Sidereal entrepreneurs and semi-periphery: Privatization of space in Argentina

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Abstract

This study aims to examine the geopolitics of entrepreneurship in Argentina's private space sector, taking as a reference the cases of Satellogic and LIA Aerospace. What motivates the selection of these two companies? First, because they are both companies of Argentine origin – one dedicated to the manufacture of satellites and the other to the development of a rocket launcher. Second, because they have achieved different levels of success, either in the technological or commercial field. From a methodological approach, these cases were chosen recognizing that there are other companies in the sector, but they are considered representative of the capabilities of the private sector in the space industry. In advanced economies, space entrepreneurship has a dynamism that allows it to compete in national and international markets. On the other hand, in semi-peripheral countries, it is common for these developments to lose ties with the local productive and scientific ecosystem, seeking to expand in central markets that offer opportunities that do not exist in their countries of origin.

Keywords: geopolitics, semi-periphery, space, private sector
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Introduction

This article aims to analyze the geopolitics of the Argentine private space sector, focusing on the cases of Satellogic and LIA Aerospace. The selection of these two companies is justified

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for several reasons: first, both are Argentine private enterprises – one specializing in satellite manufacturing and the other in launch services; second, they have achieved varying degrees of success in their developmental and commercial endeavors. While I acknowledge the existence of other companies within the sector, I propose these two as illustrative examples of the potential contributions of the private sector to the space industry, employing qualitative research methods that analyze both primary and secondary sources.

I conceptualize geopolitics as the political and economic shaping of the space sector, recognizing that advancements in satellite and launch technologies occur within a context that both constrains and incentivizes corporate behavior. In advanced economies, space entrepreneurship flourishes, allowing access to both local and international markets. Conversely, in semi-peripheral contexts, developments often become disconnected from the productive and scientific frameworks in which they were initially conceived, as companies seek to expand into core economies that offer advantages unavailable in their countries of origin. Argentina serves as a pertinent case study of a semi-peripheral nation. The structuring of the world system presents a landscape where certain countries can leap into the ranks of core nations – much like the United States and China once did – while most semi-peripheral countries continue to struggle to catch up with core states. Semi-peripheral nations and their companies produce scientific knowledge and public education, establish regulatory frameworks, and promote strategic economic niches; however, these efforts often culminate in the emergence of companies operating abroad rather than truly Argentine enterprises.

The Argentine space sector boasts a rich history, primarily linked to public sector initiatives, both civil and military, reminiscent of the approaches taken by the two major Cold War contenders during the Space Race. It was predominantly the national states of these contenders that invested in and managed the development of this strategic technology. In the case of the United States, private companies, as part of the military-industrial complex, collaborated closely with the public sector to create various systems (Koistinen, 1967; Moskos, 1974; Chomsky, 2002: 70; DeVore, 2020). Nevertheless, the process was largely state-driven, with the government contracting well-known corporations such as Grumman, Douglas, and Boeing as strategic technology providers (Young, 2008: 153).

However, private initiatives are increasingly gaining prominence in contemporary agendas (Pomerantz & Isakowitz, 2013; Vernile, 2018; Muegge & Reid, 2019). This shift indicates that entrepreneurs are investing their capital in ventures related to space launchers, satellites, and even space tourism, often without the requisite state intervention (Robinson & Mazzucato, 2019; Orlova et al., 2020). Recent literature, albeit limited, expresses concern regarding the role of the private sector in managing space ventures from legal, economic, and administrative perspectives, encompassing exploration, exploitation, launches, observation, communication, and astronautical tourism (Kleiman, 2011; Caley, 2014; Paikowsky, 2017; Denis et al., 2020; Sharma, 2021; Di Tullio et al., 2023). Currently, private companies, through NATO, are delivering space technology for military applications, exemplified by the case of Starlink, which provides military and civilian communications to support Ukraine's critical infrastructure (Oxford Analytica, 2022; Ray and Selvamurthy, 2023).

