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Administrative reform of Japanese Space Policy Structures in 2012

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ABSTRACT

In Japan, there are several government ministries and agencies with important roles in the development and use of space. In 2012, Japan restructured its administrative organs related to the development and use of space through legal amendments to the original acts that established these organs. Although this was an important administrative reform that took four years of planning and discussion to accomplish, this restructuring has not been communicated well outside of Japan. This study provides the first comprehensive overview of the recent legal changes in Japanese space policy. In contrast to some reports, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) still has primary responsibility for the finances and personnel of the Japan Aerospace Exploration Agency (JAXA). This continues to be true even after the Cabinet Office begins its new role as the focal point for formulating Japanese space policy. It remains to be seen how the policy direction of the Cabinet Office will interact with the operational, financial, and personnel responsibilities of MEXT. I argue that knowledge of the roles of MEXT and the Cabinet Office in space policy, and the tension between the two organizations, is key to understanding Japan's future space policy decision-making process. By tracing the history of Japanese space policy since 2001, I also suggest that if bureaucrats had thought more deeply before making major reforms to space policy and its administration, there would have been less confusion over the development of national space policy this past decade. This paper concludes by identifying some key elements to monitor in the coming years of Japan's space policy.

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1. Introduction

The aim of this paper is to describe and discuss Japan's 2012 legal reform of the administrative structure for the development and use of space.

Japan's space program has experienced major organizational reforms since 2001 [1] [2]. In 2001, as part of the central government reorganization, two leading administrative organs in space policy, the Science and Technology Agency (STA) and the Ministry of Education, Science, Culture and Sports were merged into the Ministry of Education, Culture, Sports, Science and Technology (MEXT), which deals with more than half the space budget in Japan [3]. In 2003, the Japan Aerospace Exploration Agency (JAXA) was established through the merger of Japan's space agencies (the Institute of Space and Astronautical Science or ISAS; the National Space Development Agency of Japan or NASDA; and the National Aerospace Laboratory of Japan or NAL) as part of an overall reform effort targeting government-affiliated public companies [3,4]. In

2008, the Diet passed the Basic Space Law (Act No. 43, 2008) which established the Strategic Headquarters for Space Policy (hereinafter "Space Headquarters"). The headquarters were composed of all ministers in the Cabinet in an effort to unify Japan's space policies, which until then had been implemented separately by each ministry [5–7]. The 2008 Basic Space Law also required the government to review and reform the organizational structure of the ministries and agencies related to the development and use of space [8].

On June 20, 2012, four years after the enactment of the Basic Space Law, Japan's Diet passed the Act on Partial Revision of the Act for Establishment of the Cabinet Office, etc. (Act No. 43, 2012; hereinafter referred to as "the Act") to set up a new regime for the comprehensive promotion of the development and use of space in accord with the Basic Space Law. This is a significant administrative reform but is not well understood internationally. While a few reports refer to it [9–12], they do not discuss the difference between the current and previous functions and structures. To understand Japan's current space policy, the international community requires more information on the big picture of Japan's space-related administration and the changes it has undergone in the past decade.

The structure of this report is as follows. First, I introduce what is to my knowledge the most detailed account available on Japan's

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most recent administrative reforms. Next, I draw on the provisions of the Act and supporting documents issued by the government to provide a detailed overview of the recent organizational reform. I then show how this latest reform created a system of “checks and balances” between the Cabinet Office and ministries like MEXT after difficult negotiations in the government. This means that although the reforms are not completely finalized, the informal inter-ministerial rivalry highlighted in previous studies has now become formally institutionalized. In comparing the previous and current structures of the space policy regime, I also point to an institutional flaw that has received little scholarly attention. My analysis suggests that the flaw likely originates from the indifference of former STA officers toward national space strategy. If STA officers had paid more attention to national space strategy, much wasted time and effort could have been saved.

This paper focuses on Japan's space policy, but may also prove a useful reference for other countries and agencies that are now considering organizational reform. The armed services in the United States have also undergone several space-related organizational reforms [13], and in 2011, the United Kingdom established the UK Space Agency, which is responsible for all UK space activities [14]. This research shows problems in organizational design can cause long-lasting political confusion. The lessons of Japan's reforms are applicable to other countries pursuing organizational adjustments.

2. Analysis of the act to reform Japan's Space Policy Structures

2.1. The main debates in organizational reform

This section traces the discussion following the August 2008 enactment of the Basic Space Law, which eventually led to the legal amendment of the space administrative structure. The Act itself and its reference materials do not highlight the most important points of the legal amendment. A careful review of the debates surrounding amendment offers a deeper understanding of the Act's implications.

