

# **The Dragon and Eagle meet in Space – astropolitical competition in the 21<sup>st</sup> Century, and where Australia sits**

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Between Scylla and Charybdis: Is there a Middle Path for Middle Powers in the Indo-Pacific Region?

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## **THE DRAGON AND EAGLE MEET IN SPACE – ASTROPOLITICAL COMPETITION IN THE 21<sup>ST</sup> CENTURY, AND WHERE AUSTRALIA SITS**

**Abstract:** The re-emergence of major power strategic competition is a feature of the 21st Century international system, driven to a large degree by a rising China that is challenging US strategic primacy in Asia as part of the ‘China Dream’. Competition in the Space Domain is a key feature as China’s space ambitions ‘take flight’. This paper will begin by examining the key features of US and Chinese military-strategic space activities, and consider the potential for an emerging ‘space-race’ between Washington and Beijing, as well as explore the impact of US-China space competition on broader norms of space security and stability in the 2020s and beyond. It will then examine how Middle Powers like Australia, Japan, and some of the ASEAN states, may respond to growing US-Sino strategic space competition. This will include greater defence cooperation in terms of both defence diplomacy and capability development in a manner that increases the potential for ‘burden sharing in orbit’. It can also encompass the civilian level, and the paper will examine how the newly formed Australian Space Agency can develop regional collaboration towards building space consortiums for research collaboration and space technology development. It will conclude by considering whether US-China competition in Space will ultimately force Middle Powers to choose alignments and the likely implications that choice could bring.

**KEYWORDS:** ASAT, moon, middle power, Australia, competition, space, united states, china, strategy, defence

## **The Dragon and Eagle meet in Space – astropolitical competition in the 21<sup>st</sup> Century, and where Australia sits**

### **Introduction**

What does a Middle Power like Australia seek to achieve in Space? It's a highly relevant question given Canberra's establishment of the Australian Space Agency in July 2018, the rapid growth of a sovereign space industry sector, and the vital US-Australia defence and security relationship, of which space issues and space cooperation represent an important factor. We are going into space at an exciting moment, as a new golden age of human space activity, driven by rapid growth in the commercial space sector, extends our presence beyond low-earth orbit (LEO) out to the Moon for the first time since 1972, and begin to look beyond to Mars. But we are also becoming a space power in an astropolitical environment that is highly contested, congested and competitive, rather than being a peaceful global common. Space is not – and never has been – a sanctuary, sitting serene and untouched from geopolitical rivalry below. It's always been militarised since the dawn of the Space Age and Sputnik 1, but in the 21<sup>st</sup> Century space is increasingly contested as the militarization of space – the use of space to support military purposes on Earth, evolves towards the weaponization of space – the use of space for warfighting *in space*.

Australia must be cognizant of these factors as it enters a highly dynamic, and rapidly changing, space domain as a Middle Power. It has to be ready for navigating a complex and demanding path that is characterized by intensifying astropolitical competition between China and the United States.

In 2019, the US Naval War College and the East Asian Security Centre at Bond University, hosted a conference on the role of Middle Powers in the Indo Pacific, with the theme 'between Scylla and Charybdis', implying the challenge of managing relations with the major powers, the United States and China. A key implication to emerge was that as a Middle Power, Australia must navigate a careful middle course.<sup>1</sup> However, just because Australia is a Middle Power doesn't mean that Australia should be forced down a middle path that denies it real strategic benefits of boosting its space cooperation with the United States simply to avoid antagonizing China.

Australian space policy obviously must engage with international partners, but it can't be blind to the risks of closer collaboration with Xi's China, given the clearly stated policy of 'military-civil fusion'. As a key ally of the United States, Australia should strengthen and deepen the space dimensions of the US-Australia alliance, and strengthen space cooperation with other partners in region. It should be very cautious about deeper engagement with China on space.

