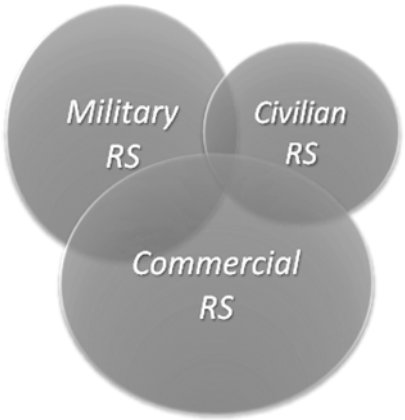
For these reasons we must ask ourselves whether the UN Principles on RS of 1986 have failed to anticipate the growth of the Earth observation field, or whether they are still relevant. In any case, the spread of RS developments and capacities around the world is a phenomenon which should become more equitable in this space era. It means that the international framework instituted by way of the UN should be reviewed considering the increasing dual use technologies for civilian and military uses and commercial interests where the competitive system developments, high resolution images, and increasing data accessibility are commonly developed.



As the technology involved in military satellite programs has evolved to possible commercial applications, firms will aim to exploit these concepts, products, and services to obtain numerous emerging lucrative ends. Such is the case of the use of global navigation satellite systems (GNSS) and RS applications to protect the environment. As costs decline and resolution improves everyday, these technologies show great potential for new and improved monitoring applications.

SENSING A CHANGE? THE RE-LAUNCH OF AUSTRALIA'S SPACE POLICY AND SOME POSSIBLE LEGAL IMPLICATIONS

Steven Freeland[*]

I. INTRODUCTION

One of the more surprising revelations for space historians is the fact that a number of countries other than the two main space superpowers of the time – the United States and the Soviet Union – made significant pioneering contributions to the early development of humankind's endeavours in space. These include countries that are not now regarded as major space-faring nations. Australia was just such a pioneer and in fact has a rich heritage in space. Indeed, the initial seeds of a cogent, relevant, and competitive space policy for the country had been laid in the 1950s and 1960s. In subsequent years, however, Government support for, and interest in, a proactive national approach to space fell away, only to be briefly reignited in the late 1990s by the finalisation of national law premised on the (unrealistic and unfulfilled) prospect of Australia becoming a major player in the global launch services industry.

The Government subsequently altered its approach yet again in the aftermath of the September 11 attack, directing that its involvement in space should instead be closely related to national security. In so doing, however, it failed both to expand upon and amend its space laws, or provide any incentives or guidance to most sectors of Australia's space industry, with the

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then revised "policy" lacking real direction and not facilitating the growth of space related activities.

More recently, however, the Government has actively sought to reassess Australia's role in space, having largely accepted a Senate Committee Inquiry Report that makes significant recommendations for a new direction for Australia's space science and industry sectors, as well as its overall space policy. Coupled with this, the subsequent Department of Defence 2009 White Paper, which sets out the Government's approach to defence planning, emphasises the increasingly significant role that satellite technology plays in the conduct of Australia's military defence activities. The past eighteen months have therefore seen some important initial steps towards a possible (re)formulation of the space policy of Australia, one of the most significant countries in the Asia-Pacific region.

However, the fact remains that Australia still does not have its own space agency or any coherent, up-to-date, and comprehensive space law and policy to match these newly developing considerations. Nor do its current national space laws readily allow for such developments. Instead, Australia relies upon a random mixture of local and foreign commercial enterprises, as well as other Governments, for access to the vast majority of its essential satellite services, leaving the maintenance of space skills and technologies on the ground almost entirely to chance and market forces.

This article discusses the evolution of Australia's national space policy, focussing particularly on these more recent developments, and assesses what tangible steps, both in terms of direct action and also in the development of more comprehensive and relevant national laws, must now be taken if Australia is to regain lost ground and secure continuous and assured access to vital space resources.

II. AUSTRALIA'S RICH EARLY HERITAGE IN SPACE

As noted above, Australia has had a long involvement in space activities, beginning at the very dawn of the space age. Its technical expertise, geographic location, and long and close alliance with the United States has meant that it has played, and

continues to play, an important role in tracking and communications activities with all manner of space objects. In addition, as early as 1949, a test launch facility was developed at a site in Woomera, a remote area in South Australia surrounded by desert, principally to support the United Kingdom's nuclear program.[1] However, as its relationship with the United States further strengthened, Australia permitted that country to utilise Woomera and other facilities – thus cementing what has become an increasingly strong bond of cooperation between the two countries in various military, strategic, and space-related matters.

The development of technical expertise at the Woomera facility meant that Australia became an early "leader" in space rocket science. At its peak, Woomera was the world's second most heavily used launch site (after Cape Canaveral), involving the launch of American, European, and Australian rockets,[2] and the Australian Government still describes it as "the largest land-based test range in the world."[3] On 29 November 1967, Australia launched the *WRESAT-1* satellite from Woomera.[4] This was the first Australian Government "indigenous" launch,[5] making Australia only the fourth country in the world to have

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[1] Brett Biddington & Roy Sach, *Australia's Place in Space: Toward a National Space Policy*, KOKODA PAPER NO. 13, June 2010, at 13, *available at* http://www.kokoda foundation.org/ Resources/Files/KP13_Space_Biddington_Final.pdf.

[2] AUSTL. SENATE STANDING COMM. ON ECON., LOST IN SPACE? SETTING A NEW DIRECTION FOR AUSTRALIA'S SPACE SCIENCE AND INDUSTRY SECTOR, ¶ 4.1 (Nov. 2008) [hereinafter SENATE INQUIRY REPORT] (citing SENATE STANDING COMM. ON TRANSP., COMMUNICATIONS AND INFRASTRUCTURE, DEVELOPING SATELLITE LAUNCHING FACILITIES IN AUSTRALIA AND THE ROLE OF GOVERNMENT, 1, 6 (Apr. 1992).

[3] Defence Alert, Austl. Dep't of Defence, *Japanese Spacecraft to Land in Australia*, (June 2 2010), *available at* http://www.defence.gov.au/media/AlertTpl.cfm?CurrentId=10368 (last visited Jan. 7 2011).

[4] For further details of the *WRESAT-1* launch, see Information Furnished in Conformity with General Assembly Resolution 1721 B (XVI) by States Launching Objects into Orbit or Beyond, Letter Dated Dec. 1, 1967, from the Permanent Representative of Australia Addressed to the Secretary General, ¶¶ 1&2, U.N. Doc. A/AC.105/INF.180 (Dec. 5, 1967).

[5] *See*, *however*, Jo-Anne Gilbert, *"We Can Lick Gravity, but…": What Trajectory for Space in Australia?*, 25 SPACE POL'Y 174, n.2 (2009) (casting some doubt as to the extent that the launch of *WRESAT-1* was, in fact, "indigenous").

successfully completed such a launch, and only the third to launch a satellite from its own soil.[6]

Australia also took an active position from the very beginning in the development of the international legal framework regulating the exploration and use of outer space, following the launch by the Soviet Union of *Sputnik 1* in October 1957. Australia was a founding Member State of the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS), being one of the eighteen Member States of an ad hoc Committee on the Peaceful Uses of Outer Space established in 1958 by the United Nations General Assembly to consider:

i) the activities and resources of the United Nations, the specialized agencies and other international bodies relating to the peaceful uses of outer space;

ii) international cooperation and programmes in the exploration and use of outer space that could appropriately be undertaken under United Nations auspices;

iii) organizational arrangements to facilitate international cooperation in the exploration and use of outer space within the framework of the United Nations; and

iv) legal problems that might arise in programmes to explore outer space.[7]

Australia stayed on as a Member State of UNCOPUOS when, in 1959, it was established as a permanent body with twenty-four Member States,[8] and has remained an active Member since that time.[9] It was a signatory to the Treaty on Princi-

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[6] Cheryl Jones, *Watch this Empty Space*, THE AUSTRALIAN (March 31, 2010, 12:00 AM), http://www.theaustralian.com.au/higher-education/watch-this-empty-space/story-e6frgcjx-1225847659700.

