The Apollo–Soyuz Test Project: Construction of an Ideal Type of Science Diplomacy

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Summary

The article explores the Apollo–Soyuz Test Project (ASTP) of 1975, the first joint US–USSR space flight, which was embedded in the wider political, ideological and cultural contexts of the Cold War. The ASTP can be viewed through the lens of science diplomacy (SD). The data, drawn from available sources and memoirs, highlights the phenomenological approach in people-to-people interaction to analyse paths, processes and timeline dependence in such cooperation. The Weberian model of generalization and the path dependency theory of constructing an ideal type were used as the study’s theoretical frameworks. An ideal type of SD is viewed not as universal, but as a heuristic device that can be contrasted and compared with other recognized cases of SD. The significance of utilizing an ideal type of SD is to maintain mechanisms and networks effectively between countries through science and technology-related joint projects when political relations are strained or limited.

Keywords

public diplomacy – science diplomacy – Cold War – United States – USSR, space cooperation– Apollo-Soyuz Test Project (ASTP)– détente– path dependency theory

Introduction

The newfound preoccupation with Russia that has overtaken the United States (US) and its national politics since the 2016 US presidential elections, in
addition to the new round of sanctions against Russia signed by US President Donald Trump in August 2017, are the results of the ongoing conflicts in Ukraine and Syria, where Russia is involved. Despite the Russian economy being in recession, the image of Russia and its nation brand had already been damaged on the international scene. Russia is at risk of even deeper international isolation the longer that the two conflicts continue. This is a time that demands intensifying diplomatic negotiations and utilizing the tools of public diplomacy in order to decrease tensions between the United States and Russia and to improve Russia’s national brand.

History suggests that science-led diplomacy can play a role in laying the foundations for peace and understanding. Moreover, the history of diplomatic negotiations and scientific cooperation during the Cold War between the United States and the Union of Soviet Socialist Republics (USSR) has proven that successful cooperation between the two colliding superpowers is possible and can be effective. The Apollo–Soyuz Test Project (ASTP) of 1975, the first joint US–USSR space flight, is an example of science diplomacy (SD) that should be reviewed considering the present situation. The ASTP saw historical cooperation between the National Aeronautics and Space Administration (NASA) and the Soviet Academy of Sciences and demonstrated the ability of the major powers to work together despite divergent political systems, differing technologies and language barriers. Both nations designed and built their own spacecraft, but there was one interface. Both spacecrafts’ parts docked successfully in outer space, allowing the astronauts to meet, work and celebrate the achievement together. The ASTP served as a prototype for the International Space Station.

Research Considerations

This article’s research questions are as follows: What enabled the major powers to cooperate during the Cold War, and how did the ASTP improve the national capacity and nation branding of both major powers?

The article argues that the ASTP should be viewed in the context of science diplomacy. One of the purposes of SD is to provide the mechanisms and networks between countries and nations for building bridges when political relationships are strained or limited. The US–USSR relationship maintained international order through science and technology-related joint projects and the involvement of non-state actors — scientists, engineers and astronauts, etc.

This article examines a recognized case of science diplomacy in which the history of the joint flight programme intersects with its Cold War background.
In particular, constructing an ideal type of SD by highlighting the scientific, political, security and public diplomacy inputs would serve to enrich that literature.

The path, process and timeline dependence help to construct the picture of the socio-political past in its sociological approach, which analyses laws and principles that govern social organizations, while a historical approach puts emphasis on particular time and place limitations. This study proposes a Weberian concept for generalizing an ideal type, and the path dependency theory for the construction of an ideal type as an analytical framework for the ASTP as a recognized case of SD. This particularly applies to the research methods based on the narrative and phenomenological approach analyses. The narrative serves as a main method for the path dependency theory. The method can be defined as an optimal form of data presentation to be used ‘when the temporal sequence and particular details are important aspects of the data or the argument being made’. Data taken from publications and memoirs provide a complex and large narrative regarding the path, process and timeline of the ASTP.

The study’s findings show that the ASTP, a recognized case of science diplomacy, may be considered a construction of an ideal type of SD. An ideal type is a heuristic device that can be contrasted and compared with other recognized cases of SD. The ideal type of SD highlights the weight of historical preconditions, qualitative and phenomenological data analysis and its tabular representation, and the path dependency scheme. In the context of a single example of ASTP, the ideal type cannot be applied universally, but can be contrasted and compared with other recognized cases of SD. In this sense, the study’s findings are of intrinsic value to the specific case of SD in the historical context of the Cold War.

The body of literature can be divided into two relevant groups: 1) official reports and scholarly publications identifying contemporary science diplomacy; and 2) scholarly publications and memoirs on recognized cases of science diplomacy between the United States and the USSR during the Cold War.

