

Space Power and Europe in the 21st Century

Nicolas PETER, Research Fellow at ESPI

In the unfolding new space order, space activities have increasingly become tied to the national power of pre-eminent States. Space power has thus become an indispensable element for a country with regional and global ambitions. However, while Europe possesses the fundamental elements of space power it has been somewhat slow to recognize the tenets and benefits of space power. This needs to change if Europe wants to be able to maintain its position in the global “space hierarchy”.

Towards a New Space Order

Since the pioneering of space activities the geopolitical context of space affairs has changed dramatically. In the post-Cold War era a new phase of space activities began. In the 1990s, the Cold War and its East versus West political environment began to evolve from a bipolar space world dominated by the United States and the U.S.S.R. into a multipolar world characterised by the rise of many new actors with increasing technical capabilities, leading to an internationalisation of the space context.¹

The multiplication of actors in the post-Cold War context has been accompanied by an emerging globalisation of space activities with actors now scattered all over the world and no longer limited to the “North”. Complementing the internationalisation and globalisation of space affairs, space activities are becoming more and more institutionalised and an increasing number of countries are developing (dedicated) policy or strategy to frame their space activities.

In the unfolding new space order the importance of space power is growing.

In this new phase of space activities, there is growing diversity in the types of actors involved in space affairs that in turn influences the overall space context. The involvement of non-

governmental organizations (NGOs) and other non-state actors such as private enterprises is indeed leading to a multiplicity of actors and stakeholders in the space scene.

The space context is evolving towards a new space order where space activities are becoming more widespread. While States remain the dominant actors, a growing number of them are using space programmes for political and symbolic objectives such as demonstrating and increasing national pride.² This is due to the fact that space activities are being increasingly recognised (even by newcomers to the space arena) as a necessary element to being, at a minimum, a regional or continental power, whereas for world powers space is increasingly being perceived as an indispensable element of national power. The importance of space power is thus growing in the unfolding new space order.

What is Space Power?

Understanding the nature and impact of power and actors is key in the emerging system of competitive multi-polarity. In this article, power is defined as “the ability for a country to affect outcomes according to its preferences, interests, and if necessary change the behaviour of other actors in order to achieve desired outcome”.³ National power can thus be

¹ Nicolas Peter: “The Changing Geopolitics of Space Activities”. *Space Policy* 22 (2006): 100-109.

² Bertrand de Montluc “The New International Political and Strategic Context for Space Policies” *Space Policy* 25(2009) 1-9.

³ Joseph Nye: “The Paradox of American Power: Why the

defined as the capacity of a country to pursue strategic goals through purposeful action. Space power is thus a subset of national power. The effects of national power can be categorised as diplomatic, economic, military and cultural.

The body of space power literature currently lacks a single comprehensive theory that thoughtfully defines, explains and predicts the nature, significance and functioning of space power.⁴ There is no widely accepted space power theory. It is emerging, but still embryonic in terms of scope and depth compared to other media (land, sea and air) and is relatively recent with the first published worked dating back only to the 1960s. Conceptually, however, space power theory has attracted an increasing amount of attention in recent years, particularly in the United States⁵ and to a lesser extent in China. While Europe possesses the fundamental elements of space power it has, however, been somewhat absent from the ongoing debate and processes leading to the development of space power theory.

While different definitions emphasise different aspects, no definition covers all aspects of the actors, capabilities, functions and purposes of space power. Space power can however be defined as the “total strength and ability of a State to conduct and influence activities to, in, through and from space to achieve its goals and objectives (security, economic and political), to affect desired outcomes in the presence of other actors in the world stage and if necessary to change the behaviour of others by exploiting the space systems and associated ground-infrastructure as well as political leverage it has garnered”.⁶ Although broad and general in nature, this definition focuses on national objectives, the use of space as a medium distinct from land, sea, or air, and the use of capabilities that are required by the space medium.

Space power is thus the ability to use space to get desired outcomes by influencing the environment and the behavior of others. In other words, space power is the pursuit of national objectives through the use of space capabilities. It is not a single property but a combination of factors. There are different elements in the space power continuum with a complex interaction between civilian, economic, and military programmes as well as soft, economic and military powers. Space power is thus multi-dimensional in essence and is composed of a set of interrelated elements. It is not simply satellites and access to space; it is anything and everything a country can achieve through space.