[7] *See* G.A. Res. 1348 (XIII), 13 U.N. GAOR, Supp. No. 18, U.N. Doc. (Dec. 13, 1958). The eighteen States were Argentina, Australia, Belgium, Brazil, Canada, Czechoslovakia, France, India, Iran, Italy, Japan, Mexico, Poland, Sweden, the Union of Soviet Socialist Republics, the United Arab Republic, the United Kingdom of Great Britain and Northern Ireland, and the United States of America.

[8] *See* G.A. Res. 1472 (XIV), U.N. Doc. A/4987 (Dec. 12, 1959). In addition to the original eighteen States, Albania, Austria, Bulgaria, Hungary, Lebanon, and Romania were included at that time as Member States of this permanent body.

[9] This being said, it is this author's personal observation and experience that, at least in recent years, the chair at the Australian delegation desk at UNCOPUOS Meet-

ples Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies (Outer Space Treaty)[10] when that instrument was opened for signature (27 January 1967), and ratified it on the day that it came into force (10 October 1967).

Indeed, Australia is one of only thirteen States (as of 1 January 2010) that are parties to all five of the main international space treaties. It was the seventh State Party to the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (Moon Agreement),[11] having acceded to that treaty on 7 July 1986,[12] primarily due to its arms limitations aspects, which complemented Australia's strong stance against the proliferation of nuclear weapons, a major priority of its foreign policy.[13] Having said this, Australia has since conceded that the Moon Agreement "does not embody a set of principles common to most Member States."[14]

Australia also regularly complies with its obligations to provide information to the United Nations Secretary-General[15]

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ings is as often left empty as it is occupied. *See also* Biddington & Sach, *supra* note 1, at 15.

[10] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, *opened for signature* Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205 [hereinafter Outer Space Treaty].

[11] Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, *opened for signature* Dec. 18, 1979, 1363 U.N.T.S. 21 [hereinafter Moon Agreement]. The earlier States Parties to the Moon Agreement were Austria, Chile, The Netherlands, Pakistan, The Philippines, and Uruguay.

[12] The Moon Agreement entered into force for Australia on August 6, 1986. *See* JOINT STANDING COMM. ON TREATIES, REP. 106: NUCLEAR NON-PROLIFERATION AND DISARMAMENT, APPENDIX E - NUCLEAR NON-PROLIFERATION AND DISARMAMENT TREATIES 223 (2009), *available at* http://www.aph.gov.au/House/committee/jsct/nuclearnon_proliferation/report/appendixe.pdf.

[13] For a discussion of Australia's strong stance against nuclear weapons, *see* Gilbert, *supra* note 5, at 178-9.

[14] *See, e.g.*, Comm. On the Peaceful Uses of Outer Space, Legal Subcomm. Unedited Transcript, 3, UN Doc. COPUOS/LEGAL/T.629 (Mar. 30, 2000)(statement of C. Cannan, Rep. of the Australian Delegation), *available at* http://www.oosa.unvienna.org/pdf/reports/transcripts/legal/LEGALT_629E.pdf.

[15] *See, e.g.*, Information Furnished in Conformity with the Convention on Registration of Objects Launched into Outer Space, Note verbale dated Nov. 30, 2009 from the Permanent Mission of Australia to the United Nations (Vienna) addressed to the Secretary-General, UN Doc. ST/SG/SER.E/584 (Jan. 18, 2010), *available at* http://www.space.gov.au/SpaceLicensingSafetyOffice/Documents/Australian_space_object_register_table_14-12-09.pdf .

pursuant to Article IV of the Convention on Registration of Objects Launched into Outer Space (Registration Convention).[16]

In 1961, Australia entered into bilateral arrangements with the United States regarding that country's satellite program, through the Exchange of Notes Constituting an Agreement between the Government of Australia and the Government of the United States of America for Cooperation in a Transit Navigational Satellite Program.[17] This and subsequent agreements with the United States led to the establishment of a number of important space tracking stations in Australia. These continue to play an important part in Australia's role in space.

During the 1960s, Australia was a Member of the European Launcher Development Organisation (ELDO)[18] – the only non-European country to have that status – and has provided various launch services to several European countries.[19] For example, in 1975 Australia entered into an Exchange of Notes constituting an Agreement between the Government of Australia and the Government of the Federal Republic of Germany concerning the Launching of a Skylark Vehicle and Payload at Woomera for Scientific Purposes.[20] This arrangement included an indemnity by the German Government in respect to loss or damage suffered by either the Australian or United Kingdom Governments,[21] as well as any potential claims for liability against the Australian Government, except where Australia failed "to exercise any of its responsibilities" under the Agreement.[22] A similar

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[16] Convention on Registration of Objects Launched into Outer Space, art. IV, *opened for signature* Jan. 14, 1975, 28 U.S.T. 695, 1023 U.N.T.S. 15 [hereinafter Registration Convention]. Article IV of the Registration Convention requires a State Party to furnish certain information relating to space objects carried on its national registry to the Secretary-General of the United Nations. *Id.*

[17] U.S.-Austl., June 5, 1961, 12.1 U.S.T. 789, *available at* http://untreaty.un.org/unts/1_60000/12/13/00022643.pdf.

[18] As an interesting aside, one of the main hotels in Woomera is called the ELDO Hotel.

[19] Gilbert, *supra* note 5, at 174, 177.

[20] Austl.-Ger., Aug. 7, 1975, 975 U.N.T.S. 137, *available at* http://untreaty.un.org/unts/1_60000/27/16/00052798.pdf [hereinafter Skylark Agreement].

[21] The various States of Australia had been "colonies" of the United Kingdom before independence on January 1, 1901, and, as noted above, the United Kingdom at the time maintained facilities and operations at the Woomera site.

[22] *See* Skylark Agreement, *supra* note 20, at art. V.

arrangement was entered into with Canada in 1976,[23] and there were several other launch agreements reached with the United States.[24]

Despite its close involvement in the early space activities of several European countries, Australia did not, however, take up the opportunity to become a Member of the European Space Agency (ESA) when that body began to function de facto from May 1975,[25] although it did conclude a bilateral cooperation treaty with ESA in 1979.[26]

III. INERTIA FOLLOWED BY A (STILL) BIRTH OF POLICY AND LAW

Despite this early legacy of space involvement, and a momentum driven by the comparative advantages Australia offered as, potentially, a significant participant in the ongoing evolution of space activities, the euphoric days up until the 1970s were not followed through by tangible Government action that would have allowed Australia to retain its place in the "space world." Somewhat ironically, as an increasing number of other countries, including some in the Asian region,[27] began to develop their capabilities in relation to space, Australia seemed to lose interest, allowing itself to relinquish its role as a significant participant.

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[23] Exchange of Notes Constituting an Agreement Between the Government of Australia and the Government of Canada Relating to the Launching of a Canadian Scientific Rocket from Woomera, Austl.-Can., Aug. 26-27, 1979, 1133 U.N.T.S. 3, *available at* http://untreaty.un.org/unts/60001_120000/1/36/00001764.pdf.

[24] *See, e.g.*, Exchange of Notes Constituting an Agreement Between the United States of America and Australia Relating to a Space Research Program, U.S.-Austl., Sept. 18, 1973, 24.2 U.S.T. 2006. Exchange of Notes constituting an Agreement between the Government of Australia and the Government of the United States of America on the Launching of Sounding Rockets, Sept. 1, 1987, [1987] ATS 13.

[25] *See* Convention for the Establishment of a European Space Agency, *concluded* May 30, 1975, 1297 UNTS 161. The ESA Convention came into force on October 30, 1980. Australia has, since then, on four occasions been offered associate membership of ESA, but has declined to take up the opportunity each time. Gilbert, *supra* note 5, at 174, 177.

