Analysis of the Legal Instruments Operating the ISS as the Most Complex Space Program Ever Undertaken: From Historical Perspective*

*Setsuko Aoki***

Abstract

"The International Space Station (ISS) is the most politically and operationally complex space exploration program ever undertaken" and without any doubt, the ISS program is one of the most successful multilateral projects in addition to the fact that this is the greatest accomplishment as a human space program. In considering the legal future of multilateral big projects including that of the ISS after 2020, it is important to consider what legal conditions and provisions in the present ISS/IGA and relevant instruments have brought a success and what elements have to be thought less than successful or could be changed in a future project. To evaluate the ISS/IGA and relevant instruments of international nature, this paper focuses on how the U.S. - U.S.S.R./Russia cooperation architecture had been developed into the present ISS/IGA and relevant instruments from the historical perspective as the present instruments is not the logical consequence for a big international space project but rather the product of the long-standing cooperative efforts among the spacefaring nations related under the specific international environment. Survey of a series of the U.S. - Soviet/Russia cooperative documents and mechanisms leads to the conclusion that the combination of the government- to- government agreements and agency- level agreements that provide for day-to-day operation is one of the keys of successful project; other findings include that cross-waiver of liability, the rules on the protection of the intellectual property as well as the principle that each country bears financial responsibility for its own tasks are among duly established practices to operate an ISS which should be used in the future human space projects. It has to be also pointed out that some rules such as criminal jurisdiction and registration, jurisdiction and control

* This study is funded by the Japan Science and Technology Agency (JST) under the grant program of the Research Institute of Science and Technology for Society (RISTEX).

** Keio University, Japan, aosets@sfc.keio.ac.jp

found in the ISS/IGA could be provided for in a different way depending on the partners, projects and international political environment.

I. Introduction

"The International Space Station (ISS) is the most politically and operationally complex space exploration program ever undertaken"[1] and without any doubt, the ISS program is one of the most successful multilateral projects in addition to the fact that this is the greatest accomplishment as a human space program. The ISS has been operated through the combination of multi-layered international instruments: government to government, government to the international intergovernmental organization, government to agency and agency to agency agreements. Among them, the more significant instruments include ISS Intergovernmental Agreement (IGA) as a legally binding instrument which provides for basic government-level commitments, and Memoranda of Understanding (MOUs) between NASA and the respective space agencies of Partners[2] which establish the agency-level cooperation basis. For the purpose of this paper, the combination of the agreements which have been collectively applied to operate the ISS is called "ISS/IGA and relevant instruments".

Present ISS/IGA and relevant instruments is not the logical consequence for a big international space project but rather the product of the long-standing cooperative efforts in space exploration among the spacefaring States under the specific international political circumstances including, *inter alia*, the Cold War. It is thus natural that agreements required among the Western countries as allies and friends for a joint human space project in the Cold War era differed from those between the U.S. and the former Soviet Union. Likewise, in contrast to the former case where overwhelming difference in human space capabilities existed between the U.S. and other Partners, the U.S. and the Soviet Union had the similar strength each other in this field.

This paper focuses on the gradual construction of the legal architecture in human space project between the U.S. and the former Soviet Union and its successive State, Russia toward the final agreement of the ISS/IGA and relevant instruments. Specific provisions not necessarily required among allies and friends may well be needed to conduct a big space project between non-friendly States, and no other space project is as big as a human space project. Through the development process of this bilateral legal architecture, it may be possible to assess what kind of provisions in the present ISS/IGA and relevant instruments should remain for a future international exploration agreement and what other provisions should not be necessarily used again. As increasing number of States have entered in space activities, it is expected

1 A/AC.105/2013/CRP. 17 (8 April 2013), p. 2.

2 With respect to Japan, however, it was the Government of Japan which signed the MOU.

more States will participate in a future human space project. China and India, neither being the U.S. ally, may participate in a multilateral human space project, if not the ISS after 2020. For such a future, the cooperative conditions accomplished between the U.S. and the Soviet Union/Russia may be a reference.