Following Germany's defeat in 1945, the Soviet Union and the United States embarked on a covert race to appropriate the scientific and technological resources of the Nazis (Neufeld, 1993, 1995, 2008). They entered the territory of the defeated nation, seizing all available hardware and scientists for their own development (Brzezinski, 2008). The Space Race represented, during the Cold War, both a symbolic and technological competition: a political contest for scientific and technical superiority between the Soviet Union and the United States (Philips & Priewer, 2009: 83–84; Colaresi & Rennstich, 2003; Neufeld, 2008; Shelton, 1971; Gimbel, 1986; Siddiqi, 2004). Despite the prominence of the United States and the Soviet Union, other countries, including Argentina, Brazil, China, and India, sought their own advancements in space technology (Harding, 2013).

Geopolitics: the economy of the Space Race

Geopolitics has historically signified the competition for power among states. Critical geopolitics emerged as a response to realist, neorealist, and neoliberal approaches within international relations theory, advocating for a reinterpretation of classical geopolitics (Cairo, 1993; Betancur-Díaz, 2020). While classical geopolitics focused on states as the primary unit of analysis, emphasizing their perpetual struggle for development and survival, critical geopolitics expands the unit of analysis to encompass various actors capable of shaping discourses and imaginaries regarding the spatialization of the global political economy. This includes state leaders, international political institutions, national or transnational think tanks, mass media, and transnational private companies (Dalby, 1998; Uc, 2008; Cabrera Toledo, 2019).

On one hand, Wallerstein's world-system theory (2005) emphasizes a global-scale unit of analysis, rather than an economy centered solely on the state (Aguirre Rojas, 2007). This geo-economic perspective seeks to elucidate the functioning of economic, political, social, and cultural relations through a cyclical analysis of the capitalist system, wherein some countries achieve hegemony over others in a dialectical and asymmetrical relationship – deepening over time – between centers, peripheries, and semi-peripheries (Betancur-Díaz, 2020). This geopolitical narrative culminates in a comprehensive approach to global power relations.

The core zone is characterized by strong states that exert significant influence and dynamism within the international system, exhibiting a greater concentration of wealth and cutting-edge technologies in productive processes. It is here that the most powerful capitalist companies are located, supported by militarily and diplomatically advanced states (Aguirre Rojas, 2007). Technology, alongside capital, plays a central role in the process of state hierarchization (Chase-Dunn & Reifer, 2002). Furthermore, core states exploit other regions of the world system through various means – such as unequal exchange or explicit blockades – targeting both semi-peripheral and peripheral areas. The latter are characterized by poverty, weak states, minimal technological development, limited industries, and low levels of income, consumption, and living standards (Aguirre Rojas, 2007). However, the semi-periphery is defined as an intermediate zone, possessing characteristics of both centers and peripheries. While these regions generally maintain an active state in relation to economic development, exhibit a certain degree of industrial and technological capabilities, and possess some military and political-diplomatic projection, they remain dependent on external markets for technology and investment. This geo-economic concentration of power in advanced economies exacerbates the gap between these nations and the rest of the world – particularly for semi-peripheral countries – intensifying productive capabilities, reinforcing the international status quo, and hindering semi-peripheral states from achieving development through both formal and informal barriers.

Global "New Space"

The concept of "New Space" is perceived as the entry of non-state actors with interests and capital seeking to develop various aspects of the vast opportunities that space presents (Bressel Baratto, 2021; Álvarez et al., 2023). This shift signifies the privatization of the sector, with private companies increasingly dominating the launch market, as well as the satellite sector, exploration, and even the exploitation of extraterrestrial resources (Blinder, 2018). Numerous scholars have noted the arrival of a commercial era; however, the question of regulatory frameworks to protect property and activities remains a topic of ongoing discussion. Countries such as the United States and Luxembourg have started this path, particularly concerning technically feasible issues that are currently in theoretical or testing phases, such as

the extraction of minerals from celestial bodies or the occupation of extraterrestrial territories (Weinzierl & Sarang, 2021).

The space economy, after years of innovation predominantly within public institutions, has experienced significant momentum from private companies, demonstrating strong growth due to improved services and reduced costs. Since the 2000s, a notable shift has occurred, with private entrepreneurs increasingly taking the lead in driving the space economy and emerging as prominent players. For instance, Starlink has become the most significant global satellite constellation operating in Low Earth Orbit, providing "high-speed and low-latency internet to users worldwide" (Starlink Web). However, this rapid development has led to a proliferation of orbiting artificial objects and launches, resulting in increased contamination that could adversely affect astronomical observations (McDowell, 2020; Di Vruno et al., 2023) and raise concerns regarding potential collisions that threaten space safety (Zhang et al., 2023).

