



Outer space: what strategy for a new environment? Everett Dolman's vision

military-Earth thinking notebook

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Published on 24/07/2018

Sciences & technologies

As a historic player in the conquest of space, the United States has always theorized the strategic role of this new dimension. Everett Dolman is one of the researchers who has certainly had the most ambitious and forward-looking vision in this area. Lieutenant Marie-Hélène Marçay, a researcher at the Centre for Higher Air Education specializing in space issues, shows us below that this vision must now take account of the reality of the financial resources available and the emergence of new global players.

After the "support" space of the Cold War and then the "operations support" space from the first Gulf War onwards, a new approach to the space environment emerged in the 1990s with the formulation in the United States of the concept of Space Control. Comprising three components (surveillance of the space environment, development of defensive means and development of offensive means against the capabilities of potential adversaries) [1], it pursues the objective of consolidating the position of superiority occupied by the United States in space matters.

It is in this context of Space dominance that Everett Dolman's book[2]. A doctor of political science, he is considered one of the most eminent thinkers on space issues and has been identified as the leading space theorist.

The main purpose of his book is to address the issue of the foundations and form of a space strategy for the United States that would maximize its power and strengthen its national security in an anarchic international world [3].

The singularity of his approach is to build its space strategy on the extension of classical geopolitical theories, notably the German Geopolitik, in order to justify American supremacy over outer space.

We shall see how the author updates classical geopolitical theories for a new environment: outer space (I), to present his prospective vision of an "astrostrategy" for the United States (II).

Updating classical geopolitical theories for a new environment

- **A return to classical geopolitical theories**
- Geopolitik and geopolitics

The notion of geopolitics has long suffered from the grim reputation it has been given by the supporters of National Socialism and Fascism through the misuse of the theories attached to it. After the Second World War, it received unanimous political condemnation which considerably diminished its influence in the literature of international relations and strategic studies. Over the past two decades, however, it has reemerged on the scene through the media to the point, moreover, that the term has been overused and understood in too broad a sense in many cases.

The theses that appeared at the end of the 20th century^{which} questioned the State territory itself in favour of a globalized representation privileging transnational networks, have accentuated the phenomenon of obsolescence attached, a priori, to the notion of geopolitics [4].

4] However, in spatial matters, these theses seem inoperative. The expert Xavier Pasco in fact affirms the centrality of the role and interests of the States in the development of space activities[5]. 5] This is why we can rightly speak of the geopolitics of space.

- The extension of classical geopolitical theories to the space environment

In order to develop what he calls an "astrostrategy", Dolman relies on several authors who developed, in their time, a strategy for the environment, be it land, sea or air. First of all, the economist Friedrich List, who underlined the decisive character of the railway network in Prussia's victory over France in 1870. The work of the American historian and strategist Mahan, for whom maritime power was one of the keys to achieving world domination, is an essential reference when one has the ambition to think about the space environment. Everett Dolman is also based on the British theorist Mackinder, whose famous formula: "Whoever dominates Eastern Europe commands the Heartland,[6] whoever dominates the Heartland commands the world island, whoever dominates the world island commands the world". The air strategists, finally, that were Douhet, Mitchell[7] (who proclaimed the crucial role of the air weapon and its decisive character through air control) as well as De Seversky and his spherical modeling of the airspace, add to the foundations of the author's thinking. A reference to Clement Ader - his theory of the airways constituting a first draft of what will be called a geopolitics of the air [8] - would have been welcome as it would have found an interesting echo in the author's effort to model space.

- **Study of the Space Environment**
- Definition and characteristics

Uncertainty still remains as to the definition and delimitation of outer space. John Klein, in his book on space strategy, refers to the American report Space Power 2010, which identifies different criteria for where space begins: biological, mechanical, administrative, aeronautical, legal and military[9].

Agreeing with this author and in accordance with international custom, we will adopt a broad definition of outer space which will be defined as starting from the lowest orbit (about 200 km) and extending to infinity.

