1 Introduction

> The exploration of space will go ahead, whether we join in it or not, and it is one of the great adventures of all time, and no nation which expects to be the leader of other nations can expect to stay behind in the race for space.
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> John F. Kennedy, September 12, 1962

In different eras in history, certain qualities or areas of expertise are identified as indicators of power and symbols of high standing. Usually, acquiring and developing these qualities require massive investments of resources and large-scale national efforts. Despite the difficulties, risks, and high costs, or because of them, nations that aspire to power and high standing often invest valuable resources and efforts in acquiring expertise in these areas. The nations that have succeeded in this task are recognized by many as an elite group – a club. In line with this reality, decision-makers and state officials often choose to emphasize the political aspect of their country's accomplishments and justify national efforts to acquire such qualities by arguing for membership in the club.

Historically, we can identify several nation-state clubs. At the end of the nineteenth century and into the early twentieth century, acquisition of battleships was an indicator of power and high standing. Each country that had battleships, or dreadnoughts (as they were later referred to), was considered a world power, and as a group, they were perceived as a superior club. After World War I, the dreadnought club declined. Total mechanization of air and ground warfare became an indicator of power and a symbol of high standing. The introduction of nuclear weapons at the end of World War II changed the rules of the game again. As of the 1950s, the group of countries that possessed nuclear weapons was recognized as the nuclear club. In the 1960s, the status of this superior group was somewhat formalized with the signing of the Non-Proliferation Treaty (NPT), by which means the international community formally accepted the N5, i.e. the five nuclear nations, as a legitimate, superior, and elite group – the nuclear club. At the same time, the countries

reaching outer space were also recognized as a superior and exclusive group under the axiom developed in the Cold War space race: "Control of space means control of the world."[1]

This reality raises a number of questions: What are nation-state clubs? What role do they play in world politics? What is their life cycle? And what distinguishes a nation-state club from other models organizing the international system? Journalistic and historiography references to a "club" of nation-states when discussing expertise in areas of space technology, nuclear weapons, and other fields are frequent. Despite that, for the most part, the concept of such a "club" has been neglected or discounted by the vast majority of contemporary international relations (IR) scholars. IR scholars have not developed a comprehensive analytical or theoretical foundation to identify the behavioral and theoretical implications of states' activities in clubs. This book is designed to respond to this neglect by providing a systematic overview of the role of nation-state clubs in world politics. It explores the aforementioned questions using the case study of the space club.

This book focuses on the space club and on the national logic to join it, because space affects our terrestrial life far more than we often realize. A large diversity of applications and services are useful and sometimes even crucial for daily military, civil, and commercial functioning on Earth. The world space industry is an evolving international business. Space capability helps states to develop areas of commercial expertise, which diversifies their economies and enhances their global competitiveness.[2] Advanced space technologies, especially when used for spreading information, are believed to be the means for a quick transition from a traditional undeveloped society to an industrial and post-industrial nation.[3] Communication satellites today are like the railroads of the nineteenth century, enabling desolate parts of a country to be settled and connecting them with the center of the country.[4] Data that come from space or pass through space enable us to run a global and modern economy. We communicate with each other from every point on Earth, use financial systems throughout the world, and continuously access news from around the world via communications satellites.

[1] Johnson, Lyndon B., Summary Statement, Hearings of the Preparedness Subcommittee, Senate Armed Services Committee, Senate Inquiry on Missiles, January 8, 1958.
[2] Pace, S., "Emerging Challenges: National Security Requirements and Economic/Commercial Interests," in D. Johnson and E. Levite, (eds.), *Toward Fusion of Air and Space: Surveying Developments and Assessing Choices for Small and Middle Powers*. (Washington, DC: RAND & Fisher Institute, 2003), 48.
[3] Mistry, D.," The Geo-Strategic Implications of India's Space Program," *Asian Survey*, 41:6, (2001), 1034.
[4] Pacey, A., *Technology in World Civilization*. (Cambridge, MA: MIT Press, 1990), 141.

Weather forecasts come from satellite imagery; sea, air, and ground transportation are based on satellite navigation (global positioning). We study and learn about the Earth's geology and geography, maintain the environment, observe what is happening anywhere on Earth for various civilian purposes, and react to natural disasters with the aid of observation satellites.

