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Space diplomacy and the International Space Station

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Abstract:

Debates regarding spacepower, and within this, what is meant by space diplomacy, are in their infancy. This article seeks to contribute to these academic discussions and reflects on the role of the International Space Station (ISS) as an asset of space diplomacy. Although it has been showcased as a successful venture of multilateral science diplomacy, US structural power has ensured that it has first and foremost been a means to project US power and reward strategic partners. As the deadline for decommissioning looms, we argue that now is the time to consider the contributions the ISS has made to space diplomacy and reflect on what will be lost when its life ends.

Key words

Space diplomacy, International Space Station, space, multilateralism, spacepower, structural power, Artemis Accords

Introduction

The time has come to reconsider how humankind operates and cooperates in an age where human beings have left Earth's atmosphere. The economic value of space activity is growing rapidly, as technological advances offer new opportunities for exploration and innovation. In 2020 the space economy was worth an estimated \$447 billion with growth projected to reach \$1 trillion by 2040.¹ Increased opportunities for wealth bring new prospectors as space becomes accessible for ever more states, and also for the richest individuals and companies in global society. Changing global dynamics and rising national populism mean that states increasingly seek to act independently in space to secure more prestige and showcase their capabilities, opening a debate regarding the future of multilateral projects in space. Travel to space is also gradually opening up to a wider audience. 2020 witnessed the first journey to space in a vehicle entirely built and owned by a private corporation (Space X) and there are other space billionaires with plans to follow suit.² There are already more than 4,550 satellites in orbit, owned by 75 states and various private companies, with Space X leading the way by some distance.³

This indicates both the growth in numbers and the diversity of actors with a vested interest in space. There is however, only one satellite where human beings live and work outside the boundaries of Earth's atmosphere: the International Space Station (ISS). From the outset, the ISS was presented to the world as a place for scientific collaboration between states, for the furthering of science and knowledge for all humankind, and a meeting place for carefully selected individuals. Astronauts and cosmonauts, sent by partner states and space agencies spend up to a year at a time on the ISS, carrying out scientific projects, projecting the soft power of the world's biggest powers,

¹ Space Foundation, 'Global Space Economy Rose To \$447b in 2020, Continuing Five-Year Growth'.

² Weinzierl and Sarang, 'The Commercial Space Age is Here'.

³ Kizer Whitt, 'Who owns all the satellites?'

and easing relations between states from a location set apart from on-Earth geopolitical concerns. Within this paper we discuss the role of the ISS as a tool of space diplomacy and analyse the implications of the breakdown of relations following Russia's invasion of Ukraine in 2022.

Recent space diplomacy literature⁴ has tended to provide a definition that draws upon science diplomacy literature, focussing on inter-state cooperation on technological innovations and scientific exploration within space. This paper seeks to change the direction of the debate by defining space diplomacy as prestige, power projection and strategic alliance building, more akin to traditional statecraft than to science diplomacy. This form of space diplomacy was seen clearly during the Cold War, when the space race formed a major part of the rivalry between the United States of America and the Soviet Union though also led to opportunities for cooperation.⁵ During this phase of space exploration, European states also ventured to space through the European Launch Development Organisation (ELDO) and subsequently the European Space Agency (ESA) as states aimed to shore up prestige and build new post-war power.⁶ More recently, China's growing confidence on the global stage has been reflected in a newfound position as a spacefaring rival to the United States, Russia and Europe, and has, moreover, launched itself and its space agency as a sponsor of space programmes in the Global South.⁷ China's behaviour indeed adds weight to the conjecture that space activity is a necessary component of garnering international prestige.

The ISS has offered a unique place to demonstrate prestige and power. Ostensibly, it allows carefully selected technocrats and scientists to carry out seemingly apolitical scientific projects on neutral territory – reflecting the notion of space diplomacy as a branch of science diplomacy. Indeed, the special inter-state, or perhaps extra-state, position accorded by the ISS prompted German astronaut Alexander Gerst to note that you cannot see borders from space.⁸ Although the ISS promotes soft power, science, and cooperation, the extent to which on-Earth realist concerns play upon interstate relations concerning near space has been evidenced by clear examples of geopolitical positioning and diplomatic statecraft. The US was able to project its power and build strategic alliances by dictating the terms of engagement on the ISS. Moreover, the US had clear objectives when it invited partners to work on the ISS. Its choices about which states it could work with (the weakened Russia of the 1990s, ideological allies EU, Japan, and Canada) and those which it could not (a rising China who could pose a genuine threat) show clear calculations of self-interest at play.

The 2022 Russian invasion of Ukraine, and Russia's subsequent refusal to extend the planned life of the International Space Station again demonstrated that outer space is an arena that reflects earthly geopolitics, and that the ISS cannot be completely free from earth bound diplomatic concerns. Existing agreements guaranteed ISS operations until 2024, and there had been some

⁴ Borowitz, 'Let's Just Talk About the Weather: Weather Satellites and Space Diplomacy'; Chiu, 'Orbis non sufficit—Co-operation and Discord in Global Space and Disarmament Governance'; Riordan, Machoň, and Csajková, 'Space Diplomacy and the Artemis Accords.'

⁵ Cross, 'The Social Construction of the Space Race: Then and Now'. pp.1412-1417; Launius, 'An Unintended Consequence of the IGY: Eisenhower, Sputnik, the Founding of NASA'.

⁶ These efforts are often forgotten as their collaborative nature to lever a position on the international space stage while maintaining alliances kept Europe apart from the foremost space competition.

⁷ Abolarin, 'The Nigerian Space Sector: Structure of Power Analysis'; Klinger, 'China, Africa, and the Rest: Recent Trends in Space Science, Technology, and Satellite Development'.