II. Path to the Present ISS Program

II.1 Early Days U.S.-U.S.S.R. Joint Exploration

U.S.-U.S.S.R. space cooperation dated from 1962. It was meteorological studies, which was followed by the two-year telecommunications experiments from 1962 to 1964 and geomagnetic mapping from 1962 to 1973. All such joint studies were based on the agreements between NASA and the Soviet Academy of Sciences.[3] That was changed in early 1970s. President Nixon, described as "only the first of many Presidents who set NASA on a course of sharing space exploration and space applications through international cooperation"[4] brought the first government-level treaty between the two countries in 1972. The 1972 Agreement Concerning Cooperation in the Exploration and Use of Outer Space for Peaceful Purposes (hereinafter "1972 Agreement"),[5] signed by U.S. President Nixon and Chairman of the Council of Ministers of the U.S.S.R. Kosygin, led in the successful 1975 Apollo-Soyuz test project. [6]

The 1972 Agreement is summarized as follows: the field of cooperation to be developed is specified [7] with the possibility of the additional area of cooperation based on the mutual agreement.[8] It is agreed upon that such cooperation would be carried out by means of mutual exchange of scientific information and delegations that may be put into practice through the creation of "the joint working groups."[9]Then, the specific project already agreed to proceed is set out which aims at developing compatible rendezvous and docking system: both countries had agreed to conduct a docking project of Apollo-type spacecraft and Soyuz-type spacecraft with visits of astronauts in each other's spacecraft in 1975 in accordance with the procedures and

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3 https://www.princeton.edu/~ota/disk2/1985/8513/851305.PDF., P.39 (last accessed 2 May 2014).

4 Presentation Statement of Mr. Gerstenmaier at the Legal Subcommittee of the COPUOS (12 April, 2013) http://www.unoosa.org/pdf/pres/lsc2013/tech-02E.pdf (last accessed 29 July 2014), p.4. President Nixon stated that "our progress will be faster and our accomplishments will be great if nations will join together in this effort, both in contributing the resources and in enjoying the benefits." *Ibid.*

5 Signed at Moscow, 24 May 1972. Treaty No.12115. http://history.nasa.gov/astp/documents/Agreement%20concerning%20coop%20%28Nixon-Kosygin%29.pdf (last accessed 12 May 2014).

6 Presentation Statement of Mr. Gerstenmaier, *supra* note 5, p.4.

7 Art. I of the 1972 Agreement.

8 Art. V of the 1972 Agreement.

9 Art. II of the 1972 Agreement.

measures to be made under the agreements of the scientists and engineers on both sides. [10] While by far the longest provision of the succinct six article Agreement, Art. III is yet much shorter and simpler compared with the later day description of the implementation agreements, let alone MOUs of the ISS/IGA today. Art. VI specifies the duration of the 1972 Agreement as five years with the possibility of the extension and modification. It also sets out that this instrument shall enter into force upon signature.[11]

This short Agreement nevertheless set the standard of form and substance for the subsequent project agreements for the two countries. All of the later U.S.-U.S.S.R. agreements with respect to manned space projects referred to the following points: 1) the clear and detailed description of the project to be conducted. Later, this tends to be specified in a different independent agreement especially in the agency-level non-legally binding agreement; 2) the joint working groups which could address the planned and unexpected events during the course of the project; 3) the concrete duration of the cooperative agreement with the possibility of renewal; 4) the simplified system of the entering into force upon signature. However, later agreements did not necessarily follow all provisions in the 1972 Agreement. One example would be the responsible entity for the cooperation. While the counterpart of NASA was the Academy of Sciences of the U.S.S.R. in the 1972 Agreement,[12] it was changed into the space agencies of the respective countries in 1992. [13]

The Case of joint Shuttle-Salyut flights was not nearly as successful as the Apollo-Soyuz test project. In order to make this project happen, in addition to the renewal of the 1972 Agreement, or the adoption of the Agreement Concerning Cooperation in the Exploration and Use of Outer Space for Peaceful Purposes of 1977 (hereinafter "the 1977 Agreement"), the Agreement between the U.S.S.R./Academy of Sciences and U.S./NASA on Cooperation in the Area of Manned Space Flight (hereinafter "Manned Space Flight Agreement") was adopted in the same year.[14] Chronologically, after the Manned Space Flight Agreement formally opened the studies of joint Shuttle-Salyut flights on 11 May 1977, the 1977 Agreement was signed and

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10 Art. III of the 1972 Agreement.