[26] Agreement for a Co-operative Space Vehicle Tracking Program, Austl.-E.S.A., June, 15 1979, 1217 U.N.T.S. 201.

[27] In the Asian region, China, Taiwan, Japan, Malaysia, Indonesia, Vietnam, South Korea, and Thailand (the latter principally through its membership of the Asia-Pacific Space Cooperation Organization) all have dedicated space programs and continue to develop increasing space capability.

Instead of building upon its early successes and developing a clear focus on space into the future, a period of what has been described as "bureaucratic inertia"[28] took hold, and the Government ignored a number of opportunities to expand Australia's research and commercial involvement in space, just at the time that others were seizing upon the potential (and need) to do so. Whatever steps it did take in this period were only half-hearted. For example, the Government did establish an Australian Space Office (ASO) in 1987, but this was underfunded and lacked real political support during its operation,[29] and was eventually disbanded in 1996.

Things seemed to change again, however, in the late 1990s, when the Government began to consider seriously the potential for the establishment of a significant commercial space launch industry in the country. As the international commercial launch industry became more competitive and sophisticated during that decade, several private overseas consortia sought to explore the possibilities of providing commercial satellite launches from Australia. Given the historical reluctance of the Australian Government to encourage the development of a large-scale domestic space launch vehicle system, these projects were largely conceived by the Government as being consistent with the need to "import" launch vehicles and associated technology, and as the foundation to allow for the development of a domestic launch industry.[30]

Largely in response to this private sector interest in the development of a launch industry in Australia, in December 1998, the Government passed the Space Activities Act, thereby becoming only the sixth country to introduce specific domestic legislation directed towards space activities.[31]

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[28] Gilbert, *supra* note 5, at 174.

[29] *Id*. at 175.

[30] Heather Walker, Bi-lateral Agreements to Facilitate Launch Projects and Satisfy Non-Proliferation Obligations, unpublished paper presented to the 47th Colloquium on the Law of Outer Space (Oct. 2004) (on file with author).

[31] The previous countries were the United States, Sweden, the United Kingdom, the Russian Federation, and South Africa. Frans G. von der Dunk, *Launching from "Down Under": The New Australian Space Activities Act of 1998*, *in* PROCEEDINGS OF THE FORTY-THIRD COLLOQUIUM ON THE LAW OF OUTER SPACE 132, 139, n.9 (Am. Inst. of Aeronautics & Astronautics ed., 2000).

Prior to this, there had been no existing Australian legislative or regulatory framework – including in relation to licensing, safety, and liability issues – that specifically applied to 'national' space activities, particularly launch activities from Australia.

Much has been written about the specific terms of the Space Activities Act, as well as the 2001 Space Activities Regulations, which expand on the general provisions of the Space Activities Act, and it is not necessary to repeat those details here.[32] For present purposes, it should be noted that, in terms of detail, including the licensing regime established in relation to launch activities, the Space Activities Act was generally regarded as representing the most complex domestic launching regulations at the time. Unfortunately, as will be seen below, the main *raison d'être* for the legislation did not come to fruition, although it is still relevant in certain licensing matters.

In relation to its policy implications, the Government described the principal object of the legislation as:

> reflect[ing] in an Australian law, Australia's obligations as a signatory to the key United Nations space treaties and provid[ing] a legally certain and predictable environment for the development and operation of Australia's space launch facilities. [33]

In keeping with this stated objective, the primary purposes of the legislation were expressed as follows:

> (a) to establish a regulation regime for commercial space activities carried out either from Australia or by Australian nationals outside Australia;

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[32] For a description of the principal terms of the Space Activities Act and Regulations, *see* Steven Freeland, *Difficulties of Implementing National Space Legislation Exemplified by the Australian Approach*, *in* "PROJECT 2001 PLUS" - GLOBAL AND EUROPEAN CHALLENGES FOR AIR AND SPACE LAW AT THE EDGE OF THE 21ST CENTURY: PROCEEDINGS OF AN INTERNATIONAL SYMPOSIUM 65 (Stephan Hobe, Bernhard Schmidt-Tedd and Kai-Uwe Schrogl eds., 2006), and the various references therein.

[33] NICK MINCHIN, AUSTL. MINISTRY FOR INDUS., SCIENCE AND RESOURCES, EXPLANATORY MEMORANDUM TO THE SPACE ACTIVITIES BILL 1998, ¶ A1 (Dec. 1998), *available at* http://www.austlii.edu.au/au/legis/cth/bill_em/sab1998177/memo1.html.

> (b) to provide for the payment of adequate compensation for damage caused to persons or property as a result of space activities regulated by [the legislation];
>
> (c) to implement certain of Australia's obligations under the United Nations Space Treaties; and
>
> (d) to implement certain of Australia's obligations under specified space cooperation agreements. [34]

In essence, the legislation was designed to facilitate a commercial space launch industry in Australia, as well as launches of Australian payloads from overseas sites, and the possible return of a space object that was not launched from a launch facility located within Australia, all within the context of protecting public safety. At the time of entering into the 2001 Cooperation Agreement with Russia noted above, the Australian Government heralded the establishment of Australia as a "significant player in the satellite launch industry"[35] and pledged AUD$100 million as a Strategic Investment Incentive towards the development of the AUD$800 million Christmas Island Spaceport Facility. Moreover, the Government announced that, over the following ten years, Australia could reasonably expect to gain between 10-20% of the worldwide demand for satellite launches, generating approximately AUD$2.5 billion of revenue to Australia.[36] The first launch was expected to take place in 2003,[37] and, by 2005, there were expectations of ten to twelve satellite launches per year.

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[34] Space Activities Act 1998, (Cth)s 3 (Austl.). Purpose (d) was subsequently added to the legislation under the Space Activities Amendment (Bilateral Agreement) Act 2001 to take into account the arrangements for cooperation between the Australia and Russian Governments, as reflected in the Agreement between the Government of Australia and the Government of the Russian Federation on Cooperation in the Field of the Exploration and Use Of Outer Space for Peaceful Purposes, 23 May 2001, [2004] ATS 17.

[35] The then Minister for Industry, Science and Resources Nick Minchin, quoted in Michael Perry, *Australia Announces Christmas Island Spaceport*, SPACE FLIGHT (June 25, 2001) http://theartofpolitics.homestead.com/files/Australia_AnnouncesChristmas_Island_Spaceport.htm.

[36] *Id.*; *Australia Signs Space Launch Agreement with Russia*, SPACE DAILY, (May 23, 2001), http://www.spacedaily.com/news/aust-01a.html.

[37] *Christmas Island Asia Pacific Launch Facility, Australia*, AEROSPACE-TECHNOLOGY.COM, http://www.aerospace-technology.com/projects/christmas/ (last visited Jan. 21 2011).

The reality has, however, been completely different, and there is no commercial launch service likely in Australia for a considerable period of time, if ever. In the words of the recent Government Senate Inquiry Report (which is described in more detail below),

> [w]hile not opposed in principle to Australia regaining its role as a launch site if a commercial venture wishes to do so (whether for satellites or tourists), the committee does not see this as likely, nor as something the government should be supporting with taxpayers' money.[38]

In this regard, therefore, the policy underpinning the existing national space law of Australia has proven largely to be irrelevant and unattainable. Indeed, shortly afterwards, the direction for Australian space involvement was to take another turn (see below). Having said this, however, it must be noted that the licensing regime that is established under the legislation continues to be used to authorize overseas launches by a major Australian telecommunications company,[39] as well as, very recently, the planned return in mid-June of a Japanese spacecraft – the *Hayabusa* asteroid probe – that had been launched from Japan in 2003.[40]

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[38] SENATE INQUIRY REPORT, *supra* note 2, ¶ 4.16 (2008).

