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Japanese space activity started in 1955. After fourteen years of rocket and satellite experimentation, space activity was initiated in such practical realms as weather forecasting and broadcasting. Scientific missions extending from the near-Earth region to deep space were organized by the Institute of Space and Astronautical Science (ISAS), which was founded at Tokyo University in 1964. Other missions such as weather satellites, communication satellites, broadcasting satellites and environment monitoring satellites were managed mainly by the National Space Development Agency of Japan (NASDA), which was established in 1969. The two organizations together with the National Aerospace Laboratory were merged to form the Japan Aerospace Exploration Agency (JAXA) in 2003. When NASDA was founded, the Diet unanimously adopted a resolution stating that Japan’s space programs were exclusively for

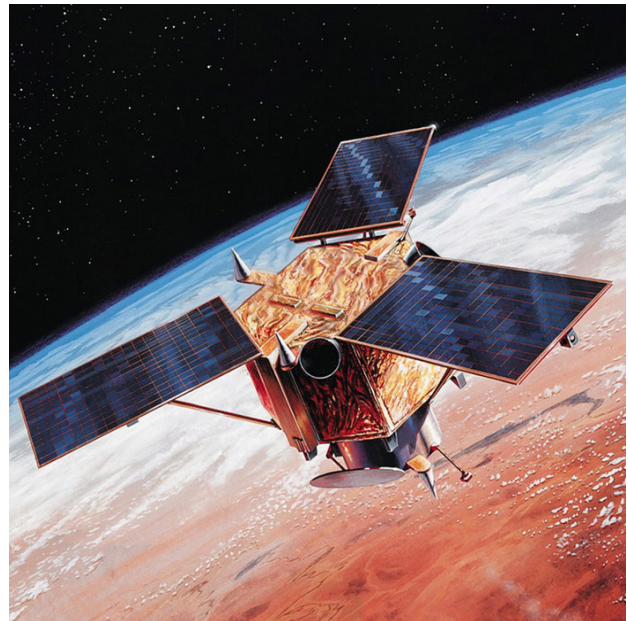
peaceful purposes, consistent with Article 9 of the Japanese Constitution. The word “peaceful purposes” was strictly interpreted to mean that Japan could use and exploit space only for “non-military” purposes. Japan’s “non-nuclear” policy was simultaneously proclaimed. The Diet resolution of 1969 established “the principle of peaceful use of space” as the bedrock of Japan’s space policy. As discussed below, military space activity would infiltrate the space program despite the principle. Indeed, Japan would become the most active military partner of the U.S. with respect to so-called “missile defense” systems. Even the “non-nuclear” policy has been discarded in practice through official tolerance of entry into Japan of U.S. nuclear submarines and nuclear missiles. After two decades of inconsistency between “the Principle of peaceful use of space” and the reality of militarized space activity, the new Japanese space law enacted in 2008 lifted the ban on the use of space technology for military purposes.

The Diet resolution of 1969 stipulates four purposes of exploration and utilization of space. The purposes are to advance science, to improve

people's lives and promote the welfare of mankind, to contribute to the development of industrial technology, and to foster international cooperation. In order to advance "the peaceful use of space", four additional principles were approved as supplements to the resolution: "independence", "democracy", "openness", and "international cooperation". "The principle of peaceful use of space" and the four supplements made Japanese space activity unique. Space science covers sciences of the Earth and solar systems, evolution of the solar system, and evolution and structure of space. Japanese space science has played a leading role despite very limited funds and manpower. The non-military space budget of Japan in 1998 was about 15% of that of the U.S. and 50% of Europe's. Nevertheless, Japanese space science achieved significant advances.

Militarization of Japan's space activity began in the mid-1980s. In 1985, the Maritime Self-Defense Force (SDF) bought receiving equipment to obtain information provided by the U.S. Navy FLEETSAT satellite. The Japanese government excused a violation of "the Principle for peaceful use of space" in terms of the so-called "generalization theory" which allows the SDF to use 'commonly' used satellites (those used in the civilian sector) or satellites that have equivalent capabilities. Reconnaissance spy satellites were introduced in 1988. These were called "information gathering satellites" □IGS□ in

order to avoid violation of "the principle of peaceful use of space". The introduction of IGS was also justified by "generalization theory". The spatial resolution of the IGS imagery data was similar to that of the U.S. commercial-satellite, IKONOS, a remote-sensing satellite developed using reconnaissance technology.