⁸ Gannon, 'Astronaut's View on Israel-Gaza Conflict: No Borders Visible from Space'.

hopes that this would be extended until 2030.⁹ NASA's International Space Station Transition Report¹⁰ confirmed in January 2022 that the ISS could be operated safely until 2030 and planned for deorbit in 2031. However, on 26 July 2022 Yuri Borisov, the new chief of Russia's federal space agency Roscosmos, announced that Russia intended to withdraw from the ISS when contracts expired in 2024 and focus efforts on building a new Russian space station.¹¹ For its part the US embarked on a new project - the Artemis Accords - which, scholars have noted, "Russia has lamented the impossibility of signing...due to their being perceived as protecting the interests of the United States in pursuing the exploitation of the Moon's natural resources".¹² These policy choices signalled the beginning of the end of what had been a very successful relationship on the ISS, largely unscathed until that point by deteriorating relations on Earth.

In this paper we first provide a review of current space diplomacy literature which we analyse alongside discussion of classic understandings of diplomacy. We use this to provide a new definition of space diplomacy, one that reflects the use of statecraft and the impact of geopolitical tensions in space, but that supersedes simple off-Earth diplomacy. Using this definition, we analyse the founding documents which established the ISS, and other relevant policy documents and archive material, and we argue that the ISS is more than a mobile science lab, and that space diplomacy is more than science diplomacy in space. We conclude by noting that the ISS has been a valuable tool of statecraft for the US and as decommissioning looms, serious questions arise about how the US can seek to renew or replace this resource in the future.

Space Diplomacy

If we are to understand the diplomatic role of the ISS, we must first define space diplomacy on which there is a new and growing body of literature. We propose a definition of space diplomacy as prestige, power projection, and strategic alliance building. This definition offers an analytical frame to explore how diplomacy operates in space where some of the rules of engagement are still being tested.

Diplomacy is at its core a form of strategic alliance building. It consists of mechanisms by which states – and other actors – achieve their goals and manage their international relations peacefully.¹³ This has been described as the "mediation of estrangement by symbolic power and social constraints".¹⁴ Given the high stakes and risks, diplomatic activity is typically conducted by highly trained professionals who can be trusted to act with tact and intelligence to achieve optimum outcomes. Often diplomacy is seen as a means to avoid violent conflicts erupting, although Constantinou and Der Derian have called for a more ambitious view of diplomacy which finds ways and terms "under which rival entities and ways of living can co-exist and flourish (including

⁹ Singh, 'Biden extends U.S. support for International Space Station through 2030' *Reuters*, (31 December 2021).

¹⁰ NASA. 'International Space Station Transition Report, January 2022'.

¹¹ Tobias, 'Russia to pull out of International Space Station'.

¹² Deplano, 'The Artemis Accords: Evolution or Revolution in International Space Law?', p.800.

¹³ Barston, *Modern Diplomacy*; Jönsson and Hall, *The Essence of Diplomacy*.

¹⁴ Der Derian, *On Diplomacy: A Genealogy of Western Estrangement*, p.42.

biodiversity and future generations)”¹⁵ Arguably, diplomacy in space would follow the same patterns as on Earth. Indeed since states first ventured into space, diplomats and other envoys have been entrusted to develop treaties and collaborate in intergovernmental organisations to resolve a wide range of issues from the management of weather satellites to control of the use of weapons in space.¹⁶

For some authors, space diplomacy is conceived as actions in space to defend state interests.¹⁷ However, there is a developing body of literature which seeks to consider state actions in space as something unique. In the existing literature, some authors consider space power by comparing it to naval power and mercantile power of the 15th and 16th centuries,¹⁸ some in terms of military power¹⁹ and some in terms of structural power as conceived by Susan Strange.²⁰ The benefit of considering space power as a form of structural power is that it allows us to discuss it according to the four clear structures of power set out by Strange. This is important because as Lieberman notes “states accrue power through wealth, through knowledge, through production and through military prowess, and demonstrate their power through the display of the above, states with hegemonic aims or aspirations of greatness will seek to achieve new heights in those areas which best showcase that power”.²¹ Lieberman contends, that space is an arena in which these forms of power are showcased and indeed increased. Space activity is, therefore, for power projection and political posturing. However, we note that a further element of soft power should be considered, and that space diplomacy can help us to understand how states come to work together, rather than in competition on selected space projects.

Alfathimy *et al.* characterise space diplomacy as “space activities connecting the ways and means of achieving [...] goals and policies in or from outer space”.²² Their conception of space diplomacy as a three-dimensional framework encompasses activities (military, scientific, civil, and commercial), tracks (governmental and non-governmental), and levels (bilateral, regional and global). Using their taxonomy, the ISS can be classified as a scientific activity on the governmental track, however, it operates on a multilateral rather than global level because partners need to be vetted and accepted to join ISS projects. Cross and Pekkanen define space diplomacy as “processes of dialogue in which actors engage (whether in pre-existing or emerging structures, institutions, or venues) that result in outcomes of cooperation or conflict on a given space issue”.²³ This is persuasive and relates to Polkowska’s argument that in the current climate where hard space laws cannot be created or enforced, space diplomacy offers the best way forward as “only good

¹⁵ Constantinou and Der Derian, ‘Introduction: Sustaining Global Hope: Sovereignty, Power and the Transformation of Diplomacy’, p.2.

¹⁶ Borowitz, ‘Let’s Just Talk About the Weather: Weather Satellites and Space Diplomacy’; Chiu, ‘Orbis non sufficit’.

¹⁷ Braunschvig, Garwin and Marwell, ‘Space diplomacy’; Whiting, ‘Space and Diplomacy: A New Tool for Leverage’; Paladini, ‘Space Diplomacy: Traditional and Non-traditional Security Issues’.

¹⁸ Sumida, ‘Old Thoughts, New Problems: Mahan and the Consideration of Spacepower’.

¹⁹ Bowen, *War in space: Strategy, Spacepower, Geopolitics*.