11 Art. VI of the 1972 Agreement.

12 Art. III of the Agreement. Academy of Sciences of the U.S.S.R. is said to be used to avoid identifying which ministry or the institution, often times it being the military department, actually conducted the project. See, e.g., Roald Sagdeev & Susan Eisenhower, "United States – Soviet Space Cooperation during the Cold War", http://www.nasa.gov/50th/50th_magazine/coldWarCoOp.html (last accessed 24 May 2014).

13 See, *infra* note 26.

14 John Logsdon, ed., *Exploring Unknown*, Selected Documents in the History of the US Civilian Space Program, NASA SP-4407, vol. II (1996), Doc.I-50, pp. 215-217.

endorsed the contents of the former on 18 May 1977.[15] The Manned Space Flight Agreement was understood as the implementing agreement of the 1977 Agreement, for it is specified in the latter Agreement that the planned joint work of Shuttle-Salyut flight "will be carried out in accordance with the Agreement Between the U.S. National Aeronautics and Space Administration and the Academy of Sciences of the U.S.S.R. on Cooperation in the Area of Manned Space Flight dated May 11, 1977."[16] Manned Space Flight Agreement is consisted of two parts: part I includes study to accomplish joint experimental flights of Salyut-Shuttle program; and part II is reserved for the consideration of the feasibility of developing the future international space platform. Work of the each part was planned to be conducted by the close cooperation of the joint working groups. [17]

The joint Shuttle-Salyut flights was not realized due mainly to the transfer of technology concerns expressed on the U.S. part. [18] This can be a lesson learned. It might have been helpful, at least to some extent, if the effective provisions to safeguard technology had been provided for in the Manned Space Flight Agreement itself or an independent instrument annexed to the 1977 Agreement. However, it has to be underlined as that the true reason of the failure of this project should be attributed to the rapidly worsening relationship between the two countries. After the Soviet invasion in Afghanistan, no substantial cooperation was possible except a few scientific area such as space biology which was provided for as an item of cooperative field in the 1972 and 1977 Agreements. [19] Naturally, the 1977 Agreement was not only renewed, but terminated in 1982 as one of the U.S. sanctions towards the U.S.S.R.[20]

While it is difficult to evaluate the degree of the problems of the contents of the 1977 Agreement and the 1977 Manned Space Flight Agreement, one thing seems clear. Political environment closely connected with the wills of the leadership is a decisive factor in case of a major cooperative project between non-allies except a small scale of a pure scientific research which had been pursued prior to the surge of a problem.

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15 1977 Agreement was signed between the U.S. Secretary of State Cyrus Vance and Soviet Foreign Minister Andrei Gromyko. This Agreement pursued the same directions as established in the 1972 Agreement concerning the pure scientific investigation of space and space application experiments.

16 Art. III of the 1977 Agreement.

17 Logsdon, *supra* note 15, Doc.I-50, pp.215-217.

18 *Aviation Week & Space Technology* (17 July 1998), p.13, cited in John Logsdon, *US-Soviet Space Cooperation: A Historical Perspective,* Eisenhower Institute (2003), p.49.

19 Art. I of the 1972 Agreement; Art. I of the 1977 Agreement.

20 *Supra* note 4, p.39.

II.2 Progressive Developments towards the ISS/IGA

The discussion of the Shuttle-Mir docking mission started in a much better political environment, which was conducted as the combination of a series of summit meetings, head of the agencies meetings and working-level negotiations. First, talks on the possible Shuttle-Mir docking, etc. were conducted between U.S. Vice-President and Soviet head of state in May 1990, which eventually resulted in the Space Cooperation Agreement signed by Presidents Bush and Gorbachev in July 1991.That called for a flight by a U.S. astronaut aboard a Soviet Soyuz to Mir for a stay of up to six months. In return, a Soviet cosmonaut would fly aboard a Shuttle Spacelab mission. As a result, the US-Soviet "Manned Flight Joint Working Group" and a coordinating mechanism were set up in the same year. Then, the U.S.-Russian Space Agreement Concerning Cooperation in the Exploration and Use of Outer Space for Peaceful Purposes was signed by Presidents Bush and Yeltsin on 17 June 1992 (hereinafter "the 1992 Agreement")[21] which included a joint statement[22] on Shuttle-Mir docking mission. [23]