Responding to the Basic Space Law's directives, the government began discussions in September 2008 to carry out administrative reform. The Space Headquarters that had been established by the Basic Space Law formed an advisory board, the Special Committee of the Space Policy (hereinafter “Special Committee”), which was composed of experts nominated from various non-governmental sectors including manufacturing, banking, and academia, and also included astronauts [15]. On April 3, 2009, the Special Committee's working group reported the interim results of the discussion [16]. The most controversial issues were how to establish a new government organization to oversee government-wide space policy and whether to allocate jurisdiction of JAXA to this new organization. In the discussion leading up to the Basic Space Law, there had been a consensus among lawmakers to establish a new organization in the Cabinet Office. However, they did not specify the relationship between the Cabinet Office, JAXA, and the ministries. The Special Committee's working group presented four possibilities for this relationship, which ranged from the consolidation of all space-related organizations in Cabinet Office to essentially the status quo, but neither the Special Committee nor Space Headquarters made a decision. The Space Headquarters decided the most fundamental space policy of Japan—the Basic Space Plan—in June, 2009, the policy made no mention of the relationship between the space-related organizations even though the reorganization was already underway [17]. This is most likely because Japan was expected to go through a change of government in the near future. The goal of the Democratic Party of Japan (DPJ), the largest opposition party at the

time, was to consolidate all space-related sectors and the headquarters within JAXA [18]. As expected, after the general election in August 2009, the previously ruling coalition of the Liberal Democratic Party (LDP) and the New Komei Party lost power and the DPJ and its coalition parties took office.

The Special Committee suspended its activities for more than one year after the DPJ's victory. During that time, the space minister consulted a group of five academic experts nominated separately from the Special Committee about the reorganization. After two long months of discussion, they submitted their report to the space minister. However, their conclusion was thought to be infeasible and too different from other Japanese administrative organizations. The MEXT minister also expressed doubts about their recommendation because their discussion was not in line with what the Special Committee had discussed logically and systematically from the perspective of Japan's overall space policy [19]. The results of the experts' discussion were ultimately abandoned [20].

Finally, in December 2010, the Special Committee resumed its discussions. The Committee first tackled the evaluation of space programs to clarify budgetary prioritization for the ministries. The goal was to coordinate all ministries' budget requests from a government-wide perspective. In August of 2011, the Special Committee decided to set the initiation of the operational Quasi-Zenith Satellite System (QZSS) project as its top priority [21]. The operational QZSS is a new project aimed at improving the performance of the Global Positioning System (GPS) in the Asia-Pacific region. The QZSS program is now in its second phase, the first being when JAXA launched a test QZSS satellite in 2010, with the cooperation of MEXT and other ministries. Based on the performance results of the test satellite, the government was to decide whether or not it should continue with the second phase of implementing the QZSS for practical use [22]. The Special Committee proposed that the Cabinet Office be the agency to execute this new program because the operational QZSS would assist a broad range of administrative activities, and the Cabinet Office is a government organ that generally deals with the coordination of inter-ministry matters. The Cabinet and Space Headquarters agreed that the Cabinet Office would manage the operational QZSS project [23] [24].

The Special Committee also discussed organizational reform. It intended to come to a conclusion by summer 2011, when it decided on the prioritization of space programs. Yet it could not wrap up the discussion because some members opposed submitting an incomplete report to the government [25]. According to the minutes on June 30, 2011, there was still disagreement over whether the Cabinet Office should be in charge of both the implementation and command functions of the space program. Here the implementation function meant jurisdiction over JAXA, for which MEXT had been primarily responsible. If the Cabinet Office were put in charge of JAXA, MEXT would lose considerable influence on Japan's space policy. Those in favor of centralizing the implementation and command functions in the Cabinet Office insisted that the Cabinet Office needed both functions to be a powerful organization leading Japan's space policy. Those against centralization insisted that implementation be separated from command for a neutral and fair evaluation of the organization's activities. This unresolved debate meant the report was not issued by the summer.

Alongside the operational QZSS resolution, the Cabinet and Space Headquarters also decided the basic direction of organizational reform [26] [27]. The main points were: 1) The new regime should not be established by the consolidation of all space-related organizations; 2) The government must consider neutrality and fairness when it decides how to divide the command and implementation functions among the administrative organizations;

3) With regard to jurisdiction over JAXA, the government must ensure the Cabinet Office has the authority to exercise its command function effectively considering the achievements that MEXT has already made as JAXA's main competent ministry. This last point is difficult to interpret, but basically it meant that MEXT would keep its authority as the main competent ministry while the relationship between the Cabinet Office and JAXA required more discussion. These decisions advanced the Special Committee's discussions, which had been stalled since the summer of 2011 [28].

Finally, in January 2012, the Special Committee published its report on the restructuring of space-related administrative organs [29]. Their discussion and its results will be covered in next section. On the basis of the final report, the Cabinet finalized the Bill on Partial Revision of the Act for Establishment of the Cabinet Office, etc. [30] and submitted it to the Diet in February 2012. The Bill passed the Diet in June and was enforced in July.

As discussed above, the crux of the debate has been how to allocate jurisdiction over JAXA to the Cabinet Office and other ministries, or how to secure a system of "checks and balances" between the Cabinet Office in its command function and the other ministries in their implementation functions. In the next section, I will review how Japan's government resolved this problem and offer a macro perspective of Japan's space-related administrative organization.

2.2. Review of the act

This section will cover the detailed content of the amendments. Fig. 1 is a translated diagram used by the Cabinet Office to show how the administrative structure was changed by the amendment. The explanations below are reconstituted mainly on the basis of the language of the Act [30]. It is difficult to understand the provisions' intent from the Act itself because Japanese laws generally only provide basic explanations. Therefore, the Special Committee's minutes, the final report, and Diet deliberations were used to piece together the meaning of the provisions. In fact, Space Minister Motohisa Furukawa and Cabinet Secretariat Deputy Director-General Hirofumi Katase apparently said that the government would draft the bill based on Special Committee's final report [31]. The final report covers the concepts of this amendment in detail and helps clarify the provisions in the Act. For the parts it does not explain, my interpretations are based on official statements during the Diet deliberations.