Space power is the pursuit of national objectives through the use of space capabilities.

The foundations of space power range from obvious hardware elements (such as launch sites, launch vehicles, telemetry tracking and communications sites, on-orbit satellites and other spacecraft) to socio-economic elements (such as human capital) through to political and regulatory elements such as the number of seats in international organisations and other relevant bodies. Pre-eminent space actors, particularly space-faring countries, thus possess inherent attributes of space power.

The exercise of space power is not purely a technological question. To fully exploit space power, simply having resources in the form of equipment and manpower is inadequate if these assets are not structured to solve special tasks. It is necessary that a country demonstrates “political will” and develops the attendant national strategy and policy to exploit the elements of space power. Possessing cutting edge technology and a skilled workforce is thus not sufficient. Being able to use the foundations of space power efficiently is crucial and many impediments to the exercise of space power must be overcome to fully reap the benefits of space power.

Why Space Power Matters.

In the changing geopolitical context, States that seek to garner more power are increasingly becoming involved in space affairs including space power. Space power has consequences (and profound implications) both domestically and internationally and gives additional overall national power to a State.

World's only Superpower Can't Go it Alone". Oxford University Press. 2002

⁴ In the following article “Nicolas Peter: “Space Power and Europe, in the Need for a Conceptual Framework”. 59th International Astronautical Congress. Glasgow, Scotland. 29 September - 3 October 2008” most of the theoretical underpinnings of space power are described.

⁵ For instance the U.S. National Defense University's Institute for National Strategic Studies recently conducted a study that seeks to develop a theory of space power.

⁶ Nicolas Peter: “Space Power and Europe, in the Need for a Conceptual Framework”. 59th International Astronautical Congress. Glasgow, Scotland. 29 September - 3 October 2008.

While the arguments over possible theories of space power continue, in practice space power is being exercised by all space-faring country every day, purposefully or not. Today space power has become inseparable from all other forms of terrestrial power due to the ubiquitous and pervasive nature of space activities. And, in conjunction with other forms of conventional power, space power is necessary for a country's overall national power and international standing. However, any State's approach to space power depends on its perception of the strategic environment and its position relative to other space actors. Moreover a space-faring country can be a major actor in one or two domains linked with space activities (e.g. scientific activities), but this does not necessarily imply that this actor possesses the complete spectrum of space activities or that this actor can exercise space power to its maximum.

Exercising space power conveys a variety of benefits to space actors such as national and international prestige, military advantage, economic competitiveness and scientific prowess. It also demonstrates the willingness of a country to ensure that it is not dependent in space affairs. Space programmes when well conceived and well executed are a valuable source of hard power, economic power and soft power for a State. Exercising space power thus provides tangible and intangible benefits. Using the traditional four effects of national power, the impacts of space power can be categorised as diplomatic, economic, military and cultural.

- Space power is a means of impressing the world through the possession of elaborate space capabilities illustrating an assertive global position that allows influence in the international context.
- Space power allows the development of a highly skilled technological workforce and a dynamic industrial base that are both critical for a country's international economic competitiveness.
- Space power can be used as a pressure point to support political decisions since it can be an element to dissuade targeted players of hostile actions and can also be used to apply force.
- Space power can help to promote the awareness of a common identity among citizens and demonstrate increased confidence in future capabilities.

There is no general hierarchy of these attributes since they do not exist in isolation from one another and various traits are tied

together with none being an overriding factor. Space power therefore leverages different elements and is a foundation for a State's total power capability and, by its very nature, enables the exercise of influence over a broad spectrum of areas.

Space power is a foundation of a State's total power capability and provides both symbolic and political advantages that go beyond material benefits.

Space power can be applied in different ways. It can provide direct benefits to the owner of space assets but it can also be used to encourage and reward others, dissuade targeted players and, ultimately it can be used to apply force. All of these demonstrate the flexibility and versatility of space power. There are however only a few historical examples of the utilisation of space power and thus knowledge of its full potential significance and impact is currently limited. For instance, the first Gulf War is one of the few examples of the utilisation of hard space power. Nonetheless, space power is an important reality which cannot be denied and as long as there is not major conflict, the most important form of space power is non-military (soft and/or economic power). For space power, soft power is thus just as important as economic and hard power.