The 1992 Agreement contains the following provisions: the scope of the Agreement is defined with the emphasis as this is "civil cooperation".[24] Then, space agency of each country, NASA and Russian Space Agency (RSA) are designated as "their principal implementing agencies" of the joint project.[25] This is certainly a departure from the past cooperative scheme between the two countries.[26] From that time on, "the principal implementing agency" is the space agencies between USA and Russia. This has also become the practice of the most of the U.S. space cooperation agreements, which provides that it is the space agencies of the countries concerned which carry

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21 This Agreement is the renewal of the 1987 Agreement as the first one in the series signed in 1972. While the 1977 Agreement terminated in 1982, that was signed again in 1987 as the political situation was ameliorated by that time. Text of the Agreement Concerning Cooperation in the Exploration and Use of Outer Space for Peaceful Purposes (hereinafter "1987 Agreement") is found: http://www.jaxa.jp/library/space_law/chapter_4/4-2-2-6_e.html (last accessed on 13 May 2014). See, also, Logsdon, *supra* note 15, Doc. I-51, pp.218-219.

22 http://fas.org/spp/starwars/offdocs/b920617c.htm (last accessed 24 May 2014).

23 http://spaceflight.nasa.gov/history/Shuttle-mir/history/h-b-negotiations.htm (last accessed 24 May 2014).

24 Art. 1 of the 1992 Agreement. In addition to the Shuttle-Mir project, scope of cooperation included monitoring of the global environment, safety of space flight activities, space biology and medicine and consideration of future joint work such as the exploration of Mars.

25 Art. II of the 1992 Agreement.

26 Art. II of the 1987 Agreement provided that the cooperation would be conducted "through their designated cooperating agencies" not through space agencies. See, Logsdon, *supra* note 15, Doc. I-51, p. 218.

out day-to-day operation.[27] It may merit mentioning that China has the same practice in adopting a cooperative agreement with other countries.[28]
Art. III of the 1992 Agreement provides that the cooperative project shall be conducted within the limits of available funds. This is the first time that the funding issue is explicitly stated in the U.S. - Soviet/Russian government-to-government space agreements. Art. IV provides for the annual consultations as a mechanism for government-level review of ongoing cooperative projects and as the principal means for proposing new activities the scope of which is set out in Art. I. This is followed by the confirmation that this cooperation agreement is the *lex specialis* that enables the other international cooperation projects on both sides intact.[29]Art. VI may be the most important provision in the 1992 Agreement in that it provides for the new mechanism to address the intellectual property issues that can be as problematic as the technology safeguard which in part caused the collapse of the Salyut-Shuttle project by the early 1980s. Art. VI provides that "adequate and effective protection of intellectual property created or furnished" under the 1992 Agreement and relevant agreements concluded by NASA and RSA shall be ensured. Allocation of rights to intellectual property shall be made in accordance with the Annex attached to the 1992 Agreement unless otherwise specified in the relevant agreements.[30] The Annex as an integral part of the 1992 Agreement contains the conditions of the intellectual property rights including i) its scope, ii) allocation of rights, and iii) business-confidential information.
It is provided that the cooperative agreement would be entered into force on signature.[31]The technique how a cooperative agreement entered into force is an important factor to be taken into consideration as the first ISS/IGA adopted in 1988 had not been entered into force for Canada and ESA when it was terminated by the entering into force of the current ISS/IGA on 27 March 2001. [32] The 1992 Agreement contains the provision of the duration as five years with renewable clauses. [33] Written notice shall be sent to the other party six months before terminating this Agreement. [34]

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27 A/AC.105/C.2/2013/CRP.17, *supra* note 2, pp.2-9.
28 China reported that its 68 cooperative agreements with 24 countries provide, in general, the following two points: 1) the space agencies of the two parties are the competent bodies to implement the agreement; and 2) a joint committee for space cooperation is charged with developing the outline programme and identifying the key areas of cooperation and projects. A/AC.105/2013/CRP.14 (8 April 2013), p.3.
29 Art V of the 1992 Agreement.
30 See also Annex of the 1992 Agreement.
31 Art VII of the 1992 Agreement.
32 The 1988 ISS/IGA had been applicable through the transitional application method to the Partners concerning which the Agreement was not effective.
33 Art. VII of the 1992 Agreement.
34 *Ibid.*

This Agreement is characterized as the newly pronounced factors of financial arrangements and intellectual property rights (Arts. II & VI). Two of the new provisions have become indispensable elements for the subsequent cooperative agreements.