²⁰ Strange, *States and Markets*.

²¹ Lieberman, ‘Strange Spaces: an International Political Economy reading of operational space programmes’, p.129.

²² Alfathimy, Permatasari, Susilawati, Susanti, Diana, Susanto, and Darmawan. ‘The Indo-Pacific and Space Diplomacy: Opportunities and Challenges’. p.47.

²³ Cross, and Pekkanen. ‘Introduction. Space Diplomacy: The Final Frontier of Theory and Practice’. p.194.

negotiators and politicians can discuss soft law solutions and find acceptable provisions for all”.²⁴ In this paper we demonstrate how the ISS has helped to engender peaceful collaboration, for a time at least, and argue that the ISS is about more than the posturing and power accumulation that we see in other space activities. The ISS offers a route to strategic alliance building as a venue of science and public diplomacy.

Jönsson and Hall note that for classic realist theorists, diplomacy is regarded as an asset “like a strong fleet or nuclear capacity. It is something an actor possesses, as it were.”²⁵ Kissinger, in his treatise *Diplomacy* emphasised that the European states within which the tradition of diplomacy emerged were not built upon a central belief in peace or goodwill: rather “European diplomacy was predicated not on the peace-loving nature of states but on their propensity for war, which needed to be either discouraged or balanced. Alliances were formed in the pursuit of specific definable objectives, not in the defense of peace in the abstract”.²⁶ As the ISS begins to outlive its usefulness, and cooperation falters, our analysis demonstrates that this perspective remains valid.

Borowitz²⁷ and Chiu²⁸ both categorise space diplomacy as a sub-set of science diplomacy and in many respects, the activities conducted on the ISS demonstrate science diplomacy in action. Science diplomacy is still fairly new to the lexicon of foreign policy, but Ruffini notes that it is rooted in the history of soft power and owes much to earlier work to promote cooperation between states.²⁹ Science diplomacy invites scientists, engineers, and technological entrepreneurs to work together to address common global issues. As globalisation and widespread capitalist growth has caused international problems that require international solutions, science diplomacy can address “management of the global commons, faltering public health systems and the threat of collapsing eco-systems”.³⁰ Moreover, the scale and expense of projects and the need to draw expertise from the widest possible pool of experts also encourages transnational collaborations. Examples beyond the ISS of such large-scale practical science diplomacy at work include the Large Hadron Collider at CERN, Switzerland, and the ALMA Observatory in Chile.

Turekian *et al.*³¹ note that cooperation between scientists, while commendable, is not the sum-total of science diplomacy: while the former is largely driven by individuals and groups seeking to further scientific knowledge, the latter is more likely to include a state level agreement, driven by foreign policy goals. Certainly, the ISS is presented to the world as a multilateral scientific project, it is ostensibly a politically neutral meeting place where astronauts and scientists can convene with like-minded people. Astronauts cooperate with astronauts; scientists cooperate with scientists; diplomacy through off-Earth collaboration takes place.

This view of the ISS as a neutral multilateral venue does not tell the whole story, however. The ISS has also served as a valuable public diplomacy resource for the states involved, guided by the US. Tetsuo Tanaka, the director of JAXA's Space Environment and Utilization Center, said in 2011:

²⁴ Polkowska, ‘Space diplomacy–future perspective’, p.127.

²⁵ Jönsson and Hall, *The Essence of Diplomacy*, pp.15-16.

²⁶ Kissinger, *Diplomacy*, p.222.

²⁷ Borowitz, ‘Let’s Just Talk About the Weather: Weather Satellites and Space Diplomacy’.

²⁸ Chiu, ‘Orbis non sufficit’.

²⁹ Ruffini, *Science and Diplomacy: A New Dimension of International Relations*, p.11.

³⁰ Turekian, Macindoe, Copeland, Davis, Patman, and Pozza. ‘The Emergence of Science Diplomacy’, p.5.

³¹ *Ibid*, p.6.

“There is something about space that touches even people who are not interested in science”.³² This is one reason why states are willing to invest so much into space. While definitions of public diplomacy remain contested and blurred,³³ it can be broadly described as the mechanism through which states seek to connect with the public abroad. As a vehicle for soft power, public diplomacy promotes a positive image of the state (or other actor) and thus make others more receptive to its foreign policy aims. Classic examples of public diplomacy initiatives include Voice of America, the Nobel Prize, the British Council, and the Confucius Institute. Curiously, we note that collaboration on the ISS is rarely mentioned in case studies of public diplomacy despite it being an excellent vehicle for the self-promotion of the states involved.

For a time, public diplomacy was seen pejoratively as a propaganda tool, and indeed some states may still regard this as its most important function.³⁴ Cowan and Arsenault identify three layers of public diplomacy: monologue, dialogue, and collaboration, and argue that public diplomacy is most effective when circumstances allow collaboration to be achieved.³⁵ A crucial aspect of public diplomacy is that initiatives go beyond formal diplomatic routes and may involve any citizens engaged in activities which promote a positive image of the state. While realist and liberal perspectives only differ in how they see non-state actors having an influence on state behaviour, constructivist analysis can say more about the potential impacts of the myriad forms of interaction offered through public diplomacy. Sharing and shaping ideas through collaboration in epistemic communities and transnational networks can lead to the transformation of interests and goals.³⁶ This aspect of public diplomacy aligns with the understandings of science diplomacy. As specialists work together across borders, the empirical knowledge and cultural integration they achieve can generate an evolving sense of purpose.

We suggest that the ISS bolstered the myth of democratic peace and the post-Cold War détente. It was in the US’ best interests to promote good post-Cold War relations with Russia from the early 1990s onwards. Furthermore, the cross-border initiatives and the inter-personal relationships which developed, may indeed have contributed towards the development of new inter-personal routes to build alternative forms of cooperation. Byrne notes that public diplomacy is a long game.³⁷ It may evolve over generations but with time this can feed back to heads of states and governments and inform foreign policy agendas. It establishes the groundwork to build resilient relationships and may have a cushioning effect at times when tensions arise allowing states to fall back on longer standing positive relationships. The continued functioning of relations between NASA and Roscosmos despite the tensions on Earth in the past decade are an illustration of this.