Which companies are most relevant in the New Space sector? The most well-known is SpaceX, founded by Elon Musk (Space Exploration Technologies Corporation), which developed the Falcon series of launch vehicles, including the reusable Falcon 9 and the Falcon Heavy, designed for heliocentric orbit, as well as the Dragon spacecraft for cargo transport and the Starship for carrying cargo and passengers into space. Another notable company is Virgin Galactic, owned by Richard Branson, which focuses on suborbital space tourism. However, the landscape is diverse, encompassing a wide range of small and large companies that contribute to the sector, including Astrobotic, Blue Origin, Boeing Aerospace, Masten Space Systems, Orbital ATK, Sierra Nevada Corp, Space Adventures, Stratolaunch Systems, World View Enterprises, United Launch Alliance, XCOR Aerospace, Iceye, Planet, Spire Global Inc., Analytical Space, Astroscale, Bridgesat, Kepler Communications, Maxar, OneWeb, Oxford Space Systems, Qwaltec, Skywatch, Vector Space Systems, Axiom, Bigelow Aerospace, Ixion Initiative Team, Made In Space, Nanoracks, Space Tango, Deep Space Industries, Golden Spike, Mars One, Moon Express, and Planetary Resources, Inc. (Weinzierl, 2018). Collectively, these companies engage in launching, satellite manufacturing, system development, communication, spacecraft design, imaging, and other services related to habitat and mobility in outer space, alongside traditional NASA suppliers such as Lockheed Martin, Boeing, Northrop Grumman, and General Dynamics (Blinder, 2019).

However, these firms are the outcome of sustained economic resilience, state support, and the demand for technologies with both civilian and military applications. Their competitiveness in the global arena rests on the presence of a domestic market, institutional stability, accumulated experience, and export capacity. This is not the case for comparable firms in less advanced economies. In the semi-periphery, dynamics unfold differently. The semi-periphery can be understood as peripheral regions in transition – without fully achieving development – toward advanced economies, which may eventually enable a country or group of countries to move into the core of the world capitalist system (Wallerstein, 2005). States in this position often foster specific industrial and technological niches in an attempt to make this leap. Nevertheless, such initiatives are constrained by economic or political pressures from dominant nations, as well as by established corporations that impose entry barriers to prevent the emergence of new competitors (Blinder et al., 2021). Consequently, the trajectories of these countries and their firms diverge markedly from those at the core. What role has Argentina in this global Space Race?

Argentina in space

Argentina has a long-standing tradition in space development, which has evolved incrementally since the 1960s, marked by a series of technological achievements in rocketry led by the Air Force. Following the development of the Condor missile in the 1980s, the civil public

sector began to focus on satellite development in the 1990s. In the 2000s, the national space agency (CONAE) collaborated with NASA, the European Space Agency, and the space agencies of China and Russia. Furthermore, Argentina successfully developed its own geostationary satellites, leveraging the technological knowledge acquired over previous decades (Blinder, 2022).

During the dictatorship from 1976 to 1983, space technology development was characterized by a lack of coherent planning and consistency in technological and political objectives, particularly regarding the Condor II missile project. The objectives included technology transfer and the acquisition of indigenous capabilities; however, this did not result in the mass production of Condor missiles or the commercialization of associated know-how. The Argentine military's motivations for the Condor missile project encompassed geopolitical and economic variables, envisioning the country as a "technological power" in the context of national military strength and the Malvinas conflict with the United Kingdom.

In the period from 1983 to 1989, during President Alfonsín's administration, the Condor project gained momentum, with financing expanded through capital from Middle Eastern countries such as Egypt and Iraq, as well as genuine funds from national and European companies, facilitated by a secret Argentine government decree. However, the project was ultimately halted due to budgetary constraints, revealing weaknesses in addressing military pressures, a lack of capacity to evaluate the true financial dimensions of the rocket, and political irresponsibility in promoting a development incompatible with the economic-financial situation. Informal pressures during this period included messages from the US government expressing concerns about the missile project and its potential applications.