While some talk of an aerospace continuum, it is however indisputable that there is a physical separation between the two environments, which technical progress will never be able to remove [10]. 10] However, rejecting the uniqueness of the environment does not mean not recognising the "interrelationship and dependence" of the air and space environments .

11] Let us identify the main characteristics of this environment on which strategic action is envisaged in order to identify its uniqueness.

This environment is **hostile**, both for the infrastructures deployed but also, and above all, for man (absence of gravity, radiation, even the thermal effect of infrared radiation).

The **rigidity of the** environment has an impact on the transport of space assets. Placing a satellite in orbit is incomparable with the circulation of other mobiles in other environments. As for its freedom of movement, it is almost nil [12].

12] The **vastness of space makes** surveillance and control of the environment extremely delicate.

Finally, the absence of friction in this atmosphere-less environment favours a durability of space objects that is out of all proportion to other environments.

- Geographical approach and specific constraints

Like Mackinder, who divided the Earth's territory into distinct regions, the author distinguishes four spatial regions.

- His first region is the **terrestrial** region. This is the Earth's surface and its atmosphere extending to the altitude from which there is a marked weakening of atmospheric pressure[13]. 13] As a mandatory gateway for space activities, it embodies "thecoastal region ofouter space" [14]. It is a kind of hybrid region, concerned both by the classical topography and by the new space geography. Astropolitics would thus correspond to a space-terrestrial geopolitics with the identification of terrestrial ("astrostrategic") hot spots.
- The second region is **circumterrestrial** space. This is the environment in which military satellites operate (reconnaissance, navigation, telecommunications in particular). It is divided into three main categories of orbit: low orbit (150-200 to 500 km), medium orbit (1,500 to 36,000 km) and geosynchronous orbit (36,000 km) including the geostationary orbit.

Each of these orbits has different military interests. It should be noted that the physico-chemical qualities of the low orbit particularly favour telecommunications [15]. On the other hand, the residual pressure remains significant and the satellites undergo premature wear there due to atomic oxygenation. Finally, they are threatened by the multitude of space debris present in low orbit and are also vulnerable to probable anti-satellite weapons (blinding laser or missile, for example [16]).

The geostationary orbit, which allows a satellite to remain always plumb with a single point on the Earth's surface, is particularly coveted for telecommunications, television and

observation satellites.

- The third region is lunar space, **delimited** by the geostationary orbit for its lower limit and the lunar orbit for its upper limit.
- Finally, the last region is **solar** space, **which** covers the rest of the solar system. Its exploitation by man remains technically limited.

Towards a future space strategy - prospective approach

- **Building an "Astrostrategy" for the United States**
- Identification of astrostrategic spatial areas

Earth space is considered to be the premier **astrostrategic space zone, since it is on its** surface that launches, command and control, surveillance, research and development and many other missions directly related to space take place. This is why, according to the author, it is better to control space from Earth than Earth from space (due to the excessive vulnerability of satellite networks).

Circum-terrestrial space is already the framework for the use of space assets for military purposes. There are, moreover, space "lines of communication" which, like the maritime communication routes identified by Mahan in his conception of Sea Power, open up the possibility of controlling the environment by making it possible to control exchanges. These lines of communication are represented by the Hohmann transfer orbits, which are the most economical means of changing orbit.

The moon, unlike circumterrestrial space, has interesting resources (iron, calcium, silicon, aluminium and titanium). The exploitation of the oxygen present in the soil could allow future colonization.

In reference to Mahan, Dolman is studying the possibility of establishing space bases on "planets, moons, asteroids and other celestial bodies." In reference to Mahan, Dolman is studying the possibility of establishing space bases on "planets, moons, asteroids and other celestial bodies" as transit or stopping stations for space operations, and eventually discarding them because they would not be the "most favourable places" [17]. [17] He thus opposes the vision of Cole, a proponent of the colonization of asteroids, described as "stepping stones for the conquest of outer space" [18].