[39] One of the licences established under the Space Activities Act is an Overseas Launch Certificate, which is required for an Australian national to launch "a space object … from a launch facility located outside Australia". Space Activities Act, *supra* note 34, s 12(a). For example, in August 2009, Optus Networks Pty Limited launched its D3 communications satellite from French Guyana, pursuant to an Overseas Launch Certificate.

[40] *See* Steven Freeland, *Space Jump Better Late Than Never*, THE AGE, June 7, 2010, at 11, *available at* http://www.theage.com.au/opinion/politics/space-jump-better-late-than-never-20100606-xn3t.html; *Dearth of Australian Space Presence Highlighted,* THE CANBERRA TIMES, June 12, 2010, at 27; Paul Rincon, *Asteroid probe 'on home straight'*, BBC NEWS (May 31, 2010, 6:52 AM), http://news.bbc.co.uk/2/hi/science_and_environment/10196807.stm. One of the licences established under the Space Activities Act is an Authorization to Return, which is required for the "return to a place anywhere in Australia of a space object that was not launched from a launch facility located within Australia." Space Activities Act, *supra* note 34, at ss 14(a) & (b).

IV. REVERTING TO A "NON-POLICY"

The failure of every proposal to develop a commercial launch industry, coupled with the post September 11 geopolitical climate, resulted once again in a rather sudden change of focus by the Australian Government as to how it believed the country should engage in space activities. This was implemented, however, not by the necessary refinements to the law, but rather by generalised and ad hoc "policy" statements. The Government issued a paper – *Australian Government Space Engagement: Policy Framework and Overview*[41] – in 2003 (revised again in 2004), which took no cognisance of the need to change the existing national space law, but rather gave a clear message to space lawyers and the broader space industry that there was no pressing necessity, and consequently no Government support, for a centrally funded "space office" or a "dedicated space program" in Australia,[42] notwithstanding that it was, by this time, the only developed country in the world without such a program.

The Government also announced the termination of funding in 2005 for the Cooperative Research Centre for Satellite Systems (CRCSS),[43] which had built and operated the fifty kilogram Australian research satellite *FedSat*, the first Australian-built satellite in more than thirty years, which was launched in December 2002. *FedSat*'s signal eventually failed in 2007.[44]

At this time, the Government seemed to consider the space sector as being similar to any other high technology industry in Australia and did not provide specific support for space development, but rather called for competition with other technology and industry development through the general range of indus-

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[41] Australian Department of Industry, Tourism and Resources, *Australian Government Space Engagement: Policy Framework and Overview* (Aug. 2004) (on file with author).

[42] *Id.* at 3.

[43] CRCSS combined the resources and skills of twelve Australian organizations (four companies, six universities, and two government agencies). It was established on 1 January 1998 with a budget of about $60 million over a seven-year period, of which about $22 million was provided by the Australian Government. Australian Department of Industry, Tourism and Resources, *supra* note 41 at 10.

[44] Jones, *supra* note 6.

try and science support programs. As such, Australia continued to lack a central body and a coordinated approach to its space-related activities and development, and provided no tangible incentives to encourage growth and innovation among those already involved in domestic space-related industries. Instead, the 2003/2004 policy document indicated that the focus of the country's future engagement with space activities was to be increasingly driven by those areas where Australia has existing competitive advantages.[45]

In this respect, it was anticipated that much of Australia's participation in future space activities would revolve around the provision of technological expertise and ground station tracking services, utilizing several of those facilities established under the terms of the previous bilateral arrangements noted above, particularly those with the United States.[46] In essence, there was no real Government support for a space policy that would effectively promote an increasing role for Australia in space activities. Even more significantly, there was no serious Governmental consideration of Australia's need for, and dependence upon space technology for its future economic, strategic, and military effectiveness. In this context, there was also no suggestion that Australia's domestic space laws required enhancement or consolidation.

V. GREEN SHOOTS ….. A (POSSIBLE) REBIRTH OF POLICY …..

There are now indications that, with a relatively recent (2007) change of Government, the future of Australia's participation in space may again take a different (and more positive) direction. In particular, two important documents – the Government Senate Inquiry Report (November 2008) and the Department of Defence 2009 White Paper (April 2009) – were produced in rapid succession. Both of these documents have raised interesting issues in relation to Australia's ongoing involvement

[45] Australian Department of Industry, Tourism and Resources, *supra* note 41.

[46] Indeed, one commentator suggests that the alliance with the United States 'has arguably been an important contributor to Australia's *lack* of space policy.' Gilbert, *supra* note 5, at 177 (emphasis added).

in space activities and will have an undoubted impact on Australia's future space policy and legal regulation.

A. Government Senate Inquiry Report

In March 2008, at the instigation of the newly elected Rudd Labour Government, the Australian Senate convened a Senate Standing Committee to conduct a public inquiry, and then report, on the current state of Australia's space science and industry sector. Its purpose was to examine options to "strengthen and expand Australia's position in fields that strongly align with space science and industry," with particular reference to:

> (a) Australia's capabilities in space science, industry, and education, including:
>
> a. existing Australian activity of world-class standard; and
>
> b. areas in which there is currently little or no activity, but that are within the technical and intellectual capacity of the country;
>
> (b) Arguments for and against expanded Australian activity in space science and industry, including:
>
> a. an assessment of the risks to Australia's national interest of Australia's dependence on foreign-owned and operated satellites;
>
> b. the potential benefits that could accrue to Australia through further development of its space capability;
>
> c. economic, social, environmental, national security and other needs that are not being met or are in danger of not being met by Australia's existing space resources or access to foreign resources;
>
> d. impediments to strengthening and expanding space science and industry in Australia, including limiting factors relating to spatial information and global positioning systems, including but not limited to ground infrastructures, intergovernmental arrangements, legislative arrangements and government/industry coordination; and

> e. the goals of any strengthening and expansion of Australia's space capability, both in the private sector and across government;
>
> (c) Realistic policy options that facilitate effective solutions to cross-sector technological and organisational challenges, opportunity capture and development imperatives that align with national need and in consideration of existing world-class capability.[47]

The Committee received eighty-eight submissions and held public hearings across the country over a five month period. It issued an interim report in June 2008 and its final report – somewhat mischievously (partly) entitled *Lost in Space* – in November 2008. The Government Senate Inquiry Report contains a series of recommendations that are contained in Appendix 1 of this article and provides a possible platform upon which Australia could develop a revised national space strategy for the future, incorporating a coordinated space policy and a dedicated space agency.[48]

As can be seen from the recommendations, the thrust of the Government Senate Inquiry Report is geared towards a "whole of Government" approach to space. In the view of the authors of the Government Senate Inquiry Report,

> the recommendations … chart a course towards Australia regaining an important place in global space science and industry by gradually developing a dedicated space agency. [49]

A year after its release, the Government issued its response to the recommendations contained in the Government Senate Inquiry Report.[50] It has generally accepted the findings of that

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[47] SENATE INQUIRY REPORT, *supra* note 2, at vii (Terms of Reference).

[48] For a discussion of the recommendations contained in the Government Senate Inquiry Report, see Noel Siemon & Steven Freeland, *Regulation of Space Activities in Australia*, *in* NATIONAL REGULATION OF SPACE ACTIVITIES (Ram Jakhu, ed., Springer 2010); Biddington & Sach, *supra* note 1.

[49] SENATE INQUIRY REPORT, *supra* note 2, at ¶ 1.4.