The field of science diplomacy branched out from diplomatic studies relatively recently, even though science diplomacy has a long history. The new discipline focuses on engagement between scientists and diplomats/politicians in inter-state relations, as well as strengthening inter-state relations through

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scientific cooperation. The frontline of literature on contemporary science diplomacy is represented by reports from the United Kingdom's Royal Society, the American Association for the Advancement of Science (AAAS)\(^2\) and the National Academies of Sciences in the United States,\(^3\) and the European Commission,\(^4\) etc. In addition, some ministries of foreign affairs that adopt the implementation of science diplomacy approaches into their foreign policy have released their own reports,\(^5\) which define, contemplate and elaborate contemporary science diplomacy.

To determine the conceptual framework of SD interaction, this article refers to the criteria suggested by the AAAS. Science diplomacy is examined through relationship-building approaches as follows: Diplomacy for Science; Science in Diplomacy; and Science for Diplomacy. Each approach has its special characteristics and indicates the general aim and relationship between state and non-state actors as the interaction between scientists and diplomats/politicians.\(^6\) Diplomacy for Science serves the interests of international research institutions from multiple countries, when collaboration between the actors is necessary because of the high cost of research projects and broader or global consequences of the scientific outcome. Science in Diplomacy addresses concerns on global issues and assists in bilateral and multilateral relations by seeking resolutions and obeying agreements between states. Science for Diplomacy — or science diplomacy — represents mechanisms and networks between countries to build bridges between nations when political relationships are strained or limited. The ASTP is viewed through this type of SD interaction.

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The related scholarly publications mostly investigate SD as a branch of public diplomacy.7

Amid Cold War tensions, there were recognized cases of successful scientific cooperation in ‘vaccine diplomacy’ between the United States and the Soviet Union that involved the diplomatic corps and non-state actors. Erez Manela has examined the case of a global campaign to eradicate smallpox with the involvement of both superpowers.8 The campaign was a reflection of growing superpower interest in the developing world and resulted in smallpox eradication, which was ‘the single most successful instance of superpower collaboration in Cold War history’.9 Peter Hotez noted the vaccine science diplomacy during the Cold War and concluded that, since the 1950s, joint US–Soviet cooperation ‘has shown a dual track record of improving both foreign relations and scientific collaborations’.10 A report by the Carnegie Endowment for International Peace Public–Private Task Force on US–Russian Health Cooperation noted that scientific collaboration between the two countries led to extraordinary achievements in public health.11

The case of the ASTP was a logical continuity of such scientific cooperation. Detailed information about the negotiations, preparations, agreements, joint work and training can be found in both Soviet and American publications.

Handshake in Space is a collection of Soviet news accounts describing the joint mission.\textsuperscript{12} Soyuz and Apollon is a collection of essays written by the Soviet working group chairmen and other leading participants in the mission, which was published on the first anniversary of the 15 July 1975 launch.\textsuperscript{13} The American-authored book The Partnership was completed by professional historians Edward and Linda Ezell.\textsuperscript{14} The book contemplates the history of NASA’s programmes and is based on analysis of a large number of official NASA documents, photographs and quotations from people involved at the working level, which enrich the story of this historic venture in manned spaceflight. These publications are considered primary ASTP sources. Ross-Nazzal, a historian at NASA, reviews the narratives of the ASTP when new evidence of international space cooperation requires historical examples.\textsuperscript{15}

The memoirs of Vladimir Syromiatnikov, a Russian space scientist, engineer and mechanical design expert for the docking systems for manned spacecraft,\textsuperscript{16} and of Deke Slayton, a famous American astronaut,\textsuperscript{17} are great sources that provide supplementary information for understanding the essentials of science diplomacy in people-to-people interactions. Their memoirs help to construct the path, progress and timeline dependence from a phenomenological point of view. Importantly, narrative phenomenology of memoirs essentially utilizes the human desire to tell convincing stories as a means to understand individuals’ common or shared experiences of a phenomenon. It consists of eliciting narratives from individuals who had experienced the ASTP personally. Memoirs also provide insights into international affairs during the period of détente, the time when Cold War tensions were reduced and the partnership between the United States and the USSR was developed.

The literature review shows that much can be learned from the aforementioned publications about the theory and practices of contemporary science diplomacy. A number of recognized cases of science diplomacy between major powers during the Cold War are also covered in diplomatic studies literature.

