

Cultural Idea and Space Development

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Abstract

The ideology of space development can be classified into three types: national security, scientific inquiry, and commercialism. Korea and Japan have influenced the space development innovation system by different proportions. In the rhetoric analysis of Kim Young Sam, Kim Dae Jung, Roh Moo Hyun, and President Lee Myung Bak, the periods when Korea's space development began in earnest, the pragmatism (commercialism) of strengthening industrial competitiveness through space development has been consistently emphasized. But it also maintains national security and scientific inquiry as ancillary.

Keywords: Cultural Idea, Space Development, Korea, Japan, USA, Satellite, Launch Vehicle, National Security, Exploration Space Activity, Commercial Space Activity, President, Prime Minister, Rhetoric

1. Introduction

This study was to investigate how the space innovation system has been influenced by the analysis of the space development policy ideology through comparison between Korea and Japan in terms of the Sectoral Innovation System [1]. We used the method of literature study in this research.

First of all, the implications of this study are analyzed from the viewpoint of Sectoral Innovation System in order to identify the unique factors that led to technological innovation of the space development industry sector. The characteristics of the space development innovation system are differentiated from other industrial sectors [2].

Second, we use the analysis framework of comparison between countries. It has a framework of international comparison that differentiates from the existing research, and it is in line with the academic tendency that comparative research of the national innovation system in which many countries participated recently is being done. Third, the distinctive feature of this framework is that it identifies the 'influence' factors that could affect the space development innovation system, which is cultural ideology.

2. Value, cultural ideology and technology

Shared culture influences both internally and externally how technological progress proceeds [2]. As many institutionalists point out, the new cultural ideology is a key factor in the formation of existing political coalitions and making them gain new policy positions. Good ideas or theory does not always win a political

victory, and historically new idea or theory have not always been politicized, so any policy of idea or theory necessarily requires some political process. A good idea or theory faces opposition and does not become a policy, while the fact that a bad policy can be a policy if it gets political support shows the importance of politics.

In general, the dominant ideas of an era are often transformed into formal governmental organizations directly through legal mechanisms, and are embedded in institutions in the form of policies, such as early embedding. It is a historical situation that determines the fusion of existing and new ideas.

Policy ideology is a framework of perception that influences the choice of policy goals and means, and is embodied in policy participants and institutions. The policy ideology not only influences the choice of policy, but also functions to give meaning and justify it. In recent years, the ideology of science and technology of such wealthy countries has become more concrete in the context of globalization and neoliberalism, which is the ideology of so called (industrial) competitiveness.

The fact that science and technology policy ideology is centered on improving competitiveness reflects the institutional and political strong support base of science and technology policy of this nature. From an institutional point of view, the 'competitiveness' ideology is reflected in various related laws, plans and guidelines of the government. On the other hand, the US science and technology policy ideology is national security, economic prosperity, and environmental quality improvement. Japan has the principle that it seeks social and environmental values along with the enhancement of competitiveness and regards improvement of quality of life as important as well.

Europe has emerged as a major policy ideology, such as national defense (1950-1975), industrial competitiveness (1975-95), and social goals such as improving employment and quality of life. These policy ideas influence not only policy formulation but also analysis and selection of policy alternatives and play an important role in defining the strategies and duties of administrative organizations. Raising new social ideas and ideas can be said to affect the content of policy ideas.

3. President Rhetoric and ideology of space development

The ideology and value of Korean space development can be seen to be intensified by the will of the superintendent, such as the president's space development rhetoric. De Gaulle fostered aerospace and nuclear technology through the 'Science and Technology Project' shortly after World War II. After the Cultural Revolution in 1975, China announced the four modernization policies of agriculture, industry, defense and science and technology for economic revival. It announced that science and technology should be promoted for economic construction, and there was space technology at the center. Deng Xiaoping, Jiang and Zhu Rongji, and began to focus especially on civilian compatibility of space technology. Indeed, even if space development projects fail or are disappointing, the President's words have kept space development underway.

When the Soviets surpassed the United States in space, Kennedy attempted to renew America ("A long way to go in space competition, but the universe is a new sea, and the United States believes it will sail"). And when Challenger exploded, Reagan reminded, "The universe is all about catching an opportunity and widening the horizon of mankind. The future is not of the weak but of the brave." People who make or use symbols do not only communicate information in words, but also perform the function of creating images of society.

