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Space power and its implications—The case of Europe

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ABSTRACT

Having passed its 50th anniversary, the Space Age has attained some degree of maturity. In parallel, space activities have, over the years been for major world powers increasingly tied to national power. 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 absent from the on-going debate and process leading to the development of space power theory. This needs to change as Europe should be able to influence the development of a cogent and comprehensive space power theory and maintain its position in the global "space hierarchy". This paper aims thus to present an overview of the concept of space power and its implications with a particular attention devoted to Europe.

1. Introduction

Recent years have been marked by the changing geopolitics of the space context. In particular, there is an increasing internationalisation, globalisation and institutionalisation of space activities as more and more governments invest in space activities throughout the world [1]. In parallel, over the years space activities have increasingly been tied to national power for major world powers. Space power has thus become an indispensable element for a country with global ambitions.

Conceptually space power theory has attracted an increasing source of attention in recent years, particularly in the United States[1] and to a lesser extent in China. However, while Europe possesses collectively the fundamental elements of space power it has been absent from the on-going debate and process leading to the development of space power theory.[2] This paper aims thus to present an overview of the concept of space power and its implications with a particular attention devoted to Europe in order to help to nurture contemporary conceptual discussions.

This paper first describes the changing context of space activities, and covers the concept of national power as well as its links with the fundamental principles of space power; it then compares the space power abilities of major space-faring actors, and particularly of Europe. Finally, options for Europe to increase its overall space power are also presented.

2. A changing space context

Since the pioneering of space activities during the Cold War, the geopolitical context of space affairs has changed dramatically [1]. The history of space activities can be

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[1] For instance the U.S. National Defense University's Institute for National Strategic Studies is conducting a study that seeks to develop a theory of space power.

[2] The semantic difficulty of defining Europe is acknowledged and in the context of this paper Europe corresponds to the European Union, the European Space Agency and their respective Member States.

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structured into three phases, each having distinct features and characteristics as illustrated in Table 1.

The first phase of the space era corresponds to the "Proto-space Age" during which major advancements in the field of rocketry and astronautics were made before the Second World War under the leadership of visionary individuals such as the American Goddard, the German Oberth and the Soviet Tsiolkovsky (Table 1). Societies and scientific groups played also a significant role in this phase.

The second phase of the space era, or "Space 1.0", took place during the Cold War from the late 1950s to the late 1980s (Table 1). For more than three decades, space was viewed as one of the areas for peaceful Cold War competition between the United States and the USSR as a substitute to armed conflict. Space activities in this period were therefore an emblematic element in this rivalry. During this era space activities were limited to a small number of countries with "intra-bloc" cooperation as the norm [1].

The third space phase, or "Space 2.0", started in the 1990s as a result of the changing space context (Table 1). 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 USSR into a multipolar space context characterised by the rise of many new actors with increasing technical capabilities [1]. In the second space phase a technological revolution linked to the development of small satellite technology, the increasing reliability and accessibility of commercial-off-the-shelf (COTS) technology, as well as the multiplication of commercial services including a reduction of the price of access to space have all increased the prospects to involve non-traditional space actors in the space arena. This led to the internationalisation of the space context.

The multiplication of actors in the post-Cold War context has been accompanied by an emerging globalisation of space activities, with players now scattered all over the world and no longer limited to the "North".[3] Furthermore, in order to accomplish their national goals, countries involved in space activities have created different types of institutional structures. The most widespread model of institutional structure dealing with space activities being dedicated space agencies [1]. New ambitions to create space agencies are surfacing on all continents and the space context is evolving towards a new space order where space activities are becoming more widespread.

Complementing this paradigm shift, more and more countries are also developing (dedicated) space policy or strategy.[4] This is done in order to guide their domestic and international space activities with the principal aim being to improve their capabilities and competitiveness. This is due to the fact that space activities are increasingly being recognised (even by newcomers in 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 seen as an indispensable element tied to national power. With the changing geopolitics of space activities no country can now be regarded as world power or remain a world power unless it posses cutting edge and diversified space capabilities. The importance of space power is thus growing in the unfolding new space order.

3. National power

Understanding the nature and impact of power and actors has been central to study of international relations for decades. However, the concept of power is again important and also more debated than compared to the 1990s due to among others the evolution of the geopolitical context. 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 defined as the capacity of a country to pursue strategic goals through purposeful action. It encompasses two dimensions [2]:

- Internal dimension which is a State's capacity to transform the resources of its society into activities to support national effort.
- External dimension which is the capacity of a State to affect the global environment through its economic, political and military potential.

In this paper, the tenets and concepts of national power are only considered in the context of the latter case, the external dimension.

While national power has both internal and external dimensions it can also be conceived at three levels [2]:

- Level of resources or capabilities.
- Level of power conversion through national process.
- Level of power in outcomes.

This paper focuses on the elements of the second criterion that is the conversion process. Resources conversion capability is critical for a State because it determines whether the resources of a country as a whole can produce capabilities and activities that can fulfil its aspiration (so-called usable power).

At the international level where States compete Joseph Nye identifies three components of national power in international relations:

- Hard power which is the ability to threaten to use, and use if necessary, force. Coercion is thus used as a main strategy.
- Economic power which is the ability to influence the operation of the global market in ways that advance one's national interests.
- Soft power which is the ability of a country "to obtain the outcomes it wants in world politics because other countries want to follow it, admiring its values, emulating its

[3] Space technology is often seen as an important tool to allow the transition from a developing country to a developed country.

[4] For more information on the recent developments in the global space sector see ESPI Yearbook on Space Policy (Chapters 1 and 2). "Yearbook on Space Policy 2006/2007" Schrogl, K.-U.; Mathieu, C.; Peter, N.; European Space Policy Institute (Eds.), Springer, Wien, New York, 2008 and "Yearbook on Space Policy 2007/2008" Schrogl, K.-U.; Mathieu, C.; Peter, N.; European Space Policy Institute (Eds.), Springer, Wien, New York, 2009.