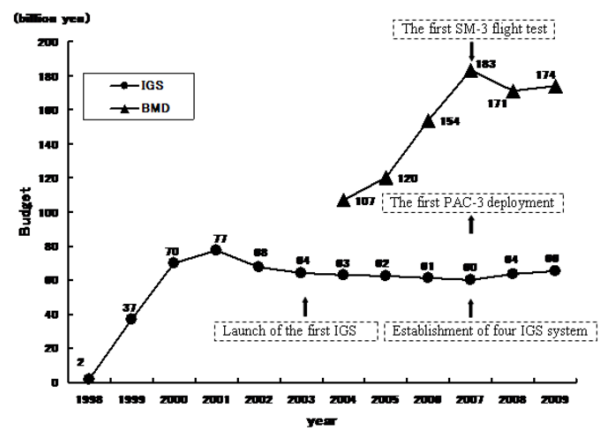
IKONOS

Although the purpose of IGS was clearly to monitor military activities of 'possible' threats, it was disguised as a "multi-purpose" satellite. Just after North Korea (D.P.R.K.) launched its first intermediate-range ballistic missile (IRBM), Taepodong in 1998, development of IGS began. In order to avoid the appearance of conflict with the Diet resolution of 1969, the government placed control of IGS not under the Japanese Defense Agency (JDA) but under the Cabinet Secretariat, a small office with national

intelligence gathering mission and crisis management functions. IGS was formally designed as a "crisis management satellite", but one that had both civilian and military applications. At the time of the 'Niigata-Chuetsu earthquake in 2004, however, rather than use IGS data, the Cabinet office utilized the IKONOS data. In 2000, the first Japanese astronaut, Mohri Mamoru, participated in the U.S. Department of Defense mission during his second Shuttle flight. The mission was devoted to military use of satellite data of the global three dimensional land surface for guided missiles.

Space militarization has accelerated in the last ten years. The development of IGS has been funded since 1998. As shown in the following figure, the budget rose steeply in the initial phase of development to 77 billion yen in FY2000-FY2001. The first IGS was launched in 2003. The IGS budget has remained above 60 billion yen thereafter. The four IGS systems (two satellites have optical sensors and two others have imaging radar capabilities), which make it possible to scout any point on the Earth at least once every day, were completed in 2007. Three new-generation IGS are scheduled to be launched between 2009 and 2014. The total IGS budget is estimated to be 1,000 billion yen. As for Ballistic Missile Defense (BMD), U.S. consultations began in December, 1993. The Koizumi cabinet participated in the U.S. BMD program from the end of 2003, a major step toward Japan's

militarization of space. The government disguised the change by claiming that "the BMD system is purely defensive and presents no threat to neighboring countries". The BMD system, far from being purely defensive, is an offensive weapon system. The BMD system exemplifies the principle of "collective defense" which successive cabinets recognized to be a violation of the Article 9. The BMD system has been funded since 2004. The Aegis vessel 'Kongo' conducted the first standard missile SM3 flight test in 2007. The SM3 missiles are on board Japan's four Aegis vessels. There are plans to upgrade the ship's BMD capability. The first Patriot PAC-3 missile was set in place in 2007. Subsequently PAC-3 missiles have been placed in nine SDF bases, with four more planned for 2010. A budget of 94 billion yen has been requested to extend the PAC-3 program in FY2010.



Administration and organization of Japanese space activity were drastically changed in 2003 when ISAS and NASDA merged to form JAXA. ISAS survived as a sub-unit devoted strictly to

science. National security-oriented space activities moved ahead with strengthened cooperation of JAXA with JDA and SDF. JDA, which was raised to the Ministry of Defense (MoD) in January 2007, set up a new “Strategy Planning Office” that year. The new office was to strengthen the ability of defense policy-making, and space policy was one of its pillars. The JAXA aeronautical program published in 2007 designated an institute of SDF as one of its cooperative organizations. Among the three astronauts employed by JAXA in 2009, two are SDF officials, an Air-SDF pilot of the F-15 and a Maritime-SDF medical doctor. In 2005, the Koizumi cabinet suddenly stopped development of the M-V rocket, which was Japan’s largest rocket for launching scientific satellites, with the highest payload ratio (the ratio of weight of launched satellite to weight of launching rocket) in the world. The last mission of the M-V rocket on September 2006 was the launch of the solar observation satellite HINODE, a successful Japanese scientific satellite. The M-V rocket has been acknowledged as the quintessence of Japanese space science and technology. The strong demand of the science community to develop the M-V rockets was an obstacle to proceeding with the military GX-rocket project. The loss of the M-V rocket crippled Japan’s scientific exploration. What is certain is that the militarization of Japan’s space activity which followed was propelled at the cost of long-term scientific and technological results.