³² Japan Aerospace Exploration Agency (JAXA), ‘Kibo: Japan’s First Human Space Facility’.

³³ See: Ayhan, ‘The Boundaries of Public Diplomacy and Nonstate Actors: A taxonomy of Perspectives’ for a useful survey of the field.

³⁴ Melissen, ‘Public Diplomacy’, pp.441-442.

³⁵ Cowan and Arsenault, ‘Moving from monologue to dialogue to collaboration: The three layers of public diplomacy.’.

³⁶ Wendt, ‘Anarchy is What States Make of it: The Social Construction of Power Politics’; Keck and Sikkink, *Activists Beyond Borders: Advocacy Networks in International Politics*; Haas, *Epistemic Communities, Constructivism, and International Environmental Politics*.

³⁷ Byrne, ‘Public diplomacy’. p.169.

It is certainly the case that the ISS offers a venue for science diplomacy and a useful public diplomacy resource for partner states. However, we argue that it has offered more than this to the US. This paper will show how it has been a valuable tool of space diplomacy for the USA allowing it to maintain its prestige on the international stage, exert power and build strategic alliances.

Diplomatic Actors on the ISS

Considering space diplomacy in terms of power projection, prestige and strategic alliance building also invites us to consider the roles and status of the individuals on board the ISS. Selling the prestige of being a spacefaring state has been a key task for astronauts since the early days of the space race: Gagarin's achievement of orbit; Aldrin and Armstrong's walk on the moon; Valentina Tereshkova as an icon of socialist feminism. Chris Hadfield, Tim Peake and the many others who have worked on the ISS have become celebrities in their home states performing important public diplomacy roles.

Astronauts sent into orbit by national governments are envoys of humankind, as noted by The International Space Station Intergovernmental Agreement (IGA) which states in Article 18 that:

Subject to its laws and regulations, each Partner State shall facilitate provision of the appropriate entry and residence documentation for nationals and families of nationals of another Partner State who enter or exit or reside within the territory of the first Partner State in order to carry out functions necessary for the implementation of this Agreement.³⁸

This is reminiscent of the protections offered to diplomats under the 1961 Vienna Convention on Diplomatic Relations and it reconfirms the UN Office for Outer Space Affairs 1967 Annex to the Outer Space Treaty, the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, which states that:

If owing to accident, distress, emergency or unintended landing, the personnel of a spacecraft land in territory under the jurisdiction of a Contracting Party, it shall immediately take all possible steps to rescue them and render them all necessary assistance.³⁹

Astronauts are indeed envoys of all humankind and the combined UNOOSA treaties and ISS Agreement make it clear that they should be treated as such.

In terms of power and alliance building, we can see new dynamics in play where states are developing public-private strategic alliances to access new funding streams by opening up space tourism to billionaires. For these space tourists, a trip into orbit is seen as the ultimate statement of their wealth and power.

The status of billionaire spacemen is more complex and as this type of tourism is a growing industry, it requires more attention. At the time of writing, thirteen space tourists have visited the ISS; (seven transported on the Russian Soyuz spacecraft and six on Space X rockets) paying hefty fees of approximately \$50 million each. Space Billionaires do not directly represent a state and act out of

³⁸ United States Department of Defense, 'Department Of Defense And Full-Year Continuing Appropriations Act. 2011'.

³⁹ United Nations Office for Outer Space Affairs, 'Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space'.

private interest. They also no longer meet the criteria to call themselves astronauts. The Federal Aviation Administration (FAA) changed the definition which allows the award of commercial astronaut wings on 20th July 2021 - the day of Blue Origin's maiden flight past the Karman line (the boundary between Earth's atmosphere and space).⁴⁰ Since 2004, flight passengers have been required to travel over 50 miles above Earth's surface and attain a minimum in flight qualifications and training to achieve astronaut 'wings', but added to this, they must now also have "demonstrated activities during flight that were essential to public safety, or contributed to human space flight safety".⁴¹

Space tourists who pay to visit Earth's orbit do not have the level of expertise or specialist training that we see in astronauts who work on the ISS. The purely commercial nature of their relationship with space, coupled with a lack of flight competency means that their status is different to that of previous spacefarers. Astronauts have a status and state-recognised qualifications that sets them apart from the general population, and skills and expertise that allow them to carry out all the tasks required on board space bound vehicles and on the ISS. Billionaire spacemen and their paying passengers are private actors without those skills that define an astronaut, or a diplomat.

The changing cast of visitors to the ISS is thus changing its very nature, which indicates that the role of the ISS as diplomatic venue may also be changing. Hosting tourists is a different form of diplomacy, with different dynamics. Nevertheless, tourists are becoming increasingly active in space and as policy develops, we remind decision makers that it will be important to discuss space tourist responsibilities and liabilities given that their state role is non-representative, and their scientific expertise often limited.

International Space Station as a Multilateral Venue for Diplomacy

According to Pigman, the 'venues' where diplomacy happens are much more varied than government buildings, stately homes, or grand embassies.⁴² These include early incarnations such as the Concert of Europe or the League of Nations, to current permanent diplomatic representations at the UN and other intergovernmental organisations. These multilateral venues for diplomatic engagement offer opportunities for diplomatic culture to evolve and provide states and their representatives with different degrees of latitude to test the waters for new initiatives. At times, the shared community of diplomats may find more in common with their peers in the multilateral forum than with officials 'back home'. Similarly, astronauts and cosmonauts are likely to find more in common with their peers on the ISS than with Earth-bound colleagues. As a shared community it is small, intimate and provides impetus for shared projects and cooperative initiatives.

