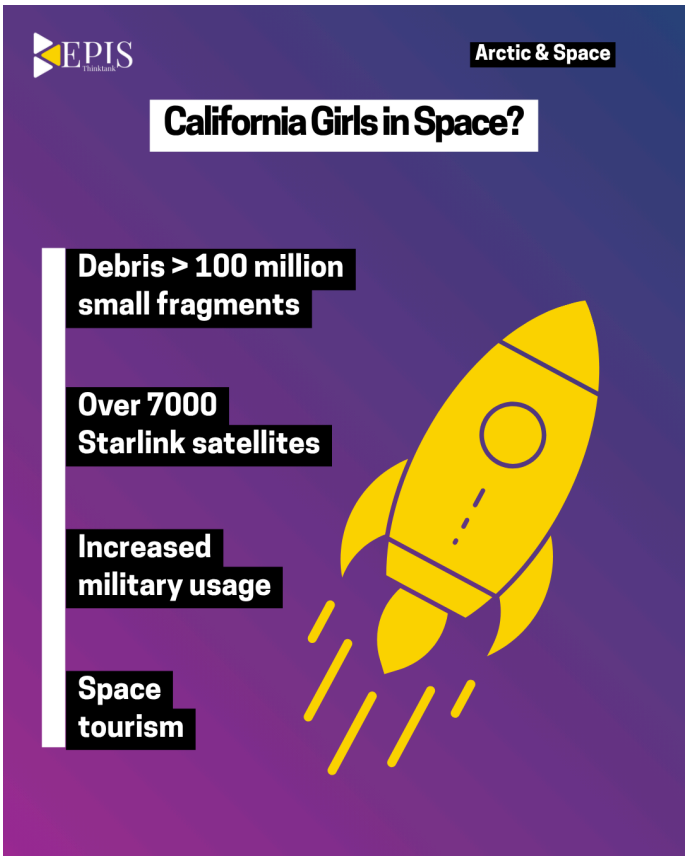
California Girls in Space?

A Far-fetched consequence of space governance



In April this year, artist and singer Katy Perry, along with three other women, was launched into space with Jeff Bezos' space company Blue Origin. The stunt was framed as a feminist landmark to mark the first spaceflight with an all-female crew in over 60 years, but instead, questions were raised over the phenomenon of space tourism, something that was unheard of in the past. In recent decades, billionaire-backed space programmes have significantly transformed the space domain. Historically, satellite and rocket launches were primarily managed by government agencies, such as NASA or ESA. But the rise of commercial space companies has changed this dynamic, towards a more governance-like structure. Companies such as SpaceX, Blue Origin, and Virgin Galactic, led by high-profile billionaires including Elon Musk, Jeff Bezos, and Richard Branson, are for example reshaping how satellites are deployed and

operated. This shift raises important questions about how private companies are driving the surge in satellite launches and what that means for space governance.

SpaceX, for instance, has launched thousands of Starlink satellites to establish a global internet network. By 2025, the number of operational Starlink satellites has soared to over 7 000 — a tenfold increase in under a decade, and a number that puts them at around 60 % of all known satellites currently in orbit. An important reason for the rapid expansion is the development of reusable rocket technology, such as SpaceX's Falcon 9 and Falcon Heavy, which have dramatically lowered the cost of launches. This cost reduction has opened the door for smaller companies to enter the satellite market, further accelerating deployment. Additionally, upcoming constellations like Amazon's Project Kuiper and OneWeb plan to launch thousands more satellites in the near future.

This rapid growth in satellite numbers has brought both opportunities and challenges. On one hand, increased satellite deployment improves global internet access and advances possibilities for scientific research. On the other hand, it raises concerns about orbital congestion, space debris, and regulatory challenges. The Kessler Syndrome, a scenario where satellite collisions create a cascade of debris that would make space impenetrable, is a growing concern. Moreover, the influx of private actors complicates existing governance frameworks. This is true especially regarding security concerns that states may have regarding potential dual uses of satellites, underscoring the need for updated regulations to manage satellite proliferation effectively.