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<sup>1</sup> Charles Edel, 'A Narrow Path for Asia's Middle Powers', US Studies Centre, 8<sup>th</sup> November 2019, at <https://www.ussc.edu.au/analysis/a-narrow-path-for-asias-middle-powers>

We should consider what such a path might imply for shaping Australia's sovereign space capability. How might we burden share with the United States in orbit to a greater degree, as well as build new partnerships with our allies across the Indo-Pacific, and beyond, and ensure that our defence and national security interests in space aren't threatened? That's a challenging task for a new space power, that's just starting to find its feet in what is one of the most rapidly growing global sectors and most important domains of major power competition in the 21<sup>st</sup> Century.

### **Australia's emerging space policy**

Although Australia's space heritage goes back to the heady days of the early space program, and its involvement with the European Defence Launcher Organisation (ELDO) at Woomera, South Australia, in the 1960s, Australia is a new 'space power'.<sup>2</sup> For most of its recent history, there's been little government interest in an Australian space program, beyond the provision of ground facilities and personnel for NASA's deep space tracking network (DSTN), and an active, world-class astronomy community. That mindset has been decisively overturned by a far more sophisticated and forward-looking perspective since 2015. Australia has woken up to space, and now no longer thinks purely in terms of a ground-based space program. At the 2017 International Astronautical Congress (IAC) in Adelaide, the then Turnbull Government announced the creation of an Australian Space Agency.<sup>3</sup> This followed a substantial government-led review of Australia's space sector.<sup>4</sup> This decision was met with universal support from across Australia's space sector, and the Australian Space Agency was established on 1<sup>st</sup> July 2018.<sup>5</sup>

The purpose of the Australian Space Agency (hereafter referred to as 'the Agency') is not to build and launch rockets or train astronauts – it's not 'NASA down under'. The Agency is small, with limited funding, and its role is to craft space policy that helps grow Australian commercial space industry; engage with international partners; and stimulate public awareness of, and interest in space to encourage future generations of space leaders and thinkers.<sup>6</sup> The overall goal is to transform the future of the Australian commercial space sector, from 10,000 jobs and a value of A\$3.9bn in 2018 to 30,000 jobs and a value of

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<sup>2</sup> Malcolm J. Phillips, 'How it started – Australia's early days in space at Woomera', *The Strategist*, ASPI, 2<sup>nd</sup> May 2018, at <https://www.aspistrategist.org.au/started-australias-early-days-space-woomera/>; see also Peter Morton, *Fire Across the Desert – Woomera and the Anglo-Australian Joint Project 1946-1980*, Department of Defence, 1989; see also Kerrie Dougherty, *Australia in Space*, ATF Press, 2017

<sup>3</sup> Simon Birmingham, Opening Remarks to the 68<sup>th</sup> International Astronautical Congress, 25<sup>th</sup> September 2017, at <https://www.senatorbirmingham.com.au/opening-remarks-to-the-68th-international-astronautical-congress/>

<sup>4</sup> Australian Space Agency, Review of Australia's Space Industry Capability, March 2018, at <https://www.industry.gov.au/data-and-publications/review-of-australias-space-industry-capability>

<sup>5</sup> Australian Space Agency, 'Australian Space Agency launches operations: A message from Head, Dr Megan Clark AC', 29<sup>th</sup> June 2018, at <https://www.industry.gov.au/news-media/australian-space-agency-news/australian-space-agency-launches-operations-a-message-from-head-dr-megan-clark-ac>

<sup>6</sup> Australian Space Agency 'Our role in growing the space sector', at <https://www.industry.gov.au/strategies-for-the-future/australian-space-agency>; also Australian Space Agency, Advancing Space: Australia's Civil Space Strategy, April 2019, p. 2, at <https://publications.industry.gov.au/publications/advancing-space-australian-civil-space-strategy-2019-2028.pdf>

A\$12bn in 2030.<sup>7</sup> That will make it more competitive in a rapidly growing global market that will increase from US\$350bn in 2018 to US\$1.1tn in 2040.<sup>8</sup>

It is the Australian commercial space sector that will be responsible for developing sovereign capability, including satellites, launch capabilities and launch sites, as well as growing a more expansive ground segment that generates rapid expansion of Australia's space sector. A key factor driving Australia's space activities is a recognition of the importance of commercial space and the requirement that the commercial sector must lead rather than embracing a traditional government-run space program. Australia has firmly embraced 'space 2.0' and moved away from the more traditional 'space 1.0' mindset epitomized by government run 'big space' approaches practiced by NASA.<sup>9</sup>