Space technology and applications are also used extensively for national security and defense missions during war and peace. In fact, the very first uses of space were for intelligence purposes. Remote sensing satellites fulfill military and security intelligence requirements, without violating the sovereignty of any rival nation and without risk to human life. To a certain degree, during the Cold War, military intelligence satellites were viewed as a stabilizing force, preventing direct confrontation between the two powers.[5] In the last few decades, information gathered from and transferred through space is used extensively for tracking and pinpointing targets on earth; it is used for guidance and positioning, as well as for communications to forces engaged in combat and to weapons systems. In fact, space technology is considered one of the central factors of modern warfare that is based on information and knowledge superiority, better known as the Revolution in Military Affairs (RMA).[6]

In this context, exploring the origins and features of the space club is important in order to understand its role in world politics. The space club

[5] Gaddis, J. L., *The Long Peace: Inquiries into the History of the Cold War*, (New York, NY: Oxford University Press, 1987); Day, D. A., Logsdon, J. M., and Latell, B., *Eye In the Sky: The History of the CORONA Spy Satellites*, (Washington, DC: Smithsonian Institution Press, 1998).

[6] RMA is a concept of warfare that was developed in the 1980s and early 1990s in the United States. It is based on four main components: information warfare, dominant maneuver, precision strike (precise and guided attack capability), and space control. RMA aims at synchronizing all four components into one "System of Systems." Full synchronization can be obtained by using space technologies such as GPS satellites, surveillance and reconnaissance satellites, and communications satellites. Toffler, A., and Toffler, H., *War and Anti-War: Survival at the Dawn of the 21st Century*. (Boston, MA: Little, Brown, 1993); Ben Israel, I., "The Revolution in Military Affairs in the War in Iraq," in S. Feldman and M. Grundman, (eds.), *After the War in Iraq*. (Tel Aviv, Israel: Jaffe Center for Strategic Studies, Tel Aviv University Press, 2004), 55–74; Tilford, E. H., *The Revolution in Military Affairs: Prospects and Cautions*, (Carlisle, PA: Strategic Studies Institute, US Army War College, 1995); Cohen, E., "A Revolution in Warfare," *Foreign Affairs*, 75:2 (March/April 1996), 37–54; Gray, C., "Space Power and the Revolution in Military Affairs: A Glass Half Full?," *Aerospace Power Journal*, 13:3 (Fall 1999) 23–38; Nye, J., and Owens, W., "America's Information Edge," *Foreign Affairs*, 75:2 (March/April 1996), 20–36; Owens, W., "The Once and Future Revolution in Military Affairs," *Joint Force Quarterly*, 31:3, (Summer 2002), 55–61; Paikowsky, D., *The Impact of Space Technologies on Warfare and Force Build-Up in the USA Military Forces and the IDF*, M.A. thesis, Tel Aviv University, 2005.

is not a formal international organization. Nevertheless, despite the absence of a formal organization, it has an actual and significant role in world politics. The first evidence that the expression "space club" was used in the context of states' competition over space achievements can be traced back to the early 1960s. Surprisingly, one of the earliest occasions, if not the first one, referred to the United States' first man in space as an act of joining the "space club": "The United States now can claim membership in the space club, with the 11-minute flight of Alan B. Shepard paving the way for many more ventures beyond the limits of earth."[7] This reference to a club is a bit peculiar; a club is a social entity, therefore, at a minimum, it must consist of two members. This statement refers to the space club of that time as being composed of only one member, the Soviet Union.

From the early days of the race to space, state officials referred to a space club when discussing international activity in space technology and exploration. For example, in 1965, Arnold Frutkin, the Assistant Administrator for International Affairs at NASA, used the term "club" in his book *International Cooperation in Space*. In referring to an initiative to use India's sounding-rocket range for international cooperation, he wrote, "What began as a bilateral effort, with relatively narrow technical objectives, has grown through a process of inexorable technical and political appeal to the point where major nations, including the Soviet Union, find it important to join in ... Important was the fact that an unequivocal set of requirements for 'joining the club' was established."[8]

Observing current space activity shows that the space club is significant to world politics as well as to space politics. In December 2013, India successfully launched the Mangalyaan Mars Mission, which entered Mars' orbit in late September 2014. Several days later, the *New York Times* published a cartoon showing a traditionally dressed Indian man with a cow knocking at the door of the "Elite Space Club." Inside, white male members of the club are reading a newspaper with a headline about India's Mars mission and seem to be surprised and unhappy. Many readers felt that the cartoon was offensive and did not rightly reflect India's role in current space exploration. A few days later, the *New York Times* published an apology in a Facebook post, explaining that the