\textsuperscript{12} Handshake in Space (Moscow: Izvestia, 1975).
\textsuperscript{13} Konstantin D. Bushuyev (ed.), Soyuz and Apollon, ebook (Moscow: Politizdat, 1976).
\textsuperscript{16} Vladimir Syromiatnikov, 100 Stories About Docking and Other Adventures in Space and on Earth (Moscow: Logos, 2003).
\textsuperscript{17} Donald K. Slayton and Michael Cassutt, Deke! US Manned Space from Mercury to the Shuttle, ebook (New York, NY: Forge Books, 1995).
The works considering the case of the ASTP together with the memoirs give a phenomenological insight into the people-to-people interactions when and where the project was being conducted. However, the whole concept of generalizing and constructing an ideal type of SD framework using the Weberian model of an ideal type and through the path dependency theory is underdeveloped, both in reports and scholarly publications. Reflecting on this, there remains a gap in knowledge regarding the theorization of an ideal type of science diplomacy. This study serves as an attempt to construct an ideal type of science diplomacy as a heuristic device that can be contrasted with other cases of SD.

**Generalizing an Ideal Type of Science Diplomacy**

The concept of an ideal type is based on the Weberian ideal type — a constructed, heuristic device designed to understand the significance, meaning and, in some circumstances, the causes and consequences of ‘concrete phenomena’. The researcher constructs an ideal type with the sole purpose of solving a central investigative problem. It is ‘not a hypothesis, an average or a formulation of common traits’, but a device. Max Weber specified that the construction of an ideal type involves the logical abstraction of certain features of a social phenomenon. The method estimates the discovering uniformities in a broad social experience based on historical and traditional backgrounds, and the reflection of this experience in its individual actions.

An ideal type is a logically constructed model of pure forms of social phenomena that can be contrasted and compared. Ideal types unnecessarily exist in reality, but can be taken as a guidance. An ideal type of science diplomacy is facilitated by the professional tradition of ‘ideal diplomacy’ and is espoused as a form of scholar–diplomat interaction. The value of an ideal type is determined not by its closeness to reality, but rather its ‘usefulness to the task at hand — essentially, a yard stick to contrast and compare a concrete example’.

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21 Robertson, *Diplomatic Style and Foreign Policy*, p. 59.
Weber describes ‘human behaviour’ as action, ‘when and in so far as the acting individual attaches a subjective meaning to it’, while social action is the action that is formed by combinations of specific traits, behaviours or situations. There are also joint intentions by individuals sharing a sense of project and process, in which individuals cognitively seek coordination. In the context of this study, the actors — both scientists and diplomats — are agents of their actions. This has a clear application to the diplomatic practice of science diplomacy: scholar–diplomat interaction inherently relates to the behaviour of individuals in its course of context coordinations and dependency of path, process and timeline.

To construct an ideal type of science diplomacy, the ASTP fits perfectly well. In constructing an ideal type of SD to be used in the contrast and comparison of concrete reality (or in this case perceptions of reality), there are certain methodological and analytical assumptions that must be considered. First, the construction depends upon the purposive actions of individuals as political leaders, diplomats and scientists. Second, any social action evolves steadily with the passage of time and can also be transformed abruptly under special circumstances — détente here means the cooling of tensions during the Cold War. Accordingly, any contrast and comparison of concrete reality using a constructed ideal type will be highly contextual and limited to the particular period of time and place of when and where the action is undertaken. Third, it is important to note that an ideal type is constructed from traits or elements chosen by the social scientist based upon preconceptions and understanding of the phenomenon being studied. In this way, the ideal type is subjective. The construction of an ideal type of SD is a standard case, which is ultimately designed to contrast and compare replication in other cases that are relevant to science diplomacy.

**Constructing an Ideal Type of Science Diplomacy**

To construct an ideal type of science diplomacy, social mechanisms of path dependence were presented. Path dependency theory appeared to be a framework

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24 Robertson, *Diplomatic Style and Foreign Policy*, p. 65.
for such construction. The usefulness of this theory and the method for it are
demonstrated by analysing data using a phenomenological approach.

The phenomenological approach of social mechanisms, along with the
ways in which things happened, is path dependency, which accentuates the
idea of sequencing and timing. Sequence and timing are considered to
be alternatives and influence outcomes. Outcomes depend on the procedural
structure within which they are determined. Timing and sequencing have an
effect on the causal chain of events — for example, the early 1970s was the
perfect timing for the ASTP; not before; not after. Also, to examine the histori-
cal narrative objectively, the ASTP was crucial for both countries in cooling
tensions and developing a partnership internationally. Using path dependency
theory as an analytical framework helps us to understand the advantages of
well-established and continued practices of historical preferences and dip-
lomatic negotiations, rather than the creation and use of newly available yet
unsettled practices.

The optimal form of data representation — the narrative — leads to
the necessary reduction techniques that are quantitative analysis, tabular
representation and the path dependency scheme with historical variables.
The question of the appropriate explanatory strategy depends on the quality
of the information, based on the available data. The narrative was used when
referring to the specific behaviour of actors in a changing historical context
and was linked to the historical data. Several mutual visits, joint training ses-
sions, cultural trips and a variety of other activities during the ASTP were rep-
resented, part quantitatively and part narratively. Differences in both states’
organizations, the management style of their space agencies, state and non-
state actors, and the specifics of negotiations and criss-crossing communica-
tion were compared and shown tabularly.