According to the Special Committee's final report, the fundamental reason for the administrative restructuring was to make space policy a whole of government strategy, which was mentioned many times previously in the discussion of the 2008 Basic Space Law [29]. The Basic Space Law laid out six basic principles. While they are long-term goals for Japan, the final report of the Special Committee introduced two basic ideas for Japan to focus on immediately: 1) promoting the use of space for both civil and military purposes and 2) maintaining and improving the autonomous ability to use outer space and strengthening the industrial and technological base. The slow progress of space use and the weakening space industry were thus targeted as key issues. To address these topics, the government designated the Cabinet Office, the Committee on National Space Policy (hereinafter "Space Policy Committee"), and JAXA as the focal points of Japan's space policy. The role of each is discussed below.

2.2.1. The Cabinet office as a new space-related administrative organization

The Act established the Office of National Space Policy (hereinafter "Space Office") in the Cabinet Office to command a whole of government space policy. With regard to the command function,

the Space Headquarters already existed as a national headquarters since the enforcement of the Basic Space Law in 2008. To serve the Space Headquarters, the Space Office plans, drafts, and coordinates affairs based on the fundamental policies for the comprehensive and systematic promotion of space development and use. In particular, the Space Office drafts the Basic Space Plan and communicates budgetary prioritization to relevant ministries. The Space Office is also expected to negotiate with foreign space agencies together with relevant ministries and JAXA, but the Cabinet Office and the Ministry of Foreign Affairs (MOFA) will handle the negotiations if they are related to diplomacy. This command function of the Space Office is expected to overcome sectionalism, or the "stovepiping" of space-related ministries, and to promote a whole of government strategy.

In addition to the command function, the Space Office may implement space programs for public and official use in diverse fields. The amendment allows the Space Office to get involved in the maintenance and management of satellites and equipment, including budgetary provision. In fact, the Cabinet Office can manage the operational QZSS under this rule.

In addition to the QZSS, Japan also possesses a multi-purpose earth-observation satellite system, or Information Gathering Satellites (IGS). IGS was developed by the Cabinet Secretariat with JAXA as the main contractor and is used for national security and disaster prevention. Unlike the QZSS, which is now managed by the Cabinet Office, the Cabinet Secretariat continues to manage the IGS. The Cabinet Secretariat has an intelligence function and supports the Cabinet's policy-making based on Article 3 of the Act for Establishment of the Cabinet Office (Act No. 89, 1999). The Cabinet Secretariat is in charge of the IGS because the IGS is used for intelligence, according to an official in the Cabinet Secretariat [32].

As far as personnel, the Space Office is so big that it engages one deputy director-general of space, another deputy director-general, and eleven directors on loan from the various ministries. MEXT has only four directors who specialize in space. Generally, the Cabinet Office has only a few of its own officers while most are on loan from other ministries [33]. The deputy director-general of space, who is originally from the Ministry of Economy, Trade and Industry (METI), now heads the Space Office, and the directors in the Space Office are also on loan from METI, MEXT, Ministry of Internal Affairs and Communications (MIC), and the Ministry of Defense (MOD) as well as JAXA. These officers do not get involved in field work related to the QZSS, such as system design, operation, and control of satellites. Instead, they are responsible for authorizing Private Finance Initiative (PFI) contracts with the private sector, which aims to use financial resources efficiently by relying on private sector's financial, management and technological ability [34]. The officers' role is thus mainly to supervise the contractors.

2.2.2. The Space Policy Committee as a new advisory board for space policy

In addition to the Space Office, the Act established the Space Policy Committee in Cabinet Office. The Space Policy Committee serves as an advisory committee for space policy with support from the Space Office. This committee comprises seven or fewer part-time expert members. The Space Policy Committee investigates and deliberates on policies such as the Basic Space Plan and budgetary prioritization in response to the Prime Minister's requests. In fact, the Space Headquarters revision of the Basic Space Plan and the Space Office's 2013 budgetary prioritizations were based on the results of the Space Policy Committee's discussions [35,36]. The Space Policy Committee can also provide recommendations and opinions to the Prime Minister and other ministers. The impact of the recommendations and opinions is unclear and they are generally thought to not have legally binding power [37], but there are