[7] "Space Problems Are Many," *Quebec Chronicle Telegraph*, May 8, 1961, 4.
[8] Frutkin served as NASA's Director of International Programs from its inception. In 1963, he became Assistant Administrator for International Affairs. He retired in 1979. During his career, he was involved in almost every negotiation process of important international space agreements. Arnold W. Frutkin, Biographical File, NASA Historical Reference Collection, NASA History Office, NASA Headquarters, Washington, DC; and Frutkin, A., *International Cooperation in Space*, (Englewood Cliffs, NJ: Prentice-Hall, 1965), 35, 62–63.

cartoonist's intention "was to highlight how space exploration is no longer the exclusive domain of rich, Western countries."[9] This cartoon highlights the significance of the "space club" in world politics, and its worldwide acknowledgment as a concrete entity. This reality raises several questions, which this book aims to answer. On the international level, in the absence of a formal organization called "space club," what is the space club, how did it develop, and how did it change over time? On the national level, why do states seek to join the club? And why do they construe their accomplishments in space as an act of joining it?

A nation-state club is a political structure that separates a small number of countries from the rest of the world because they have exclusive and unique capabilities that others do not have and cooperate with each other, even if on a limited scale. The basis for the separation between the haves and have-nots is in the fact that these unique capabilities are widely accepted as force multipliers or as currencies of power and high standing. By producing a distinction between powerful and less powerful nations, a club, formal or informal, serves as a structural expression of the distribution of power, stratification of status, and role in global governance.

The process by which nation-state clubs emerge begins when unique skills and capabilities are promoted by key players, usually the superpowers, to be the benchmarks for competition over power and high standing. Once the others acknowledge the high potential and strategic value of these skills, they perceive the group of haves as an elite group. Clubs make it easier to identify the stronger, higher-status players and distinguish them from weaker states. In return, states absorb the actions and characteristics expected of great powers and what it takes to be one. Individual states learn of the skills they are expected to develop and which specific superior group they should join in order to maintain their power and status or to achieve the power and position to which they aspire.

The dynamic that occurs within the club is usually characterized by an inherent tension between competition and cooperation among its members. Members of the club compete with each other over capabilities, achievements, and status in a highly visible and competitive but nonaggressive way. At the same time, they cooperate with each other for several reasons. Together, they develop the governance mechanisms of the club. They also cooperate to maximize the tangible goods and

[9] "New York Times Slammed for 'Racist' Cartoon about India's Mars Mission," *Mail Online India*, October 2, 2014, available at: www.dailymail.co.uk/indiahome/indianews/article-2778703/New-York-Times-slammed-racist-cartoon-India-s-Mars-mission.html, accessed on December 29, 2014; "India Mars Mission: New York Times Apologizes for Cartoon," *BBC*, October 6, 2014, available at: www.bbc.com/news/world-asia-india-29502062, accessed on December 29, 2014.

intangible benefits that accrue to them from the fact that they have the capabilities required, and that they are members of the club.

Analysts have explained why states want and develop expertise in highly demanding fields such as space technology, nuclear energy, and so forth. However, they have not carefully examined the role of nation-state clubs, such as the space club or the nuclear club, in shaping preferences, policies, and behavior. Rationalists explain state behavior through cost/benefit calculations of security considerations, the desire to achieve a high level of development in order to obtain economic benefit, or even the need for international prestige. According to their logic, it would be irrational to assume that states make tremendous efforts out of any arbitrary motivation to be a member of a club. Nevertheless, their reasoning fails to completely explain how and why certain qualities are perceived by many as indicators of power and symbols of high standing while others are not. They also fail to explain national investments in "impractical" projects or indigenous development of expensive capabilities for practical use that are available through foreign or commercial suppliers at much lower costs. Furthermore, these explanations are also inadequate when juxtaposed with the fact that these qualities and this expertise are often associated with an exclusive group of states – a club.

This book challenges this conventional wisdom. The phenomenon of grouping into clubs or cliques is a widespread human activity. Therefore, this book draws on the disciplines of sociology, psychology, and economics, in which the phenomenon of clubs in humans was comprehensively explored. Based on what is known about human clubs and the perception that nation-states are social entities operating in a social environment,[10] the general premise of this book is that the phenomenon of states clustering in clubs is applicable to the field of international relations.