The ISS is currently the only habitable microgravity science laboratory. It operates in Lower Earth Orbit, approximately 400km above the Earth's surface and orbits the Earth sixteen times a day. In September 1993 American Vice-President Al Gore and Russian Prime Minister Viktor Chernomyrdin announced what must be the most technically ambitious scientific projects of our times. Construction began in 1998 and was completed in 2011. From the outset, this was a multi-

⁴⁰ Ghod, 'New FAA Rules Change who Qualifies for Commercial Astronaut Wings'.

⁴¹ United States Federal Aviation Administration, 'U.S. Department of Transportation, Federal Aviation Administration Order 8800.2 FAA Commercial Space Astronaut Wings Program'.

⁴² Pigman, *Contemporary Diplomacy*, pp.22-30.

national project involving the European Space Agency (ESA) and the national space agencies of Canada, Japan, Russia and the United States. However, the partnership between America and Russia is the most important. The project began with the linking of the US module *Unity* and the Russian module *Zarya* (meaning sunrise) in 1998. Currently the Russian Orbital Segment operates six of the seventeen modules of the ISS, including *Zvezda* where the main engine system is located. Support for the US Orbital Segment (the other eleven modules) is shared by NASA, and the space agencies of Japan (JAXA), Europe (ESA) and Canada (CSA). Humans have been living and working on the space station since November 2000 and more than 266 astronauts from 20 countries have visited the ISS.⁴³ It has produced an impressive output of scientific and technological results with wide-reaching impacts.⁴⁴ As Margolis notes, it has delivered what science fiction authors always dreamed of: “a multi-disciplinary laboratory, manufacturing facility, and test habitat for long-range space exploration, as well as a tool of diplomacy and symbol of national prestige”.⁴⁵

The ISS is a cooperative project whose aims are aligned with those of the UN’s Office for Outer Space Activities, that “outer space should be for the benefit of all humankind”.⁴⁶ As noted by NASA in 2005 “the primary objective of the ISS is to support scientific research and other activities requiring the unique attributes of humans in space”.⁴⁷ Furthermore, NASA acknowledged that “the ISS represents an unprecedented level of international cooperation” and that this “international participation has significantly enhanced the capabilities of the ISS”.⁴⁸

The relationship between partners to the ISS has shifted over its two and half decades in orbit, but the US and Russia have always been the main players, with a true emphasis on the US. The original ISS document states that “The United States and Russia, drawing on their extensive experience in human space flight will produce elements which serve as the foundation for the International Space Station”,⁴⁹ and NASA later, in 2005, noted that “[d]uring the current Shuttle hiatus, Russian participation has been critical to the continued operation of the Space Station”.⁵⁰ Until the invasion of Ukraine in 2022, the partnership between America and Russia appeared to be capable of preventing tensions on Earth from disrupting cooperation on the ISS. Certainly, there were instances where relations were tested. These include the granting of asylum in Russia to Edward Snowden, Russian involvement in the war in Syria, and the annexation of Crimea. Yet the partnership continued aboard the ISS and there were even promises of further collaboration in space such as a joint US-Russia Mars project. As Mauduit argues, despite rash public statements, cooperation between the space agencies continued peacefully.⁵¹ Indeed, even after the initial threats of Roscosmos in 2022 to withdraw in 2024, there was a softening of the position. At the time

⁴³ Garcia, ‘Partners Extend International Space Station for Benefit of Humanity’.

⁴⁴ Ruttley, Robinson, and Gerstenmaier, ‘The International Space Station: Collaboration, Utilization, and Commercialization’ .

⁴⁵ Margolis, ‘Microgravity, Macro Investment: Overcoming International Space Station Utilization Challenges Through Managerial Innovation’, p.323.

⁴⁶ United Nations, ‘Treaty On Principles Governing the Activities Of States in the Exploration and Use of Outer Space including the Moon and Other Celestial Bodies’.

⁴⁷ NASA, ‘International Space Station’, p.2.

⁴⁸ *Ibid*

⁴⁹ United States Department of Defense, ‘Space Station: Agreement between the United States of America and Other Governments’, p.3.

⁵⁰ NASA, ‘International Space Station’, p.2.

⁵¹ Mauduit, ‘Collaboration around the International Space Station: Science for Diplomacy and its Implication for U.S.-Russia and China relations’, p.11.

of writing in January 2024, Russia is committed to supporting operations on the space station until 2028.⁵²

China was not involved with the International Space Station at the outset, but as its own space programme developed, cooperation became a technological possibility though not a political one. In 2011, citing national security, the US Congress passed the Wolf Amendment preventing NASA from engaging in bilateral agreements with China without special approval from the Federal Bureau of Investigation and US Congress, by blocking funding “to develop, design, plan, promulgate, implement, or execute a bilateral policy, program, order, or contract of any kind to participate, collaborate, or coordinate bilaterally in any way ... or to host official Chinese visitors at facilities belonging to or utilised by [NASA]”.⁵³ The decision reflects the deep mistrust of China, its record of espionage and theft of intellectual property⁵⁴ and concerns that welcoming China on board might provide the means for China to gain military or technological advantages over the US. Thus the Wolf Amendment blocked China and its *taikonauts* from participating in the ISS at all.

Diplomatic venues are not open spaces where any and all tensions can be overcome and the ISS is no different. First there needs to be buy-in to the ‘rules of the game’, the institutional norms and values. Russia in the 1990s was willing to sign up to the vision asserted by America. In the 21st century, China will not. In the next section we will explore how the US specifically was able to use the ISS as a space diplomacy resource and the limits to its effectiveness.

