Governing Space: Between Defense, Astrophysics, and the New Space Economy

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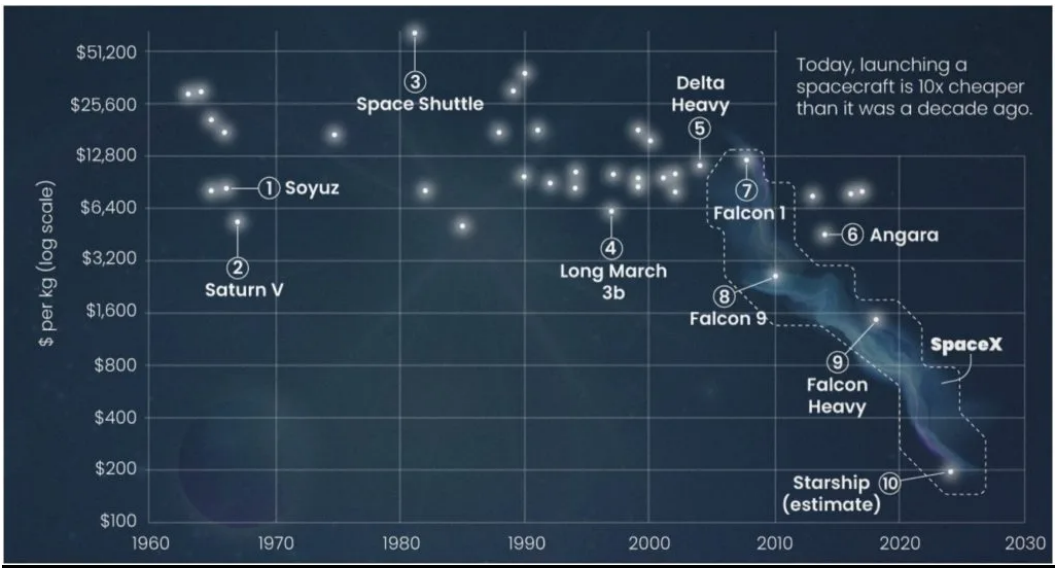
Access to space is undergoing a radical transformation. Ever-lower launch costs, rapidly developed orbital infrastructures, and the massive entry of private actors have given rise to what is called the **new space economy**. A change that not only affects telecommunications and commercial services but directly impacts **basic science**, starting with astrophysics.

This topic was covered by **Media INAF**, which reviewed the contents of a study published in the journal *Space Policy* and authored by **Fabrizio Fiore**, director of the INAF Astronomical Observatory of Trieste, along with **Martin Elvis** from the Center for Astrophysics – Harvard & Smithsonian. The study, titled *Space science & the space economy*, offers a reflection on how the evolution of the space market influences scientific research and orbital security.

One of the cases cited is that of **LiciaCube**, the Italian cubesat that closely documented the impact of NASA's DART mission against the asteroid Dimorphos. With ordinary instruments and a reduced budget, it produced unique scientific results, demonstrating that **cutting-edge science can be done even with economical solutions**, leveraging the standardization of components. An approach reminiscent of historical programs like NASA's **Explorer**, built on agile and targeted missions.

Opportunities and Risks: From James Webb to Space Governance

Alongside these streamlined models, there remains the opposite example of the **James Webb Space Telescope (JWST)**: ten billion dollars, twenty years of development, and extraordinary scientific results. Fiore, however, emphasizes that JWST represents the structural limit of a model now difficult to replicate. In the context of the new space economy, monumental missions risk hitting a real **“funding wall”**, as also demonstrated by the cancellation of the JPL's Mars Sample Return mission.



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Another crucial element concerns governance. Data collected by Media INAF show the exponential growth of launches: from about 200 satellites annually in 2000 to 3000 in 2023. This increase raises the issue of **orbital sustainability** and the risk of chain collisions, the so-called Kessler syndrome.

The crux is that the main legal reference remains the **Outer Space Treaty of 1967**, now inadequate for current challenges. Some call for new global treaties, while others hope for total freedom of action in a “Far West” logic. Fiore warns against scenarios without rules: space is a fragile environment, and a conflict between lunar or orbital missions could compromise years of research and strategic investments.

The Role of Europe and Prospects for Space Defense

The study highlights how the new space economy is today primarily a U.S. phenomenon, with roots planted in the early 2000s. Europe, on the other hand, suffers from chronic delay, although the ESA has launched support programs for innovative start-ups and SMEs. The situation is different in **China**, where there is a boom in both government and private activities, with a growing international projection.

If Europe does not accelerate and if the United States were to reduce public investments, it will likely be China writing many of the next pages of space exploration. A scenario that concerns not only science but also **defense and orbital security**, now recognized as strategic dimensions on par with land, sea, air, and cyberspace.

In conclusion, Fiore and Elvis – as Media INAF recalls – emphasize that the **new space economy is both an obligatory path and a great opportunity**. For astrophysics, it means focusing on more agile missions, public-private partnerships, and stronger international governance. Only in this way will it be possible to prevent the space race from degenerating into a new Far West and, on the contrary, turn it into a driving force for science, defense, and global cooperation.

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