It is a worthwhile topic to study exactly how presidents conceptualize and talk about space programs. In their stories, words and images, we can find clues to find out why the results of the universe program and the cosmic policy of that country are formed today. Of course, the president is not the only actor in the space policy debate. To put it in some cases, interest groups, presidential advisers, representatives of Congress and

the bureaucracy are also trying to control how space policy should be defined and formed. But mainly, the president is given responsibility for leading the state on public policy issues through his constitutional right to speak directly to the people. Indeed, if the President fails to implement this "right of declaration", he is a failed president and the state falls into a cliff of policy confusion.

When exploring the president's role in describing the nation's space policy and evaluating the success of making that policy real, it is necessary first to illuminate the phrases surrounding the President's space policy, describing the "rhetorical presidency" [3].

4. Ideological conceptualization of space development

In this paper, we try to classify three concepts for the conceptualization of the space development process in Korea and Japan [4].

4.1 National Security

Military space activities have progressed through several stages in the development process. At first, the main purpose was to protect the United States from the nuclear massacre. The initial issue involved establishing a sufficiently reliable military universe to increase the effectiveness of US strategic nuclear forces. These efforts led to the development of a guard system with precise scouting power enough to defeat the Soviet blinds and to develop a sophisticated missile detection system. Since the Eisenhower administration in the United States, military space activities have been conducted secretly or at least have been made public.

That is, it minimizes the public's understanding and exposure to the scope of these activities. The main driving force is the expansion of military command and control at the field level. Previously space assets have changed in shape for military support and military buildup on a continuum of military activities at all levels. Moreover, more recently, US forces have begun to verify and validate space-based technologies to protect US space assets, with the ability to defeat enemy access to Earth's orbit, whether space assets are military or not. This includes the application of space control and force.

4.2 Exploration Space Activity

Another space activity is "scientific inquiry" that justifies space development and maintains the space community. We can explore, discover, understand, and inspire humanity by leaving Earth and exploring mankind toward the solar system. Advanced space development countries such as the United States as well as Europe are promoting the availability of space development by restoring human space flight and space exploration.

Access to space has attracted a great deal of attention from the beginning because of its potential for expanding human knowledge of the Earth and the universe. Satellites within Earth's orbit provide insights into the physical processes affecting the Earth. Several topics are included as a reason for supporting space science activities. Elsewhere, we pursue abstract knowledge, such as knowing more about Earth and the universe, to expand the human mind.

Recent expressions on this topic have become clearer because the emphasis has shifted to earth science, especially the environment. Due to cost constraints, only a few missions and scientific inquiries are carried out deeply in a specific period of time. Today, exploration of the origin of humanity and the exploration of Mars using robots is the dominant policy in the space science era.

At the heart of US space activities is to send human beings to Earth orbit. The United States has reviewed the creation of a nationwide civil space program to establish NASA in early 1958. In this report, manned

space flight was given priority, a major issue in civilian space activities. First up in the Earth's orbit and ultimately in the universe is to build permanent human residential areas. The moon can be said to have been realized earlier due to political deviation (cold war rivalry).

The International Space Station (ISS) is at the heart of the current manned space effort in the United States. The cost aspect is an obstacle after the Apollo era and is still the most worrying now

Continuously orbiting humans restrains the space policy paradigm, but it also creates opportunities in other ways. For example, microgravity plants can be used to carry out research activities in a variety of space environments, since long-term exposure to the space environment is possible both internally and externally in spacecraft facilities. The presence of man in the universe opens up unexpected opportunities, because man's cleverness and observing ability give new prospects. Unexpected scientific principles are identified, most evident in the space shuttle mission to repair the Hubble Space Telescope in the field by astronauts.

In terms of politics, human beings in the universe were a major factor in giving legitimacy to space politics. Without human beings, the universe is approaching a farther, far-away environment. Since the Mercury astronaut, space navigators have become attractive.