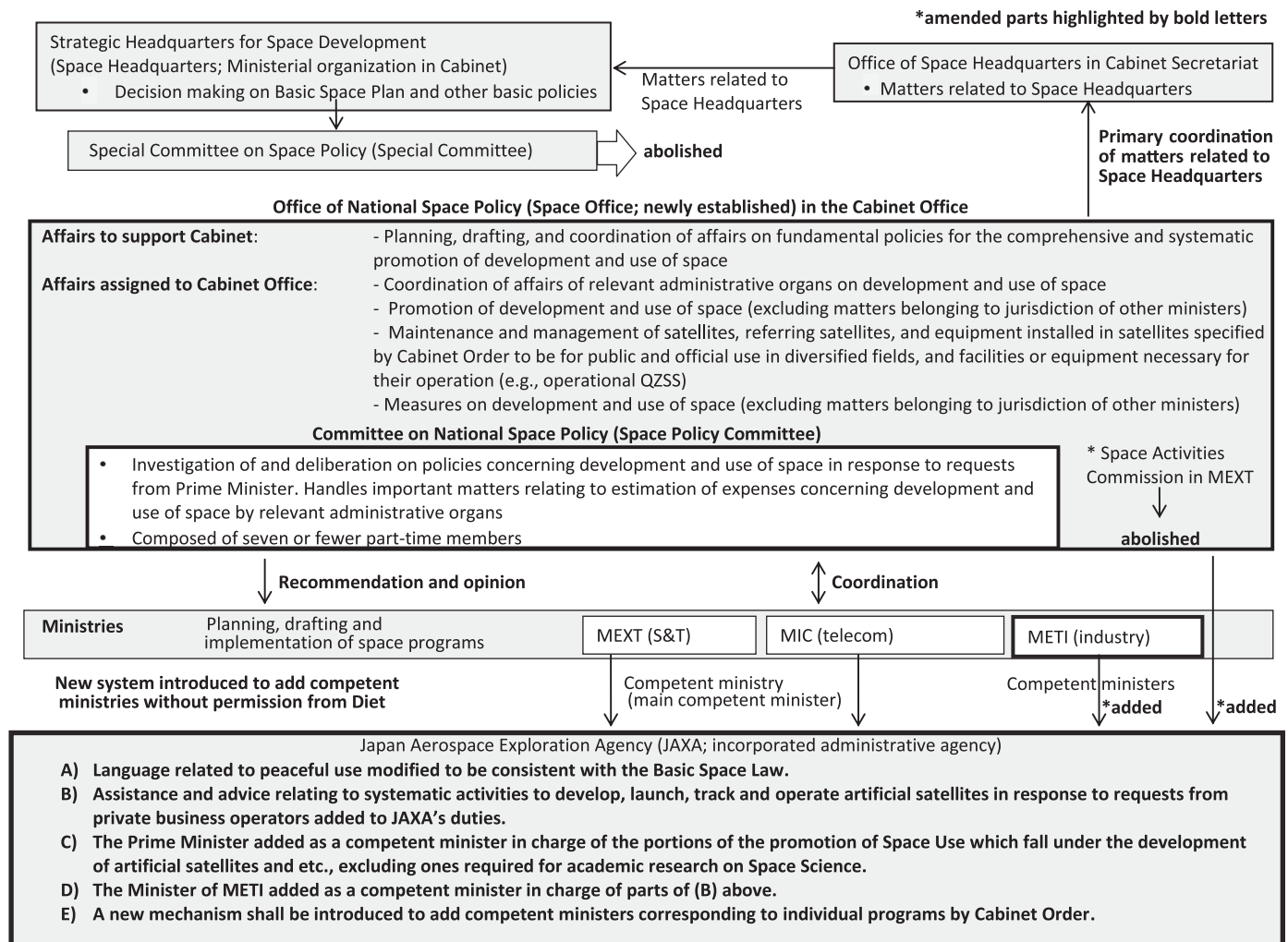


Fig. 1. Japan's restructured organization to promote the strategic development and use of space.

few cases in which ministers refused the recommendations of other similar advisory committees that were similarly established on a legal basis [38].

2.2.3. JAXA as the core space agency, supporting government-wide space development and use

The Special Committee's final report recommended that JAXA should be reformed to become Japan's core agency supporting the development and use of space. Moreover, this should be a government-wide approach and incorporate both civil and military uses. To achieve these objectives, JAXA was reformed as below.

2.2.3.1. The peaceful purposes of JAXA. The Act revised JAXA's purpose to be consistent with the principles indicated by the Basic Space Law. The 2008 Basic Space Law amended the national purposes of the development and use of space. Until this time, all Japanese space development had to be "non-military" based on the peaceful purposes of space stipulated by a 1969 Diet resolution concerning fundamental space policy and the subsequent interpretation of "peaceful purposes" in Diet deliberations [39] [40]. In particular, the space activities of the Japan Self-Defense Forces (JSDF) were curtailed by this strict interpretation. But when lawmakers established a new provision about the peaceful purposes of space in the Basic Space Law, the interpretation was reconciled with the pacifist language of the Japanese Constitution. As a result, the

Basic Space Law enabled all Japanese space development and use to take place freely within the limits of the pacifism of the Constitution as well as other treaties and international agreements like the Outer Space Treaty, unless otherwise specified [5]. Because JSDF's current activities take place under the pacifism of the Constitution, the Basic Space Law was expected to open the door to JSDF's development and use of space. However, at that time, lawmakers did not amend the language related to the peaceful use of outer space in JAXA's establishment act (Law Concerning Japan Aerospace Exploration Agency (Act No. 161, 2002)). The Basic Space Law was created through politicians' initiative but the Cabinet, including the minister of MEXT, carried out the actual drafting of the 2012 legal amendment acts. Around this time, the politicians came into conflict with MEXT because they wanted to eliminate MEXT's monopoly on space policy making [7]. Therefore, it is likely that the politicians did not communicate well with MEXT, which is in charge of the JAXA act [41]. Thus, it was necessary to later adjust the JAXA act to bring it in line with the intentions of the Basic Space Law. At last, the re-definition of the peaceful purposes of JAXA was included in the bill. As a result of this amendment, like the JSDF, JAXA is expected to be able to operate its space programs based on the pacifist principles of Article 9 of the Japanese Constitution. In theory, this amendment enables JAXA to work as a core implementation agency to support the Ministry of Defense, with which JAXA could not cooperate before.