Based on the 1992 Agreement, the Implementing Agreement between NASA and RSA on Human Space Cooperation (hereinafter "the 1992 Implementing Agreement") was adopted on 5 October 1992. [35] The purpose of this Agreement includes: 1) the flight of Russian cosmonauts on the U.S. Space Shuttle; 2) the flight of U.S. astronauts on the Mir Space Station; and 3) the joint mission involving the rendezvous and docking of the U.S. Space Shuttle and the Russian Mir Space Station.[36] While this instrument has not yet shown a resemblance to the present ISS/IGA and relevant instruments, it can be said a milestone as it shows a substantial difference from the past U.S.-Soviet/Russia cooperation agreements. Accordingly, it seems worth introducing the summary of the 1992 Implementing Agreement in some detail below: first, the detailed contents of the bilateral cooperation is enumerated in Art. I, and that Article also mentioned that "each Party will be responsible for funding its respective responsibilities, consistent with its domestic laws and regulations, and subject to the availability of appropriated funds".[37] That funding responsibilities would be assumed by the host country with respect to: a) all training; b) in-country travel; c) living arrangements; and d) flight and other associated costs for each Party's crew members and dependents. [38] Residual articles are: designation of representatives and organizations (Art. II); joint implementation teams (Art. III); selection of candidates of astronauts based on the mutual agreement (Art. IV); training, the contents of which is subject to standards of conduct agreement (Art. V); science (to establish a Working Group to coordinate experiments and the publication of the results, etc.) (Art. VI); cross-waiver of liability and the application of the 1972 Liability Convention when cross-waiver of liability is not applied (Art. VII). As this is one of the most important aspects of this study, para. 1 of Art. VII is cited below: "1. A comprehensive cross-waiver of liability between the two Parties and their related entities (e.g., contractors, subcontractors, and other participating entities associated with the Parties including any state from which RSA procures a launch to carry out its obligations under this agreement) shall apply to the activities under this agreement. The cross-waiver of liability shall be broadly construed. The terms of the waiver are set out in Annex 2." Annex 2, consisted of five

[35] Text of the 1992 Implementing Agreement is found: http://www.jaxa.jp/library/space_law/chapter_4/4-2-2-4/index_e.html (last accessed 24 August 2014); see, also Logsdon, *supra* note 15, Doc I-53, pp.223-228.

[36] Preamble, the 1992 Implementing Agreement.

[37] Art. I, para. 9 of the 1992 Implementing Agreement.

[38] *Ibid.*

articles, does not define main technical terms nor has the detailed provisions like those found in Art. 16 of the ISS/IGA. Other Articles are: intellectual property rights (invention and patent rights, etc.) (Art. VIII); public information (the release of information is allowed as desired on its own portion of the program) (Art. IX); exchange of technical data and goods (the limitation of the duty to transfer to the other party) (Art. X); customs and immigration (facilitation of the movement of persons and free custom clearance) (Art. XI); settlement of disputes (consultation) (Art. XII); duration, five years with possible earlier termination by the prior notice of at least six months (Art. XIII); and entry into force upon the exchange of diplomatic notes signed by heads of space agencies (Art. XIV). [39]

Further development was seen after Russia was invited to participate in the ISS project in September 1993. U.S. President already had directed NASA to redesign the ISS (Freedom) in March 1993 and three months later, the report was sent to the President by the Advisory Committee on the Redesign of the Space Station, which recommended the President to pursue opportunities for cooperation with Russia as a means to enhance the capability of the ISS and reduce cost.[40]

With respect to Russia, the first real step for the existing ISS/IGA started as the adoption of the Interim Agreement Between NASA and RSA for the Conduct of Activities Leading to Russian Partnership in the Detailed Design, Development Operation and Utilization of the Permanently Manned Civil Station on 24 June 1994 (hereinafter the 1994 Interim Agreement). [41] Fourteen provisions of the Interim Agreement are set out to smoothly invite Russia into the ISS. The structure of this Agreement is as follows: Art.1 Objectives (transitional process of assimilating Russia into the ISS is underlined.); Art.2 Responsibilities (it provides for the allocated responsibility of the task on both parts and the prime contractors of both countries are named.); Art.3 Management (14 paragraphs. That is tantamount to the implementing agreement.); Art. 4 Safety and mission

[39] *Supra* note 36. The next year, on 16 December 1993, Protocol to the Implementing Agreement on Human Space Flight Cooperation between NASA and RSA was signed. Art. I provides for the additional activities in 13 detailed paragraphs. Other provisions include joint implementation teams (Art. II) and entry into force upon exchange of diplomatic notes that would be signed by heads of both space agencies (Art. III). Text is found in Logsdon, *supra* note 15, Doc. 1-55, pp. 230-232.