[50] GOVERNMENT RESPONSE TO THE INQUIRY BY THE SENATE STANDING COMMITTEE ON ECONOMICS INTO THE CURRENT STATE OF AUSTRALIA'S SPACE SCIENCE AND INDUSTRY SECTOR (Nov. 2009) [hereinafter GOVERNMENT RESPONSE], *available at*

report. As an important interim step, and in accordance with some of the recommendations, in its 2009 Government budget, AUD$160.5 million was dedicated to space science and astronomy infrastructure acquisitions and development, and a further AUD$8.6 million was allocated to establish the Space Policy Unit (SPU) within the Department of Innovation, Industry and Resources. The SPU began operations in mid 2009 and is tasked with various functions, including:

> (a) to act as a central point of contact and coordination for all civil space activities with international space organisations;
>
> (b) to examine Australia's current civil space activities with a focus on Earth observation, satellite communications and navigation, and continue to hold the Australian Government Space Forum;
>
> (c) to develop a national space policy; and
>
> (d) to administer the AUD$40 million Australian Space research program, which will support space research, innovation and skills development in areas of national significance. [51]

In addition, the Government has set up a dedicated website dealing with space-related matters (accessed via www.space.gov.au) and, at the time of issuing the Government Response in November 2009, established the Australian Space Industry Innovation Council to provide strategic advice to the Government, as it seeks to develop a national space policy and increase its support for space science and technology.[52]

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http://www.space.gov.au/SpacePolicyUnit/Documents/GovernmentResponsetoSenate inquiryintoSpace.pdf.

[51] *See*, *Australian Space Science Program – Space Policy Unit*, AUSTL. GOV'T, DEP'T OF INNOVATION, INDUSTRY, SCIENCE AND RESEARCH, http://www.space.gov.au /SpacePolicyUnit/NationalSpacePolicy/Pages/default.aspx (last visited Jan. 13, 2011); *see also* GOVERNMENT RESPONSE, *supra* note 50.

[52] Media Release, Senator The Hon. Kim Carr, Industry Council to Boost Australian Space Innovation: Government Response to Senate Space Report (Nov. 19, 2009), *available at* http://minister.innovation.gov.au/Carr/Pages/INDUSTRYCOUNCILTOBOOST AUSTRALIANSPACEINNOVATION.aspx.

B. Department of Defence 2009 White Paper

Following a review of the existing capabilities and requirements of its Navy, Army, and Air Force, in April 2009 the Australian Department of Defence issued a White Paper designed to meet the following purposes:

> (a) [to explain] how the Government plans to strengthen the foundations of Australia's defence so that we are ready to meet the challenges of an uncertain strategic future. It sets out the Government's future plans for Defence, and how it will achieve those plans[; and]
>
> (b) [to lay] out the Government's future plans for the development of Force 2030, including the major capability investments that will need to be made in the coming years. Most importantly, it explains the level of resources that the Government is planning to invest in Defence over coming years and what the Government, on behalf of the Australian people, expects in return from Defence.[53]

The Defence White Paper is a very comprehensive document, dealing with all aspects of the current and future defence capabilities and needs of the country, including issues relating to its increasing demand for assured access to specific space-related technology. In general terms, the document concludes that Australia's defence policy must enable the country to

> a. act independently where we have unique strategic interests at stake, and in relation to which we would not wish to be reliant on the combat forces of any foreign power;
>
> b. lead military coalitions where we have shared strategic interests at stake with others, and in relation to which we would be willing to accept a leadership role, in part to compensate for the limited capacity or engagement of others; and

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[53] AUSTRALIAN DEP'T OF DEFENCE, DEFENCE WHITE PAPER: DEFENDING AUSTRALIA IN THE ASIA PACIFIC CENTURY: FORCE 2030 ¶¶ 1.1 & 1.2 (Apr. 2009) [hereinafter DEFENCE WHITE PAPER].

> c. make tailored contributions to military coalitions where we share wider strategic interests with others and are willing to accept a share of the burden in securing those interests. [54]

The Defence White Paper emphasizes the need of the Australian Defence Forces (ADF) to be in a position to exercise greater self-reliance, whilst at the same time maintaining and utilising the strong existing strategic alliances, predominately with the United States. Importantly, it recognises that the nature and capacity of the ADF must be able to adapt to changes of a political, strategic, economic, and military nature in the Asia-Pacific region, including the modernization of the military and the increasing space capability of Australia's regional neighbours, fuelling what some observers have called an "Asian space race."[55] Indeed, the Australian Defence Minister has suggested that "[a]s the Asia-Pacific region becomes more prosperous, we will see an increase in the region's military capability."[56]

Implicit in the Defence White Paper is a shift in emphasis towards planning based on possible strategic threats and developments in Asia.[57] Interestingly in the context of this meeting in Hawaii, the title of the Defence White Paper refers to this century as "the Asia Pacific Century."

In relation specifically to space technology, the Government Senate Inquiry Report had already heard evidence from the Department of Defence that over 50% of the ADF's major capability developments for the period 2006-2016 "have a dependency on services that are derived from space."[58] Yet, although Austra-

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[54] *Id*. at 13.

[55] *See, e.g.*, *South Korean Rocket Launch Delayed*, BBC NEWS, (June 9, 2010), http://news.bbc.co.uk/2/hi/ science_and_environment/10269459.stm.

[56] Media Release, The Hon. Joel Fitzgibbon, Minister for Defence, A New Strategic Environment, (May 2, 2009), http://www.defence.gov.au/whitepaper/mr/06NewStrategic EnvironmentFixed.pdf.

[57] As an example, as this article is being written, there is increasing tension in the Korean peninsula following the claim by South Korea that North Korea fired a torpedo that sank the South Korean navy ship, the Cheonan, in March 2010, with the loss of fourty-six lives. *See The Sinking of the Cheonan*, THE NEW YORK TIMES, May 20, 2010, at A26, *available at* http://www.nytimes.com/2010/05/21/opinion/21fri2.html?scp=1&sq =The%20sinking%20of%20the%20Cheonan&st=cse; *Their Number Is Up*, THE ECONOMIST (May 20, 2010), http://www.economist.com/node/16167868.

[58] SENATE INQUIRY REPORT, *supra* note 2, at ¶ 5.56.

lia does benefit from a comprehensive network of communications satellites, for its other satellite needs such as remote sensing and GPS, it is at present entirely reliant on satellites operated and controlled offshore, despite the fact that it is uniquely dependent upon space technology for defence, security, and economic reasons due to its huge coastline. Of course, these "offshore" satellites are not subject to Australian ownership or jurisdiction and control – the latter either in a practical day-to-day sense, and/or as contemplated in the Outer Space Treaty.[59] As a consequence, the reality is that access to these satellites in a crisis would be solely dependent on the strength and enforceability of contractual terms and political ties.

The Defence White Paper therefore places a "high priority on assured access to high quality space-based imagery" in order to meet the ADF's requirements for "mapping, charting, navigation and targeting data."[60] In addition, great emphasis is placed on the need to enhance Australia's Intelligence, Surveillance and Reconnaissance (ISR) capabilities,[61] designed to give it the ability "to collect, share, interpret and act upon information in a timely manner."[62]

As a result, the Defence White Paper confirms the Government's intention to improve the country's intelligence collection capability "by acquiring a satellite with a remote sensing capa-

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[59] Article VIII of the Outer Space Treaty provides in part as follows:

> A State Party to the Treaty on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object, and over any personnel thereof, while in outer space or on a celestial body. Ownership of objects launched into outer space, including objects landed or constructed on a celestial body, and of their component parts, is not affected by their presence in outer space or on a celestial body or by their return to the Earth.

Outer Space Treaty, *supra* note 10, at art. VIII.

[60] GOVERNMENT RESPONSE, *supra* note 50, at 3, http://www.aph.gov.au/senate/committee/economics_ctte/space_08/gov_response/gov_response.pdf (last visited Jan. 13, 2011).

[61] DEFENCE WHITE PAPER, *supra* note 53, at ¶ 9.78.