Space power has applications on Earth and has profound implications both domestically and around the world in terms of the credibility of a country's technology. It is enormously valuable for countries and provides both symbolic and political advantages that are beyond material benefits. Space power alone, however, cannot ensure the attainment of terrestrial political objectives; it must be combined with other power elements. It has nonetheless become a major element of national power of major world powers and is also becoming a strategic field for many other countries.

Reflections on Space Power in Europe and its Implications

Europe (the European Union and its Member States) possesses some degrees of national power (soft, military and economic powers) in space activities. This is due to the fact that, when considered collectively, Europe possesses critical technical assets (independent launch site, versatile launch vehicle fleet, diversified spacecraft, solid industry and dynamic universities etc.), and non-technical assets such as high visibility in

international organisations (United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS), International Telecommunication Union (ITU), Conference on Disarmament etc.), which are all necessary elements to exercise space power. A combination of European abilities and capabilities coming from different European actors (members States, European Space Agency and the European Union) thus provides Europe with the status of a major space actor and with the ability to benefit from the various attributes of space power (soft, military and economic powers).

The internationalisation and globalisation of space has increased very rapidly over the past decade and is likely to continue.⁷ There is now a more global space landscape with growing strength in emerging economies and increasing specialisation in various parts of the world. The evolving geopolitics of space activities and the unfolding new space order present both challenges and opportunities for Europe. In this dynamic context Europe ought to remain a leading world player and should nurture and develop its space power capabilities in keeping with the increasing influence it wields.

Europe's development in this new international order based on multilateralism is the product of necessity, not choice or alternative. Moreover, global developments will entail fundamental changes to the distribution of resources and influence with the emergence of new players forging closer ties at the regional level, leading to a potential shift of power and influence.⁸ This process does not necessarily pose a threat to Europe but it needs to be reckoned with for the specific purpose of managing change in a balanced and effective way.

Exercising greater space power will allow Europe to protect its own interests and strengths while meeting the challenges of the multipolar (space) order currently emerging. There is nothing fatalistically preordained in the shape of the space context to come and in Europe's place therein. It is however a matter of political decision drawing on Europe's comparative strengths and ambitions and the ability to nurture and use space power.

Europe currently enjoys a leading position in the global "space hierarchy" but this might not last to the detriment of its ability to exercise space power.

The effectiveness of space power is dependent on the ability to set the space agenda and influence other actors. The ability to exercise space power is therefore an important tool for Europe because space power, among others, enhances Europe's prestige in the international arena due to its superior economic and soft power and supports the exercise of its hard power potential.⁹ Exercising space power could for instance allow Europe to influence the drafting of international regulations, and by taking the lead in strategic thematic areas such as environmental research, it can also help to affect the development of global standards and norms. Space power could also allow Europe to remain a centre of gravity in international relations by attracting the best partners to cooperate, therefore increasing the capabilities and possibilities of its projects (e.g. financial, technical etc.).

Europe currently enjoys a leading position in the global "space hierarchy" but this might not last. Europe's ability to exercise space power could decrease over time. In this context, to maintain a leading space role and consequently to be able to exercise space power to a greater extent, Europe must foster more "political will" and develop associated encompassing policies, strategies and doctrines. This further needs to be complemented by a series of programmatic elements facilitating policy implementation.

Specific programmatic elements that are considered to be important building-blocks for Europe to acquire or expand in the upcoming years to foster its space power potential are indicated in Table 1. These eight programmatic elements in combination would provide Europe with the diplomatic, economic, military and cultural tools that would enable Europe to face the challenges presented by the evolving space context. These elements provide different types of benefits depending on the specific elements considered and should consequently not be considered in isolation.

⁷ Nicolas Peter: "The Changing Geopolitics of Space Activities". Space Policy 22 (2006): 100-109

⁸ Nicolas Peter: "Space Exploration 2025: Global Perspectives and Options for Europe". European Space Policy Institute (ESPI). Vienna, Austria. ESPI Report 14. August 2008

⁹ Nicolas Peter: "Space Power and Europe, in the Need for a Conceptual Framework". 59th International Astronautical Congress. Glasgow, Scotland. 29 September - 3 October 2008.

Space Power and Europe in the 21st Century

	Diplomatic effects	Economic effects	Military effects	Cultural effects
Access to space	X	X	X	X
Competitive industrial and space services base		X	X	X
Global navigation satellite system (GNSS)	X	X	X	
Space exploration	X	X		X
Utilitarian space activities	X	X		X
Space science		X	X	X
Space Situational Awareness (SSA)	X		X	
Space Traffic Management (STM)	X	X	X	

Table 1 Programmatic building-blocks needed by Europe to foster its space power potential and enhance respective national power effects.