[40] Rapidly increasing cooperation between the two States on Shuttle-Mir project and beyond was described in the White House Office of the Vice President, US-Russian Joint Commission on Energy and Space, *Joint Statement on Cooperation in Space* (2 September 1993); GAO, *Space Station- Impact of the Expanded Russian Role on Funding and Research* (1994), p.3.

[41] Text of this Interim Agreement is found: https://www.princeton.edu/~ota/disk1/1995/9546/954610.PDF (last accessed 23 June 2014).

assurance; Art.5 Cross-waiver of liability (one of the most important commitments to accomplish a multilateral project and for avoidance of doubt, it provides that this cross-waiver of liability includes a cross-waiver of liability arising from the 1972 Liability Convention. (5.3 (c))). Provisions found in Art. 5 is almost the same with Art. 16 of the 1998 ISS/IGA. This shows the rapid development of the bilateral cooperation since the time adopted the 1992 Implementing Agreement. Art. 6 provides for the exchange of technical data and goods (Each Party will transfer all technical data and goods considered to be necessary to fulfill its respective responsibilities, but transfer is subject to national laws and regulations and other restrictions decided under this Agreement.); Art. 7 Intellectual property rights (This is basically subject to the 1992 Agreement.); Art. 8 Public information; Art. 9 Customs and immigration (Best effort is emphasized in facilitating the movement of persons and goods necessary to implement this Agreement.); Art. 10 Financial arrangements (Each Party will bear the costs of fulfilling its responsibilities, including but not limited to costs of compensation, travel and subsistence of its own personnel.); Art. 11 Termination (at least three months prior notice.); Art. 12 Amendment; Art. 13 Language (operating language is English.); Art. 14 Entry into force (upon the exchange of diplomatic notes signed by heads of space agencies).

There is yet a difference between the final product of the ISS/IGA (28 articles) and the 14 articles of this Interim Agreement. This is partly because the former is a multilateral project Agreement while the latter addresses the bilateral concerns until the ISS/IGA was to be adopted. Yet, the difference of substantial contents was considerably narrowed. Residual difference was more technical than substantial in operating a human space project except that with respect to the ISS/IGA, UN treaties on outer space played an important role as found in Arts. 2 (international rights and obligations) and 5 (registration, jurisdiction and control).[42]

Here, very briefly, the European and Canadian experiences before their participation in the 1988 ISS program is stated for the reference of the U.S.-U.S.S.R./Russia cooperation development. Both ESRO/ESA and Canada participated in STS program in 1970s. In European case, ten years after the adoption of the Spacelab Agreement in 1973,[43] the first Spacelab mission was successfully conducted. Provisions such as each bearing the full costs of discharging their respective responsibilities arising from this cooperative programme and the availability of funds were already specified in the

[42] One example of the changes from the 1994 Interim Agreement which is minor but substantial in nature would be that the facilitation of the movement of persons and goods has become a legal obligation ("shall") in the ISS/IGA (Art. 18. 1) while it was the best effort clause in the Interim Agreement. (Art.9).

[43] Text is found: http://www.jaxa.jp/library/space_law/chapter_2/2-2-2-10/index_e.html (last accessed 21 Sept. 2014).

Spacelab Agreement (Art. 8), but yet it was as succinct as a series of U.S.-U.S.S.R. agreements. Canada decided to design, develop and build Shuttle Remote Manipulator System (SRMS) in 1974. In 1981, so-called "Canadarm" was aboard Space Shuttle Columbia. Experiences of these occasions were useful for ESA and Canada to address the problems to adopt the first IGA/ISS.

III. Indispensable Provisions and Other Provisions

III.1 Provisions Indispensable for Operating an ISS

Historical developments of the U.S.-U.S.S.R./Russia manned space cooperation seem to show that legal efforts have its own restrictions under the broader political environments.