Within solar space, Dolman favors the five positions (from L1 to L5) identified by Lagrange in the 18th century. Called libration points or more commonly Lagrange points, they have the particularity to see the gravitational effects of the Earth-Moon or Earth-Sun systems balance in their place. The strategic advantage is that an object parked in one of these points would remain permanently stable without consuming energy.

- Space domination: a way to establish the supremacy of the American model

Dolman's goal is to develop an "astrostrategy" for the United States that uses the concept of "grand strategy" in the sense that it is not reduced to a military "tool" in the quest for increased national power. Economic, informational and diplomatic instruments also play an important role.

The aim of its demonstration is as follows: the concept of "dominance" is the means by which the United States can impose its correct vision of the world within a new space regime, governed by the principles of economic liberalism.[19]

According to the author, while Geopolitik provided the basis for the establishment of a totalitarian Nazi regime that advocated the development of a "superior race" within Lebensraum and theAccording to the author, while Geopolitik was the basis for the establishment of a Nazi totalitarian regime that advocated the development of a "superior race" within the Lebensraum and the enslavement or even extermination of "inferior" peoples, Astropolitikwould favour the establishment of American domination over outer space for the good of all humanity.

Such a discourse is not new and fits well with the messianic significance attributed by the Americans to the conquest of space (in the broadest sense) [20].

Thus, the author, under the guise of a benevolent and beneficent morality, paradoxically justifies a space Realpolitik, which is by nature quite amoral .

Some observers have moreover noticed, when looking at the American policy carried out under the Bush era, "a withdrawal frommultilateralism and international law, but, on the other hand, a commitment to promote liberal democracy, which here joins the idealistic current. [...]. This leads Pierre Hassner to describe American foreign policy as "bottled wilsonism". Wilsonism would be realistic here, insofar as it would serve the national interest and would be based on the use of military power" [21].

- **An unlikely realization**
- **Challenging American unipolarity on the space scene**

Xavier Pasco stressed in one of his lectures[22] the fact that other players (Russia, India, Europe, but especially China, which is particularly threatening) tend to impose themselves as real interlocutors, or even as worrying adversaries.

Admittedly, if China's activities reveal a form of diplomatic-military arm wrestling, one is more in a position of affirmation[23]. 23] Nonetheless, the American power takes very seriously this probable disruption of the unipolar balance, considered as a potential threat to its national security.

24] For strategic thinker Colin Gray, more than one state, it is an alliance of states that should be feared. Indeed, he considers that the triptych Russia/China/India[25], if it were to be formed, could very well compete with the American power[26]. Europe, for its part, asserts a real interest in using space technologies for security purposes.

These various initiatives suggest a gradual redistribution of the balance of power in the space arena and, consequently, a gradual weakening of American domination of space.

- **The revision of American space ambitions**

The Vision for Space exploration foresaw two successive major programmes: a manned flight to the Moon[27], and the conquest of Mars from the 2030s onwards.

The arrival of Obama, but above all the severe financial crisis facing NASA, have called

such ambitions into question.

If the objective of going beyond the proximity of the Earth has not been abandoned, the will to go to the Moon as early as 2018 has. On¹ February 2010, President Obama announced his decision before Congress to cancel the Constellation programme, which involves insurmountable costs for NASA [28]. The withdrawal of the space shuttle was confirmed in 2010. This would force the United States to use Russian Soyuz vessels to send men into space until the arrival of a possible successor to the Shuttles.

The new U.S. Strategic Doctrine, released May 27, 2010, highlights the new president's change in rhetoric from the old one. It 'marks a shift away from war rhetoric and unilateralism' [29] to a focus on building partnerships with other countries.

It is in this spirit that the National Space Policy of United States[30] is written. International cooperation as well as the strengthening of stability in space are among the major objectives set.

According to several realistic authors, the United States will not be able to maintain its hegemonic position for very long[31]. 31] The serious economic crisis currently affecting the United States is leading to a serious questioning of some of its space programmes and attests to the possibility of their erosion. Thus, Dolman's prospective vision, already a little extreme in its time, seems seriously called into question today.

1] U.S. Air Force Space Command, Strategic Master Plan FY06 and Beyond, Peterson AFB, October 2003.