This study mainly uses the narrative and phenomenological approaches of
data representation that were based on rationality and appropriation. Data
representation together with the analysis of historical processes were linked to
the behaviour of the actors, the individuals, and whether the authors of mem-
oirs or protagonists mentioned them in the memoirs: (1) how actors’ individ-
ual interests were relevant for explaining actions; (2) how social and material

25 Johannes Marx, ‘Path Dependency and Change in International Relations: Institutional
Dynamics in the Field of Intellectual Property Rights’, Historical Social Research, vol. 35,
no. 3 (2010), pp. 175-199.
26 Peter Abell, ‘Narrative Explanation: An Alternative to Variable-Centered Explanation?’,
restrictions might be relevant or affective upon social actions; and (3) how actors’ behaviour might maximize their contributions and individual benefits to the project. This approach has theoretical restrictions, but there is still a need for deeper theoretical insight into the characteristics of historical reality.

The first step in constructing an ideal type of SD is the selection of elements of historical reality, or preconditions. The narrative of the preconditions is used to form a logically precise and coherent set of data consisting of the memoirs. Subsequent steps, discussed later in this section, are data analysis and its representation. The final step is completing the path dependency scheme with historical variables.

**Preconditions**

The analysis of historical processes — the preconditions — is inspired by the understanding of social mechanisms, the ways in which things happen. If historians focus on limiting the conditions of time and place, then sociologists master structures and processes when analysing social mechanisms. Combining the two methodologies leads us to path dependence, where social processes might be viewed through the given time–place. Path dependence prevails in political processes, just as path dependence prevails in social movements, so that in both cases events occurring at one stage in a sequence constrain the range of events that are possible at later stages. Prior to the five years of US–USSR cooperation from 1970 to 1975, there were ten years of space competition. This competition was based on the specifics of nation political processes, which predetermined both internal and external nodes. That begs the question: What caused both countries to switch focus in their political processes towards scientific cooperation?

The answer to the question lies in analysis of the historical background of the 1950s and 1960s. The reasons for the cooperation noted above regarding the vaccine diplomacy of the 1950s might be reflected in US President Lyndon Johnson’s words: ‘The turning point in the struggle — not of man against man, but of man against nature’. It allowed the Cold War counterparts to ‘begin to chart a course toward the possibilities of conquest which bypass the politics

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27 Marx, ‘Path Dependency and Change in International Relations’, p. 182.
of the Cold War’. Joint space observations and information exchange, flown from satellites and space stations Salyut and Skylab, started in 1962. The hydro-meteorological centres in Moscow and Washington, DC used shared information for satellite meteorology and radar sounding.

Not only the nature and health requirements, but the political circumstances of the 1960s were challenging for both countries and eventually facilitated US–USSR cooperation. The unpopular Vietnam War where the United States became stuck on one side, and increasing confrontations with China, combined with the Soviets losing influence over the Arab states after their defeat in the Six Days War, plus the invasion in Czechoslovakia, led to deadlock. Calming the situation was desperately needed. The United States and USSR were now ready to establish closer ties. It was time for détente, the cooling of Cold War tensions. More importantly, détente was also possible because of the individual approaches and almost unlimited resources based on the goal-oriented social action of US President Richard Nixon and USSR General Secretary Leonid Brezhnev. These individual benefits, however, could hardly be detected because of the Watergate scandal and Nixon’s resignation in 1974 and the unpopularity of Brezhnev in the USSR. However, willingness to cooperate and the ensuing chain of successful negotiations between human agency maximized the project’s mutual benefits regardless of the political leaders’ images and the domestic implications.

The preconditions of the ASTP were an external node of the Cold War. The external node of rivalry changed the modus of path dependence and opened a chance for an internal node of cooperation: inter-state relations affected domestic politics, and everything together led to détente. In both cases, any external or internal changes in their capacity were oriented towards facilitating people-to-people interactions. The preconditions of the ASTP were a combination of external and internal nodes that constructed path dependence.

**Data Analysis and its Representation**

Using reduction techniques, data analysis can be represented narratively, tabularly and schematically. The narrative, depicted per year, included information about the paths, processes and timeline. Table 1 below shows the qualitative characteristics of differences in a variety of categories to be compared. The scheme illustrates the path dependency.