The manned spacewalk accident broke the ground and broke it and made the human mind feel defeated. After the Challenger accident, NASA's "Return to Flight" movement is partly based on this assumption, and it is based on the assumption that internationally, such as tremendous security, operational difficulties, tragedies such as the Apollo 204, explosion of the Challenger and International Space Station (ISS). Despite political complexity, they continue to transport mankind in space.

4.3 Commercial Space Activity

Space activity is a technically challenging activity. Successfully carrying out such a challenge is itself regarded as an important justification for the commercialization of the space. The countries that can sustain space commercialization are the major economic competitors of the world and are considered to be modern development countries in international politics. Space technology requires a skilled and highly trained workforce. Their talents are spread to spread the country's greater technology and economic base.

Apollo served as an economic tow of the state in the southern United States and represented the "American Space Age". Since the Apollo era, NASA has established a series of commercial space centers between industry and universities to facilitate the commercialization of space. Economic logic is more convincing because space applications such as telecommunications and remote sensing satellites play an important role in furthering the US economic competitiveness.

The Reagan administration is the first government to explain the economic impact of space applications by expanding the role of the epic realm as the role of the government is reduced. An example of a change in commercial universe activity is the "National Space Policy" promulgated in 1982. The United States has facilitated domestic commercial exploration of space capabilities, technology and systems for national economic benefit. Space technology has become a means by which other advanced technologies can be utilized. The government's space activities supported the development of space commercialization through the Department of Commerce and NASA. President Clinton's 1996 space policy and the 1998 commercial space law are important examples of public policy that are driving this trend.

The commercial space law is a representative public policy that designates commercial activity in the space that was previously governed and controlled by the government. The field includes GPS, acquisition of space science and earth science data, and space transportation services. This law requires governments to use commercial space technology rather than technology or capability development itself.

We can distinguish what kind of space development ideology is based on the situation of the time, which is affecting the space development innovation system through budget and other policy results.

Table 1. Cultural Idea and Space Policy[5]

Time Line: Activity	Beginning	Present	Future
National Security	Military Space	Force Support Force Enhancement	Space Control Force Application
Scientific	Space Science Human Spaceflight	Earth Science Astronomy Space Shuttle Space Station	Planets Asteroids Environment Human Habitation Human Exploration
Commercial	Technology Development	Commercial Application	Economic competitiveness

5. Comparison of Space Development Ideology between Korea and Japan

In this paper, we compare the idea of the space development in two countries such as Korea and Japan.

5.1 Korea

In the analysis of the texts of Kim Young Sam, Kim Dae Jung, Roh Moo Hyun and Lee Myung Bak, the periods when Korea's space development began in earnest, the pragmatic elements of strengthening industrial competitiveness through space development have been consistently emphasized.

Table 2. President's speech on space development

Representative space development speech	
Kim Young Sam	Celebration of the opening ceremony of the Mugunghwa Satellite era (March 18, 1996) With the launch of the Mugunghwa Satellite era, it will bring about 14 trillion won of related effects to the business fields of aviation, ship, automobile and electronics over the next 10 years. And will be able to enter the world space industry market.
Kim Dae-jung	Science and Technology Convention for the Millennium (December 15, 1999) We will pioneer aerospace, make up-front investments in promising industries in the future, and actively pursue the construction of the space station in 2005.
Roh Moo-hyun	Space Center Groundbreaking Video Message (August 8, 2003) We will pioneer aerospace, make up-front investments in promising industries in the future, and actively pursue the construction of space bosses in 2005.
Lee Myung -bak	The opening ceremony of the Daejeon International Space Congress (October 12, 2009) The International Space Congress will be a 'Space Olympic' in a word that promotes the application technology of space companies and related business actively.

The ultimate goal of Korea's space development is i) to secure its own space development capability through the development of core space technology, ii) to enter the world top 10 by entering the world market of space industry, iii) securing the area of the space and improving the quality of people's life, and iv) successful prestige of the people through space development. As such, the main direction was to strengthen practical industrial competitiveness (commercialism) through practical implementation of mid- and long-term plan of space development in Korea [6].

In the case of Korea, the same pragmatism has been consistently emphasized in other technology fields, such as strengthening industrial competitiveness, and the budget, which is a representative product of policy, has steadily increased, is the main factor of determinant of policy content.