2] Everett Dolman, "Astropolitik, classical Geopolitics in the Space Age" London, Frank Cass, October 2002, 208 p.

3] The author's vision is within the realistic current of international relations.

4] See Bertrand Badie. The End territorial* Paris, Fayard, 1995. Coll. L'espace du politique, 276 p.

5] Xavier Pasco, "Vers une politique territoriale de l'Espace - le renouveau américain", Géopolitique, April 2007, n° 98, p.12-13.

6] The Eurasian continent - "geographical pivot of history", according to Mackinder .

7] In which he implicitly adapts, for the space environment, the idea that "the world is on the threshold of the aeronautical era during which the destinies of all peoples will be played out in the air". Cf Serge Grouard, "The war in orbit. An Essay on Space Policy and Strategy" Paris, Économica, 1994, Coll. Bibliothèque Stratégique, p. 43.

8] Hervé Coutau-Bégarie, "...Strategy Treatise" Paris, Économica, 6th ed., ^{2008, Coll.} Bibliothèque Stratégique, p. 704.

[9] John J. Klein, [9] John J. Klein, "Space Warfare: Strategies, Principles and Policy" London, Routledge, 2006, p. 6.

10] Hervé Coutau-Bégarie, op.cit. , p. 944.

11] John J. Klein, op. cit. , p. 15.

12] It remains limited to the orbital trajectory. At most, a change of orbit is feasible, although it requires a great deal of technological mastery and remains costly in terms of energy. Finally, the very maintenance of the satellite orbit requires meticulous monitoring.

13] Karman line located about 100 km above the Earth's surface.

14 | Everett Dolman, op.cit., p. 69.

15 | Alexis Bautzmann, "Les grandes divisions de l'espace", Special Issue Diplomatie, August-September 2009, No. 9, p. 10.

16 | China's operation to destroy one of its satellites in 2007, or the same American operation a year later, attest to the reality of the threat.

17 | Ibid, p. 74.

18 | D. Cole and D. Cox, "The challenge of the Planetoids" (Philadelphia, PA: Chilton Press, 1964), p.5. Cited in Everett Dolman, op.cit. at 149 .

19 | Ibid., p. 179.

20 | Ibid, p. 16.

21 | Marie de Jerphanion, "Vers un rapprochement de la morale et de la Realpolitik?" La Revue internationale et stratégique, No. 67, Fall 2007, p. 133.

22 | Conference at the Military School on "The Militarization of Space", ANAJ-IHEDN, 9 October 2009.

[23] Xavier Pasco, lecture cited.

24 | "The annual report to Congress - Military Power of the People's Republic of China" of March 2009: http://hongkong.usconsulate.gov/uploads/images/2gxa2UnPNVwX8w5cE3smAQ/uscni_dod_2009032501.pdf.

25 | Russia already cooperates with China on military space affairs. See The annual report to Congress, op.cit . p. 49 . In January 2007, India announced the launch by Indian forces of the process of creating a space defence command centre, without specifying a time frame for its completion. See Karol Barthélémy, "Du rifi dans l'espace: Star Wars épisode 2007?", Latitude 5, No. 76, April 2007, p. 30.

26 | Alain Dupas, Lecture at the École militaire: "Quelles stratégies pour les États-Unis et le monde pour l'exploration humaine du système solaire au XXI^{ème} siècle", Association planète^{Mars.1} December 2009.

27 | "Constellation" program that would correspond to the enhanced Apollo program.

28 | The Chinese would then find themselves alone in the race. It should be remembered that they plan to launch an uninhabited rocket to the Moon in 2012 before sending men there around 2020.

29 | Diplomacy n° 45, p.8.

30 | http://www.whitehouse.gov/sites/default/files/national_space_policy_6-28-10.pdf

31 | Charles-Philippe David, "[31 | Charles-Philippe David," p.5. The War and Peace" Presses de Sciences Po, 2006, 2nd^{édition}, p. 88.

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Release date 11/07/2018