In Defence and National Security terms, maintaining dependency on foreign providers for the space segment creates unnecessary risk to assured access to space, whilst constraining Australia's ability to contribute more to burden sharing with key allies. With the cost of accessing space dropping through the impact of commercial space, it makes more sense for Australia to begin exploring how it can develop sovereign space capability, including a full space segment comprising responsive space launch, and local development of small satellites.<sup>10</sup> Launching Australian satellites on Australian launch vehicles from Australian launch sites to serve defence and national security requirements is now clearly the next step forward, whilst maintaining a strong and secure ground segment, including essential space-situational awareness facilities.<sup>11</sup>

There is also a requirement to strengthen a credible space deterrence posture against peer adversaries armed with counterspace capability.<sup>12</sup> These include direct-ascent anti-satellite (ASAT) weapons, ground-based counterspace systems for 'soft kill', and, potential co-orbital ASAT capability.<sup>13</sup> Defence recognizes that space is contested and the 2016 Defence White Paper states that "...some countries are developing capabilities to target satellites to destroy

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<sup>7</sup> Australian Space Agency, *Advancing Space: Australia's Civil Space Strategy*, April 2019, , p. 3, at <https://publications.industry.gov.au/publications/advancing-space-australian-civil-space-strategy-2019-2028.pdf>

<sup>8</sup> Australian Space Agency, *Advancing Space: Australia's Civil Space Strategy*, April 2019.

<sup>9</sup> Malcolm Davis, *Australia's future in space*, ASPI, February 2018, at <https://www.aspi.org.au/report/australias-future-space>; see also Davis, 'Space 2.0 – why it matters for Australia's defence', *The Strategist*, 30<sup>th</sup> April 2018, at <https://www.aspi.org.au/space-2-0-matters-australias-defence/>

<sup>10</sup> Malcolm Davis, *The Australian Defence Force and contested space*, ASPI, August 2019, Chapter 3, pp. 29-34.

<sup>11</sup> Malcolm Davis, *ibid.*, p. 35-37.

<sup>12</sup> Maximilian Betmann, 'A counterspace awakening (part 1)', *The Space Review*, 22<sup>nd</sup> May 2017, at <https://www.thespacereview.com/article/3247/1>; Betmann, May 30<sup>th</sup>, 2017, at <https://www.thespacereview.com/article/3250/1>

<sup>13</sup> Brian Weeden, Victoria Sampson, *Global Counterspace Capabilities: An Open Source Assessment*, Secure World Foundation, April 2019, at <https://swfound.org/counterspace/>; see also Center for Strategic and International Studies, *Space Threat Assessment 2019*, CSIS, April 4<sup>th</sup> 2019, at <https://www.csis.org/analysis/space-threat-assessment-2019>; US Defense Intelligence Agency, 'Challenges to Security in Space', January 2019, at [https://www.dia.mil/Portals/27/Documents/News/Military%20Power%20Publications/Space\\_Threat\\_V14\\_020119\\_sm.pdf](https://www.dia.mil/Portals/27/Documents/News/Military%20Power%20Publications/Space_Threat_V14_020119_sm.pdf)

these systems or degrade their capabilities, threatening our networks.”<sup>14</sup> In particular, there is growing counterspace threats from China and Russia which are developing capability both deter threats to their own essential space support, but also potentially to hold at risk critical US and allied space capability.<sup>15</sup> Space is also increasingly congested given the growth of space debris, and the risk that use of some ASAT systems that employ physical destruction (as opposed to ‘soft kill’) would generate even more space debris.<sup>16</sup> Together, these contribute towards the risks of space as being operationally limited, or even a risk of a Kessler Syndrome type event.<sup>17</sup>

Strengthening space cooperation within the ‘five eyes’ partnership through the 2014 Combined Space Operations (CSpO) Initiative, via the Australian Space Operations Centre (AUSSPOC) at Joint Operations Command Headquarters, and via completion of critical Space Situational Awareness (SSA) facilities at Exmouth, WA, is a first step.<sup>18</sup> As a Middle Power, Australia can be even more ambitious.

