



ASPI – Embassy of Japan 1.5 Track Dialogue on ‘Responsible Behaviour in Space’

Proceedings and Outcomes

12th April 2021

Prepared by Dr. Malcolm Davis, Ms Khwezi Nkwanyana, and Ms Elena Yi-Ching Ho, ASPI

Key Recommendations:

- 1) A case can be made that Track 1.5 dialogues such as that held by ASPI and the Embassy of Japan are important because they can move debate along outside of the UN process and in doing so, provide input into that process that could potentially lead to faster diplomatic, legal, and regulatory outcomes than would be the case if dialogue only occurred within the UN system.
- 2) Space is a key part of surveillance and intelligence capabilities, early warning, communications as well as positioning, navigation, and timing services. These are core capabilities for the ADF, and they could be significantly reduced if states were to successfully challenge them. Space is a warfighting domain whether we like it or not, given emerging counterspace capabilities.
- 3) States must oversee commercial and state-based activities occurring either from their territory or on their behalf. In this sense, it is the states are responsible for all actions in space under their jurisdictions.
- 4) States must follow guidelines and through licensing establish a means that there is some way of ensuring commercial actors are behaving and impose penalties when they do not. Currently there is very little enforcing mechanism under licensing law
- 5) States must increase collaboration and diplomatic communications, establish frameworks for data sharing, which can move faster in the bilateral arena than international arena.
- 6) There should be collaboration between like-minded states in a manner to reduce the risk to space systems, and to achieve this relatively quickly – in the space of several years. There should also be international network of like-minded states that would verify activities in space, including ensuring attribution of states employing ASATs.
- 7) There needs to be the creation of a non-binding agreement within the UN General Assembly leading to an ASAT agreement designed to ban kinetic kill ASATs that would create space debris.
- 8) The risks posed by new technologies that employ rendezvous and proximity operations (RPOs) that see close approaches between satellites must be considered, as this could generate misperception and misunderstanding. With that in mind, it's important to build communication links and create greater transparency in space and establish a process of international consultation on space activities, and to create mechanisms for responding to damage to space systems.

Background

The Embassy of Japan approached the Australian Strategic Policy Institute (ASPI) to run a 1.5 Track Dialogue on 'Responsible Behaviours in Space'. This issue has emerged as a key focus of international diplomatic and legal dialogue within the global space policy community following the tabling and adoption of Resolution 75/36 on 'Reducing space threats through norms, rules, and principles of responsible behaviours' by the United Kingdom to the United Nations General Assembly (UNGA) on 7th December 2020.¹ The resolution has been widely supported, including by the governments of Australia and Japan, and is seen as an important next step in updating and establishing a new basis for legal and regulatory approaches to managing and avoiding irresponsible behaviour in space, notably the challenge posed by counterspace capabilities. The overall goal of the resolution is summed up in two key articles amongst seven in total. Article 3 seeks to ensure that:

“...all Member states reach a common understanding of how best to act to reduce threats to space systems in order to maintain outer space as a peaceful, safe, stable, and sustainable environment, free from an arms race and conflict, for the benefit of all...”

And Article 5 states that:

“...Member states to study existing and potential threats and security risks to space systems, including those arising from actions, activities or systems in outer space or on Earth, characterise actions and activities that could be considered responsible, irresponsible or threatening and their potential impact on international security, and share their ideas on the further development of implementation of norms, rules and principles of responsible behaviours and on the reduction of the risks of misunderstanding and miscalculations with respect to outer space.”

In effect, UNGA Resolution 75/36 seeks to establish a new basis for understanding space as an increasingly *contested* domain, even as it is accepted as a global common, and the resolution seeks to provide a basis for diplomatic discussion that can lead to new legal and regulatory measures that would act to constrain threats posed by irresponsible behaviour.

This could include the challenge posed by states acquiring counterspace capabilities (commonly referred to as anti-satellite weapons or 'ASATs') or activities that could generate an increasing amount of space debris, as well as management of the space domain, which is not only increasingly contested, but also *congested*.

