

An Astrostrategy for the EU: Spaceship Europe at Sanctuary's End

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Introduction

This paper attempts to outline a basic European Union (EU) astrostrategy for the decades and century ahead. The European Space Strategy (ESS) is used as a starting point to outline objectives where the EU may be hesitant to commit to in writing or has not considered. Taking a step back from immediate policy concerns and looking into the long term, it is hoped that this paper will help stimulate thought about the future of 'Spaceship Europe' and their place aboard, as space continues to become increasingly vital to humans in military-economic terms, and possibly as humanity stands poised to develop a cislunar economy.¹ *Astrostrategy means the identifying and linking of all means with political ends in matters relating to outer space.* This means that an ultimate political objective (the purpose of a grand strategy) can be met at least in part through space-related capabilities, whether they are pacifist in nature (such as exploration and economic development) or more military orientated (such as developing weapons to maintain and dispute the control of celestial lines of communication).² However, an astrostrategy concerned with the military utility and contest of space control may be more aptly termed a 'military astrostrategy'. 'Astrostrategy' is used in a different manner here to how it has been used by Everett Dolman in *Astropolitik*.³ This astrostrategy's objective is subordinate to the EU's overall grand strategy which gives itself the purpose for its existence as a political entity,⁴ and as an entity made up of member states which may have conflicting and congruent political and bureaucratic interests. This astrostrategy crosses the boundaries of the civilian and the military, of peace and war, of competition and cooperation. The question asked here is: how does exploiting space help achieve the EU's broad overall objectives? This can only begin to be answered once an understanding of the wider astropolitical context is illustrated; an understanding that space is not a sanctuary from conflict and will be characterised by dual-use technology.

Sanctuary's end?

In 2006, the Director of the US National Reconnaissance Office (NRO) claimed that a Chinese laser had illuminated a US satellite. This was

followed by a Chinese anti-satellite kinetic-kill weapons test in 2007.⁵ 2008 saw a similar satellite shoot-down by the USA. In 2011 two US government satellites' control systems were infiltrated via cyber methods.⁶ These recent events do not innately support the contention that an arms race in space is occurring; such sporadic testing pales into comparison against the number of anti-satellite (ASAT) weapons tests during the Cold War.⁷ Rather, it shows that the norm of 'space sanctuary', that space should be a realm free of war, weapons, or the threat of their use⁸ may not hold, if it has ever done so. Space systems provide important services for the functioning of modern civilisation and have become lucrative strategic targets. Attacking space systems may not only have direct negative military consequences, but also economic, humanitarian, and environmental consequences.

Should a conflict occur between sufficiently developed or equipped belligerents, it is

reasonable – some might say inevitable⁹ – to expect some form of hostile action, or space warfare, against space systems to occur. The wide gambit of space warfare can range from the physical destruction of satellites with terrestrial or space-based missiles with kinetic or nuclear warheads, spacecraft designed to hide, loiter, and detonate, or the forced deorbiting of spacecraft through their hijacking via cyber infiltration. Space warfare also includes lasers which may blind satellites or alter their orbital paths into a collision course or atmospheric re-entry. Space warfare may occur outside of 'space' itself with attacks on groundstations, launch facilities, and the terrestrial deployment of jamming or 'spoofing' equipment to create service gaps. The 1967 Outer Space Treaty (OST) only bans chemical, biological, radiological, and nuclear weapons in orbital space, and all weapons *on* celestial bodies.¹⁰ This means that there are no legal prohibitions on placing ramming, kinetic, or energy weapons in orbits. Whether doing so is a breach of the spirit of the OST is an open question. Even were a treaty such as the Russian-Chinese proposal to ban the prevention and placement of weapons *in* outer space (PPWT) be agreed upon, it still would not prevent other forms of space warfare.