The ADF could certainly seek to acquire a responsive space access capability through supporting local commercially space launch providers that are now emerging. The objective would be to assist the US in building space resilience by augmenting and disaggregating critical space capabilities in a crisis, or reconstituting space capability in the event of a counterspace attack by an adversary.<sup>19</sup> The objective in doing so would be to raise the difficulty for any adversary contemplating such an action to a level where the likelihood of successfully attacking US and allied space capabilities are reduced, whilst the costs and consequences of an offensive attack in space outweigh any benefits. Australia would be contributing directly to creating a credible space deterrence posture. At the same time, it would be exploiting and supporting the growth of a sovereign space capability that could generate substantial economic benefits for the country, and also add an entirely new type of capability for the Australian Defence Force. It would give the ADF a sovereign space capability.

At the level of diplomacy, Australia should take a leading role as a Middle Power in promoting new legal, arms control and regulatory approaches to better manage growing space

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<sup>14</sup> Department of Defence, Defence White Paper, 2016, 2.53, p. 52, at <https://www.defence.gov.au/WhitePaper/>

<sup>15</sup> Weeden, Sampson, ‘China’, pp. 1-1 – 1-22; ‘Russian Federation’, pp. 2.1-2.24

<sup>16</sup> European Space Agency, ‘Space Debris by the numbers’, at [https://www.esa.int/Safety\\_Security/Space\\_Debris/Space\\_debris\\_by\\_the\\_numbers](https://www.esa.int/Safety_Security/Space_Debris/Space_debris_by_the_numbers)

<sup>17</sup> Malcolm Davis, ‘Will India’s anti-satellite weapon test spark an arms race in space?’, *The Strategist*, 29<sup>th</sup> March 2019, at <https://www.aspistrategist.org.au/will-indias-anti-satellite-weapon-test-spark-an-arms-race-in-space/>

<sup>18</sup> Cheryl Pellerin, ‘Stratcom, DoD sign space operations agreement with allies’, US Department of Defense, September 23<sup>rd</sup>, 2014, at <https://www.defense.gov/Explore/News/Article/Article/603303/stratcom-dod-sign-space-operations-agreement-with-allies/>; Max Blenkin, ‘Australia reaffirms space co-operation initiative’, *Space Connect*, 15<sup>th</sup> April 2019, at <https://www.spaceconnectonline.com.au/operations/3301-australia-reaffirms-space-cooperation-initiative>; Department of Defence, Defence White Paper, 2016, 4.16, p. 87 at <https://www.defence.gov.au/WhitePaper/>

<sup>19</sup> Davis, Malcolm Davis, *The Australian Defence Force and contested space*, ASPI, August 2019, Chapter 3, pp. 35-37.

competition between the major powers.<sup>20</sup> Current efforts have been underway in organisations such as the United Nations Office of Outer Space Affairs (UNOOSA), which runs the Committee on the Peaceful Uses of Outer Space (COPUOUS).<sup>21</sup> Australia's 'Middle Power' status allows it to play an important space diplomacy role between the US and China, in promoting credible and useful approaches for constraining space weaponization, and more broadly, shaping the regulatory structure of space to ensure the interests of western liberal democracies are protected.

There are important Track 2.0 events that Australia is leading in this regard. The Woomera Manual project, being run from the University of Adelaide is an international research project to develop a manual that 'articulates and clarifies existing international law applicable to military space operations.'<sup>22</sup> Australia is also involved at the Track 2.0 level with the Manual on International Law Applicable to the Military Uses of Outer Space (the 'MILAMOS project') at McGill University in Canada.<sup>23</sup>

Both Woomera and MILAMOS represent efforts by two Middle Powers – Australia and Canada – working together to try and shape the regulatory structure of 'space' in an effort to avoid unconstrained arms races in space, and the attendant risk of direct military conflict in space. More broadly, there is a growing urgency to shape this environment, particularly as major powers return their attention to the Moon in the next decade. Although the 1967 Outer Space Treaty – the foundation for current space law – states that no state can claim territory on the Moon or other celestial bodies, it is vague over the ability of non-state actors – particularly commercial companies – to claim control of resources, and by implication, territory.<sup>24</sup> To avoid major power space competition, and the potential for competition between rival commercial actors on and around the Moon in the 2020s and beyond, new legal and regulatory structures need to be established soon. Failure to do so will see a legal 'free-for-all' which will intensify the risk that competition will turn into conflict.