2.2.3.2. Jurisdiction over JAXA. Despite the intense discussions in the Special Committee, this amendment did not change JAXA's competent ministry: MEXT continues to work as the sole competent ministry (or the main competent minister). From an institutional standpoint, competent ministries are treated differently than competent ministers [42]. Incorporated administrative agencies such as JAXA can have several competent ministers. Each competent minister oversees the incorporated administrative agency's handling of the areas relevant to his or her ministry. On the other hand, in principle there should only be one competent ministry, and this competent ministry takes ultimate responsibility for the incorporated administrative agency [43]. Item 1, Paragraph 1, Article 26 of the amended JAXA act remains intact and stipulates that only MEXT manages matters relating to executives and employees, finance and accounting, and other administrative management. "Finance and accounting" is thought to include subsidizing management expense grants to JAXA. In fact, only MEXT requested FY 2013 grants for JAXA. During the discussion on the Special Committee's final report, they explored the possibility of giving authority to the Cabinet Office as a second main competent ministry, but ended up acquiescing to the general rule that there should be only one competent ministry.

Instead of becoming a competent ministry, the Cabinet Office gained authority to participate in the jurisdiction of JAXA by the Prime Minister becoming one of the competent ministers. Because the Prime Minister is the chief of the Cabinet Office, the Cabinet Office can oversee JAXA via the Prime Minister. Together with the ministers of the MEXT and MIC, the Prime Minister will direct the promotion of space use through JAXA. This means that the Prime Minister will work to gain a consensus from the users of space and will determine the development policies necessary to set up the specifications and performance of satellites, rockets and rocket ranges, and the promotion of operational satellite use. In fact, the Cabinet Office set up a liaison meeting for all the ministries generate a consensus among satellite-using ministries to promote the use of space. It is important to note that academic research on space science, such as astronomy and asteroid exploration, was and continues to be exclusively under MEXT's jurisdiction.

To promote industrialization, the minister of METI was added to the competent ministers overseeing JAXA. Together with the Prime Minister and the MEXT and MIC ministers, the METI minister directs the assistance of and advice to private business operators. JAXA was able to popularize the results of its R&D even before the amendment, but now, JAXA's assistance and advice is not limited to R&D topics. The amendment allows JAXA to assist and advise on new projects initiated by the private sector, or projects whose R&D is not based on JAXA's research achievements. At the meeting of the Special Committee, it was only METI that expressed its will to participate in the jurisdiction over JAXA as a competent minister [44]. Because there was a consensus to enable JAXA to conduct space programs related to national security, there was the possibility for security-oriented ministries such as the MOD and MOFA to also become competent ministers, but they did not express this desire. This is likely why only METI was added to the competent ministers. However, as the result of the amendment, relevant administrative organs, including MOD and MOFA, can ask the competent ministers to request that JAXA take necessary actions. This would occur when they find it particularly necessary for the promotion of international cooperation, the maintenance of international peace and security, or in times of urgent necessity. However, MOD answered in Diet questioning that at present, it did not foresee any concrete situations in which it would request the competent ministers of JAXA to act [45].

In the final report, the Special Committee recommended that JAXA should be open to other ministries so that it can respond to

their various administrative needs for the development and use of space. Following this recommendation, a new mechanism was introduced to add competent ministers by Cabinet Order, which generally only requires a Cabinet decision and not the time-consuming approval of the Diet. Therefore, ministers who are not competent ministers of JAXA can be added more flexibly as competent ministers. Newly added competent ministers are assumed to provide JAXA with the financial resources needed to carry out its orders. Thus, JAXA will get more resources if the number of the competent ministers increases. The Defense Minister can also be added to the competent ministers, but as explained in the Diet deliberations, there is no specific program that the MOD will carry out with JAXA at this time [46].

2.2.3.3. The Basic Space Plan and the abolishment of the Space Activities Commission in MEXT. JAXA's activities are carried out along a medium-term (5-year) plan. Before the amendment, JAXA's medium-term plan was formed based on the long-term plan discussed by the Space Activities Commission in MEXT. The MEXT and MIC ministers, who had jurisdiction over JAXA, decided on this long-term plan. Meanwhile, based on the Basic Space Law, the Space Headquarters also forms a Basic Space Plan, which, as mentioned earlier, is the most fundamental plan for space policy in Japan. The Special Committee working group pointed out that the long-term plan had the same function as the Basic Space Plan [16]. As the result of the amendment, the Space Activities Commission was abolished and JAXA's medium-term plan will now be based only on the Basic Space Plan.