UNGA Resolution 75/36 seeks to generate momentum for international rulemaking to reduce threats in space and promote the space domain for peaceful and stable use as a global common. The first step in this process is to promote international understanding of and discussion on issues such as what threats in outer space are and to describe 'responsible behaviours' to distinguish them from irresponsible behaviour. It was with this initial step in mind, that the Embassy of Japan sought the assistance of ASPI via a 1.5 Track dialogue process, which was conducted on the evening of April 12th, 2021 at ASPI.

This report outlines the key takeaways from the dialogue and summarises main recommendations stemming from the discussions.

Opening address

The workshop began by noting that space is becoming ‘contested, congested and competitive’, and although it has traditionally been seen as a peaceful global common, increasingly this perception is being challenged. Space has been ‘militarised’, that is, used for military tasks to support terrestrial military operations, since the dawn of space age. There is now a greater risk of space becoming ‘weaponised’ and **contested** due to the development of counterspace (anti-satellite) capabilities. There are also concerns about the growth of a **congested** space domain, including increasing amounts of space debris. This trend is set to sharpen as commercial space actors begin deployment of ‘mega-constellations’ of small satellites to provide a range of terrestrial services. Space is becoming more **competitive**, as more actors, both state and commercial, can take advantage of lower-cost access to orbit and cheaper space technology. Space is no longer a domain solely open to the great powers.

Regarding UNGA Resolution 75/36, the dialogue considered that it was important to have discussions outside of an on-going UN Process. The very nature of consensus diplomacy that is practiced within UN organisations such as the Committee on the Peaceful Uses of Outer Space (COPUOS) and in the UN General Assembly means it is a slow process of diplomacy. This will be occurring even as strategic and technological change occurs rapidly. Track 1.5 dialogues such as that held by ASPI and the Embassy of Japan are important because they can provide input into that process that could potentially lead to faster diplomatic, legal, and regulatory outcomes than would be the case if dialogue only occurred within the UN system.

The dialogue considered how the space domain facilitates a range of vital terrestrial capabilities essential for a modern society and economy. These include directly supporting economic growth and prosperity as well as monitoring climate events, supporting increasingly challenging logistics and traffic management and facilitating better social development and ensuring public health. With these benefits in mind, it is vital that the peaceful use of space as a global common continues to grow. Interference could lead to economic instability, particularly if there were an effect that undermined the efficacy of global navigation satellite systems (GNSS) such as ‘GPS’. The importance of space is such that any interference in critical space infrastructure could lead to increasing global instability, including a potential risk of nuclear insecurity. The integration of space technology is so vital that the preservation of space as a global common is of great importance and all countries

enjoy the benefits of space capabilities – a loss of space access would affect the entire international system.

There was consensus that the international community hold discussions and cooperate within space to preserve space security and ensure responsible use. Given that space capabilities are used to ensure strategic stability, ensuring space security is of the utmost importance.

In some cases, it is hard to draw a distinction between safety and security in space. For example, in the case of space debris, the creation of this debris can also be seen as a security threat, given the growing amount of material, and the difficulty in tracking it.

The discussion also considered the importance of verification in relation to space activities, suggesting that new criteria to identify harmful use of technology in space as a verification method is needed, which also allows some consideration of intentions. This speaks to an actor's behaviour in space, allowing some ability to determine to what degree it is responsible or irresponsible. This will demand a comprehensive approach to the management of space.

There was also consensus that reliance on space is growing for all nations. Therefore, a secure and sustainable space is in the interest of all. Space is a public domain and inherently international. It is vital to include all nations in the formation of norms of behaviour to avoid escalations in the future.

The point was made that space is 'not a 'wild west' environment in which there are no rules, and in which anyone can do whatever they want'. There is a clear legal and regulatory framework that underpins contemporary space activities. However, how actors will behave in space is yet to be determined, particularly as the space domain becomes more competitive and complex in nature, and the current rules in space have yet to be tested in times of real conflict; it is especially unclear how states might behave in space, particularly in times of conflict.

Given the critical dependency on space capabilities, the prospect of irresponsible behaviour or even conflict in space is a sobering thought which demands deeper consideration. From the perspective of the Australian Defence Force (ADF), space is a key part of surveillance and intelligence capabilities and early-warning communications, as well as positioning, navigation, and timing services. These are core capabilities for the ADF, and they could be significantly reduced if states were to successfully challenge them. Space presents a lucrative target for those who would threaten Australia's defence and national security, and space is a warfighting domain whether we like it or not, particularly given emerging counterspace capabilities.