Hinode satellite

Military use of space has been promoted in step with the industrialization of space activity. Strong demand from Japanese aerospace industries (most are also defense industries) to extend space activity for national security has been a driving force for the change in Japanese space policy. Promotion of Japanese aerospace industries was delayed as a result of Article 301 of the U.S. Trade Act (so-called "super 301"), in which the U.S. government demanded that Japan open government satellite procurement for public tender. The agreement hit Japanese satellite industries, whose competitiveness was much lower than that of U.S. companies. Subsequently almost all communication, broadcast and weather satellites were procured from U.S. manufacturers. In order to acquire a bigger share of the pie without serious conflict with U.S. industries, Japanese aerospace and defense industries targeted the extension of space use for military purpose. They recognize the Diet resolution of 1969 as an impediment to industrialization of Japanese space activity.

Keidanren, the Japanese Business lobby, has strongly promoted reform of space policy.

“The Basic Law on Space” was passed on 28 May 2008 after just four hours discussion in the Diet. “The Basic Law on Space” replaced the 1969 Diet resolution with the United Nations Space Treaty proclaimed in 1967 as the basic guideline for space activity. The concept of “peaceful purposes” in the Treaty differs from that adopted in the 1969 Diet resolution. The Treaty calls upon states to refrain from placing in orbit around the Earth any object carrying nuclear weapons or any other weapons of mass destruction or from installing such weapons on celestial bodies. It does not, however, explicitly prohibit placing weapons other than those of mass destruction and nuclear weapons in orbit around the Earth. Nor does it ban placing even nuclear weapons or weapons of mass destruction in orbits other than those around the Earth. The concept “peaceful” in the Treaty does not mean “non-military” but “non-aggressive” or “defensive”. Hence various missiles carrying even nuclear warheads have been developed and experimented for the purpose of security and self-defense. Japanese space policy reformed in 2008 implies the revision of the meaning of “peaceful” use from “non-military” use to “non-aggressive” use. The revision raises a serious conflict with the second paragraph of Article 9 of the Constitution, which declares that “land, sea, and air forces, as well as other war potential will never be maintained”.

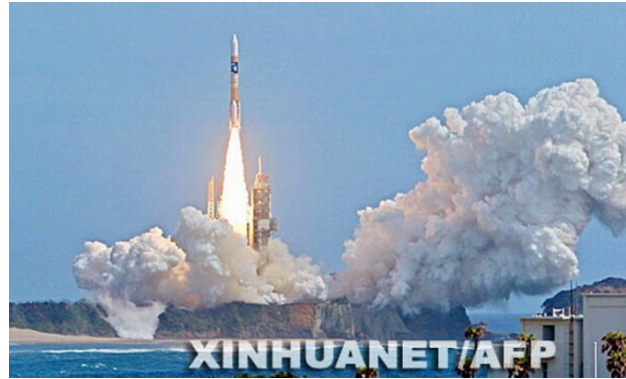
The first priority of space use in “the Basic Law on Space” is given to international and national security. Industrial development is next.

“The Basic Law on Space” unifies policies related to the comprehensive development and utilization of space. The Strategic Headquarters for Space Development, chaired by the prime minister, is located in the Cabinet with the participation of all ministers. The new policy buried the four supplementary principles of the Diet resolution of 1969; independence, democracy, openness, and international cooperation. The Science Council of Japan and some academic societies (the Japan Geoscience Union, the Physical Society of Japan, etc.) drew the attention of policy makers to the principles. A substructure of the Headquarters, the special committee on space policy chaired by Terashima Jitsuro (the chairperson of the Japan Research Institute Ltd.) and composed of 15 members (six representatives of industries including the leader of Keidanren, two lawyers, three specialists of the space science and technology, the astronaut Mohri Mamoru, a journalist, a weather forecaster, and a comic artist) formulated “the Basic Plan on Space Policy”, which was published on 2 June, 2009 by the Strategic Headquarters. The Plan aims at realizing “a safe, secure and affluent society through the development of space use as well as strengthening national security through the development of space use”. All the proceedings

of the committee were closed to the public.

“The Basic Plan on Space Policy” projected state strategy for 5 years through 2013, with nine projects selected; five systems for space use (monitoring system of land and sea surface in Asia, weather forecasts and environment monitoring by meteorological satellites, satellite communication and broadcasting, navigation by the global positioning system, and a self-defense system) and 4 research programs (space science, manned space activity, solar power generation, and a small demonstration satellite). The priorities are characterized by a shift from research to utilitarian and military applications. Development of high-resolution reconnaissance satellites and further research on sensors of a warning satellite for early detection of ballistic missile launches have been stated in “the Basic Plan on Space Policy” as the Japanese project of the BMD system.