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31 Bushuyev, Soyuz and Apollo.
The beginning of negotiations on space cooperation started in 1969 with an exchange of correspondence between NASA Administrator Thomas Paine and President of the Soviet Academy of Sciences Mstislav Keldysh. This correspondence, as well as the push for international cooperation, was a direct result of the space policy promoted by the Nixon administration and highlighted the necessity for the two major powers to change the mode of space competition into collaboration. The Paine–Keldysh file sequenced the common ground of docking mechanisms to be utilized for both space stations. As the mood shifted from the pragmatic scepticism of some at NASA headquarters about cooperating with an ideological enemy, to sympathy and the challenge of cooperation, the project was advanced. The beginning of goal-oriented social action of human agency between diplomats and scientists fostered further negotiations. For example, from the Soviet side, some important diplomatic assistance by Soviet Ambassador to the United States Anatoliy Dobrynin, who had a scientific background, contributed to the better adaptation of the Soviet scientists to American soil.

The first official visit by NASA representatives, including Arnold Frutkin, Robert R. Gilruth, Glynn S. Lunney, Caldwell C. Johnson and George B. Hardy, to Moscow took place in October 1970. Both sides undertook extensive work and signed the ‘Summary of Results’, the keystone that included twelve principles of cooperation. Both sides made a preliminary decision about the docking mechanism: ‘An androgynous (neuter) docking gear should be designed so that either of the two spacecraft could dock and undock without the active support of the second vehicle’. Suggested by Vladimir Syromiatnikov, the Androgynous Peripheral Assembly System was an electromechanical docking device that was satisfactory for both sides because no one wanted their spacecraft to be ‘female’.

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32 Ross-Nazzal, ‘Détente on Earth and Space’, p. 29; Ezell and Ezell, The Partnership, p. 3; and Bushuyev, Soyuz and Apollon.
33 Ezell and Ezell, The Partnership, p. ix.
34 Ezell and Ezell, The Partnership, p. 11.
35 Ezell and Ezell, The Partnership, p. 106.
38 Syromiatnikov, 100 Stories About Docking, p. 94.
### Table 1  
Comparison of the Apollo–Soyuz Test Project’s implementation by country’s political system

<table>
<thead>
<tr>
<th>Categories compared</th>
<th>USA</th>
<th>USSR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management style</td>
<td>Democratic, criss-crossing control at all levels</td>
<td>Authoritarian, a leader’s cult prevails</td>
</tr>
<tr>
<td>Public dissemination of information, e.g. space programme, astronauts, scientists, engineers involved</td>
<td>Open, available</td>
<td>Classified, partly fictional, partly unveiled</td>
</tr>
<tr>
<td>Funding and finances</td>
<td>Governmental, justification required</td>
<td>Governmental, unlimited</td>
</tr>
<tr>
<td>The mission’s cost</td>
<td>Estimated, approximately US$ 280 million</td>
<td>Non-estimated</td>
</tr>
<tr>
<td>Manufacturing plants and enterprises</td>
<td>Governmental and private conglomerates and enterprises, e.g. Rockwell International, Grumman Aerospace Corporation</td>
<td>Only governmental</td>
</tr>
<tr>
<td>Number of space vehicles used for the mission, 1974</td>
<td>One Apollo</td>
<td>Seven ‘Soyuz’ and two ‘Salyuts’</td>
</tr>
<tr>
<td>Number of docking modules and mechanisms used for the mission</td>
<td>10</td>
<td>17</td>
</tr>
</tbody>
</table>
| TV broadcasting of launching space vehicles, satellites, etc. | Broadcasted on TV | Non-broadcasted Announcements only after successful launches and flights  
The only exception was the ASTP |

The year 1971 was marked by continuous negotiations and preparations for agreements. Exchange visits by the Soviets to Houston in June and by the NASA delegation to Moscow in October showed, as Syromiatnikov pointed out, an
extraordinary flexibility, agreeability and compatibility by both delegations with the crucial role of personal negotiations between the project’s directors, Konstantin Bushuyev and Glynn Lunney.\textsuperscript{39} The level of trust between the Soviets and Americans and their eagerness to complete the ASTP prevailed over the risk of being left behind in the space race. Importantly, the NASA administration insisted on communication that should proceed with ease. Unrestricted communication between engineers was their prerogative for the project’s success, while telephone calls, teletypes, joint schedules, and other contacts and meetings sometimes remained obstacles for the Soviet engineers because of their constant surveillance. The ultimatum moment came from NASA when it threatened to withdraw from the project, which resulted in unlimited communication by Soviet engineers with their American colleagues over the following three and a half years.

The year 1972 emphasized the cooperation of five working groups. The Soviet engineers, accompanied by Vitaly Bagno, another Soviet diplomat with a scientific background, arrived in Houston in March. Later, in May 1972, US President Nixon and Soviet Premier Kosygin signed the ‘Agreement Concerning Cooperation in the Exploration and Use of Outer Space for Peaceful Purposes’, reassuring the ASTP. The agreement was the result of years of negotiations.\textsuperscript{40} By October 1972, manufactured docking models were demonstrated in Moscow. Then, in December 1972, both docking models, nicknamed the ‘Androgynous Brother in Cosmos’,\textsuperscript{41} satisfactory for their counterparts, were successfully tested on land. The foremost consideration of the five working groups was the safety of the flight, because both sides had been affected by the tragedies of Apollo 1 in 1967 and Soyuz 11 in 1971, when all of the crew members lost their lives.