Most of these capabilities, to wildly varying degrees, are already in the possession of many states. China and the United States have already demonstrated their respective capabilities to shoot down satellites in LEO. A recent report alleges a Chinese capability to reach medium

¹ On a cislunar economy, see: Ken Murphy, 'The cislunar econosphere (part 1)', *The Space Review*, 20/04/2012, <http://www.thespacereview.com/article/2027/1> (accessed 28/05/2013)

² On celestial lines of communication and space control, see: John J. Klein, *Space Warfare: Strategy, Principles and Policy* (Abingdon: Routledge, 2006) pp. 51-68

³ Everett C. Dolman, *Astropolitik: Classical Geopolitics in the Space Age* (Abingdon: Frank Cass, 2002) p. 15

⁴ For more on this terminology, see: Colin S. Gray, *The Strategy Bridge: Theory for Practice* (Oxford: Oxford University Press, 2010) pp. 17-25

⁵ Michael P. Pillsbury, *An Assessment of China's Anti-Satellite and Space Warfare Programs, Policies and Doctrines* (Report for the US-China Economic and Security Review Commission, Washington, D.C., 19/01/2008) p. 3

⁶ US-China Economic and Security Review Commission, '2011 Report to Congress', November 2011, available at: http://origin.www.uscc.gov/sites/default/files/annual_reports/annual_report_full_11.pdf (accessed 13/05/2013) p. 8

⁷ Cesar Jaramillo (ed) *Space Security 2012* (Kitchener: Pandora Press, 2012) p. 144, available at www.spacesecurity.org

⁸ Gerry Doyle, 'Space as a Medium for Warfighting', *Air Power Review* (12:3) pp. 77-81

⁹ Michael Sheehan, 'On the Inevitability of War in Space', Presentation given to the Security Research Group, Department of International Politics, Aberystwyth University, 05/12/12. Summary available at: <http://abersrg.wordpress.com> (accessed 26/04/2013)

¹⁰ UN, 'United Nations Treaties and Principles On Outer Space', <http://www.unoosa.org/oosa/SpaceLaw/outerspt.html> (accessed 11/04/2013) p. 4

Earth orbit ASAT missiles.¹¹ Russia continues to benefit from a large Soviet ASAT and space industry heritage. India is developing anti-ballistic missile (ABM) systems which could easily be repurposed to ASAT purposes.¹² Basic ground-based space-targeting laser systems are proliferated and “this equipment could be used – without permission – to illuminate satellites that are not part of the network.”¹³ The proliferation of such technology demonstrates crudely that many states possess both real and residual means of waging space warfare. Potential conflicts between any sufficiently developed states could involve some measure of space warfare, not only between the US and China. Caught in a potential crossfire, the EU should consider the proliferation of space warfare capabilities in an astrostrategy.

Spaceship Europe

European states and the EU have not been immune from these trends in developing greater military space capabilities through dual-use systems. Regardless of original intent systems such as Galileo or GMES (Global Monitoring for the Environment and Security) will provide latent military capabilities and support. The 1990s saw the increasing militarisation of the European Space Agency (ESA) as a result of institutional survival and greater EU interest and integration in

defence and ‘security’ policy areas.¹⁴ More recently, the EU’s military-space-industrial nexus has become apparent as the European Defence Agency (EDA) “can provide military requirements to space projects that are in development.”¹⁵ Europe’s growing space surveillance network (SSN), which is needed by any space power wishing to have any degree of self-reliance in space capabilities, complements the EU’s space launch capabilities in providing the EU with significant residual military space capabilities. Further examples of residual capabilities are proposed orbital debris removal systems; which could be turned to ASAT purposes. ESA’s Clean Space programme refers to debris removal as a “strategic goal,”¹⁶ it aims to build upon existing debris removal programmes, such as ESA’s Robotic Geostationary Orbit Restorer and the German Deutchse Orbital Servicing mission. The British harpoon concept may also provide a residual anti-satellite capability.

Against this backdrop, all the member governments of the EU, and the EU itself, must consider their strategic options. Some elements of an astrostrategy are already in existence, most notably in the form of the ESS.¹⁷ The ESS appears to be the latest refinement of the 2007

¹¹ Craig Murray, ‘China Missile Launch May Have Tested Part of a New Anti-Satellite Capability’, US-China Economic and Security Review Commission (Washington, D.C., 22 May 2013)

¹² Michael Listner, ‘India’s ABM test: a validated ASAT capability or a paper tiger?’, *The Space Review*, 28/03/2013, <http://www.thespacereview.com/article/1807/1> (accessed 20/05/2013)

¹³ Laura Grego, ‘A history of anti-satellite programs’, Union of Concerned Scientists, January 2012, available at: http://www.ucsusa.org/nuclear_weapons_and_global_security/space_weapons/policy_issues/a-history-of-anti-satellite.html

¹⁴ Michael Sheehan, ‘Profaning the path to the sacred: The militarisation of the European space programme’, in Natalie Bormann and Michael Sheehan (ed) *Securing Outer Space* (Abingdon: Routledge, 2009) pp. 175-178