With these warnings in mind, it was emphasized that it is important to note that space will be a place which supports warfighting, but it does not mean it has to be a place where warfighting takes

place. There is an important distinction between the two. Most people do not understand the devastation that a war in space would mean given that access to space is critical to everyday life. There was a strong point made that the 1.5 Track process will help shape international behaviour and action in space and preventing conflict from happening.

The session concluded by noting some challenges ahead. Firstly, making a judgement about what is responsible is one thing but how to set those standards, and how to enforce those stands is another challenge. That will demand holding actors who violate responsible behaviour standards to account, and it's important that states should seek to attribute malign behaviour and call it out. The challenge is how to decide what is acceptable and how do we hold actors to account.

Secondly, there needs to be a global deterrence framework. This would require imposing costs when our space capabilities are under attack, and the threat of such costs should change the decision calculus of adversaries in a manner that reduces the incentive for any aggressive use of counterspace capabilities. This approach represents a traditional military role. In this regard, it is also important to balance imposing costs with denying benefits. The latter is often overlooked. If the ADF develops its military capabilities to be critically reliant on space, then there is inherent benefit for an adversary to attack our space capabilities. However, if the ADF can invest in resilient space capabilities so that it is harder to attack, then a 'deterrence by denial' approach will reduce the incentive for an adversary to threaten those capabilities. In simple terms, if attacking a satellite had absolutely no benefits or effects on the outcome of military intervention then there is no incentive to do so. There is a case for reducing dependency on space or to ensure greater space resilience to reduce vulnerabilities.

Thirdly, even if it were under attack, Australia would want to mount a credible military response, and that response does not necessarily have to be responded to in space. It can be responded to through other operational domains, and it is important to avoid being constrained by narrow symmetrical thinking.

The opening session concluded that we must focus on shaping, deterring, and responding to irresponsible behaviour, and this is the focus of the Australian Department of Defence and more broadly, the whole of the Australian Government. No one wants conflict in space, given the global impacts that such an event would generate, and we must be aware to the challenge of a crisis – perhaps in the grey zone – that could lead to conflict. We need to avoid slipping into a strategy of hope and instead be clear-eyed about the world we live in, including emerging power dynamics between major actors. Above all, we must recognise that space is a warfighting domain, and we need to understand how to work together to maintain the peace.

Panel One:
**Stable and sustainable use of space and management of security challenges
in space**

The panel sought to discuss the importance of stable and sustainable use of outer space, and how best to manage threats in outer space, including those which may affect countries that are not engaged in space activities. The discussion began around three aspects of emerging space threats – safety, security, and sustainability. These are so entwined with each other that we cannot think about one without considering the others. There is a difference between hazards and threats, which makes it more difficult to consider responsible vs irresponsible behaviour in space.

There was also discussion related to deterrence in space, recognising that space is a vital domain given that we do not depend on other domains the same way we depend on space. Our dependency on space is arguably stronger than cyber, or the high seas, as everyone globally is dependent on space, including most countries which are not active in space, or which do not have either a national space agency or commercial space sectors. They still use space, and thus even smaller states have a ‘presence in space’.

In this sense, any hazards or threats in space impacts *every nation* much more immediately than any other domain.

In terms of the ‘congested’ aspect of space, the number of satellites is increasing each month, debris is increasingly raising challenges for safety and sustainability, and the challenges associated with the commercial aspects of space are growing. There was discussion about the example of *SpaceX*, with one speaker arguing that the company is pushing boundaries in terms of technology innovation and they are not accountable to anyone or public opinion in the same way as government agencies are, and that they are pushing the boundaries of the law. It is important to discuss the pace of commercial space development, particularly as commercial space companies are developing a dominant relationship in providing critical services to the military, as part of any discussion on responsible behaviours. That discussion needs to consider cooperation and data sharing. There were some recommendations going forward:

Firstly, the states must oversee commercial and state-based activities occurring either from their territory or on their behalf. In this sense, it is the states are responsible for all actions in space under their jurisdictions.