Notably, it was in 1972 that the American delegation included the only woman engineer, while Soviet female engineers as well as scientists of Jewish descent (regardless of gender) were not allowed to communicate with Americans or go abroad.\textsuperscript{42} The historical mistrust of Jews was exacerbated by an incident in 1969 when the Jewish Defense League had undertaken a campaign of bombing Soviet installations and intimidating Soviet personnel in New York and Washington, which led to heightened diplomatic tension between the Soviet Union and the United States. Soviet Ambassador Anatoliy

\begin{thebibliography}{9}
\bibitem{39} Syromiatnikov, \textit{100 Stories About Docking}, p. 96; and Bushuyev, \textit{Soyuz and Apollon}.
\bibitem{40} Ross-Nazzal, ‘Détente on Earth and Space’, p. 31.
\bibitem{41} Syromiatnikov, \textit{100 Stories About Docking}, p. 109.
\bibitem{42} Syromiatnikov, \textit{100 Stories About Docking}, p. 111.
\end{thebibliography}
Dobrynin delivered a note to the US State Department accusing the American government of ‘connivance’ in these hostile acts and warned that the Soviet government ‘could not guarantee the safety of American officials and businessmen in Moscow’.

However, diplomatic tensions did not impact space cooperation, but rather worsened the position of the Soviet Jews in the Soviet Union.

The first part of 1973 could be characterized by crew assignments. Regimen
tation interface documents to coordinate the crews were prepared prior
to the beginning of joint lectures and exercises. Special attention was given to
the two-year language-training programme for scientists and crew members.
Meetings between astronauts and cosmonauts became commonplace. A
number of mutual visits in both countries included entertainment —
theaking, partying, shopping, and even hunting — which helped both sides plunge
into the real, yet previously unknown, life of their ‘ideological enemies’. The
‘enemies’ turned out to be reliable partners and good friends because of com-
patible professionalism, sincere dedication to the project and a good attitude
towards their colleagues. In the second part of 1973, testing of the docking
system continued in Houston. The intensive activities of this year resulted in a
total of 236 tests being conducted.

In 1974, in addition to regular exchange visits, joint work and training exer-
cises, the Soviets unilaterally launched two unmanned spacecrafts, then four
more manned Soyuz spacecrafts for tests in orbit. Despite the enormous
financial expense, the Soviet Union aimed to exclude any risk of failure for the
final joint flight. Those launches were a rehearsal. Prestige was the cornerstone
motive in space cooperation. The number of tests and launches of manned
and unmanned space vehicles for testing in orbit might have provoked specu-
lation that the ASTP was not a ‘test project’, but a well-equipped and completed
project, ‘more of a public relation flight than a test flight’.

It is interesting that the United States, being more advanced economically
and financially, did not practise these sorts of rehearsals. In contrast, in the
USSR, the cost of government-supported space exploration programmes was
never estimated precisely. Presumably, the involvement of thousands of
qualified specialists, a number of manufactured rockets and rocket vehicles,
numerous working docking models, seventeen manufactured docking mod-
ules and other equipment cost a significant amount of money and resources
for the sake of international prestige and an exercise of power.

During this fourth year of the ASTP in 1974, the (last) Nixon–Brezhnev sum-
mit was the culmination of détente before its quick end. The Watergate scan-
dal and Nixon's resignation marked a return to the Cold War tensions, showing
clear interdependence of the personal intentions of the major powers’ lead-
ers and foreign policy. Soon after, détente faded away from the foreign policy
vocabulary. New US President Gerald Ford continued the project by inertia
until the completion of the mission.

In the meantime, at the end of 1974 the American docking module was
transported to Moscow for another round of tests. Then, in early 1975 the
Soviet docking module was transported to the United States for similar tests
in return. All of the tests were conducted successfully. Final negotiations
and mutual visits of the space ports at Cape Canaveral and Baikonur were
unprecedented symbolical gestures of openness and mutual trust. Mutual
trust and exchange of ideas enriched both sides. For instance, Vladimir
Syromiatnikov refers to the American philosophy of creating a space tech-
nology that includes the steps as follows: critical design review; preliminary;
and flight readiness. This philosophy was finally adopted for the organization
of Soviet space-rocket technology. Deke Slayton mentions technical details
regarding space vehicles’ transportation — the Americans stacked vehicles
vertically, while the Russians assembled their spacecrafts horizontally, which
gave them the ability to launch a lot of space vehicles quickly.

