

## American Spacepower: Security, Science, and Hope

Christopher W. Allen\*

Department of Science, Colorado State University, Colorado, United States

\***Corresponding author:** Christopher W. Allen, Department of Science, Colorado State University, Colorado, United States, Tel: 9443751487; E-mail: bxrddad6102@outlook.com

**Received:** Nov 10, 2024, Manuscript No. TSSE-24-51988; **Editor assigned:** Nov 12, 2024, PreQC No. TSSE-24-51988 (PQ); **Reviewed:** Nov 14, 2024, QC No. TSSE-24-51988; **Revised:** Nov 16, 2024, Manuscript No. TSSE-24-51988 (R); **Published:** Nov 30, 2024, DOI: 10.37532/2319-9822.24.13.(11).001

### Introduction

Nanoparticles The United States Space Force recently celebrated its two-year anniversary. The American private sector continues to demonstrate increases in commercial capabilities for space lift, as well as nascent space travel for non-astronauts. International space players representing a myriad of countries and joint ventures busily press the envelope in space exploration and utilization. It is truly a fascinating time for observers of all things space. Yet so many other headline-grabbing, negative events (that shall not be mentioned here) can tend to crowd out coverage of positive space stories. Admittedly nostalgic for a time when achievements in space inspired awe and enthusiasm, the intent of this article is to distract from the negativity of the day and focus the general readers' attention on how hope should still be found by focusing our attention upward [1].

In 1958 in the aftermath of the game-changing Soviet *Sputnik* launch, Donald Cox and Michael Stoiko identified spacepower as “quasi-military and scientific power” [1]. Over six decades, United States space activities helped secure the country in the Cold War and afterwards and fostered innumerable scientific and technological advances. Beyond military and scientific justifications, Cox and Stoiko expressed “hope” space power would “provide the fertile frontier for man’s peaceful evolution into the Universe” [2]. Undoubtedly, the American public’s level of enthusiasm for spacepower fluctuates over time; yet hope in different forms remains a key motivation for the space enterprise. Americans continue to value spacepower in terms of security, science, and hope. Space policy choices should reflect these values and enhance their meaning to the American people [3].

### Description

Cox and Stoiko defined military spacepower as the ability to exert national will *via* Space [3]. In fact, spacepower supports all instruments of power—diplomatic, information, military, and economic. David Lupton stated, “Spacepower is the ability of a nation to exploit the space environment in pursuit of national goals and purposes and includes the entire astronomical capabilities of the nation.” The latter phrase bolsters the notion spacepower is valuable to all instruments of national power. Beyond mere utility, space activities offer deeper meaning or value to Americans, including security.

**Spacepower provides a means of security, in its broadest sense; Americans value security:** The US government employs instruments of national power to protect the American people and provide for their security physical and economic in peacetime and wartime [4-7].

**Spacepower assists all instruments of power at peace and in war and thereby supports national security:** Currently, information is the key product space assets furnish to instruments of national power. Space assets facilitate diverse forms of information, including intelligence, surveillance, and reconnaissance, positioning, navigation, and timing, weather and climatological data, missile warning, nuclear detonation detection, and communications (e.g., inter-personal, television, internet, financial). Most, but not all, forms of space information is dual-use for physical and economic security, which justifies in part the enormous expenses involved in space operations [8,9].

These various forms of spacepower utility enhance security and represent an important value to the country, along with science [10].

**Spacepower advances science; Americans value science:** More specifically, spacepower advances science and technology, which improves knowledge, security, and standards of living. Activities continue to expand scientific knowledge of space, the Moon, and other celestial bodies, including information on the physical composition, workings, and origin of these bodies, which allows for theories on the origins and progression of the Earth and Universe. Human space activities increase knowledge of the effects of gravity-free living and labor, including weightlessness and radiation, which is useful information to build upon for further human exploration and work in space. Key technological advances include weather forecasting, television and other communications transmissions, financial transactions, and global positioning, mapping, and photography capabilities. Scientific and technological advances from spacepower enhance information, improving the security and well-being of the American people and offering hope for a better future.

**Space power offers hope; Americans value hope:** Hope encompasses aspirations, possibilities, and expectations, but also optimism, faith, progress, purpose, discovery, and exploration. Spacepower offers a variety of hope to Americans and provides a positive example of US leadership and power to the world. Hope in spacepower promotes American cultural unity and motivates innovation, the engine of scientific and technological advancement, which strengthens US physical and economic security. Leveraging the British strategist, J.F.C. Fuller, helps tie spacepower values together nicely: spacepower-enhanced security protects man's physical body and possessions; science stimulates the mind of man and its mental quest for knowledge and tools; and hope serves the moral yearnings of man's soul to live positively and purposefully, in this world or elsewhere.

**US policy choices should reflect American values for spacepower-security, science, and hope-and seek to enhance their meaning to the country:** Cold War-era international agreements continue to appear insufficient to promote a stable environment in the near-term for US space operations. Continued anti-satellite tests by competitor states provide one of numerous concerning examples for why the US should continue to examine self-defense capabilities sufficient to protect its invaluable space infrastructure. Yet, US leaders should engage first in good-faith efforts to negotiate or amend agreements and treaties that minimize the potential for space conflict. If agreement proves elusive, the US will possess moral authority and realist justification to press forward with deployment of more robust space defense capabilities. Any defenses should minimize the potential for debris creation in the event use is necessary, in order to preserve the space environment for future beneficial US operations.

The US must strike a balance between capabilities-driven and mission-driven approaches to incentivize and execute manned and unmanned space activities. A capabilities-driven approach expands scientific knowledge, generates technologies, and provides physical and economic security, while avoiding moving target inefficiencies of a mission-driven approach (e.g., returning to the Moon, human landing on Mars) where different administrations change ultimate destinations for space activities. Conversely, a mission-driven approach offers a tangible goal toward which to direct resources that expand science and technology, avoiding potential lack of direction in a capabilities-driven approach.

The cislunar area between the Earth and the Moon should be the focus of a near-term US spacepower hybrid approach, with extensive capabilities development for beneficial cislunar activities (e.g., advanced communications, travel, resource/energy procurement) including renewed Moon missions and civilian lunar outposts. The US should continue to promote private-public partnerships to share costs and spread risk in order to incentivize expansion of space science and technology and foster and grow profitable commercial space ventures. In the absence of acceptable international agreements, US self-defense capabilities must provide a benign security umbrella for expanded cislunar activities.

Efforts to enhance US physical and economic security through advanced spacepower, and to further scientific knowledge and develop useful technologies for use on Earth and in space, will promote various forms of hope for space activities. If, instead, hope for spacepower declines due to lack of sustained vision for space development and utilization, the danger is loss of American space leadership with a resultant lack of economic opportunities, and potential loss of American leadership on Earth. Space experts/enthusiasts evinced this concern in stating, “Space and space technology represent both the resources and the innovation that can keep a liberal and responsible American hegemony in place for decades, if not centuries, to come; furthermore, unless America maintains this technological edge, it will likely lose its preeminence.”

## **Conclusion**

To conclude, “Hope is not a strategy,” or at least not a good strategy. Yet, strategists should value hope. For US space power, hope represents a value to the American people, as do security and science. Hope inspires efforts to enhance security—physical and economic and advance science and technology, in turn generating more hope. Physical and mental progress serves no purpose without moral direction from the soul, which comes only from hope for a better future. US policy choices should recognize and reflect American spacepower values and seek to enhance security, science, and hope for the continued benefit of the country.

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