### **Australia's space future**

With these factors in mind, where does space take Australia, and what is the best path as a Middle Power for Australia's space ambitions? Australia has an opportunity to rapidly grow its space sector in line with the Agency's declared goals in its civil space strategy and become a significant space power globally. It can certainly engage with international partners on collaborative activities both on Earth and in space. An agreement between the Agency and

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<sup>20</sup> Annie Handmer, 'Australia should aspire to be a leader in strategic space diplomacy', *The Strategist*, 31<sup>st</sup> October 2018, at <https://www.aspistrategist.org.au/australia-should-aspire-to-be-a-leader-in-strategic-space-diplomacy/>

<sup>21</sup> United Nations Office for Outer Space Affairs (UNOOSA), <https://www.unoosa.org/>; see also Committee on the Peaceful Uses of Outer Space (COPUOS), <https://www.unoosa.org/oosa/en/ourwork/copuos/index.html>

<sup>22</sup> The University of Adelaide, 'The Woomera Manual', at <https://law.adelaide.edu.au/woomera/>

<sup>23</sup> McGill University, 'The Manual on International Law Applicable to Military Uses of Outer Space', at <https://www.mcgill.ca/milamos/>

<sup>24</sup> Malcolm Davis, 'Avoiding a free-for-all: the Outer Space Treaty Revisited', *The Strategist*, 16<sup>th</sup> July 2018, at <https://www.aspistrategist.org.au/avoiding-a-free-for-all-the-outer-space-treaty-revisited/>

NASA for Australian space industry to support NASA's Project Artemis, that will see the first human landing on the Moon since December 1972, is the most significant so far.<sup>25</sup> In defence and national security terms, Australia needs to strengthen its cooperation and raise its role in space within the Five Eyes Community via CSpO to deter the risk of adversary use of counterspace capabilities, and boost ADF space capability. It should also promote Australian space capability with its partners outside the Five Eyes Community, notably with Japan, South Korea, the EU, and potentially with some ASEAN states and India. The prospect for multilateral space consortiums, with Australia contributing satellites, launch vehicles and launch sites is a significant diplomatic opportunity for Australia, both in terms of delivering public goods such as maritime domain awareness (MDA).

In terms of engagement with China, Australia must approach such a step with extreme caution. President Xi has strongly promoted 'military-civil fusion' which is designed to acquire and exploit western scientific research and technology development in the higher education sector, as well as through commercial companies, and apply that to further PLA military modernisation.<sup>26</sup> What may appear to be research partnerships with Chinese civilian agencies or commercial companies (State-owned enterprises) on the surface inevitably ends directly in PLA capability improvement. China's national space agency (CNSA) is largely controlled and staffed by the PLA, and there is no separate civil space program, as is the case in the US with NASA.<sup>27</sup>

Therefore, in considering the role of Australia as a Middle Power, it is clear that in terms of space, a path can be charted in a manner strengthens Australia's role within the Five Eyes Community for defence and national security purposes, to boost space resilience and thus strengthen space deterrence, as well as to enhance ADF space capability. In the civil sector, Australia can and should engage with a broad range of international partners, on a range of space activities, especially in shaping new legal and regulatory structures for future space activities.

There will be growing risks as US and Chinese space competition intensifies in the coming two decades. China shows no signs of slowing or scaling back its counterspace developments, and instead is proceeding apace to deploy ASAT capabilities designed to deny the US and its allies – including Australia – access to essential space support capabilities. China's military space doctrine, developed by the PLA Strategic Support Force (PLASSF) seeks to deter threats to its own satellites but generates a security dilemma as it also raises the

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<sup>25</sup> The Hon. Karen Andrews MP, 'Backing Australian business, jobs for the US Moon to Mars mission', 22<sup>nd</sup> September 2019, at <https://www.minister.industry.gov.au/ministers/karenandrews/media-releases/backing-australian-business-jobs-us-moon-mars-mission>