During Menem's presidency from 1989 to 1999, the Condor missile project became publicly relevant. The international context shifted, with the Soviet Union withdrawing from the scene and the United States emerging as the sole superpower. During this administration, explicit international pressure aimed at canceling and destroying the Condor project intensified, as the missile became a contentious issue in bilateral relations, ultimately leading to the project's termination. However, Argentina did not abandon its space policy; instead, it established CONAE and integrated it into the Ministry of Foreign Affairs. This institutional framework facilitated the signing of international security treaties, such as the Missile Technology Control Regime (MTCR), agreements with agencies like NASA, and the development and launch of satellites. Nevertheless, no endogenous launcher development has been planned since then, given the contentious nature of the canceled Condor II project (Blinder, 2022). Given the strong public space sector in this South American country, has Argentina a private space companies ecosystem?

The Argentine private space sector

In Argentina, space policy is primarily conceived and managed by the state. Key public sector companies include VENG (propulsion), CTA-UNLP, and INVAP (satellite manufacturing). However, in recent years, private companies have increased their participation in this market. Various enterprises are emerging in the space sector, seeking to provide solutions for satellite imaging, propulsion, and other systems. Many of these companies are spin-offs from state-owned enterprises, including former employees of public institutions. While there is a lack of specific academic works examining the geopolitical dimensions of the privatization of the space sector in Argentina, some publications offer descriptive analyses of the phenomenon (Pascuini & López, 2022), yet fail to address the geo-economic implications from the perspectives of international relations and geopolitics, as explored by several authors in the fields of technology and geopolitics.[1] The following companies have been identified: Asembli

(information technology), Infosat (satellite), Geoagris (satellite), Epic Aerospace (propulsion), LIA Aerospace (propulsion), Tlon Space (propulsion), LatamSat (satellite), ArsUltra (satellite), Satellogic (satellite), Ascentio (satellite), DTA (satellite), Space Sur (satellite), Mecanica 14 (satellite solutions), Invenio (satellite), Frontec (satellite products), Auravant (satellite products), Skyloom (satellite products), Aeropac (launcher), Crux (propulsion), Tesacom (satellite products), Citem (circuits), Dai Ichi Circuitos (circuits), CNC Mitre (launcher or satellite parts), Emtech (engineering), Kohlenia (engineering), Metalúrgica Bognanno (metallurgy), NYTT (software), Promatix (electronics), Pylos (electronics), and Varitel Ingeniería Electrónica (electronics), among others.

I have selected the cases of Satellogic and LIA as emblematic examples of Argentina's private space sector and its disconnection from the national production system and research and development ecosystem. This detachment, particularly evident beyond the initial stages, can be attributed to the semi-peripheral condition of the Argentine economy and the inherent difficulties of establishing a globally competitive enterprise from a non-core position. Both Satellogic and LIA have demonstrated notable progress and achievements; nevertheless, in order to fully realize their potential, they encounter limitations in securing domestic clients and consequently turn to international markets, expanding their operations and seeking buyers abroad. Why, then, is it not possible to consolidate and sustain their business activities locally? The answer lies in the structural features of semi-peripheral economies, which are comparatively less technologically intensive and demand lower levels of innovation. A paradox emerges: despite the presence of a robust educational system, a highly skilled workforce, and access to financing, significant constraints persist. Educational and financial policies may be designed to promote the transition toward an advanced economy; however, this trajectory is undermined by the tendency of companies, once they attain a certain threshold of development, to relocate their commercial and production capacities to more profitable environments. In doing so, they ultimately reinforce the advantages of core economies while hindering the semi-peripheral states that aspire to achieve upward mobility.

The Satellogic case

In a TEDx Talk at Río de la Plata, Kargieman asserted that the current Space Shuttle employs technology that is two decades old, stating, "we are flying old technology, very old, … because it is built with a risk-averse mentality" (TEDx, 27 December 2011). Drawing a parallel between the growth of the computer industry and the space industry, Kargieman questioned why the two had not developed similarly. He attributed this disparity to the fact that the computer industry was developed for common use, while the space industry remained dominated by large companies and governments. Kargieman emphasized, "today the space industry is ready to be in the hands of everyone" (TEDx, 27 December 2011). This encapsulates the narrative of New Space: the belief that any entrepreneur can conquer space (TEDx, 22 November 2013).