The culmination of the ASTP was the flight. On 15 July 1975 according to
the published schedules, the Soyuz and Apollo spacecrafts were launched.
They docked in orbit on 17 July 1975, undocked on 19 July, and then returned to
earth. The mission was complete. Final visits by crews to Moscow and Houston
and the completion of the joint flight’s final report signalled the closure of
the mission.

To summarize, during the years of collaboration there were twenty visits:
ten in the USSR (Moscow, Star Town and Baikonur Cosmodrome); and ten in
the United States (Houston, Downey and Kennedy Space Center). Five joint
working groups were formed. The number of joint experiments that were
approved and performed during the flight and docking phase of the operation

50 Slayton, Deke!
51 Syromiatnikov, 100 Stories About Docking, p. 118.
52 Slayton, Deke!
was 28. Once the major powers had proven that they could work together, they needed to develop other meaningful activities, and there were indications that this could be accomplished. Over a two-year period from 1974-1976, NASA scientists had worked with their Soviet counterparts to develop a package of four biological experiments that were flown on the Soviet satellite Cosmos 782. In mid-summer 1976, the three-volume *Foundations of Space Biology and Medicine* was finally distributed in separate English and Russian editions as a joint publication of the Soviet Academy of Sciences and NASA.54

The narrative of the preconditions and the years of cooperation for the ASTP showed the complexity of negotiations, agreements, actual work, and the number of visits and criss-crossed communication including state and non-state actors for science diplomacy. Table 1 provides a qualitative analysis by category to be compared and shows significant differences between the two countries’ systems.

**The Path Dependency Scheme**

Fig. 1 below shows the paths, processes and timeline dependence of the project. The historical variables did not occur, but potentially might have changed the path dependence and the nodes of activity.

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Results and Discussion

This article's findings clearly show that there is a gap in the literature for constructing an ideal type of science diplomacy. The question about an ideal type might not be about what the ideal type is, but how the ideal type might be. The ASTP was taken as an example for constructing an ideal type of science diplomacy. Even an ideal type cannot be applied universally, yet this is a heuristic device that can be generalized, constructed, and then contrasted and compared with other recognized cases of science diplomacy. In this regard, the comparison with any other recognized cases of science diplomacy, whether actual or potential, with an ideal type might be utilized precisely in order to avoid disappointments or failures in science-diplomacy interactions between states and nations.

Path dependency theory was applied to the construction of an ideal type of science diplomacy — the continuity of practices sequencing in the particular historical dimensions of time and place, together with an examination of the social mechanisms and principles that govern the given social organization. The path dependence of the ASTP was represented in the narrative with an emphasis on phenomenological approaches. The qualitative characteristics were listed, compared and shown tabularly. Finally, the path dependence timeline with historical variables was illustrated in the scheme. The scheme shows how timing and sequencing influence the chain of events, including how historical variable situations were expected theoretically but did not occur, and might have been potentially negatively impacts upon the path dependence.

A few examples of path dependence from a qualitative approach were discussed as follows: management and organization styles; funding of the space projects; and media involvement. The divergence in management and organization style of NASA, which was democratic with criss-crossing control at all levels, and the Soviet Academies of Sciences, with the indisputable authority of a leader not only in scientific but ideological terms, might have caused problems for the mission's implementation, but eventually all negotiations and agreements proceeded successfully.

The specifics of the space cooperation projects were rather ambitious, risky, and required an immense amount of investment in research and development. Governmental funding of space projects in both countries had differences: precise budget planning, then followed by NASA persuading the US Senate about financing; versus unlimited resources for space exploration from the Soviet leadership, without precise budgeting and planning. Despite the United States having greater economic and financial resources, the funding of such an ambitious mission might have been limited because of the flight's high
risk and cooperation with the United States’ ideological opponent. The limited financial resources of the Soviet Union might have been an obstacle for the mission as well, yet prestige for both superpowers on an international scale prevailed. In addition, both partners were equally compatible intellectually and well equipped scientifically.

The media, and more broadly the role of public relations, were immense during the ASTP. If in a democratic society the media is considered a fourth pillar, in the Soviet Union the media were guided and served ideological purposes. For instance, the Soviets normally released information about their missions only after the fact. ‘Public dissemination of information proved to be a difficult task for the Soviets to overcome, as they were unaccustomed to distributing news about their space program’.55 The Soviet Union had not engaged in extensive use of television, preferring instead to tell the space story through newspapers. Therefore, NASA and the Soviet Academy of Sciences had to reconcile sharing news in real time with after-the-fact news coverage, and reliance upon different media forms. Skilful negotiations were required to satisfy the obligations and practices of both sides.56 As a result, there was in-flight television coverage of the ASTP.57 Moreover, newspaper publications, television programmes, broadcasting and documentaries highlighted nodes of acting in space cooperation between two countries. Despite the traditional secrecy associated with space technology in general and the people involved in particular, the Soviets had to uncover partially their specialists, scientists and engineers to the public.58 That was a progressive achievement for the Soviet regime to conduct for a wider audience. The above-mentioned examples represent historical and social mechanisms that occurred in certain ways, thus allowing the ASTP to succeed.

