2000/11/03;www.resident.ru/news/gps/270700.html)
www.resident.ru/news/gps/270700.html
- 26 www.rian.ru/technology/20060524/48554117.html
- 27 www.aktuell.ru/russland/news/russland_und_indien_kooperieren_staerker_8475.html
- 28 www.aktuell.ru/russland/news/russland_bietet_neues_navigationssystem_glonass_an_17075.html
- 29 www.aktuell.ru, 15 October 2003
- 30 cf. wirtschaft.russlandonline.ru/militaer/
- 31 cf. wirtschaft.russlandonline.ru/militaer/
- 32 cf. UNROCA (http://disarmament.un.org/UN_REGISTER.NSF); experts assume that the warships consist of six submarines class "Project 636 M" worth 1.5 billion US dollar and one destroyer class "Project 956 EM Taijou" worth 700 million US dollar (cf. wirtschaft.russlandonline.ru/militaer/, 10 February 2006). The Russian report to the United Nations, however, might be incomplete
- 33 cf. wirtschaft.russlandonline.ru/militaer/, 14 September 2006
- 34 cf. Federal Service for State Statistics: External trade of the Russian Federation with non CIS states (in the year 2005)
- 35 cf. news agency Xinhuan, 9 September 2006
- 36 cf. wirtschaft.russlandonline.ru/militaer/, 14 September 2006
- 37 cf. Ulrich Heyden, *Eurasisches Magazin*, May 2006
- 38 cf. news agency Xinhua, 4 July 2006
- 39 JERS-1 was developed by METI in response to the oil crisis in 1970s. JERS-1 was designed to find the traces of underground resources.
- 40 "China, India forming strategic ties", <http://in.chineseembassy.org/eng/ssygd/zygx/t183837.htm>
- 41 C. Raja Mohan, "Realism on the China border", *The Hindu*, 25 November 2003.
- 42 Eligar Sadeh quoted by Terry Renna, "USA launches new era of space diplomacy with India, China", *USA Today*, 14 May 2006, http://www.usatoday.com/tech/science/space/2006-05-14-spacediplomacy_x.htm
- 43 Ministry of Foreign Affairs of the People's Republic of China, "Declaration on Principles for Relations and Comprehensive Cooperation Between the People's Republic of China and the Republic of India", 25 June 2003, <http://www.fmprc.gov.cn/eng/wjdt/2649/t22852.htm>; "China, India Sign Declaration on Bilateral Ties", http://english.peopledaily.com.cn/2003/06/25/eng20030625_11882_3.shtml
- 44 "Chinese Premier visits ISRO Satellite Centre", 10 April 2005, http://www.isro.org/pressrelease/Apr10_2005.htm
- 45 "Wen asserts Indo-China cooperation on space programme", *Times of India*, 10 April 2005



- 46 http://english.peopledaily.com.cn/200311/12/eng20031112_128144.shtml
- 47 http://www.businessweek.com/globalbiz/blog/asiatech/archives/2006/11/chindia_-_coope.html
- 48 <http://www.chinaembassy.org.in/eng/sgxw/t282045.htm> and
http://www.panasianbiz.com/2006/12/6_areas_of_indiachina_cooperat.html
- 49 Dean Cheng, a researcher at the U.S. Virginia-based Center for Naval Analyses in his October 2004 Report, quoted by Larry M. Wortzel in "The Rules of Engagement: The Russia Model",
http://www.space.com/adastra/china_russia-model_0505.html
- 50 "India's Foreign Minister Calls For Weapon-free Space", Agence France-Presse, 5 February 2007,
http://www.spacewar.com/reports/India_Foreign_Minister_Calls_For_Weapon_free_Space_999.html
- 51 "No Space Race Please", 16 October 2003, <http://www.asiasource.org/trade/thirteen.cfm>
- 52 "India 'A Step ahead' Of China In Satellite Technology: Space Chief," 28 February 2005, <http://www.space-travel.com/news/india-05h.html>
- 53 The U.K. Parliamentary Office of Science and Technology, "MILITARY USES OF SPACE", Postnote, Number 273, December 2006, p.2. <http://www.parliament.uk/documents/upload/postpn273.pdf>
- 54 "India's scientific talent pool smaller than China's", Indo-Asian News Service, New Delhi, 23 January 2007,
http://www.hindustantimes.com/news/181_1908412,0004.htm
- 55 "ISRO planning space university in Kerala", 16 January 2007, <http://www.siliconindia.com/shownews/34751>
- 56 For details, see C. Dasgupta, "Recent Trends in India-China Relations", 5 July 2003,
<http://www.observerindia.com/analysis/A011.htm>; "Historic India-China link to open", BBC News, 5 July 2006, http://news.bbc.co.uk/2/hi/south_asia/5150682.stm; "China and India to sign accord to expand military ties", 29 May 2006, http://www.spacewar.com/reports/China_and_India_to_sign_accord_to_expand_military_ties.html (31May 2006); Kushal Jeena, "Growing Sino-India Military Ties", New Delhi (UPI) 7 June 2006, http://www.spacewar.com/reports/Growing_Sino_India_Military_Ties.html; "India, China relations in 'good shape'", China Daily, 27 June 2006,
http://www.chinadaily.com.cn/china/2006-06/27/content_626628.htm
- 57 Jiang Zhuqing, "China, India hold strategic dialogue", China Daily, 26 January 2005.
- 58 "China, India forming strategic ties", People's Daily Online, 18 February 2005,
http://english.people.com.cn/200502/18/eng20050218_173904.html
- 59 Siddharth Varadarajan, "The challenge of the Asian Security Architecture", The Hindu, 1 December 2006.
- 60 Somini Sengupta, "Competition between China and India goes beyond borders," The New York Times, 20 November 2006, <http://www.iht.com/articles/2006/11/20/news/china.php>
- 61 Sanjoy Majumder, "India-China ties at a crossroads", http://news.bbc.co.uk/2/low/south_asia/6157364.stm
- 62 V.P. Malik, Kargil: From Surprise to Victory, (Harper Collins: New Delhi, 2006)
- 63 Zhang Guihong, "The Rise of China: India's Perceptions and Responses", South Asian Survey, 13: 1 (2006), p.98.
- 64 For details, see Mohan Malik, "China's Strategy of Containing India", Power and Interest News Report, 6 February 2006, http://www.pinr.com/report.php?ac=view_report&report_id=434
- 65 The National Security Strategy of the United States of America (Washington, D.C.: The White House, September 2002), p. 27, <http://www.whitehouse.gov/nsc/nss.pdf>
- 66 Lora Saalman, "Redrawing India's Geostrategic Maps with China and the United States", Znet, 22 September 2005, <http://www.zmag.org/content/showarticle.cfm?ItemID=8791>