[62] Media Release, The Hon. Joel Fitzgibbon, Minister for Defence & The Hon. Warren Snowden, Minister for Defence Science and Personnel, A Smarter Defence for a more Complex World, May 2, 2009, http://www.defence.gov.au/whitepaper/mr/07_A_SmarterDefence.pdf.

bility, most likely to be based on a high-resolution, cloud-penetrating synthetic aperture radar."[63]

These strategies are to be augmented into the existing strategic alliances with the United States, which involve the sharing of imagery access with that country, as well as enhancing Australia's ISR capability by linking it with that of the United States. The Australian Minister for Defence has indicated that "[p]ossession of an indigenous [remote sensing] satellite … will add to Australia's status as a contributing partner within the alliance framework."[64]

These new initiatives complement the terms of a 2008 Statement of Principles between the respective Governments establishing the United States – Australia Military Satellite Communications Partnership (United States – Australia Partnership Agreement),[65] which specifies that the countries will "jointly pursue the development of satellite capabilities – both commercial and military."[66] It is clear that, without these strategic alliances, Australia would have to allocate even greater resources towards the development of essential space capabilities.

Moreover, these proposals are in addition to other committed joint projects with the United States, including a AUD$927 million arrangement to provide funding to, and participate in, the Wideband Global Satellite Communications constellation (WGS).[67]

The Defence White Paper, recognising both a need for "space situational awareness" and appropriately skilled space professionals, also indicates that the ADF will develop a "career

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[63] DEFENCE WHITE PAPER, *supra* note 53, at ¶ 9.80; GOVERNMENT RESPONSE, *supra* note 50, at 3.

[64] Media Release, The Hon. Joel Fitzgibbon, Minister for Defence, Government to Acquire Satellite with Remote Sensing Capability (May 2, 2009), http://www.defence.gov.au/whitepaper/mr/48_SatelliteCapability.pdf.

[65] *See* Austl. Gov't, Australian-United States Ministerial Consultations (AUSMIN), 2008 Joint Communiqué, http://www.dfat.gov.au/geo/us/ausmin/ausmin08_joint_communique.html.

[66] Gilbert, *supra* note 5, at note 13 (*citing* DEFENCE WHITE PAPER, *supra* note 53, at 121).

[67] For further details of this and other planned joint projects, *see* Gilbert, *supra* note 5, at 176.

stream for space specialists."[68] At present, there are only a small number of people within the military dealing with an increasingly broad and complex array of space-related issues, so that this emphasis on the development of specific and up-to-date technical expertise is to be welcomed. This will also require the involvement of lawyers across a whole range of issues related to the interaction of the laws of armed conflict, military law, and space regulation, a convergence that is not in itself entirely straightforward under existing international law.[69]

VI. ….. BUT (HOW) WILL THE LAW FOLLOW?

The recent developments and proposed initiatives referred to in the previous section of this article give rise to (cautious) optimism as to the future direction of Australia's participation in space, particularly if one is to compare them with prior attempts to articulate a space policy for the country. No doubt, there are many issues of detail to be determined regarding the proposals, and it may well be some time before the precise direction of Australia's space initiatives are apparent, even more so given the sometimes rapidly changing geopolitical factors at play, not to mention the constantly evolving technological developments. Moreover, any long-term strategy will require considerable and unwavering governmental support and political will, something that has been sadly lacking in the past.

The articulation of clear, relevant, and comprehensive domestic laws, as well as appropriate binding multi- and bilateral international arrangements, will also be vital elements in Australia's future space policy. These are necessary to provide the proper legal and regulatory framework for the implementation of this new policy. Some aspects of what is required, and the issues that these may raise, are briefly considered below.

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[68] DEFENCE WHITE PAPER, *supra* note 53, at 85.

[69] For a general discussion of the possible application of the international laws of war (*jus in bello*) within the international legal regulation of outer space, see Steven Freeland, *The Applicability of the* Jus in Bello *Rules of International Humanitarian Law to the Use of Outer Space*, *in* FORTY-NINTH COLLOQUIUM ON THE LAW OF OUTER SPACE 338 (Am. Inst. of Aeronautics & Astronautics ed., 2006).

A. Retention of the Space Activities Act

Of course, Australia already has domestic space law. Indeed, at the time it was introduced, the Space Activities Act was aptly described as "an interesting and generally positive contribution to the national implementation of international space law."[70] As noted, the legal regime established under the legislation is a rather sophisticated and detailed example of domestic space law, but (despite its broad title), it only applies to a relatively narrow field focused on the creation of a licensing mechanism (with associated safety oversight) to deal with commercial space launches (and returns).

Nevertheless, the Space Activities Act should remain in place to deal with any relevant activities that fall within its coverage. It works quite well in relation to the very limited scope of space activities with which it is currently involved. Indeed, despite the fact that the primary motivation for the promulgation of the law did not translate into reality, the licensing regime it has established appears to operate effectively for overseas launches and returns. Moreover, the legislation also deals in some detail with issues of financial responsibility for liability arising from launch activities and, in certain aspects, is (or at least was at the time it came into force) quite innovative, for example, in relation to the still vexed question as to "where space begins."[71]

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[70] von der Dunk, *supra* note 31, at 139.

[71] The Space Activities Act incorporates into the definitions of a "launch", a "launch vehicle", a "return," and a "space object" a reference to "the distance of 100 [kilometres] above mean sea level" (section 8). At the time of introducing these definitions, the relevant Government Ministry explained that this was necessary to

> address the issue that there is uncertainty as to where "outer space" begins given that there is no definitive explanation of the term in either Australian or international law. The effect of these amendments is that the [Space Activities] Act will now apply to launches or attempted launches that go to a clearly defined point – being an area beyond the distance of 100 [kilometres] above mean sea level. In doing so, it will provide certainty to industry about the point where industry players become subject to the provisions of the [Space Activities] Act.

AUSTL MINISTRY FOR INDUSTRY, TOURISM AND RESOURCES, EXPLANATORY MEMORANDUM TO THE SPACE ACTIVITIES AMENDMENT BILL 2002, ITEM 2 (2002), *available at*

Yet, while the innovations in the Space Activities are of great interest to space lawyers, the stark fact remains that the current domestic legal framework in Australia is far from adequate to deal with the much broader range of activities that the revised space policy initiatives envisage. A considerable body of additional law will be necessary. The Government Senate Inquiry Report and Defence White Paper convincingly argue for an expansion of Australia's space capabilities, their centralized coordination and the development of additional links with both private industry and international and inter-governmental organisations. Yet, these major policy documents make scant reference to the changes that are required to existing legal arrangements to accommodate these ambitions, as well as the need for additional laws. This is a worrying oversight.

B. The Need for Additional (Remote Sensing) Legislation

For one thing, as noted, it is intended that Australia acquire its own remote sensing satellite, thus both enhancing its indigenous capabilities in this regard and also contributing to its cooperative relationships with its strategic allies, principally the United States. While it is not yet entirely clear as to the precise range of activities in which this indigenous satellite will be engaged, the clear implication is that it will be primarily involved with sensitive ISR operations. This in itself poses an interesting dilemma as to the form and substance that the necessary legal regulation of remote sensing activities in Australia should/will take.

A major theme at this meeting is the growing body of law and regulation in the Asia-Pacific region in relation to remote sensing activities. Given the proposals suggested in the major Australian documents discussed above, it is apparent that there will also be an increasing need for some form of Australian national law to deal in more detail with such activities – no doubt this issue will be explored in another paper presented at this meeting. Yet, given the (seemingly) sensitive nature of those

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http://www.austlii.edu.au/au/legis/cth/bill_em/saab2002257/memo1.html (last visited Jan. 13, 2011). *See also* Steven Freeland, *supra* note 31, at 79-81.

proposed activities, it is not entirely certain that whatever Australian national law is eventually drafted will be particularly clear (as opposed to vague) or comprehensive (as opposed to limited).