Japan has not yet developed its own manned spacecraft and is not currently developing one. So far, a manned space mission has not been considered crucial from the scientific point of view. “The Basic Plan on Space Policy” includes humanoid-robotic lunar exploration, which will be conducted by around 2020, and manned exploration is projected for around 2030. In 2003-2009, EU, China, India and U.S. launched lunar probes. Japan also launched the lunar-orbiting satellite ‘KAGUYA’ in 2007.



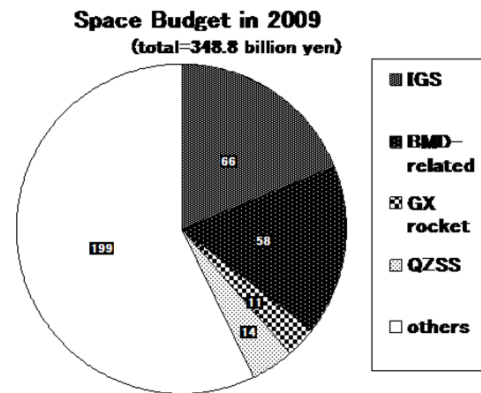
Kaguya launch

Japan, U.S., England, Germany, Russia, China and Korea have been planning to launch unmanned/manned lunar probes within a few decades. Many of these aim at exploration of natural resources such as rare metals, radioactive isotopes and Helium 3 (the isotope of Helium sought for use in nuclear fusion research). It should be noted that “the UN Moon Agreement” (Governing the Activities of States on the Moon and Other Celestial Bodies) entered into force in 1984 declares that the moon (including all celestial bodies) should be used for peaceful purposes and prohibits any military use including weapons testing or establishment of military bases. It declares that the moon and its natural resources are the common heritage of mankind, that all states have equal right to conduct research on the moon, and the moon shall not become the property of any state, organization or person. As of 19 December, 2008, only 13 states had ratified it and 5 states had signed but not ratified it. As it has not been ratified by any major space-faring power (including the U.S. and Japan) and is unsigned by

most nations, it hardly defines current space activities.

In response to the approval of “the Basic Law on Space”, the FY2009 space budget is weighted even more heavily toward military purposes. The new BMD budget was appropriated as a space-related project. The total budget for space development is about 349 billion yen with a 10% increase over the FY2008 budget. Most of the increase is in military fields such as IGS, the space-related part of the BMD system, the GX rockets, and the Quasi-Zenith Satellite System (QZSS). The GX rocket has been under development since 2003 in a joint venture among JAXA, Lockheed Martin Corporation, and several Japanese private companies in cooperation with the U.S. Air Force. It is suspected that the GX rocket system will assist the Pentagon in launching military space missions. The total cost for Japan of the GX-rocket project through 2008 was about 30 billion yen. The Space Activities Commission under MEXT (Ministry of Education, Culture, Sports, Science and Technology) recommended suspension of the GX-rocket project in May 2008. But at that time “the Basic Law on Space” was approved, and the project has continued to be funded. The QZSS makes it possible to provide high accuracy satellite positioning services covering close to 100% of Japan with assistance of GPS satellite data, and can be used in a broad array of fields including car navigation and land surveying

with military applications. The non-military budget is 198.9 billion yen, mostly for utilitarian application, with only 5 % increase.



The Ministry of Defense (MoD) has evaluated the enactment of “The Basic Law on Space” as a chance to develop and use outer space for defensive purposes. In order to strengthen the space-related defense policies, MoD established the Committee on promotion of outer space development and use. The National Defense Program Guideline and the Formulation of the Mid-term (five years) Defense Build-up Program would have been reviewed and revised at the end of 2009 by the former government of Liberal Democratic Party (LDP). Due to the change of the 2009 election results, however, the new government of the Democratic Party of Japan (DPJ) has postponed the review for a year. The new government’s defense policies are not yet clear.

Some political leaders of the LDP and of the DPJ have claimed the right to preemptive attack by firing missiles and even nuclear weapons with

specific reference to the Korean Peninsula. Such armaments inevitably contradict the Constitution, particularly the second paragraph of Article 9 which prohibits Japan from holding any kind of war potential. Pressures for reform of Article 9 have continued to come from many quarters. Just before the change of the political party in power in August 2009, the Council on Security and Defense Capability (a private council of the prime minister) published a report emphasizing that “We should decide the basic principles on national security policy” in place of “the Exclusively Defense-Oriented Policy”. The report calls for review of the constitutional interpretation on the right of collective self-defense, making it lawful in order to make it possible to intercept a missile on its way to the U.S. The Japanese Constitution faces a great challenge.

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