- 67 Kenneth I. Juster, the US Under Secretary of Commerce, "Unleashing the Potential of U.S.-India Civil Space Cooperation", The US State Department Releases, 22 June 2004, <http://www.state.gov/p/sca/rls/rm/33811.htm>
- 68 US Department of Commerce, Bureau of Industry and Security, "Announcement on U.S.-India Next Steps in Strategic Partnership", News, September 2004, <http://www.bis.doc.gov/News/2004/US-IndiaNextStep.htm>
- 69 Mohan Malik, "China's Strategy of Containing India", Power and Interest News Report, 6 February 2006, http://www.pinr.com/report.php?ac=view_report&report_id=434
- 70 Mona Lisa D. Tucker, "China and India: friends or foes?", Air & Space Power Journal, Fall, 2003, http://www.findarticles.com/p/articles/mi_m0NXL/is_3_17/ai_109219949
- 71 G.Lindstrom & G. Gasparini, The Galileo satellite system and its security implications, ISS Paris, Occasional Papers, No.44, April 2003.
- 72 The involvement of India and Israel also increased US concerns about misuse of Galileo.
- 73 Financial Times, 16 October 2006. See also T.R. Guay The Transatlantic Defence Industrial Base: Restructuring Scenarios and Their Implications, The Army College Carlisle PA US, April 2005, p. 13.
- 74 Private communication
- 75 www.eu2007.de/de/News/CFSP_Statements/January/0123China.html
- 76 Agence France Press, 19 Jan 2007
- 77 US Senate Committee on Foreign Affairs, The Lifting of the EU Arms Embargo on China 31 March 31 2005
- 78 US Senate Committee on Foreign Affairs, op cit.
- 79 'EU Stands firm on lifting embargo' Janes' Defence Weekly, 30 March 2005
- 80 Greg Suchan, Dep. Asst. Sec, Political Military Affairs, State Department, 'US warns EU on China Arms Ban', Flight International, 29 March 2005, p.4.
- 81 Quadripartite Committee, op cit, paras. 115-16.
- 82 'French Foreign Minister defends EU move to lift arms embargo on China', Financial Times, 7 March 2005.
- 83 Manfred Bishoff, co-chairman EADS, 'Arms Embargo on China divides defence industry', Financial Times, 6 April 2005, Financial Times, op. cit 7 April 2005.
- 84 See Keith Hayward, Friends and Rivals: Trans-Atlantic Relations in Aerospace and Defence in the 21st Century, Royal Aeronautical Society Specialist Paper, November 2005.



Mission Statement of ESPI

The mission of the European Space Policy Institute (ESPI) is to carry out studies and research to provide decision-makers with an independent view on mid- to long term issues relevant to the governance of space.

Through its activities, ESPI contributes to facilitate the decision-making process, increasing awareness on space technologies and applications with the user communities, opinion leaders and the public at large, and supporting students and researchers in their space-related work.

To fulfil these objectives, the Institute supports a network of experts and centres of excellence working with ESPI in-house analysts.



www.espi.or.at