Secondly, states must follow guidelines and through licensing establish a means that there is some way of ensuring commercial actors are behaving and impose penalties when they do not. Currently there is very little enforcing mechanism under licensing law.

Thirdly, we must implement law in domestic level not just international level. We need to think of norms on the international level but enforce it on domestic level.

Fourthly, we must increase collaboration and diplomatic communications, establish frameworks for data sharing, which can move faster in the bilateral arena than international arena.

For the midterm perspective: we need a formalised hybrid government approach including dialogue between a stakeholder government, commercial entities, and NGOs, based on experience of happening in the cyber world. That can ultimately lead to formalised partnerships between government and the commercial sector to ensure responsible behaviour in space.

The panel discussion continued by considering measures that can be developed quickly, for example confidence and security building measures (CSBMs) related to physical destruction of satellites. Such a capability is clearly not consistent with international law, as not only does it run counter on prohibitions against deliberate interference, but also raises the risk of inadvertent damage to third parties through the creation of space debris.

One approach would involve collaboration between like-minded states in a manner to reduce the risk to space systems, and to achieve this relatively quickly – in the space of several years. There should also be international network of like-minded states that would verify activities in space, including ensuring attribution of states employing ASATs. Importantly, there needs to be the creation of a non-binding agreement within the UN General Assembly leading to an ASAT agreement designed to ban kinetic kill ASATs that would create space debris. Both the US and Soviet Union had had similar agreements during the Cold War within the arms control process. An international body could be established to manage the risks from grey zone activity.

Returning to the prior discussion on the critical nature of space as a key enabler for modern information-based societies and a globalised economy, there was an understanding of the challenges posed by irresponsible behaviour in space demands that we see space as a complete system, including satellites in orbit, the ground segment which controls and accesses satellites and the data which flows between the surface of the Earth and space capabilities. But space threats are complex, varying from the obvious – kinetic attack against satellites – to harder to identify cyber attacks on satellites, or even interference of the link between satellite and the ground.

The challenge of threats to space systems is a disarmament issue but it is complicated by the issue of space debris. The establishment of legal frameworks that oversee legal and regulatory arrangements for dealing with space debris challenges exist, but in terms of the broader aspects of irresponsible behaviour in space, there is little point in just making statements. This is particularly true in regard to threats to satellites from counterspace capabilities. Nation-states have to choose how they respond to threats and consider issues such as 'red lines' that triggers certain responses. It is this process which needs to be clearly understood, and which should be a mechanism for future discussion in managing counterspace threats and defining responsible vs irresponsible behaviour. In other words, there needs to be a clear framework for further discussion that identifies the nature of threats and highlights where behaviour may cross from responsible to irresponsible.

Panel Two:

Defining responsible behaviour in space – the role of UNGA Resolution 75/36

This panel discussion considered the role of UNGA Resolution 75/36 and the process of national submission. The panel started with some opening remarks considering responsible behaviour and highlighting the role of the UN. The key focus in discussions should be defining what is responsible vs irresponsible behaviour in space.

There was consensus on the view that it was good that states are talking about the issue of responsible behaviour in space. It was seen as important to keep a dialogue going at all levels to demonstrate progress. Bilateral agreements can be of key importance and highlighted the difficulties faced by the EU in pursuing multilateral agreements.

In considering the challenge of counterspace capabilities, the lessons of historical experience and political dynamics suggested that in spite of a degree of hype, things are not changing quickly, with perhaps the exception of the emergence of the mega-constellation, and growing dependency on space capabilities for a wider variety of states. Despite a lot of concern about space weapons, a lot of the discussion and tone is too alarmist. Space weapons have been a feature of major power dynamics in the past, for example, between the Soviet Union and the United States during the Cold War, and at that time only had very marginal utility and did not threaten the central strategic balance between the superpowers. In many respects, the large technological and political questions we face now with regards to space weapons differ from those we faced years ago.