Satellogic has emerged as a provider of satellite imagery for military applications. Initially, the company received state support, including backing from the Argentine Ministry of Science and Technology and INVAP (a state-owned high-technology company) for its nano-satellite "Captain Beto" in 2013 (INVAP, 26 March 2013), as well as support from CONAE and CNEA (Argentina, 24 May 2023). The company initially benefited from financial support from the Argentine state (INVAP, 26 March 2013), various funds, and the presidency (Página/12, 21 November 2013).

Today, Satellogic operates as a world-class company, financed by private capital and listed on the stock exchange, with its main headquarters located in the United States and additional offices in Uruguay (Satellogic Web). It provides services to the defense sector through lucrative contracts, offering combat data as intelligence for Ukrainian operations

against Russian targets during the ongoing conflict (Satellogic, 4 August 2025), as well as satellite imagery that has facilitated the identification of alleged Iranian nuclear development sites during the recent conflict between Israel and Iran (Satellogic, 4 June 2025; 23 June 2025). This "national" company from the semi-periphery has sought to globalize its operations, resulting in its primary market being outside Argentina, and consequently, its main tax base is also located outside the country where it initially grew.

Founded in 2010 by Emiliano Kargieman, Satellogic began its operations in Argentina, emerging from incubators associated with the state-owned INVAP and the Argentine Ministry of Science & Technology. Kargieman emphasizes the crucial role of the state in the emergence of this Argentine start-up that has gone global, stating, "we were able to do this because there were forty or fifty years of systematic investment in technology in Argentina, which culminated in a wealth of accumulated knowledge" (La Nación, 10 January 2022). He recounts his experience at a NASA center in the United States, where he sought to pursue space-related ventures but faced regulatory challenges. Consequently, Kargieman reached out to his contacts in Argentina:

> So, I called Lino Barañao, who was the Minister of Science and Technology at the time. I expressed my interest in starting this company, thinking I could do it from Argentina, and he responded positively, saying, 'come here, we will support you in any way we can'. The next step was to contact INVAP, first with Tulio Calderón, the vice-president of the space area, and then with Cacho Otegui, the General Manager. They welcomed me to incubate these ideas in Bariloche, providing a space to set up and, most importantly, granting me access to INVAP's technicians and engineers – because, in some sense, I knew very little about satellites, but I was clear about my objectives and had knowledge of other technologies, such as electronics and computing. We spent two years there, from 2011 to 2013, designing the first generation of our satellites and launching Captain Beto, our first satellite. The advantage of incubators is knowing when to leave them. After Captain Beto, we decided to part ways with INVAP and pursue our own path. From the perspective of the state's role in the creation of a technology company, I believe Satellogic exemplifies how to establish a technology enterprise. (La Nación, 10 January 2022)
>
> As we grew as a company, we became increasingly aware of the limitations faced by an Argentine enterprise. Over the years, Satellogic became somewhat 'un-Argentinized' as the company needed to manufacture satellites on a large scale, which required importing and exporting components. Consequently, we established operations in a free trade zone in Uruguay and set up our business operations in the United States. (La Nación, 14 March 2022)

Uruguay lacked the limitations inherent to a semi-peripheral country that sought to develop competitive technology. The detachment from its foundational roots as a multinational enterprise that once capitalized on Argentina's economic progress and technological advancement has driven Satellogic toward internationalization, thereby diminishing its potential influence within core economies and global markets.

When the Satellogic CEO was asked why, given Argentina's advantages for incubating and developing a technology company, they moved operations to Uruguay, Kargieman clarified that they did not relocate the entire company. The main team remains in Argentina, where all satellite designs, components, and software are developed. However, he noted the challenges associated with manufacturing:

> There are many obstacles to importing and exporting, and the logistics chain in Argentina is not well developed for scaling operations. While Argentina excels in many areas, it is not conducive to mass-producing satellites. Similarly, Argentina is not the ideal location for establishing a sales center targeting governments worldwide. This led us to open a manufacturing facility in Uruguay within a free trade zone,

> which provided us with logistical advantages for imports and exports that we could not achieve in Argentina (La Nación, 10 January 2022).