<sup>26</sup> US-China Economic and Security Review Commission, Section 2, 'Emerging Technologies and Military Civil Fusion: Artificial Intelligence, New Materials, and New Energy', 2019, at <https://www.uscc.gov/annual-report/2019-annual-report>; see also Alex Joske, 'Picking Flowers, Making Honey' ASPI, 30<sup>th</sup> October 2018, at <https://www.aspi.org.au/report/picking-flowers-making-honey>

<sup>27</sup> Kevin Pollpetter, Eric Anderson, Jordan Wilson, Fan Yang, 'China Dream, Space Dream – China's Progress in Space Technologies and Implications for the United States', USCC, p. 93, at [https://www.uscc.gov/sites/default/files/Research/China%20Dream%20Space%20Dream\\_Report.pdf](https://www.uscc.gov/sites/default/files/Research/China%20Dream%20Space%20Dream_Report.pdf)

prospect of a space ‘pearl harbour’ against vital US and allied satellite constellations.<sup>28</sup> Although China’s foreign ministry’s statements on space emphasize peaceful uses of space, there is clear evidence of PLA capability development, and thinking on space warfare doctrine, towards the PLASSF having the ability to undertake warfighting in space.<sup>29</sup>

## Conclusion

As Charles Edel notes, whilst Middle Powers might ‘...worry about America, and especially the White House’s erraticism, the more pressing question is how to deal with a rising and increasingly assertive China.’<sup>30</sup> This extends into space. Australia is a Middle Power, but it should not be forced to adopt a ‘middle course’ that sees it fail to support the US and its ‘five eyes’ partners in a more contested and dangerous future at a critical inflection point in history, purely out of fear of antagonizing China. Australia has traditionally tried to balance its essential strategic alliance with Washington and its vital trading relationship with Beijing. That’s going to become more difficult to do, both on Earth, and in orbit.

Australia should strongly strengthen its space cooperation in defence and national security with the United States and boost its space cooperation with other five-eyes partners, as well as with other vital partners, notably, Japan, South Korea, the EU, India, and the ASEAN states. It needs to do this to boost space resilience and deterrence in the face of growing counterspace threat from China and Russia, and to assure that as space activity expands to the Moon and Cislunar space, the interests of established approaches to space law and regulation aren’t revised in a manner that disadvantages western liberal democracies. In the civil domain, Australia can adopt a strong and visible posture as a new space actor, and lead in key areas, including in human space activities on and around the Moon. We should engage with friendly states under international partnerships and all international space engagement must be done in a manner that is consistent with Australian national security and defence interests and national values. We can’t do all this from the ground only, and it’s time to lift our gaze up and out into Australia’s next frontier. In the 2020s, Australia should develop robust sovereign space capability, including the ability to launch Australian satellites and spacecraft on Australian launch vehicles from Australian launch sites. To achieve this and do it in a sustainable and cost-effective manner will mark that Australia as a space power has come of age.

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<sup>28</sup> Gregory Kulacki, ‘The US Congress Needs Facts, Not Hyperbole, on China’s Space Program’, *The Diplomat*, November 21<sup>st</sup>, 2019, at <https://thediplomat.com/2019/11/the-us-congress-needs-facts-not-hyperbole-on-chinas-space-program/>; see also US-China Economic and Security Review Commission, ‘China’s Ambitions in Space – Contesting the Final Frontier’, 2019 Report to Congress, Chapter 4, Section 3, pp. 379-382, at <https://www.uscc.gov/annual-report/2019-annual-report>

<sup>29</sup> The State Council of the People’s Republic of China, ‘Full text of white paper on China’s space activities in 2016’, December 28<sup>th</sup> 2016, at [http://english.www.gov.cn/archive/white\\_paper/2016/12/28/content\\_281475527159496.htm](http://english.www.gov.cn/archive/white_paper/2016/12/28/content_281475527159496.htm);

<sup>30</sup> C. Edel, ‘A narrow path for Asia’s Middle Powers’, United States Studies Centre, 8<sup>th</sup> November 2019, at <https://www.uscc.edu.au/analysis/a-narrow-path-for-asias-middle-powers>