Clubs enable us to reach a better understanding of the reasons leading states to develop indigenous capabilities in certain fields or the lack thereof, as well as the logic of the communicative strategies adopted regarding these capabilities. In addition, examining the interaction between members of the club, especially between the gatekeepers, as well as between them and the newcomers or those who wish to join the club, sheds light on major international tensions and struggles for power in the international system. States that join clubs accept and act according to conventions about the current means of power and symbols of high standing. Their decision to embark on

[10] Finnemore, M., *National Interests in International Society*, (Ithaca: Cornell University Press, 1996), 2; Wendt, A., *Social Theory of International Politics*, (Cambridge: Cambridge University Press, 1999), 20.

large-scale projects and join clubs is the result of strategic logic to fulfill what they perceive to be others' expectations of them or their own aspirations for empowerment and high status. Nevertheless, in order to be a member of the club, they need to be recognized and accepted into the club by the other members; acceptance is achieved through cooperation and joint ventures.

The primary argument is that joining nation-state clubs is a legitimate rational and significant consideration, which explains decision-making and national preferences. Nation-state clubs play a significant, and usually unrecognized, role in world politics. Exploring the phenomenon of states' activities in clubs enriches our overall understanding of the interaction between states and illuminates the factors affecting national decision-making and prioritization.

In general, by claiming membership in a club, national decision-makers and officials try to convince others to adopt their social and political interpretation of the achieved capability in terms of power, status, and esteem. Membership in the club provides a conceptual tool to evaluate a country's achievement. Nevertheless, the strategic rationale changes according to the power and status of the actor. For the strongest players or superpowers, the club is a highly valuable tool to project power and to claim the status of a superpower, by which they aspire to strengthen their impact on global governance and politics. They use the club as an arena in which they compete with each other over world leadership. In addition, they take advantage of the attractiveness of the club to less powerful players, allies, and others, to gain recognition for their claims for world leadership. The superpower club members offer other countries cooperation on joint ventures in order to placate these weaker countries and attract them as allies. The club members thus cooperate with these potential or new member nations to further their own national interests, maintain leadership positions, and increase control over the weaker countries.

Nevertheless, the superpowers are concerned that cooperation could lead to a rapid proliferation of these skills, which would reduce the exclusivity and attractiveness of these skills in terms of power and standing. This situation strategically threatens the superpowers because it erodes their superiority and reduces their tangible and intangible benefits. In order to prevent massive proliferation of these capabilities, the leading countries make it difficult for others to acquire the capabilities necessary for high international status by imposing significant restrictions and by barring proliferation and transfer of knowledge and technologies. The variety of tools used range from limited cooperation, export controls, suppliers groups, etc.

In summary, the superpowers' strategy of interweaving competition and cooperation on a limited scale and restrictions on the proliferation of these capabilities turned the countries that acquired these capabilities into an elite group – a club – in which the original members, the superpowers, served as its gatekeepers.

Powerful and high-status nations, as well as states in an empowerment process, choose to emulate the superpowers by embarking on national large-scale projects to develop indigenous expertise in the subject area. For them, club membership serves as a credible message of power, justifying their aspirations to have a seat at the table. Less powerful nations choose more moderate paths or make coherent decisions to refrain from developing their own capacity, and instead rely on others. The very weak or small nations use club membership to empower themselves and be placed in a higher category of capability and power than the one to which they actually belong.[11] In this process, the club has a twofold purpose: (a) it is a socializing mechanism and (b) an arena in which states rationally interact and negotiate over the distribution of power, status, and influence, using strategies of exclusion and inclusion.

Dual-Use Technology and the Space Club

Focused on the case of the space club, this book shows that global space activity developed via a similar process. In the late 1950s and 1960s, because of the potential immediate devastating consequences of a nuclear weapons attack using intercontinental ballistic missiles (ICBMs), the superpowers did almost anything possible to avoid direct military conflict that could escalate to a nuclear war. Among other actions taken, the superpowers channeled their hostilities into proxy wars and non-violent public competitions. The race to space was one of the prominent examples of this international rivalry. It should be noted that in addition to the public competition for achievements in space, the two superpowers each engaged in defense or military space programs aimed at preventing nuclear escalation. They developed and used space-based intelligence-gathering capabilities to obtain important information regarding the capabilities and developments of their opponents and to monitor arms control agreements.