5.2 Japan

Japan's goal of space development is to secure the safety of the people, to improve the quality of life of the people and to create knowledge and sustainable development of mankind. However, it also maintains additional national security and scientific inquiry.

The rhetorical content of the award on the Japanese space development shows that the ideological characteristics of space development are the main factors that determine policy contents, as commercialism is the primary and secondary security and scientific inquiry [7].

Table 3. Japanese Prime Minister's speech on space development

Minister	Representative space development speech
Junichi Koizumi (小泉 純一郎)	<p>19th General Science and Technology Conference (June 19, 2002) He decided on 「the basics of strategies for future space exploitation」 One of them will promote industrialization of space exploitation and actively apply it to civilian technology (commercialism).</p> <p>North Korea-Japan Summit Pyongyang Declaration (September 17, 2002) The two Governments have confirmed that they will comply with all relevant international agreements for a comprehensive settlement of the North Korean nuclear issue. In addition, the two countries confirmed the need for a plan to resolve the problem by facilitating dialogue among the countries concerned on various security issues, including missile issues. (National security).</p> <p>15th Economic and Financial Advisory Meeting (June 26, 2003) The general account includes special accounting for the general budget, and reflects the highest budget of the comprehensive science and technology meeting in the actual budget for the entire science and technology budget. At that time, it is based on a research budget that invests in the realization of safe, safe, and comfortable living. (Commercialism).</p>

The space development ideology has largely influenced the space development innovation system by three different factors: national security, scientific inquiry, and commercialism. Korea has consistently emphasized the pragmatism (commercialism) of enhancing industrial competitiveness through space development in the analysis of the words Kim Young-sam, Kim Dae-jung, Roh Moo-hyun and Lee Myung-bak from 1993 to 2013 when space development was in full swing. In addition, the mid - to long - term basic plan for Korea's space development has consistently emphasized the strengthening of the industrial competitiveness of pragmatism. Japan is leaning toward commercialism to strengthen its industrial competitiveness, but it also maintains national security and scientific inquiry as an aid.

Table 4. Model of Space Development Ideology in Korea and Japan

Nation	Ideology
Korea(Late Comer)	Commercialism
Japan(Fast Follower)	Commercialism(as main); National Security And Scientific Inquiry(as ancillary)

6. Conclusion

Korea's space development should be differentiated from all-round research and development such as national security, scientific inquiry, and commercialism, which the United States and other countries have pursued in the past. This should be considered as a comprehensive consideration of the reality of the country and investment potential of R & D, and a systematic promotion system for space development and basic principles of fostering should be set up.

Korea should understand what goals and objectives can be achieved through space programs. In other words, it is necessary to establish the requirements for space development, and to find out what kind of national benefits Korea has in economic, social and scientific fields through the development of space systems and capabilities. From there, we must move on to concrete space missions and space technology development. The important space strategy for Korea is to find purpose and reason. Because other countries do not do it unconditionally, we have to do space development that meets Korea's national interests and goals.

Korea seems to be inevitable for space development centered on real demand for the time being. Korea has successfully completed the multi-purpose utility satellite (Arirang) series, small scientific satellite development project and science observation rocket development project. Based on successful business accomplishment up to now, it has completed national projects such as geostationary orbit composite satellite series, Korea space launch vehicle, lunar exploration program[8].

The short-term goal of domestic space development is the increasing supply of domestic satellites. Demand for domestic satellite is not necessarily small. The first goal is to supply domestic demand with domestic technology capability instead of relying on foreign countries. It should utilize the characteristics of space technology as convergence technology, such as utilizing existing IT technology in Korea[9].

In addition, demand for public sector needs, such as the development of the Korean economy and diversification of industrial activities, is increasing more than the existing forecasts based on demand from the government sector, and it is predicted that demand for various satellites with different purposes will increase. Increasing demand for satellites will inevitably entail demand for satellite launch vehicles, and building a space launch site is also essential.

The public opinion of the general public in carrying out space development is expressed by the demand and support of policy. The public awareness of space development should be increased through publicity and promotion of the achievements of national space development. It should be enough to convince the public that space development is directly linked to the people's economy, welfare, and life, and that the influence of space development will increase in the future.

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