

Emilio Cozzi

Geopolitics of Space.

History, Economy and the Future of a New Continent.



For centuries, space has been the domain of the divine and the unknown, unapproachable and sacred place, then instrument of competition between world powers, today the objective behind the activity of public and private companies that, in this dimension, glimpse economic value, material resources and global benefits for our future. Nations and commercial enterprises who until a few years ago were detached from any extra-atmospheric perspective, now look out the window to the cosmos ready to invest so that they may extract prestige and earnings.

Emilio Cozzi, among the most notable disseminators of space content and technological innovation in Italy, guides us on the discovery of the extraterrestrial economy and geopolitics, retracing the fundamental milestones that in the course of history have made space reachable, with costly and not-free-of-risk space missions that have, however, brought humanity

closer to infinity and beyond. How have we come from the Soyuz, the first attempted Russian space missions, to SpaceX, Elon Musk's space company, which, in 2023, carried out no less than 100 launches of its Falcon 9 rockets? How have we passed from the technical difficulties of Apollo 13 to the space tourism promoted by Jeff Bezos and Blu Origin, his company that aims for the advancement of missile technology and access to space for "all"? What is the impact of a potential industry of extra-terrestrial voyages, and what role does the conquest of space have in the geopolitical balance of the world? Are we talking about space colonialism? And lastly, what role does Europe play in respect to other countries when, with even Operation Cargo-2028 alone, it will once again be equipped with a suitable space structure?

Thanks to the detailed and fascinating journey of Cozzi, we can understand the present dynamics that are advancing the new space economy and preparing us to live in a new era – in reality already begun – that is in continual and swift expansion. The new space economy doesn't concern only the space sector in a strict sense, as it extends to the ever more pervasive and mutable impacts of products, services and knowledge that derive from space.

Humanity is enjoying the effects of a new collective race beyond the sky: activity in sectors seemingly distant from the space industry, like precision agriculture, insurance planning, real-time surveillance, and economic calculations, derive from and increasingly depend on satellite signals and data. New economic activity, often far from investment in orbital infrastructures, is born and proliferates in this direction. And if today, the only space stations able to host crew for multiple months at a time are the Chinese Tiangong and the International Space Station, very soon there will be more: to continue doing technological and scientific research, to study the human body and its matter, to create new materials and new pharmaceuticals, to record films with realistic effects in environments void of gravity, and to open new paths to entertainment and art.

Space is the new centre of Earth; after all Tziolkovskij, the theoretical father of astronautics, who did all of the calculations to carry out the first ever space flights, asserted with conviction that “Earth is the cradle of humanity, but one cannot live in the cradle forever.”

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Emilio Cozzi is a journalist and author. He writes regularly on space, technology and gaming culture for *Wired Italia*, *Corriere della sera* and *Il Sole 24 Ore*, as well as being a collaborator with the ISPI. Since 2019 he has directed the space economy section of *Forbes Italia*, and *Cosmo*, a magazine specialising in scientific dissemination of an astronomical and astronautical nature.

Chapters breakdown – English texts by Seán McDonagh

PROLOGUE God Knows What

CHAPTER 1 The Dawn of Space Exploration

New Dawn: Sputnik

88 Minutes to Change the World: Jurij Gagarin

The First Dreamer: Kostantin Ciolkovskij

Rulers of Fire: Korolëv e Gluško

Barking at the Stars: Laika

Wernher von Braun or the Christopher Columbus of the Cosmos

Towards NASA

Lost Astronauts: Ivan Ivanovič, How a Legend Was Born

The Mercury Project

The launch of Sputnik and its socio-cultural impact in the United States inaugurated the era in which humankind became capable of operating in space. The consequences, intrinsically political, coincided with the Soviet conviction of their own strategic and cultural supremacy, and with the Western perception of a threat to civilisation that warranted a reaction. The *Sputnik Moment* – and its technological foundation – triggered what came to be recounted as the space decline of the Cold War, extending it and raising its tensions beyond the terrestrial atmosphere; from Jurij Gagarin's flight around Earth to the public announcement of the immortal Mercury 7 Americans, the legacy of pioneers like Ciolkovskij, von Braun, Korolev, and Glusko actualised a competition that, shooting for the moon, would shift the centre of terrestrial power into space.