The company's mission is to "democratize access to satellite information" (La Nación, 10 January 2022) and not solely provide services to governments and defense agencies. However, paradoxically, one of its primary markets is strategic space information (Web Satellogic). Kargieman highlighted the company's involvement in military operations during the Ukraine conflict: "We began working when Russian troops amassed at the border. Today, we capture daily images and provide this data to the Ukrainian government, NATO countries, and various companies, as well as humanitarian organizations" (La Nación, 14 March 2022).

Kargieman emphasized the technology's intended purposes, acknowledging multiple interpretations regarding the military applications of satellites: "It must be understood that our satellites and the data we collect are distributed solely for peaceful purposes. We do not support our data for military campaigns. In this context, our data is utilized to understand how to evacuate civilians, manage logistics, and identify routes for delivering essential supplies" (La Nación, 14 March 2022). Despite these peaceful intentions, "defense and intelligence account for 68% of the market" (La Nación, 14 March 2022).

The LIA aerospace case

According to its English-language website, LIA defines itself as a company that designs and develops satellites for what they term the "last mile", referring to their destination orbit. "Our green, non-toxic, bipropellant solutions are safe for people, sustainable for our environment, and clean for space" (LIA Aerospace Web, n.d.). The company has been selected to participate in numerous programs and is currently incubated by the European Space Agency's Business Incubation Centre in the UK, receiving support from the Global Entrepreneur Programme, UK Research and Innovation, and UK Trade and Investment. Despite being an Argentine start-up, LIA aims to develop means of accessing space through small satellite payload launchers. Founded by Dan Etenberg in 2014 and operating in Buenos Aires, the company focuses on developing Low Earth Orbit payload launchers capable of carrying up to 200 kilograms, with an emphasis on reducing the carbon footprint compared to existing launchers.

Etenberg asserts that LIA is the first company to launch a reusable rocket powered by biofuels. The company has pursued a development strategy through partnerships with the public sector and the National Technological University in Argentina. The technology aims to compete in the emerging satellite launcher market while maintaining technical sustainability through innovative inputs (Facultad de Ingeniería del Ejército, 2020).

> Satellites are not always sent to their target orbit with the rocket or launcher. In-orbit maneuvers are often required post-launch to achieve the desired orbital parameters. Therefore, there is a clear need for reliable and cost-effective propulsion for the last mile in space. This is where LIA Aerospace comes into play. (Forbes, 2023)

Etenberg indicated that LIA faced no legal restrictions on importing inputs and developing its product; however, obtaining insurance to protect activities during launches was necessary to avoid impacting other operators and to mitigate accident risks. "The main obstacle was financing, but we eventually secured funding to cover raw materials and salaries" (Etenberg, 2021). Once the rocket project was capitalized,

> there were no significant external restrictions regarding import regulations for sensitive materials because LIA Aerospace's rocket was develo8ped using locally sourced elements, and imported components were readily available through retail platforms like Mercado Libre. However, it is a demonstrator, and it must fly. We opted to use materials that are easily accessible in Argentina, such as aluminum from Aluar,

> plates from local factories, and local electronics. The fuel, which is challenging to import or transport, was produced in-house, along with the oxidizer. (Etenberg, 2021)

The concept of New Space has begun to resonate within the Argentine entrepreneurial discourse, with CEOs and developers increasingly emerging in the market. While CONAE serves as the primary space institution and some developments are undertaken by military entities, LIA Aerospace has indicated limited interaction with these state institutions, expressing a willingness to collaborate on future projects, although they currently do not play a significant role in the company's operations (Etenberg, 2021). According to Etenberg, access to space is costly and requires substantial investment. However, he believes it is crucial "because it invests in local engineering, which can position the country as a platform for access to space" (Etenberg, 2021). Large private investors have yet to engage significantly in Argentina's space sector. Nevertheless, Etenberg remains optimistic about the near future of the business, as an increasing number of companies are providing "various services for low orbit access, allowing LIA to compete in this market" (Etenberg, 2021).