The Way Forward for Europe

Since the end of the Cold War the sources and distribution of power are being transformed in a profound way. Changes in the power structures of the international space system necessitate re-thinking the traditional perception of space power. The Cold War paradigm shaped virtually every aspect of the space context and space systems until the mid-1990s. The concept of space power emerged in the context of the rivalry between the United States and the Soviet Union. However, with the emergence of a new geopolitical context and the resulting evolving space context, the concept of space power needs to evolve to reflect the motivations and objectives of current developments. Moreover, because of the growing importance of space power and the rapid pace of change of the space environment, it is important to have a sound understanding of space power in Europe to be able to develop a strategy that maintains Europe's advantages in the space sector to enable Europe to maintain its position in the global "space hierarchy" in the emerging new space order.

European space programmes have been highly successful and European citizens have embraced space-based services and support in many aspects of their everyday lives. Space is now enabling and enhancing many European economic activities and is a building block of Europe's information infrastructure. It could therefore be assumed that because of the

relevance and pervasiveness of the European space programme, a clear understanding of space power exists. There are however enormous shortcomings in Europe's ability to understand, develop and exercise space power. In Europe there is no mention of space power in policy, strategy or doctrine documents. A sound understanding of the nature and exploitation of space power is critical for Europe as its technical lead, even if it does not shrink, could nonetheless become relatively less important in the emerging new space order. If Europe wishes to retain its space power, it must protect its space interests both philosophically and politically.

Conceptually, space power theory has attracted increasing attention in recent years, particularly in the United States and to a lesser extent in China. However, while Europe possesses the fundamental elements of space power it has been absent from the on-going debate leading to the development of space power theory. The involvement of Europe in the debate on defining and strengthening the conceptual framework of space power is essential in order to take account of Europe's specific assets and perspectives and depart from the current idea of space power being dominated by military power. A better understanding of the attributes of space power will also help Europe to develop more "political will" and programmatic building blocks.

European space power today is deficient and Europe must recognise this deficiency in order to maintain the status of leading space actor. As U.S. President John Fitzgerald Kennedy in said in 1961 "No one can predict with certainty what the ultimate meaning will be of mastery of space".¹⁰ Europe needs thus to ready itself and prepare for continuing change in the space context and an open-ended evolution of the potential provided by space activities. Europe's increased presence in all domains of space should also translate into comparable influence, which has not always been the case. Europe has to realise that space can provide support for a host of its activities but it is also a tool to serve its interests. Processes need to be geared more explicitly towards producing outcomes rather than being seen as ends in their own right and they must bring tangible results within reasonable time frames.

¹⁰ Special Message to the Congress on Urgent National Needs. President John F. Kennedy, 25 May 1961.

In the emerging new space order, Europe should not create the impression that it is only a follower and lose its credibility as a reliable partner in space. Space affairs are a highly symbolic representation of Earthly powers and overall national standing and will undoubtedly continue to be a persuasive method of demonstrating national power to the rest of the world.

Therefore, Europe needs to realize and consequently develop its space power potential because what is at stake is the future agenda-setting power of Europe in the international system, its ability to shape the priorities and timing of events, and its ability to attract the best partners to be able to fully benefit from opportunities wherever these support European space objectives and wider European policy goals.



Palais Fanto
Schwarzenbergplatz 6
(Entrance: Zaunergasse 1-3)
A-1030 Vienna, Austria
Tel +43 1 718 1118 -0 / Fax -99

www.espi.or.at

The mission of the European Space Policy Institute (ESPI) is to provide decision-makers with an independent view and analysis on mid- to long-term issues relevant to the use of space.

Through its activities, ESPI contributes to facilitate the decision-making process, increases awareness of space technologies and applications with the user communities, opinion leaders and the public at large, and supports researchers and students in their space-related work.

To fulfill these objectives, the Institute supports a network of experts and centres of excellence working with ESPI in-house analysts.

ESPI Perspectives are short and concise thought or position papers prepared by ESPI staff as well as external researchers.

Available for free download from the ESPI website

www.espi.or.at

© ESPI 2009