3. Discussion

3.1. Relationship between the Cabinet Office and MEXT

3.1.1. The reevaluation of the Cabinet Office's command function for Japan's space policy

As described above, MEXT retained its authority to oversee JAXA, contrary to what was reported outside Japan. Legally, MEXT has exclusive responsibility for JAXA's finances, accounting, and personnel, including nomination of the president and auditor-secretary of JAXA. While the Act enabled the Cabinet Office to propose a guideline for budget requests for all ministers' space policies, each ministry's budgetary request is determined in accordance with general request restrictions and the budget limitation or "ceiling" allotted to each ministry [47]. According to government documents, the budget request limit is primarily calculated based on the sum of all budgets distributed to each ministry in the previous fiscal year to keep each ministry's budget to a level lower than the previous fiscal year. Because the upper limit of the budget requests is fixed, if a ministry wants to increase the space budget, it has to cut from other budgets to reallocate money towards the space budget. Each ministry directly distributes its budget to each policy the ministry manages, but the Space Office and Space Policy Committee gets involved in the budgetary process in an indirect and partial manner, such as by giving direction to the ministries. Each ministry has more influence on its own budget than the Space Office and Space Policy Committee. After the budget request, the Space Policy Committee evaluates the ministries' budget requests and shows the evaluation results to each ministry [48]. The Cabinet Office is then supposed to negotiate with relevant ministries and the Ministry of Finance to reflect these results in budget decisions. However, the ministries may have space programs they value regardless of national space policy. When this is the case, even if the Space Policy Committee views such programs to be low priority, the ministries will not reduce their space budget. The Hayabusa 2 project, discussed below, is one such example.

3.1.2. *A system of checks and balances between the Cabinet Office and other ministries*

As described above, while as the main competent ministry MEXT will retain its implementation function, including budgetary and personnel decisions, under the revised rules, the Cabinet Office will mainly control the fundamental policy of JAXA instead of the Space Activities Commission and MEXT. As one of the competent ministers, the Cabinet Office can also supervise JAXA's development policy for satellite and rocket design to promote the use of space. Thus, confrontation is likely to occur between the Cabinet Office's policies and MEXT's implementation. The concept of dividing the policy making and implementation functions can be found in the Cabinet and Space Headquarters decisions [26,27]. As described earlier, the decision papers declared that the government must consider neutrality and fairness in deciding how to divide these functions in the administrative organizations. The basic concept is that the command function should not also carry out implementation because this would lead to a situation in which the policy maker prioritizes and evaluates its own space programs. Instead, the Cabinet Office's role is to promote the prioritization and streamlining of each ministry's space programs in light of Japan's severe financial conditions [36,49]. Therefore, the relationship between the Cabinet Office and MEXT is designed to be a system of checks and balances to avoid situations in which a referee judges his own sumo match.

As one example of emerging confrontation, MEXT is planning to launch Hayabusa 2, JAXA's asteroid probe, in 2014. However, the Cabinet Office seems to oppose Hayabusa 2 because it requested that MEXT extend discussion of the plan, even though there are only two years left until the launch date [36]. Three popular films were made about the dramatic journey of its predecessor, Hayabusa, and Japanese people have high expectations for the Hayabusa 2 project. It is unclear why the Cabinet Office is reluctant to get behind Hayabusa 2, as the reason for its evaluation was not mentioned at the Space Policy Committee meeting. The committee chair, Yoshiyuki Kasai, who was also chair of the Special Committee, questioned whether Hayabusa 2 had been selected by science specialists in the face of stiff competition like other space programs, and said, "We shouldn't just allot budget money because of enthusiastic requests from the people" [50]. Finally, the Space Policy Committee ended up evaluating Hayabusa 2 as second priority, not top priority for FY 2013 budget allocation [48]. This episode shows that MEXT does not have a free hand to pursue even popular space programs, but instead has to make an effort to persuade the Cabinet Office. It is difficult to predict whether confrontation like this between the Cabinet Office and MEXT will positively impact Japan's overall space policies, but such confrontations will be essential to understanding Japan's coming space policies.

3.1.3. *The problem of the Cabinet Office and the Space Policy Committee*

However, the system of checks and balances does not apply in the case of the operational QZSS. Based on the amended act, the Cabinet Office can operate space programs for public and official use in diversified fields, such as the operational QZSS. Therefore, the Cabinet Office can get involved in the QZSS with both command and implementation functions. This means that the Cabinet Office can make a self-serving policy to promote the QZSS and that it can also influence project evaluation to its own advantage. In fact, the Cabinet Office put top priority on the QZSS in the budget request policy and budget evaluation based on the Space Policy Committee's recommendation [36,48]. Because the operational QZSS is still in its early stages, there are no problems evident yet. Whether or not the Cabinet Office can judge its own project neutrally and fairly remains to be seen.

To prevent the Cabinet Office from making self-serving policy, the Space Policy Committee should play a key role as the Prime

Minister's advisory board. The members of the Space Policy Committee are formally removed from inter-ministerial conflicts because they are not bureaucrats in the Cabinet Office and ministries. However, there are some issues with the organization of the Space Policy Committee [51]. For example, part-time members form the Space Policy Committee. The government explained that this was because the government had to appoint highly qualified people, including those who have other jobs [52]. However, the former Space Activities Commission included three full-time members. If the part-time members are too busy with their own work to spare a great deal of time to deliberate on space policy, they may become dependent on data and materials that the bureaucrats provide [51]. Thus the quality of the individuals and their sense of responsibility in guiding the Cabinet Office are critical.