The company has received some support from state institutions, albeit in a context distinct from that of Satellogic, obtaining assistance from the National Civil Aviation Administration (ANAC) and the Air Force, and is in discussions with the National Space Activities Commission (CONAE). "We are a private and independent space access company that aims to present a different facet for the country. We can all coexist and enhance each other. There is no country in the world with space development companies that do not receive support" (LIA Aerospace Web, in the Media, 10 October 2020). As of the date of this article, the rocket launcher has not yet been developed or commercialized to compete in the launcher market. Rocketry has been evolving in Argentina for several decades, largely driven by state institutions. Within the context of the New Space era, developers such as LIA have emerged as market players offering comparative advantages. However, similar to the case of Satellogic, once they acquire the potential to compete in the international arena, research and development activities are relocated to a central rather than a peripheral country. This dynamic undermines Argentina's prospects for cultivating high-quality private entrepreneurial capitalism with the capacity to compete globally.

Final remarks

The geopolitics of Argentina's private space sector is shaped by centrifugal dynamics, whereby advanced economies develop new technologies while striving to preserve their advantage in both the technological race and market dominance. As a result, emerging competitors create pressures for semi-peripheral states such as Argentina. The expansion of the private sector in this South American country is constrained by the challenges posed by global competition, including limited access to markets due to its geographical location and distance from major centers of innovation, external restrictions, constraints on capital investment, and direct competition from well-established firms in developed economies.

The LIA case remains under development, and the rocket industry continues to face significant constraints, as the extended preparation time required for launch vehicles risks leaving it behind the offerings of companies from core economies. In other words, states with advanced technological and productive capacities are able to outpace LIA, manufacturing more rapidly and with higher quality, thereby undermining developments originating from the semi-periphery. This dynamic, shaped by established suppliers at the core of the global system, may ultimately deter launch vehicle enterprises from engaging with the local market, instead compelling them to adopt a global orientation in order to secure economic returns – an approach consistent with the underlying rationale of capitalist enterprises. This is precisely the path followed by Satellogic, whose provision of such services is more feasible

within satellite technology, given that satellites, once deployed, orbit the Earth. Furthermore, LIA may encounter restrictions arising from regulations governing weapons development. Although its rockets are not intended as weapons, rocketry inherently possesses dual-use characteristics, as defined by the MTCR. While satellites also exhibit dual-use potential, their market is broader, and unlike rockets, they cannot directly destroy targets if configured as such; their capacity is limited to identification.

The challenges encountered by these two companies, when considered alongside the aforementioned factors, underscore the difficulties inherent in securing a position within a niche market that offers numerous disincentives to development in a context such as Argentina. At the global level, developers of space technology must compete with internationally established firms located in core states. Consequently, in the absence of coherent national development strategies designed to overcome the structural barriers that confine a country to the semi-periphery and to enable its transition toward an advanced economy, the very notion of a "national" market becomes increasingly difficult to sustain. Only sector-specific policies that generate demand for such services are capable of fostering and consolidating their growth within an ever more competitive geo-economy that simultaneously requires greater utilization of space-based technologies. It is for this reason that Satellogic relocated its operations to Uruguay and the United States (Satellogic Web), and LIA to the United Kingdom (LIA Web), beyond considerations of corporate strategy and incentive frameworks. This also explains why their corporate websites are presented in English.

A crucial question then arises: how can the talent of semi-peripheral countries that succeed in establishing high-technology enterprises be supported? Moreover, how can such entrepreneurial achievements be translated into wider processes of local economic development through integrated corporate strategies? The answer rests upon a geopolitical understanding of the global order. The semi-periphery must be able to finance the initial stages of development while simultaneously integrating these efforts with the country's broader productive system – namely science, technology, and industry. Such integration could enable the emergence of a more capable state, one positioned to retain talent and to harness national potential in the global space economy.

Note

[1] See some of authors in Blinder, D. (2017) "Orden Mundial y tecnología. Análisis institucional desde la perspectiva geopolítica en la semiperiferia: la tecnología espacial y de misiles en Argentina y Brasil" and Blinder, D. (2023) "Geopolítica, la dimensión internacional y tecnología en Argentina y Brasil: aproximaciones desde el desarrollo espacial".

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