Space and Security

With the growth of satellite launches, space-faring countries, and dual-purpose space technologies, several security concerns emerge with New Space. The 1967 Outer Space Treaty has commonly defined space security as "the secure and sustainable access to, and use of, space and freedom from space-based threats". Following this widely accepted declaration, space security has been understood beyond simple national and commercial interests, encompassing the sustainability of the global commons of space, the physical integrity of manmade objects in space, and ground protection from artificial and natural threats from space.

Growing activity in space entails cooperation, competition, and conflict. As space activities contribute to the security and defence of a state, the global commons of outer space are crucial pillars of military, human, economic, and environmental security. The US, for one, has prioritised military security in its space strategy. Legislating space security under military security through its Space Force, the US has demonstrated interest in harnessing space for military goals. This action plan not only significantly demarcates a juncture in space policy norms, but also formally recognises the value of space activities for a state's national security by basing weapons in space and developing anti-satellite weapons.

Information Security

Globalisation has carved out modern economies and societies to be critically reliant on space infrastructures. Phones, financial exchanges, communication, navigation, and information access rely on technologies partially located in space, positing space as an essential factor of information security. In this sense, space assets are considered essential for European defence and security policy, as information increases certainty and thus guides political and strategic decisions.

Space-based operations in data and intelligence gathering are integral to the functions of a nation. Reliable and timely capabilities, secure communications, and precise navigation guidance provide an advantage foundational to situational awareness, infrastructure planning, and clarity of communications. The EU has historically prioritised autonomous European space operations, especially in its Earth Observation endeavours. Portraying security through autonomy, it maintains greater control and monitoring of the information networks guiding the societies and economy of the continent.

Economic Security

Sharing outer space with private firms and the development of modern economies dependent on New Space has not come without economic concerns for public actors. Until 2011, the US favoured a centralised model of space innovation, exploration, and technological development. New Space has introduced a decentralised model headed by space companies, shifting the space economy from public to private priorities. Risk has shifted to private firms, intensive monitoring and cost-plus contracts are sparser, and innovation has been prioritised.

Public space agencies such as NASA now target space exploration and science, focusing on public goods provision. Conversely, economic development rests on the private sector, and the regulatory

landscape still needs addressing. For example, in the limited resources in space found in asteroids, the right to extract and profit from the minerals is torn between commercial and public interests, space colonisation, and scientific advancement. Beyond legal and ethical conflicts and beyond the conversation of NASA and American multi-billionaires, spacefaring states have difficulty rivalling the USA. The EU unable to compete against the funds of American companies, is further blocked by local monopoly laws in creating a direct competitor. Entering the space market has become about addressing a niche economic need, as one can note Southeast Asia contributing to environmental monitoring.

Sustainability in Space

Considering outer space as a global commons creates several environmental implications. Not only can space influence environmental security on Earth, but it can also create concerns about its own environmental stability. The former has been identified at length by agreements such as the EU's Space Agenda 2030 or the UN's 2030 Agenda for Sustainable Development. Identifiably, space technologies would be crucial for global development, where they could foster the shift to clean energies, help monitor and assess progress for the sustainable agenda, supervise rising sea levels, and help conceptualise climate change. The latter, the sustainability of outer space itself, presents itself in three major connected aspects: thwarted astronomical observations, space debris, and collision avoidance.

Massive satellite constellations and the explosive number of satellite launches every year can have adverse effects on ground- and space-based observations of the skies. Space domain awareness (SDA), or the monitoring of near-Earth space, also cannot keep up with the space object population, as most remain invisible or undeclared. Orbital debris is also affected by these gaps in cataloguing. Indeed, space debris originating from human activities exacerbates the risk of collisions in space. Lack of transparency in objects sent into space contributes to this risk as well, and despite its seeming vastness, outer space is limited in available orbital positions and radiofrequency spectrum of communications. Surveillance systems currently cannot keep up with the tens of thousands of active satellites and fragments too small to be identified yet substantial enough to cause damage to spacecrafts.