¹⁵ Iraklis Oikonomou, ‘The European Defence Agency and EU military space policy: Whose space odyssey?’, *Space Policy* (28, 2012) p. 106

¹⁶ ESA, ‘Technologies for space debris remediation’, 14/09/2012, http://www.esa.int/TEC/Clean_Space/SEMObfNW91H_0.html (accessed 20/05/2013)

¹⁷ European Commission, ‘Towards a Space Strategy for the European Union that Benefits its Citizens’, Brussels, 04/04/2011, available at: http://ec.europa.eu/enterprise/policies/space/files/policy_comm_pdf_com_2011_0152_f_communication_en.pdf, accessed 11/05/2013

European Space Policy (ESP),¹⁸ and had a follow-up report in 2008.¹⁹ Among these documents, common themes appear: (a) Space is seen as a strategic asset and a part of critical infrastructure; (b) independent EU launch capability is the foundation for all EU space power; (c) Galileo, GMES, MUSIS (Multinational Space-Based Imaging System for Surveillance, Reconnaissance and Observation), and expanding SSN systems are cornerstone programmes; (d) the European space industry's vitality is an objective and demand will be stimulated; and (e) the EU's space systems are constructed from the start with *both* civilian and military users in mind – duality or dual use technology and end-users.

Towards an astrostrategy

Whilst the attempts at crafting a single coherent vision for the EU and its members in space are to be welcomed and commended, the ESS does fall short in terms of providing an overarching yet specific astrostrategy. Much is left open to debate as to how exactly the EU may want to stand among or near the top tier of space powers into the 21st century, and what its political motivations may be for doing so. The ESP states that “the strategic mission of a European space policy will be based on the peaceful exploitation of Outer Space by all states and will seek... to meet Europe's security and defence

needs as regards space.”²⁰ This neatly encapsulates the duality dilemma facing all users of space and astrostrategy-making. Space is immensely valuable during peace and war; for Earth observation and target acquisition; for remote internet access to drone control; for civil navigation and ‘force enhancement’. Duality means that any competent and independent space power has the capability to turn its technological-industrial might towards militaristic ends if the political will is there to direct it.

Duality underlines the point that proclamations of peaceful intent in space are never guarantees by themselves; should the political environment turn confrontational latent space warfare and other capabilities could be expected to be developed and threatened to be used. This is not a unique problem to space: astropolitics will be tied into the larger potential for security dilemmas and paradoxes between the major space powers down on Earth.²¹ In the very short term duality may not seem like a pressing issue, as developing latent military technologies and competencies do not happen overnight. Yet in the long term, this is a perennial strategic risk that has to be calculated, especially in light of the steady proliferation of space warfare capabilities. Duality can be seen as a recurring theme for an EU astrostrategy where we accept the premise that the EU wishes develop in a multipolar world and uphold the global political economy as we know it. If the EU wishes to do so on beneficial terms it will need to ensure its ability to set the agenda and participate in dialogue with the other major space powers as part of such a grand strategy. An astrostrategy to help achieve this will need to focus on its objective of keeping the EU

¹⁸ European Commission, ‘Communication from the Commission to the Council and the European Parliament: European Space Policy’, Brussels, 26/04/2007, COM(2007) http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0212:FIN:en:PDF 212 (accessed 11/05/2013) p. 4

¹⁹ European Commission, ‘Commission Working Document: European Space Policy Progress Report’, Brussels, 11/09/2008 COM(2008)561 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0561:FIN:EN:PDF (accessed 11/05/2013)

²⁰ European Commission, ‘Communication from...’, p. 4

²¹ On the security dilemma and ambiguous symbols, see: Ken Booth and Nicholas J. Wheeler, *The Security Dilemma: Fear, Cooperation, and Trust in World Politics* (Basingstoke: Palgrave Macmillan, 2008) pp. 1, 4-5

firmly within the camp of 'space haves', as opposed to the 'space have-nots'. A space cartel may emerge by the mid-21st century if one does not believe it exists already, and this may have significant implications for the economic and resource base of civilisation should humans begin to exploit mineral resources on the Moon and the asteroid belt. A space cartel is taken to mean a small group of powerful states, allied blocs, and corporations in determining the rules of exploiting space for each other and all other political-economic entities on Earth. For example, in 1976 the Bogota Declaration by equatorial states to claim sovereignty over geosynchronous Earth orbit (GEO) was ignored by the dominant space powers of the time and remains ignored to this day.