The discussion then turned to how to define what constitutes responsible behaviour in space. There needs to be a distinction between what might potentially constitute dangerous behaviour, against what constitutes such behaviour. The main challenges are political and determining what everyone can agree to on norms in space, particularly the more challenging issues of potentially hostile acts as opposed to obvious attacks. One possible step would be for the US to move on from ballistic missile defence, which he suggested was getting in the way of real progress. There needs to be greater technical expertise with political advisors, to shape political steps that produce useful progress towards responsible behaviour in space and greater effort space domain awareness, that can be widely disseminated to states, and there needs to be a more diverse range of providers for space domain awareness.

The panel noted that 116 states have supported UNGA Resolution 75/36, and they sought a shared understanding of what defines responsible behaviour. In regard to Japan's national submission, it is important to take into consideration the global risk of misunderstanding and multiple country engagement in space, be aware of the changing nature of technology and realise the ethical challenges associated with this issue. Above all else, there needs to be consensus on what constitutes responsible vs irresponsible behaviour that could then act as a basis for discouraging activities that would generate hazards. Sustainable space activities is a key part of this process, and the panel made several suggestions:

Firstly, it is important to avoid inadvertent or deliberate creation of debris through destruction of satellites, and this echoed the suggestions of many others at the dialogue.

Secondly, the risks posed by new technologies that employ rendezvous and proximity operations (RPOs) that see close approaches between satellites must be considered, as this could generate misperception and misunderstanding. With that in mind, it is important to build communication links and create greater transparency in space and establish a process of international consultation on space activities, and to create mechanisms for responding to damage to space systems.

It is clear that communication is of key importance in building up trust, which could be developed through education. There needs to be sharing of information on national conduct and cooperation on improving space situational awareness, and there needs to be consultation with the private sector, and potentially restraints on their activities. Greater communication needs to build upon the recommendations of the 2013 Group of Government Experts (GGE) Report on Transparency and Confidence Building Measures in Outer Space Activities.²

The panel noted that space has been militarised since the beginning of the space age, and that global dependency on space is wide-ranging, covering banking, communications, and military command and control. But space is not a 'wild west' domain, but one in which international law applies. However there needs to be consensus on what constitutes restraint in space.

The panel agreed that the discussion on 'Responsible Behaviour in Space' is highly significant, but the risk is that we may only get one chance. There is the potential for significant use of counterspace capabilities, the consequences of which would be catastrophic and enduring.

With Resolution 75/36 now broadly supported there is an opportunity to move forward with inclusive and productive debates. Once again, information exchange regarding space activities, including space doctrine, a better sharing of situational data, establishing systems of information sharing on national space activities, and notification of active debris removal operations are essential to establish a framework for undertaking responsible behaviour in space. The importance of contextual scope suggests this effort needs to encompass broad national activities – not just a peacetime or wartime perspective.

The Australian government is not as far advanced as Japan in considering the implications of responsible behaviour in space within UNGA Resolution 75/36 but was fully supportive of the resolution and keen to move forward.

The panel discussion concluded, covering some practical steps to go forward, that would break down the large issues related to responsible behaviour in space to more manageable and achievable policy efforts. For example, there needed to be discussion the challenges associated with interference of satellite communications; the risk of cyber operations; the role of humans in the loop as opposed to autonomous capabilities; and, how to preserve critical infrastructure such as GPS.

We need to build confidence in terms of reducing risks and suggested benchmarks established in the Chicago Convention on International Civil Aviation of 1944, and the US-Soviet Incidents at Sea (INCSEA) agreement of 1972. Good communications were vital in facilitating those agreements and effective communications would be vital for an 'Incidents in Space' agreement that could ensure responsible behaviour. That would demand not just the sharing of information, but also, establishing actions and protocols to manage incidents. These should be based on transparency, notification, and restraint in space.

The panel, and the dialogue, concluded that there is merit in pursuing an on-going process and noted that instruments from the past are not a substitute for broader international dialogue. Above all, we must keep the pressure on, particularly through the political domain, to ensure success.

¹ United Nations, 'Reducing space threats through norms, rules and principles of responsible behaviours: resolution adopted by the General Assembly on 7 December 2020', 16th December 2020, at <https://digitallibrary.un.org/record/3895440?ln=en>

² UN General Assembly, 'GGE Report on Transparency and Confidence Building Measures in Outer Space Activities', A/68/189, 29th July 2013, at https://www.stimson.org/wp-content/files/file-attachments/GGE_July_2013_1.pdf