3.2. *The cause of the organizational flaw in Japan's space policy*

3.2.1. *Comparison of the previous and current structure*

To understand the deeper meaning of this organizational reform, it is important to take a retrospective glance at the history of the organizational structure related to space, especially since the structural reforms of 2001. This was the most thorough overhaul of the central government since the end of World War II. Before 2001, the Space Activities Commission was in the Prime Minister's Office and oversaw space policy across the government [53]. The STA was another administrative organ belonging to the Prime Minister's Office and supported the Space Activities Commission. STA also oversaw the National Space Development Agency of Japan (NASDA) and the National Aerospace Laboratory of Japan (NAL). In the 2001 central administrative reform, the Prime Minister's Office was converted to the Cabinet Office and STA was merged with the Education Ministry to create MEXT. Like STA, the Education Ministry was also affiliated with the Institute of Space and Astronautical Science (ISAS). As a result, post-consolidation, MEXT ended up handling most space R&D programs (NASDA, NAL, and ISAS were also merged into JAXA in 2003). At the same time, the Council for Science and Technology Policy (CSTP) was established in the Cabinet Office to oversee national science and technology policy, which included space policy. The Space Activities Commission was moved to MEXT and relegated to a supervisory position over JAXA. Then with the 2008 Basic Space Law, the Space Headquarters was established.

If the Space Activities Commission had not been moved from the Prime Minister's Office (later Cabinet Office) to MEXT in the first place, the post-2001 situation would have been almost the same as the current situation. Currently, the Space Policy Committee has been established as an advisory board just like the Space Activities Commission, and the Space Office supports the Space Policy Committee in the Cabinet Office. Indeed, the Special Committee appears to have wanted to restore the former Space Activities Commission in the Cabinet Office [54].

There are two other major points of organizational difference between the post-2001 and current situations: 1) the existence of the Space Headquarters and 2) the operational QZSS. The *raison d'être* of the Space Headquarters may no longer exist for four reasons. First, the government's decisions in September of 2011 needed to take place in the Cabinet in addition to the Space Headquarters [23,24,26,27]. Second, although the 2012 bill was important to Japan's space policy, it was decided solely by the Cabinet and not by the Space Headquarters. Third, one of the important functions of the Space Headquarters is to make decisions on the Basic Space Plan, but other kinds of basic plans, such as the Basic Environment Plan and the Basic Energy Plan, are decided by Cabinet decision according to Article 15 of the Basic Environment Law (Act No. 91, 1993) and Article 12 of the Basic Energy Policy Law (Act No. 71, 2002; "the Basic Act on Energy Policy"), respectively. This fact suggests that the headquarters

is not even legally necessary to decide the Basic Plan. Fourth, the existence of the Space Headquarters provided the legal backing for the establishment of its supportive office. For example, the supportive office of the Space Headquarters functioned to coordinate all relevant ministries' space policies by consulting the Special Committee, but now the Space Office has almost the same function. With regard to the QZSS, there are two possible ways it can be operated, either by inter-ministerial cooperation or by the Cabinet Office. MEXT, METI, MIC and the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) sponsored the first QZSS test satellite [55]. It was therefore possible to implement the QZSS project without the involvement of the Cabinet Office. Even if the government decides to establish the implementation function in Cabinet Office for the second-generation operational QZSS, this would be simple to legislate. Further, three of the main space-developing ministries—MEXT, MIC and MLIT—were hesitant about supporting the operational QZSS because they were doubtful of its applicability [56]. These ministries would welcome the Cabinet Office implementing the QZSS so they will not have to bear any more costs associated with it. Thus, there is actually no conflict between the ministries and the Cabinet Office on QZSS. If the Space Activities Commission had not been moved from Prime Minister's Office/Cabinet Office to MEXT during the 2001 central government reform, Japan's space policy might have avoided wasting considerable amounts of time and human resources.

3.2.2. *STA/MEXT officers' approach to space policy*

STA officers have been criticized for their tendency to focus on R&D rather than the promotion and commercialization of space [3]. Therefore, one may insist that the 2012 amendment was needed to replace STA officers with more utility- and commercially-oriented bureaucrats. However, this criticism may be unwarranted because communication satellites and metrological satellites were commercially operationalized under the STA/Space Activities Commission regime, and the H-IIA rocket technology and launch operations were transferred to the private sector in 2002, prior to the establishment of the Space Headquarters. In fact, while recent space policy might lean toward R&D, the Space Policy Committee admitted that this inclination was due to the 1990 US-Japan Agreement on Satellite Procurement, which forces Japan to procure non-R&D satellites on an open and non-discriminatory basis [57]. In the 1990s, the Japan's space industrial competitiveness was still too weak to win a contract even to build Japanese government satellites [58]. Therefore, to promote space utilization and to avoid international competition, STA and NASDA had to concentrate on R&D satellites rather than non-R&D satellites. In addition, STA officers were also aware of the importance of national security programs. The CSTP, led by ex-STA officers, made the first official mention of revising the interpretation peaceful purposes of space in 2004, prior to the establishment of LDP's National Space Strategy Planning Group in 2005, which triggered the legislation of the Basic Space Law [2,59,60].