ISS as an Asset of US Space Diplomacy

Careful reading of the founding legislation reveals that while the ISS project was purportedly a multilateral endeavour, it is in fact underpinned by the structural power wielded by the United States. When US President Ronald Reagan first announced the goal of developing a permanently manned space station in his State of the Union Address in 1984, he was clear: “We can follow our dreams to distant stars, living and working in space for peaceful, economic, and scientific gain. [...] We want our friends to help us meet these challenges and share in their benefits”.⁵⁵ While all partners have benefitted from the public and science diplomacy benefits of the ISS project, it is the US which has until recently employed the ISS as an effective asset of space diplomacy in all three areas: power projection, prestige, and strategic alliance building. This section will show how this has evolved over time.

The ISS founding documents state that “[t]he Partners will join their efforts, under the *lead role* of the United States for overall management and coordination, to create an integrated International Space Station” [emphasis added].⁵⁶ It is clear from the founding documents that this is a post-Cold War unipolar form of multilateralism: one in which the United States took the lead role in terms of institution building. This makes sense given the context of the 1990s which witnessed the

⁵² Garcia, ‘Partners Extend International Space Station for Benefit of Humanity’.

⁵³ United States Department of Defense, ‘Department Of Defense And Full-Year Continuing Appropriations Act. 2011’.

⁵⁴ Halbert, Deora. ‘Intellectual Property Theft and National Security: Agendas and Assumptions’.

⁵⁵ Reagan, ‘State of the Union Address’.

⁵⁶ United States Department of Defense, ‘Space Station: Agreement between the United States of America and Other Governments’.

advent of a unipolar global power system, lacking the balance of power features of previous global power systems. Working on notions of liberal democratic peace theory, America has promoted capitalism, free trade, and democracy as the bastions of global peace and the ISS fitted right into this agenda. Space activity formed an important part of the cultural myth of America, contributing to their soft power⁵⁷ and allowing the United States to assert its structural power from the very start of the ISS negotiations.

In the late 20th century, the shift in international power dynamics meant that soft power projection came to include intergovernmental relations with Russia. Space diplomacy was crucial in this phase. By creating and developing the means by which the former Cold War opponents could cooperate in space, the United States set out its stall: although Russia had the technology to develop a space station (Mir), the founding regulatory legislation, and thus the structural power, was held by the US. The ISS was established as an intergovernmental project – the founding treaty is known as the International Space Station Intergovernmental Treaty (IGA). However, the power it projects has its basis in US hegemony, and its longer title is “Agreement between the United States of America and Other Governments”.⁵⁸ The IGA states in the recitals that NASA would “develop and place into orbit” an international space station. More importantly in terms of soft power and diplomacy, the IGA further stated that it: “*invited* friends and allies of the United States to participate in its development and use and to share in the benefits thereof” [emphasis added].⁵⁹ In 1998, the United States wrote the IGA and therefore created the parameters of the agreement, thus bolstering its structural power and projecting its soft power. Article one states that “the object of this Agreement is to establish a long term international cooperative framework among the Partners, on the basis of genuine partnership”⁶⁰: by launching this venue for cooperation in space, America created the means to demonstrate its prestige, promote its power and steer the development of strategic alliances.

Over time, the utility of this space diplomacy asset has waned. In the second decade of the 21st century, the diplomatic stage altered as global power dynamics shifted away from America in terms of both economic supremacy and its ability to maintain a clear lead on military might. The decision in 2012 to ban Chinese *taikonauts* from the ISS, and indeed from all cooperation with NASA, can be read as a weakening faith in the power of space diplomacy to overcome earthly rivalries, if this was ever fully believed in the first place. When Russia was invited to the ISS, there was no question that the United States held structural power over the project. However, engagement with a rising China was a more threatening prospect. Although it is a shame that we did not have the opportunity to test this diplomatic venue to its limits, given the realist nature of US foreign policy such action is unsurprising. Kupchan notes that “it is no accident that the most powerful states in a regional or global system also happen to be the ones that establish and enforce the rules of the prevailing order”,⁶¹ and as global change is effected and the US loses its grip on its longstanding unipolarity, it will logically turn inwards to prevent the overturning of its foundational norms, or to

⁵⁷ Krige, ‘NASA as an instrument of US foreign policy’.

⁵⁸ United States Department of Defense, ‘Space Station’

⁵⁹ *Ibid*

⁶⁰ *Ibid*

⁶¹ Kupchan, ‘The normative foundations of hegemony and the coming challenge to Pax Americana’, p.221.

prevent “shirking”⁶² by rising powers. The realist world is a self-help arena after all, and even within the diplomatic realm of the ISS the United States must protect its own structural power.

On this, America was also unwilling to plough unlimited resources into its space projects: we might suppose that in Susan Strange’s language,⁶³ the knowledge structure (i.e. the soft power), and the security structure (i.e. the hard power benefits of space exploration) were valued, but not over the economic structure. This was already the case in the 1980s, when alongside broader neo-liberal reforms, efforts were made to cut back on the costs of space projects by engaging with commercial partners. In 1982 Ronald Reagan signed national security decision directive (NSDD) 42, “National Space Policy”, making explicit the national goal of expanding of US private sector involvement in civil space activities.⁶⁴ Cutbacks to NASA funding in the 1990s made the commercialisation of NASA even more of a priority. Bill Clinton’s 1996 Space Directive and the 1998 Commercial Space Act were intended to encourage public-private sector initiatives which could help rein in the costs of funding NASA. In 2002, the Commercial Market Outreach Plan for the International Space Station Report indicated ways for the US to generate income from the ISS by marketing the use of microgravity laboratories to private industry.⁶⁵ The 2005 NASA Authorization Act directed NASA to develop a commercialisation plan which made use of innovations from the private sector and identified opportunities for more collaboration.⁶⁶ This reflects the ideological position of America which seeks to reduce state (and taxpayer) involvement and allow as much market freedom as possible. While the ISS partners may have agreed with this in principle, and indeed JAXA and ESA have commercial partners working on their modules, further plans to commercialise the ISS may not run smoothly. For example, in February 2022, Sylvie Espinasse (head of the European Space Agency’s Washington office), noted that ESA would not be able to pay for commercial services from US providers given its mandate to support the European space industry.⁶⁷ Margolis argues that it has always been a dilemma for the management of the ISS to marry the conflicting expectations of academic scientists and commercial industrialists.⁶⁸