The topic of security in space remains impaired by current security trends. Much can be read about military security in space, as well as the need for regulation in response to environmental concerns.

Nevertheless, despite the rise of commercial space actors in New Space, little can be read about the role of private actors in discussions of space security beyond sustainability. A preference for national strategies permeates the literature, using outer space as a means to further conversations of great power competition.

Governance Structures in New Space

Private space expansionism can pose benefits for the scientific community and society, but dangers still emerge, paving the way for governance. Such dangers can present in competition over space resources, human settlements, and purposeful asteroid orbit alteration (for weaponised purposes, for example). A potential fear fuelling discussions on regulation is that space tourists could harm scientifically significant locations on the Moon and Mars. Responding governance structures to private activities in outer space will have to be transnational and possibly involve currently active international institutions such as the UN.

Transatlantic Governance

The EU and the US have extended their geopolitics to space to advanced technologies. Due to the difference in their security and practice strategies, they have effectively adopted a cost-effective, calculated interests cooperative strategy. At first, there was extensive competition between the US launch vehicles and the European Ariane launcher. Later, the multilateral cooperation in the International Space Station (ISS) project, an artificial attempt at transnational collaboration, was successful. Interdependence was built, agreements were drafted, and mutual benefits were reaped.

Today, the American government might take the transatlantic relationship for granted, yet transnational and non-state actors have stepped up in maintaining the alliance in space. The space community, including space agencies, commercial actors, engineers, scientists, and more, support transatlantic cooperation where conflictual rhetoric among political leaders might stop public institutions from cooperating. Informal interactions, in the form of business, tech, and scientific exchange, dominate transatlantic space governance.

As mentioned, large firms like Boeing and Thales pursue profit, and most recently, start-ups like Blue Origin and Virgin Galactic seek to develop space tourism. Think tanks on both sides of the Atlantic also tend to position themselves against the militarisation of space. This philosophy hence led to a joint agreement

between the EU and the USA, the Galileo agreement. In this agreement, both parties agree to cooperate to make the EU Galileo system and the American Global Positioning System (GPS) interoperable and compatible, furthering mutual commercial, civil, and scientific interests and consequent security objectives. Common ground between diplomats and scientists was achieved to reap the benefits of a shared satellite network. Between joint programs with NASA and European space agencies and the mutual use of each other's space technologies, the transatlantic relationship perseveres in non-state dimensions.

Domestic Space Governance

The US desire to lead outer space control through its Space Force and the political break following the ascension of the Trump administration, and ensuing uncertainties from joint political and commercial space agreements, have contributed to a rejuvenation of European space governance towards domestic needs. The use of American space technologies is relatively widespread in the EU, with political leaders such as Italian PM Giorgia Meloni seeking services from SpaceX. This event has fueled cybersecurity concerns and ignited discussions to strengthen and boost the European space industry and governance.

The EU is slow to develop a stable governance structure. Programs and non-state organisations encounter many regulatory obstacles: few have the financial means to start such activities, just as EU executive competition officials discourage deals that leave few competitors in the European market, halting possibilities of commercial coalitions. A project such as IRIS², for example, threatens a monopoly, potentially harming customers and the European space industry. Domestic European space agencies also cannot necessarily invest, research, and scale up their operations unilaterally when faced with SpaceX. Work remains to be done by policymakers in reconciling aerospace industrial policies and European competition, to overcome the tension between maximising competition in Europe and maximising European competitiveness.

In terms of domestic use for commercial space in the US, they have started to adopt the commercial sector for both the transportation and military sectors. The US Space Force (USSF) launched its very first commercial strategy in 2024, where they stated that the pace of innovation taking place in the space industry requires them to keep using the commercial sector as much as possible. For example, they use SpaceX for launching some of their military grade satellites, while some services, such as the GPS, are still managed directly by the U.S. military.

As space becomes increasingly commercialized, the balance between innovation, security, and sustainability grows more fragile. The future of space depends not just on who gets there, but on how responsibly we govern it.