It may well be that, therefore, in the area of remote sensing legislation, Australia may see a "staged" process of law-making, initially dealing with data collection and imagery for sensitive purposes and, only later, when (or if) the use of the imagery expands in a broader (perhaps commercial) sense, with a wider range of remote sensing activities. This expanded range of activities may eventuate particularly given the other needs that Australia has for remote sensing images, which include agricultural and crop management, resources exploration, disaster management, and monitoring the effects of climate change.

There may therefore quite likely be controls put in place to restrict the use and dissemination of information obtained from the utilisation of our newly acquired remote sensing capabilities. If this were to be the case, it may raise interesting legal questions, and pose a challenge to the general principle of "non-discriminatory" access to remote sensing data that is articulated in the Principles Relating to Remote Sensing of the Earth from Outer Space (Remote Sensing Principles).[72] No doubt, the contra argument will focus on those national security concerns that resonate whenever the phenomena of "shutter control" is discussed. However, the fact remains that Australia has, in the past, generally been a good "international citizen" when it comes to its obligations under the various international space treaties and principles, and it would be disappointing if this were not to be the case when it came to its remote sensing activities.

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[72] Principles Relating to Remote Sensing of the Earth from Space, G.A. Res. 41/65, U.N. GAOR, 41st Sess., 95th plen. mtg., U.N. Doc. A/RES/41/65 (Dec. 3, 1986). Principle XII of the Remote Sensing Principles provides in part as follows:

> "As soon as the primary data and the processed data concerning the territory under its jurisdiction are produced, the sensed State shall have access to them on a non-discriminatory basis and on reasonable cost terms." *Id*.

C. The Legal Framework for the Establishment of a National Space Agency

Just as the implementation of the Space Activities Act required the establishment of the Space Licensing and Safety Office (SLASO) to administer the legislation and regulate those space activities undertaken under the regime it created, the proposed eventual establishment of a national space agency will also require appropriate legislative establishment and direction. This will almost certainly require new legislation, since the establishment of a space agency does not easily fit within the existing structure of the Space Activities Act.

Many examples exist of discreet domestic laws establishing a national space agency. One of the most comprehensive of these is The National Aeronautics and Space Act of the United States (NAS Act).[73] Under the NAS Act (as amended), the functions of that agency are to

> (1) plan, direct, and conduct aeronautical and space activities;
>
> (2) arrange for participation by the scientific community in planning scientific measurements and observations to be made through use of aeronautical and space vehicles, and conduct or arrange for the conduct of such measurements and observations;
>
> (3) provide for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof;
>
> (4) seek and encourage, to the maximum extent possible, the fullest commercial use of space; and
>
> (5) encourage and provide for Federal Government use of commercially provided space services and hardware, consistent with the requirements of the Federal Government. [74]

Obviously, however, the precise functions and responsibilities of any national space agency will depend upon issues of sov-

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[73] Pub. L. No. 85-568, 72 Stat. 426 (July 29, 1958) (as amended).
[74] *Id*. § 203(a).

ereignty, as well as the internal constitutional and administrative requirements of the relevant country – not to mention, of course, its peculiar economic, political, developmental, societal, and cultural situation. Of course, the precise scope of intended space activities will also be highly relevant. The Government Senate Inquiry Report itself recognises that there are "various models of space agency within the OECD and emerging economies."[75]

It therefore remains to be seen exactly what "model" will be considered as the most appropriate for Australia. Clearly, although the revised space policy for Australia will, if implemented, see a significant broadening of its participation in space, the scope of these expanded activities will never approach those administered by NASA. Australia's space needs and dependencies will also differ in various respects from those of many of its regional neighbours who have already established a national space agency. It will therefore be of great interest to see exactly what "medium/long-term priorities" for a space agency will be suggested by the Space Industry Advisory Council, as well as the "draft strategic plan for the establishment of a space agency and the most appropriate form of that agency, including public/private funding, budget and staffing priorities that it develops in due course."[76]

D. Laws to Encourage Government – Private Partnerships

Although this is probably not widely known, Australia does have an active private space industry in several areas of specialised technology. The major problem in the past has been the lack of a coordinating body to properly lobby Government on the part of this industry. There have also been occasions when it has not spoken with one voice. This has been a cause of frustration on all sides. The creation of a centralised space agency must incorporate legal and administrative mechanisms to enable clear communication and cooperation between Government

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[75] GOVERNMENT RECOMMENDATION, *supra* note 50, at 4.
[76] *Id.* at 5.

and industry. This will be an essential element to the successful implementation of any revised space policy.

Even more importantly, legislation must be introduced as required to provide appropriate financial incentives to private industry, both to undertake the necessary research and development to allow it to "joint venture" with Government in a true Public-Private enterprise in the furtherance of Australia's space activities, and also to enhance its capacity building. It is trite to note that any space venture requires very considerable financial as well as technical capital. From the perspective of private industry – and increasingly from that of Government as well, particularly in the wake of the recent Global Financial Crisis – an appropriate and realistic commercial "business case" must be made. The state of Australia's private space industry is such that, notwithstanding its undoubted technical capabilities, it would in general require significant tax, subsidy, and/or other types of financial and administrative incentives and support to provide effective input to the increasingly ambitious space-related plans of Government. This will require amendment to tax/other laws and perhaps also the introduction of specific legislation related to the establishment of a space industry financial support mechanism,

It is to be hoped that the Australian Government also turns to lawyers with space-related expertise to assist in the preparation of these and any other necessary national laws.

E. International Legal Agreements for Cooperation with Asia-Pacific Countries

Coupled with the necessary changes and additions to Australian national law that the implementation of the proposed new space policy initiatives will require, there is another important issue to consider. Australia is one of the most important countries in the Asia-Pacific region and continues to reaffirm its commitment to engagement with South East Asian and Pacific

nations.[77] The countries of this region share a number of significant challenges, ranging from security concerns, disaster management, people smuggling, drug trafficking, and dealing with so-called "failed States" in the region. The appropriate use of space technology plays an important role in addressing every one of these challenges.

It is therefore imperative that, as well as continuing to strengthen existing strategic alliances with respect to space-related matters, Australia work (more) closely with its regional neighbours in the use and exploration of outer space directed towards meeting these difficult issues head on. The proposed return to Woomera of the Japanese *Hayabusa* space probe in mid-June provides an excellent example of inter-regional cooperation giving rise not only to mutual benefits, but also actively promoting international cooperation in relation to space activities.

It will thus become increasingly important for Australia to develop further multi- and bilateral international arrangements with the countries in the region involving the shared access to data obtained through the utilization of space technology. Such initiatives should not be seen as conflicting with the cooperative partnership that Australia has with the United States, but rather as an important adjunct to that partnership that enhances regional prosperity, cooperation, and stability, as well as the peaceful use of outer space. Given the various geopolitical and other forces at work, however, such negotiations and the conclusion of any binding legal arrangements, will require careful drafting by the international legal departments of all countries involved.

VII. CONCLUDING REMARKS

Australia's early promise as a major space-faring nation has not materialised, due largely to the lack of direction and support on the part of successive Governments. In Australia's

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[77] *See, e.g.* , Media Release, The Hon. Joel Fitzgibbon, Minister for Defence, Cooperation with South East Asia and Pacific Nations, May 2, 2009, *available at* http://www.defence.gov.au/whitepaper/mr/04_SE_AsiaPacificFixed.pdf.

case, the Government's approach to the development of a focussed domestic space policy has often appeared to be a case of "two steps forward – one and a half steps back." At the same time many other developed and developing countries around the world, including those in the Asia-Pacific region, have devoted considerable legal, technical, and management expertise towards capacity-building in relation to their own space activities. Australia's failure to invest in space technology in the past, and to promote a legal climate that encourages such endeavours, has caused it to fall well back in the space race.