While we argue that involvement with the ISS garners prestige, there are risks attached when weaknesses are exposed very publicly. For example, the decision to outsource transportation of US astronauts to and from the ISS has risked dangerous implications and weakened the image of the US by revealing its reliance on other parties. When Russia annexed Crimea in 2014, US sanctions against the Russian space programme prompted a threat from Russian Deputy Prime Minister Dimitry Rogozin to halt US access to the Soyuz (Russian spacecraft) which were the only means at the time to transport American astronauts to the ISS. He tweeted “[a]fter analyzing the sanctions against our space industry, I suggest that the USA bring their astronauts to the International Space Station using a trampoline”.⁶⁹ This exposed the weakness of the United States: NASA had come to

⁶² Schweller, ‘Emerging powers in an age of disorder’.

⁶³ Strange, *States and Markets*.

⁶⁴ NASA, ‘National Security Decision Directive 42’.

⁶⁵ Equals Three Communications® and Booz Allen Hamilton, ‘Commercial Market Outreach Plan for the International Space Station Report presented to: NASA Headquarters February 2002’.

⁶⁶ United States 109th Congress, ‘S.1281 - National Aeronautics and Space Administration Authorization Act of 2005 109th Congress (2005-2006)’.

⁶⁷ Foust, ‘ISS transition to Commercial Stations Poses Challenges for Partners’.

⁶⁸ Margolis, ‘Microgravity, Macro Investment: Overcoming International Space Station Utilization Challenges Through Managerial Innovation’.

⁶⁹ Mosendz, ‘Russian diplomats are trolling the US Space Program’.

rely on the Russian Soyuz following the decommissioning of its own Space Shuttle programme in 2011. The intention had been for commercial partners Boeing and Space X to transport their astronauts, but these plans suffered numerous delays.⁷⁰ In March 2022, Roscosmos again threatened not to return an American astronaut to Earth on its return Soyuz trip from the ISS.⁷¹ This time however, the SpaceX Dragon spacecraft was ready. Both occasions signalled breakdowns in diplomatic relationships, but more importantly, they demonstrated limits to American power by highlighting its inability to transport astronauts to and from the ISS on its own terms.

The ISS has been a useful space diplomacy asset for America, but it has not been completely successful when it comes to the third aspect of our conceptualisation – building strategic alliances. By banning Sino-American space relations, the US government accelerated China’s move to find other partners and undermined its own intention to be in control of strategic partnerships. Between 2011 and 2016 China signed 43 space cooperation agreements or memoranda of understanding with 29 countries,⁷² and between 2016 and 2021 a further 46 space cooperation agreements or memoranda of understanding were signed with 19 countries and regions and four international organizations.⁷³ The United States Director of National Intelligence *Annual Threat Assessment* notes the progress of China’s space programme:

China is steadily progressing toward its goal of becoming a world-class space leader, with the intent to match or surpass the United States by 2045. Even by 2030, China probably will achieve world-class status in all but a few space technology areas. China’s space activities are designed to advance its global standing and strengthen its attempts to erode U.S. influence across military, technological, economic, and diplomatic spheres.⁷⁴

Mirroring its efforts on Earth, China is developing its Outer Space Silk Road which serves its wider Belt and Road Initiative⁷⁵ and has helped to provide many southern hemisphere states with nascent space programmes. While NASA’s stated claim was to conduct space exploration for the advancement of science, China’s political goals are more explicit and from an American perspective, threatening. The 2021 China Space Programme White Paper states its basic policy is “strengthening international space cooperation that is based on common goals and serves the Belt and Road Initiative and ensuring that the space industry benefits the Initiative’s participating countries, especially developing countries”.⁷⁶ Moreover, as Zhao notes, “previous experience shows that excluding China from high-tech areas will not prevent China from developing advanced technologies on its own. Cooperation, instead of confrontation, would bring more practical and immediate

⁷⁰ Hignett, ‘Russia Cuts Off U.S. Access to ISS, Pledges to Stop Ferrying American Astronauts in 2019’.

⁷¹ Harwood, ‘Russia severs ties with U.S. and European space projects; ISS operating normally for now’.

⁷² The State Council Information Office (SCIO) of the People’s Republic of China, ‘China’s Space Activities in 2016’.

⁷³ The State Council Information Office (SCIO) of the People’s Republic of China, ‘China’s Space Program: A 2021 Perspective’.

⁷⁴ United States Director of National Intelligence, ‘Annual Threat Assessment of the US Intelligence Community .6 February 2023’.

⁷⁵ Sun and Zhang, ‘Building an ‘Outer Space Silk Road’: China’s Beidou Navigation Satellite System in the Arab World’; Alfathimy, Permatasari, Susilawati, Susanti, Diana, Susanto, and Darmawan, ‘The Indo-Pacific and Space Diplomacy: Opportunities and Challenges’.

⁷⁶ The State Council Information Office (SCIO) of the People’s Republic of China. ‘China’s Space Program: A 2021 Perspective’.

benefits to all parties”.⁷⁷ China has pursued both technological development and international diplomacy in space, apparently suffering little from its exclusion from the ISS.

Thus, while the United States used the ISS as a space diplomacy asset to project its power and champion its model of American-led multilateralism, it was not a complete success. As other states have developed their space power, they are no longer willing to be beholden to the US in this way. The United States now relies on commercial partners to deliver parts of its space strategy and losing control of this may have more serious consequences than it has done previously. The United States was lucky in a sense that Russia did not follow through on the threats to refuse access to Soyuz in 2014 when they had no other transportation options. However, the global landscape in the 2020s looks more hostile.