Under such restrictions, however, it seems desirable to keep the provisions specified below:

1) Continuously effective cooperation seems to be carried out by the combination of the legally binding government-government agreement, non-legally binding implementing agreement which is usually adopted by the space agency level and other agreed procedures and measures decided by the joint working groups set up by the governmental agreement. It seems desirable that governmental agreements are used for the general rules and conditions which can be applicable wide range of cooperation, and day-to-day operation of the cooperative project would be specified in the independent implementing agreement.
2) Cross-waiver of liability has become a standard of a big cooperative project. Without this provision, none of the future international human space projects could be possible;
3) It can be safely said that standardized provisions of the protection of intellectual property rights as well as exchange of data and goods are now recognized an established custom and will remain intact in the ISS/IGA and relevant instruments and other future governmental agreements in this regard. Reasons include that treaty provisions would be a basis for national legislation which is important to make the protection of intellectual property rights operable [44] and that such provisions would alleviate concerns regarding national security, economic interests and international obligations of the participants.
4) The principle that each partner bears the cost of fulfilling its own responsibility seems to be almost customary by now.
5) UN treaties on outer space is the basis on which peaceful use of outer space has been and will be ensured. Accordingly, while principles of four of the UN space treaties are not necessarily underlined in the U.S.-U.S.S.R./Russia agreements, future human space agreements should follow the precedents of the ISS/IGA and relevant instruments in this regard.

[44] See, Sec. 105 of the U.S. Patent Law.

III.2 Provisions Which Could Be Flexible for the Future Agreements

Development or at least change from the 1988 ISS/IGA to 1998 ISS/IGA shows that some provisions have not been an established practice in this type of international project. Some examples are mentioned here:

1) It seems that the rule of the criminal jurisdiction (Art. 22) is not necessarily established. It is not clear if the personal jurisdiction only (1998 ISS/IGA) is more preferable than the use of both quasi-territorial and personal jurisdiction (1988 ISS/IGA). That would depend on the contents of the project and member States. This issue could be revisited in the future. However, in case increasing number of States are involved with a human space project and legal systems of some States are not so familiar with other States, personal jurisdiction only may be preferred by participating States;
2) Jurisdiction and Control of the ISS. Each flight element is registered by the Partner which is a launching State (Art. 5) and State of registry exercises jurisdiction and control on that element under the 1975 Registration Convention. In 1980s, at least four ideas had been floating until this system was agreed upon. [45] This system seems to have been satisfactory operated, but, a different system could be more preferable in a different project; and
3) It is uncertain if duration of a certain project should be decided with a possible renewal or should not be specified like the ISS/IGA. That could be considered along with the technique of entering into force. ISS/IGA type of agreements are, in most jurisdictions, to be subject to ratification process and that usually takes time. The 1988 ISS/IGA took the method of transitional application when it was not entered into force relating to a certain Partners.[46] The merits and demerits of this system should be studied in a future specific project.

IV. Conclusion

Three decades have passed since the first proposal of the ISS. Also, four decades passed from the first U.S.-U.S.S.R. manned space cooperation. As briefly outlined, some rules have been already a standardized practice and will be used repeatedly in the future. Other rules are more as a product of a certain specific situation rather than a logical consequence and that could be reconsidered in a different project.

One very important aspect shall be taken into consideration. That is the fact that the ISS/IGA is one of a variation of the many possible projects based on the four of the UN treaties on outer space and several UNGA Resolutions on the peaceful space exploration and use, especially that of the 1996 Space

[45] Proposals included: 1) U.S. registration; 2) joint registration; 3) registration by a certain international organization; and 4) the present system.

[46] Only Japan did not apply this technique and swiftly ratified it.

Benefit Declaration.[47] If that basics is remembered, other factors could be addressed appropriately.

Currently, the Legal Subcommittee of the COPUOS has an agenda item of "review of international mechanisms for cooperation in the peaceful exploration and use of outer space" under five-year work plan. Discussion has been held to identifying common principles and procedures of international collaboration in space activities under the hypothesis that the information on such common elements could be helpful to Member States as they choose relevant mechanisms to facilitate future cooperative endeavors.[48]In considering a future mechanism for international exploration, referring to the study of this agenda item seems useful.

47 UNGA 51/122 (13 Dec. 1996).

48 See, e.g., A/AC.105/C.2/2012/CRP.21 (29 March 2012).