Space arms control negotiation is in deadlock in part due to duality. Defining a space weapon is difficult because there is no agreed dedicated space weapons system deployed. A techno-centric approach to space arms control may forbid the use of routine space technologies. There is no intention here to resolutely define a space weapon;²² rather, it is to raise the strategic possibility - that permeates from duality - that all major independent space powers will have varying degrees of capacity to engage in many forms of space warfare should the will to do so be present. This is not to encourage defeatism in space arms control; some limited bans and rules of engagement could be established.²³ Any EU astrostrategy has to be aware of the EU's residual military space

capabilities going into any space arms negotiations.

An EU astrostrategy needs to consider how it can reform the laws, norms, and regulation affecting the conduct of civilian and military activities in and with space. The EU-pioneered International Code of Conduct (CoC) for space is a good place to start in formulating 'soft law' or norms for everyday management of space and encouraging best practice. Regardless of opinions on the EU's (and its member states') positions on, and the efficacy of, space disarmament and regulation negotiations, they are not the entirety of questions surrounding the management of extant and potential space resources. An astrostrategy needs to consider a larger looming legal reform issue. The outer space regime at worst stifles any claim of appropriation of territory or mineral resources on celestial bodies such as the Moon and asteroids,²⁴ and at best leaves uncertainty over the legalities of doing so. Whether space law has actively arrested development in space beyond LEO will remain an open question here. However, as private companies are interested in exploiting the mineral wealth of the solar system, and engaging in corporate-scientific ventures on the Moon, the 'common heritage' principle in sharing the wealth of outer space resources will be challenged. Space powers may attempt to ensure that they do not miss out on any potential bounty of space as new norms and perhaps laws governing the exploitation of space are drawn. Should the major space powers agree to a beneficial settlement, barring any breakdown in agreements and a free-for-all scramble to seize the resources of celestial bodies, there is no guarantee that such an agreement may not benefit all states on Earth as worded in the OST. A space cartel, with each state or relevant corporation gaining access to

²²On space weapon definitions, see: Joan Johnson-Freese, *Heavenly Ambitions: America's Quest to Dominate Space* (Philadelphia: University of Pennsylvania Press, 2009) pp. 80-81;

²³ Ross Liemer and Christopher F. Chyba, 'A Verifiable Limited Test Ban for Anti-Satellite Weapons', *Washington Quarterly* (33:3, 2010)

²⁴ Dolman, *Astropolitik...* p. 138

space resources and being able to dictate and shape practice in outer space, may emerge separating the space 'haves' and 'have-nots.' An EU astrostrategy needs to ensure the EU manages its position in any such negotiation and ensure it does not lose its ability to shape the future political economy of space exploitation.

Conclusion

The EU's overall astrostrategic objective is to ensure that the EU continues to be a driving force, or at least a crucial acquiescing space power, in forming the ways in which humanity will manage its exploitation of space. The EU should achieve this through ensuring its own autonomous access to space, noting that any extensive cooperation with external parties must not be detrimental. As part of its repertoire of autonomous capabilities, the EU should continue to utilise the duality of space systems as a hedge against a more militaristic turn in astropolitics. Latent military capabilities will serve as leverage in any negotiations on exploiting the solar system's resources, as the threat of escalation from imposing unfavourable terms could potentially be an option. This means that the EU should not commit to arms control initiatives which legally limit its capability of engaging in probable forms of space warfare.

This astrostrategy does not call for a hawkish drive to militarise EU space policies and programmes. Instead it clarifies how duality plays into long term astrostrategic thinking; how we bridge the gap between the 'peaceful' exploitation of space and harnessing space's military utility. This initial astrostrategy provides greater clarity of long-term vision but also allows for flexibility as conditions change over time; should consensus emerge without confrontation there would be little need to further militarise EU

space industry and capabilities. If astropolitics dictate that the military instrument is inappropriate or ineffective for achieving the EU's interests within a 'space cartel', it does not invalidate this astrostrategy's overall objective. At different times different levels of cooperation with different space powers may more benefit the EU's astrostrategy. As the small individual members of the EU will not be able to compare as separate space powers should the other space powers realise their full potential; all member states of the EU must consider how they and the EU fit into in the global debate on how humans exploit the final frontier.²⁵

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²⁵ Pending the non-collapse of European political-economic unity.

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