More recently, however, the newly elected Government has initiated a series of studies into Australia's role in space, and the initial recommendations and the action that has followed show some encouraging signs. A key difference between these proposals and previous attempts to promote (albeit half-heartedly) a space policy for the country is that the recent recommendations incorporate what one might describe as "top-down" initiatives,[78] driven by a Government that, at least in its public statements thus far, is committed to a "whole of nation" approach to space. Of course, there is a considerable amount of work yet to be done. Much of the detail of the proposed enhancements to Australia's space policy remains to be finalised. Notably, the costs associated with many of the announced initiatives have not been comprehensively reported; nor is it clear what the budget implications will be, particularly given the prevailing uncertain financial international position.[79] Moreover, no work of substance has been done on the legal implications of the new policy and there is little formal representation of lawyers on the advisory bodies that have been established.

Yet, it is clear that Australia must follow the example set by many of the countries represented in this meeting and direct its attentions to the very considerable benefits to be gained by playing a more significant role in space activities. Or perhaps

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[78] Australian Space Industry Chamber of Commerce (ASICC), *Newsletter #1*, Dec. 2009, at 3, http://www.symbioscomms.com/ASICC/newsletter.html. *See also* Gilbert, *supra* note 5, at 176.

[79] *See* Jonathon Amos, *German Space Escapes Budget Cuts*, BBC NEWS (June 9, 2010), http://www.bbc.co.uk/news/10271637.

put another way, Australia can no longer afford to fall further behind its friends and neighbours in relation to important aspects of the use and exploration of outer space. Moreover, this will involve not only introspective law- and decision-making, but also a further expansion of the binding cooperative ties that Australia already has on matters of security with countries in the region.[80] Such initiatives may also be important in the broader context of Australia's proposed bid for a seat on the United Nations Security Council for 2013-2014.[81] These enhanced cooperative arrangements may perhaps also extend to space agencies further afield, such as Canada and the ESA.[82]

In this regard, one further observation bears emphasizing. Whatever the final model that is ultimately considered to be the most appropriate, it is crucial that an Australian *space agency* is ultimately established. There have recently been some unsubstantiated rumours to the effect that the policy makers within Government may be tending away from the idea of establishing a dedicated agency, despite the recommendations made in the Government Senate Inquiry Report that were subsequently endorsed by the Government. The point remains, however, that no matter what the reasons for this might be (even if they can be objectively justified), a failure to establish an agency in due course would send negative signals to the rest of the world about the extent of seriousness with which the Australian Government approaches its commitments to active space participation in the future. That would set Australia's ambitions back considerably.

Australia's need to carefully consider its future path in space is not unique to that country. Other countries are currently undertaking a reassessment of their participation in space activities – the United Kingdom has, for example, recently

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[80] For example, Australia is an active member of the International Proliferation Security Initiative and remains committed to assisting regional states to implement arms control and non-proliferation treaties, and promote effective national export control regimes. DEFENCE WHITE PAPER, *supra* note 53, at ¶ 11.45.

[81] *See, e.g.*, Media Release, The Hon. Joel Fitzgibbon, Minister for Defence, Australia's Commitment to the United Nations and Multilateral Engagement, May 2, 2009, http://www.defence.gov.au/whitepaper/mr/03_UN_Multilat.pdf.

[82] Gilbert, *supra* note 5, at 177.

conducted a mapping inquiry and concluded a Civil Space Strategy for the period 2006-2010.[83] The new English Minister for Universities and Skills in the just-elected Conservative-Liberal Democrat Coalition Government, David Willets, has pledged to build upon and enhance developments that had taken place just prior to the election. One of these was the establishment of an executive space agency tasked with the coordination of policy and funding for space initiatives in that country.[84]

Australia must follow through on its stated determination to take a similar path towards a well-articulated and relevant engagement with space. The effective implementation of a focussed space policy, coupled with the establishment of a comprehensive and relevant body of national law and additional international cooperative arrangements, is important for Australia's future and will enable it to better compete and play an important role in an ever changing world.

Appendix 1

Recommendations Contained in the Government Senate Inquiry Report November 2008

Recommendation 1

The committee recommends as a first step that the Government give the existing unit within the Department of Innovation, Industry, Science, and Research more resources to enable the establishment of an Australian government Space Information Website. This would provide information on government programmes and contacts, and links to Australian companies working in the space industry as well as Australian universities offering courses in space science and space engineering.

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[83] *Id*. at 180.

[84] Jonathan Amos, *Coalition Wants UK Space Lift off*, BBC NEWS (May 28, 2010), http://news.bbc.co.uk/2/hi/science_ and_environment/10176761.stm.

Recommendation 2

The committee notes that Australia is the only OECD country without a national space agency and, as a consequence is missing out on opportunities to engage in this important area of innovation and technology. The committee also notes the comments by the Chief Scientist and the conclusion of the Cutler Report in relation to the importance of the space industry for innovation within Australia. The committee recommends that immediate steps are taken to coordinate our space activities and reduce our over reliance on other countries in the area of space technology.

Recommendation 3

The committee notes the wealth of expert, well informed evidence received by the committee. Despite some deviations, the overwhelming majority of witnesses strongly supported the formation of a government unit to coordinate Australian space activities, including those in the private sector. The committee supports this conclusion and notes that there must be a proper balance between industry and government involvement.

Recommendation 4

The committee notes the various models of space agency within the OECD and emerging economies and supports Australia having a space agency. The committee recommends initially establishing a Space Industry Advisory Council comprising industry representatives, government agencies, defence, and academics. The committee recommends that the advisory Council be chaired by the Minister for Innovation Industry Science and Research or his representative.

Recommendation 5

As a precursor to the establishment of the space agency the Advisory Council would:

• Conduct an audit of Australia's current space activities within six months of the establishment of the Council;

• Analyse the strengths, weaknesses, opportunities and threats to Australia's emerging space industry;

• Focus on the key 'workhorse' space applications of Earth observation, satellite communications and navigation as the most practical and beneficial initial priorities;

• Systematically evaluate the medium/long-term priorities for a space agency including the national benefit of defence related activities, Earth observation, environmental, land management, exploration, national disaster prevention and management, treaty monitoring, e-commerce and telemedicine;

• Examine the benefits to Australia of improved international collaboration including membership of the international space groups;

• Develop a draft strategic plan for the establishment of a space agency and the most appropriate form of that agency, including public/private funding, budget and staffing priorities; and

• Identify critical performance areas such as research, technological development, development of the skill base, effective partnerships, delivery of new services, and financial management.

Recommendation 6

The committee recommends that any Australian Space Agency reassess the case for Australia becoming more closely linked to an international space agency.

REMOTE SENSING ISSUES AS THEY RELATE TO KOREA

Jae Gon Lee[*]

I. INTRODUCTION

The development of space activities in Korea, despite its relatively brief history, has grown at a tremendously rapid and remarkable pace, similar to the swift progress of industrialization in Korea. Particularly, activities related to remote sensing have emerged as one of the most active fields in space industry. Remote sensing activities have been developed on two tracks: the first one relates to the development of satellites for the purpose of remote sensing, and the other concerns the interpretation and utilization of data obtained through satellite observation. For this reason, Korea, like other advanced countries, is challenged by legal problems arising from remote sensing issues. Some legislation exists, although it is at a very early stage. The purpose of this article is to introduce space activities in Korea, particularly focusing on remote sensing issues, and to discuss the legal regulations and problems related to remote sensing within the framework of relevant Korean laws.

II. EVOLUTION OF REMOTE SENSING IN KOREA

Even though Korea was at one time crushed into ruins at the outbreak of the Korean War (from 1950 to 1953) and left with traumatic wounds throughout the period of Japan's colonization (from 1910 to 1945), Korea has achieved astounding economic growth and miraculously transformed itself into one of the top ten economic powers in the World. The rapid pace of development of space activities in Korea is quite remarkable as be-

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