The ASTP is a recognized case of science diplomacy that expands with actors being involved in SD negotiations. Politicians and diplomats on the one hand, and scientists, engineers and interpreters affiliated to scientific institutions and factories, plus media, on the other hand, are actors in science diplomacy. The division of SD actors in terms of their negotiations is not strict, but rather flexible, and dealing with non-state actors and tailoring their involvement in diplomatic interactions were important components of the ASTP. Developing negotiations with non-traditional actors through mentoring,

56 Ezell and Ezell, The Partnership, p. 236.
57 Ezell and Ezell, The Partnership, p. 303.
58 Syromiatnikov, 100 Stories About Docking, p. 148.
training, partnerships and coordination displayed the consistency and effectiveness of goal-rational social action in advancing the ASTP.

Even people-to-people interactions were framed by the specific regulations and agreements of each country, yet the active involvement of non-state actors shaped inter-state relations during the project. Social mechanisms and historical circumstances completed path dependence. Consistent diplomatic interactions between state and non-state actors, and the predomination of goal-rational social action in spite of historical controversies, tensions or prejudice proved the concept of the ideal type of science diplomacy.

The ASTP also provides an insight into the foreign policy of the Soviet Union and the United States during détente. The foreign policy was consistent and successful in the early 1970s. In this case, science diplomacy may be recognized as a crucial element in foreign policy, to be utilized in the long run. An emphasis on developing human resources and criss-crossing interactions among all actors of SD at all levels is essential, since 'diplomacy is too important to be left for diplomats'.59 Also, the ability to communicate effectively is the central 'need' in achieving diplomatic goals.60

This study was limited by only having the example of the ASTP, which was used for generalizing and constructing an ideal type of science diplomacy. However, having the ideal type as a heuristic devise is useful and should be utilized more widely, for example in peaceful outer-space exploration. Contemporary peaceful outer-space exploration is a series of ongoing and very ambitious projects enabling states and nations to facilitate scientific development and to take advantage of scientific knowledge. Driven by the practical purpose of commercializing space-related projects, as well as by scientific curiosity to unveil the secrets of the universe, scientists use the support of states, nations and private enterprises to do research and launch spacecrafts and satellites. Progress with space-related projects makes scientific and technological progress inevitable. It is understandable that many developed and developing countries and nations are willing to pursue new programmes or catch up with existing space technology, while Russia and the United States still remain as traditional leaders in the field. Applying the ideal type of science diplomacy in space cooperation would be a recommendation for the rationalization of SD inter-state relations. Science diplomacy might help not only in promoting


the peaceful character of space projects, but in eliminating the threat of a military use of space technology, thus assuring security and stability in some problematic regions. The Cold War and recent escalating hostilities between the United States and Russia may be nowhere near the confrontations of the 1950s, 1960s and late 1970s, but the extraordinary opportunities of space cooperation remain to meld scientific and diplomatic activities for cooling political tensions.

Conclusion

The construction of an ideal type of science diplomacy has received scant attention from scholars. This article looked at the Apollo–Soyuz Test Project, a joint space flight for the peaceful exploration of outer space following years of cooperation by the United States and the Soviet Union, from the lens of science diplomacy. The ASTP, a recognized case of SD, was used for generalizing and constructing an ideal type of SD. Applying the Weberian concept of an ideal type and path dependency theory, the ideal type of SD was constructed and can be used for contrasting and comparing with other recognized cases of SD. The research method was based on analysis of the paths, processes and timeline of the project, and the data, which were drawn from memoirs and open sources, allowed us to look at the ASTP from phenomenological approaches and people-to-people interactions. The article shows us that the ASTP case was a complex project embedded in the wider political, ideological and cultural contexts that defined post-war international relations and that it partly shaped inter-state relations between the two major powers, reducing the tensions of the Cold War.

The article’s three key findings are: first, the ASTP was used to establish cooperation agreements at governmental or institutional levels to improve national capacities and the nation branding of the two superpowers during the Cold War; second, science diplomacy provided an even distributor of science between both countries, enabling them to cooperate effectively; and third, in spite of the divergence of political systems, space technology and languages, the universality of the language of science was proven to allow the further utilization of the experience of working together in establishing and maintaining the International Space Station.

The United States and the USSR had long been rivals in pushing the state of technology of manned spaceflight independently, making the mission even more important in cultural, scientific and diplomatic history. In this regard, the
example of the Apollo–Soyuz Test Project might be reviewed again as an ideal type of science diplomacy.

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