After the ISS

As the ISS project reaches its end, we could ask whether collaboration on such a grand scale would be possible again. In our view this seems unlikely. The liberal optimism of the 1990s has long gone. In the mid-21st century we see the return to a world of suspicion, isolationism and recourse to strategies of military autonomy. We face an interesting trajectory where international cooperation between states is reduced while public private relations and neoliberal domination of space grows. The ISS was never going to last forever. However, with 2030 set as the date for deorbit, it is important to prepare now for the time when it is gone. The risk is that without a careful appreciation of what it offered in terms of diplomatic resources, these will be missed even more once they are no longer available. Now is the time to think about alternative options and approaches to keep these lines of communication and bargaining open.

Excluded from the elite club on the ISS, China developed its own space diplomacy tactics and resources, including its own Tiangong space station.⁷⁸ Its focus has been on developing states with spacefaring ambitions. However, as we can see with the BRI projects on Earth, these partnerships come with strings attached which give China influence and structural power. A consequence of this for America is that China’s influence will undoubtedly bring more weight to their efforts to shape international space policy.

At present, the publicly stated aims of the US government are to maintain its leading and guiding role when it comes to space governance and exploration. Space policy statements continue to posit the US as the global leader. The 2020 National Space Policy uses the words lead, leader and leadership 28 times in 19 pages.⁷⁹ The 2021 United States Space Priorities Framework includes a full chapter “Space as a source of American leadership and strength”⁸⁰ and the 2023 Strategic Framework for Space Diplomacy features the words lead, leader and leadership 36 times in 37 pages.⁸¹ The USA thus continues to cast its net both wider – the Artemis Accords now have twenty-

⁷⁷ Zhao, ‘Legal Issues of China’s Possible Participation in the International Space Station: Comparing to the Russian Experience’, p.156.

⁷⁸ Li and Mayer, ‘China’s Bifurcated Space Diplomacy and Institutional Density’.

⁷⁹ United States National Space Policy, ‘Federal Register Vol. 85, No. 242’.

⁸⁰ White House, ‘United States Space Priorities Framework 2021’.

⁸¹ White House, ‘United States Space Priorities Framework 2023’.

seven signatories at the time of writing; and further – through the Artemis program NASA is aiming to return humankind to the Moon and to visit Mars. However, it has not been easy to obtain critical signatures. What the US presents as benign and generous leadership is viewed with suspicion by others. What was possible when composing the ISS founding documents is no longer so. India's signature of the Artemis Accords in June 2023 was by no means guaranteed, China and Russia will not sign and instead have agreed to establish an alternative: the International Lunar Research Station. China and Russia have also co-sponsored the Draft Treaty on the Prevention of Placement of Weapons in Outer Space and the Threat of Use of Force against Outer Space Objects (PPWT) to which the United States is vehemently opposed.⁸²

If the US is to maintain a space leadership position, it needs to earn its status rather than claiming it as an inevitability. Policy makers must be clear on this as they work on the decommissioning of the ISS. The ensuing vacuum is now as likely to be filled by Chinese ideas about economic, security, and knowledge processes, as those liberal capitalist ideals promoted by America since the middle of the last century. Decisions on space policy must take this into account: statecraft and geopolitics inform space diplomacy. It is so much more than cooperation on science programmes.

Conclusion

This paper has demonstrated how the ISS has been a positive example of collaboration which locked in partnerships and thrived on science diplomacy. In terms of soft power, or public diplomacy, there were also great gains to be made by projecting cooperation and shared wonder at the marvels of space technology. However, more than this, the ISS has been a valuable venue for statecraft and an asset for the promotion of wider diplomacy in space. Although collaborative in theory, the structural power with which the US established the ISS has meant that the space station has been a valuable space diplomacy asset according to the US power, prestige, and opportunities for strategic alliance building, though these were not always used to best effect.

While the International Space Station may have been seen as a lighter hearted addition to both America's spacepower accumulation and its international scientific standing, without it in orbit as an extra-territorial venue for diplomatic relations, the United States may find that it loses more than a satellite. Waning multilateral structural power on the part of the United States, suggests that it may not have the chance again to write the rule book for space and waiting in the wings is a rising power with great space ambitions. Regardless, the International Space Station will be decommissioned in 2030 at which point the USA will lose a valuable venue for diplomacy with Russia, Japan, and Europe.

The United States established the institutional basis of the ISS knowing that it would require collaboration to evolve and proceed as envisaged and to a large extent this has succeeded. The rejection of Chinese partners undermined claims of neutrality but until now Russian and Western partners have worked very effectively together. Announcements signalling the end of the ISS as a shared endeavour may be greeted with dismay by the science and technology community, and they may be lobbying hard for an alternative outcome but ultimately, these scientists are beholden to

⁸² United States Mission Geneva, 'Statement by Ambassador Wood: the Threats Posed by Russia and China to Security of the Outer Space Environment'.

their employers or sponsors. The effective collaborations on the ISS meant that the project has been a success. Had these astronauts not been able to work together in microgravity, the whole endeavour would have ended far sooner. However, the extension of contracts is the responsibility of others. It will be interesting to observe how the venture is drawn to a close, how credit is shared and the extent to which new collaborations can emerge. The Artemis Accords signal an appetite for this among the astronauts, scientists, and engineers working in the space agencies, but the ultimate decisions will be made at the most senior levels of government, in particular the departments of foreign policy, defence and of course the treasuries of partner states. Statecraft will thus impact on decisions that must now be taken regarding the form of any replacement for the International Space Station. And this is right. The ISS was more than a venue for scientific collaboration, and more than an Accord or Convention. It was a venue for diplomacy and this must be taken into consideration in any future decisions.

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