Research and development of space technology is similar in many ways to research and development of nuclear energy and nuclear weapons technology. This led the superpowers to use space exploration and

[11] Jervis, R., *The Logic of Images in International Relations*, (New York, NY: Columbia University Press, 1989), 14, 55.

technology as a somewhat peaceful substitute for obtaining and demonstrating power and global leadership.[12] The two fields of research – nuclear and space – are at the cutting edge of human knowledge. They each have phenomenal potential for civil purposes as well as for military ones. They each spark the human imagination concerning the potential for development, progress, and understanding the universe. Each requires a huge national investment, drawing on the many scientific and technological fields, national entities, and human resources that the nation possesses. And space research and development, like nuclear development, involves a great deal of risk and a high chance of failure. Another important aspect linking nuclear development and space development is the technological relationship regarding the means of launching. Inter-Continental Ballistic Missiles and Space Launch Vehicles (SLVs) share fundamental core technologies, and thus are characterized as dual-use.[13]

The primary distinction between ICBMs delivering nuclear warheads and SLVs delivering payloads into space is the purpose of development. SLVs are designed to put a satellite in orbit. For this reason, they are generally classified as a civil technology for peaceful uses. Missiles, on the other hand, are designed to place warheads on targets and, therefore, are classified as technology for military purposes, or simply as weapons. The difference in objectives demands different technological functions. A ballistic missile is designed to accelerate the warhead to a very high speed. The warhead then follows a path through space, but it is not in orbit. Instead of orbiting Earth, it re-enters the atmosphere and, unless intercepted, hits a spot on the surface of the Earth.

Space-launch vehicles lift a payload to a desired altitude above the Earth and then give that payload enough forward speed to remain in orbit at that altitude. With enough speed (significantly faster than that of a missile), the payload moves forward and stays in orbit while resisting Earth's gravity. When its mission is done, the payload, similar to a missile warhead, becomes a ballistic object whose path is determined by the force of gravity. Unlike a missile that returns to the atmosphere with its cargo (its warhead) intact so as to strike its target, the thermodynamics of space-launch vehicles and satellites is different, and until recently were not

[12] McDougall, W., *The Heavens and the Earth: A Political History of the Space Age*, (New York, NY: Basic Books, 1985), 405.

[13] Dual-use technology supports applications that can be used for both civil, peaceful purposes, and defense purposes. For a comprehensive discussion of the dual-use of space technologies, see Johnson-Freese, J., *Space as a Strategic Asset,* (New York, NY: Columbia University Press, 2007); and Mineiro, M. C., *Space Technology Export Controls and International Cooperation in Outer Space*, (New York, NY: Springer Press, 2012).

designed for re-entry. Most space objects burn up when they re-enter the atmosphere. Other differences between missiles and SLVs have to do with the amount of time required before launching. The preparation time for a space launch is relatively long, lasting several weeks, during which the various components are tested and the ideal weather conditions are awaited. By contrast, a ballistic missile launch has to be very rapid and reliable; it must be capable of launching under a variety of conditions.

The technological proximity of ICBMs to SLVs makes it relatively easy to turn one into the other. Therefore, a country capable of launching a satellite into space is seen by others as having the potential ability to launch a ballistic missile to any point on Earth's surface, as well as to develop kinetic anti-satellite capabilities.[14] The major difference is that launching a ballistic missile is considered aggressive, while launching a satellite into space is considered peaceful and legitimate. For this reason, launching a satellite into space sends a clear, albeit peaceful message of deterrence and power because it can also serve as a cover for a missile test. Under these circumstances, space capability was perceived as complementary to nuclear capability, and the conquest of space was considered to be a substitute for war. Based on this rationale, the axiom that the nation that dominates space will dominate the world developed in the late 1950s and early 1960s.

The advantage of conventions and norms lies in the fact that they are collectively held. Therefore, the superpowers had to convince other nations to perceive accomplishments in space as indicators of national might, political power, and ideological supremacy. Both superpowers used displays of spectacular space projects constructed through language, along with strategies of competition and international cooperation to create conventions and norms to show that national space capability and its accomplishments further proved their right to claim world leadership.[15] On September 12, 1962, a year after he announced the Apollo program to land a man on the Moon, President John F. Kennedy delivered his famous address at Rice University in which he outlined the rationale for the United States to undertake space exploration. He stated, "The exploration of space will go ahead, whether we join in it or not, and it is one of the great adventures of all time, and no nation which expects to be the leader of other nations can

[14] The development of ASATs also requires the development of the capability to track and pinpoint targets moving at high speeds in orbit.

[15] John Logsdon and, later, Walter McDougall clearly show this in their comprehensive works: Logsdon, J., *The Decision to Go to the Moon: Project Apollo and The National Interest,* (Chicago, IL: University of Chicago Press, 1970); McDougall, W., *The Heavens and The Earth: A Political History of The Space Age*, (New York, NY: Basic Books, 1985).