Despite STA officers' awareness of the non-R&D related aspects of Japan's space policy, STA did not work to promote a whole of government strategy toward space and were instead motivated by parochial interests. In 2001, headquarters for central government reform were established in the Cabinet to conduct practical matters related to government reform, such as organizational planning and necessary legislation [61]. The headquarters were composed of all the Cabinet members. Also, each ministry's highest-ranked bureaucrat (the administrative vice-minister), including one from STA, participated in the operation of the headquarters. Bureaucrats could therefore convey their opinions on Cabinet decisions through their own ministers and vice-ministers. They also had the opportunity to alter policy disadvantageous to them through various measures, including external pressure on the headquarters [62]. Significantly,

during the formation of the reform policies, STA approved the Space Activities Commission being moved from the Prime Minister's Office (Cabinet Office) to MEXT. They may have thought that it was unnecessary for the Space Activities Commission to be located in the Cabinet Office because CSTP had just been established there to oversee space policy. But CSTP was busy because it also had to manage other areas of science and technology policy [7]. A committee specializing in national space policy was therefore still necessary, as evidenced by the Space Policy Committee recently being established in the Cabinet Office despite the continued existence of the CSTP. Even though the STA officers had dealt with national space policy, they did not realize its significance and saw space policy as just one piece of science and technology policy. Had STA been genuinely concerned with creating effective space policy from a national perspective, it would have pushed for the Space Activities Commission to stay the Cabinet Office. Meanwhile, during the reforms, one seat in the Space Activities Commission was unofficially taken over by a retired STA official. STA/MEXT officers may have wanted to keep the Space Activities Commission ready at hand and to control the Commission's personnel to secure post-retirement positions. Given the evidence presented above, I argue that where STA went wrong is not necessarily in its focus on R&D, but rather that it did not take the opportunity during the 2001 reforms to keep the Space Activities Commission in the Cabinet Office, where it could have continued to develop space policy from a national perspective.

3.2.3. *Lesson for MEXT to be learned from this reform*

The 2012 reform replaced MEXT with the Cabinet Office as the main policy planner. The deputy director-general of space, who was originally from METI, now leads the new Space Office in the Cabinet Office, and METI also has jurisdiction over JAXA. The influence of MEXT on space policy has thus been reduced considerably. This reform can therefore be regarded as a punishment for STA/MEXT's indifference to the necessity of a national command function. The lesson to be learned from this story is that STA/MEXT should consider Japan's national interest from a broad perspective. At the very least, STA/MEXT officers should be aware of the importance of basic national strategy, not simply their own limited interests.

In Japan, the government is now discussing the reform of CSTP to strengthen international industrial competitiveness. They are also discussing the reform of the Atomic Energy Commission in the wake of the Fukushima nuclear disaster; the Nuclear Regulation Authority was reformed last year. Like the Space Activities Commission, these committees were managed by STA and reorganized in 2001. Even though the reforms of these committees have different motivations, it is interesting to note that these reforms occurred in the same period. So far, the government is only discussing specific problems within each organization's area of responsibility. However, a crosscutting view should be taken to address common problems arising from the 2001 reform. Clarifying of the most recent and ongoing series of STA-related administrative reforms would make a good topic for further research. As was shown in this paper, government organizational reform is intimately tied to ministries' interests. Further research could contribute to a more detailed understanding of Japanese ministries' behavioral principles, that is, those principles that are common to space and other science and technology-driven activities.

4. Conclusion

The 2012 legal amendment established the Space Office in the Cabinet Office, which is responsible for creating a national space strategy together with the Prime Minister's advisory board, the Space Policy Committee. In addition, the Space Office can handle multi-purpose space programs, such as the operational QZSS. JAXA

was modified to be a core space agency that can work flexibly for each ministry's administrative purposes, including national security. JAXA's jurisdictional structure is designed to encourage competitive tension between the Cabinet Office in its command function and other ministries with their implementation functions. The reshuffle of the space-related organizations has tentatively concluded, but discussion on administrative reforms, including the consolidation of all space-related organizations, is ongoing per the Cabinet and Space Headquarters' decision [26,27]. It is hard to predict when the next administrative reform will take place, but until then, policy makers will evaluate how well the Cabinet Office, MEXT, and other ministries contribute to national space strategy. Recently, Japan experienced a change of the government; the LDP and the New Komei Party came back to power. The information in this paper is current as of May 2013, and reflects changes only at the beginning of this new government. However, the trends in Japan's space policy are likely to continue, as they have been supported by suprapartisan cooperation. For example, the Basic Space Law was enacted by the LDP, the New Komei Party, and the previous ruling party, the DPJ. If the various ministries do not show positive results in the new regime, their influence on space policy may be reduced in the next iteration of reforms, as STA/MEXT just experienced.

As discussed above, the organizational flaw in Japanese space regime may have been avoidable if the bureaucrats had properly designed and executed the 2001 reforms. To make up for time lost carrying out reforms that may have ultimately been unnecessary, the government should now focus on addressing problems that it could not tackle to date because the organizational reforms had not yet concluded. For example, the government must dedicate all its strength to promote the Basic Space Plan, newly revised in January 2013. It was estimated to cost about 2.5 trillion yen (USD 25B) over five years to implement all the programs listed in the previous Basic Space Plan, and the government needed to double the budget related to space. However, the space budget was not increased as much as expected. The Space Headquarters referred to the necessity of revising the Basic Space Plan in its 2010 decision [63]. Probably because they recognized that administrative reform had to be carried out first, the Space Policy Committee started deliberations on the Basic Space Plan just after the enforcement of the Act. Two years have already elapsed since the government became aware of the necessity of revising the Basic Plan. The government has to concentrate on promoting, evaluating, and financing the new Basic Space Plan within a stable administrative structure to enable the development and use of space.

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¹ For convenience for international readers, Japanese titles are unofficially translated into English in brackets if the Japanese titles do not have official English versions. All online materials are confirmed to be available as of 2 May 2013.

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