CHAPTER 2 Star Money: Space Economy

Space, New Centre of the New Earth

Deprived of Origins

The New Global Cosmic Race

Mouse on Mars

SpaceX

Multiplanetary Civilisation

"We're going to build a road to space and then amazing things will happen, you will see the creativity [...] space entrepreneurs launching a company in their college dorm."

Jeff Bezos' words, sixty years after the announcement of the Mercury 7, crystallise the new epic of humans in space, pinpointing the most sensational feature today: the *Space Economy*. From its origins to its resounding growth, the evolution of the space economy is so rapid and promising, that having a fixed definition of it and identifying its borders is very difficult. From the infinite connections with the daily life of every inhabitant on planet Earth to the promise of commercial exploitation, here, we find the numbers, the history, the present, and the outlook of an economy that, even though its most innovative interpreters – from SpaceX to Blue Origin, from Virgin Galactic to the next *space billionaires* – is transforming itself and the world around it.

CHAPTER 3 Towards the Stellar Condominium

Building Balance: The Cold War, Europe and the First Space Residents

Star Wars

Tin Peace: International Space Station (ISS)

How Will We Live in Space
When Earth is No Longer Needed: Space Medicine
Cross-Fertilization, Martian Plants and Other Inventions
For a New Humanism

The evolution of the space approach and programmes immediately after the *Moon Race* of the 60s and the early 70s: from the new European ambitions to Russian space stations, from the Space Shuttle to the birth of the International Space Station, a history capable of recounting not only the technical-scientific progress of the world, but the equilibriums of actual global politics. It explores Spacelab, the European Space Agency, Mir, and Ronald Reagan's *star shield*, as the possible realisation of the first cosmic home of humanity at peace. Having lasted decades and now reaching its final chapter, this story tells us how we will live in space in the future and what the consequences will be for those who remain on Earth, including in science, medicine, agriculture, and a new humanism (extra-terrestrial).

CHAPTER 4 Satellites, The Pillars of Earth

Deus ex machina
Seeing the Fragility: Overview Effect and Nowcasting
Terrestrial Maps and the Geometry of Becoming
The (micro) Guardians of the Galaxy
The Luxuries and Threats and of a Hybrid Frontier
Orbital Ecology: Space Debris

Many are the spheres in our lives that take advantage of satellite activity and capabilities: from climate monitoring to optimising rescue missions after environmental disasters, from air and marine traffic to the state of infrastructures, to insurance plans, entertainment and super-fast bank transactions. Our dependence on satellite technology broadens the reach of human activity but, at the same time, constitutes a new fragility: our dependence on systems that can be threatened, destroyed, and compromised.

CHAPTERS 5 Astropolitik

Two Points in the Sky
Masters of the Universe
The War Seen from Above
Spacepower: Threats From/To Space
The Dragon's Space Lair: Peking
Okay, But Europe?

Having become the new *El Dorado*, since 2018, space has even been recognised by NATO as an "operational domain" to be guarded and defended. This means that the outer-atmosphere can also be a theatre of war and, therefore, a platform of "astropolitics" and *space diplomacy*. Emerging paradigms – for example, the impact of *space billionaires* on the war in Ukraine – and also the presence of new countries ready to become protagonists in space, like China and India, tell us how much the political balances of Earth are unable to leave the "masters of the Universe" out of consideration; new concepts like *space militarization* and *space weaponization*, and futuristic space weapons and defense systems today are the result of the progressive democratisation of access to the outer-atmosphere.

CHAPTER 6 The Extra Earth Promised: The New Space Economy

The New Road to El Dorado

Astrotourists and Private Astronauts

And if Picasso Had Gone to the Moon? Making Art Among the Stars

Room with a View for Europeans

The enormous riches derived from space up until today are nothing compared to those that space promises moving forward; we start to see these new glimmers like *space mining* and *space-based solar power*, the commercial exploitation of the low Earth orbit and the new paradigms of the private approach - tourism included.

CHAPTER 7 Mars via the Moon: Beyond Illusion

The First Martian

An Extra Desert

As on Dune

Off-World Colonies

New Alliances and Space Law

Why go back to the moon? Is it true that the first person that will walk on Mars is currently studying in a primary school somewhere on Earth? By recounting the illusions or false promises and describing the objectives and concrete plans, we understand that the journey of humanity towards the depths of the cosmos is only the beginning. Between *Artemis* and *Chang'e*, between ExoMars and the promised human settlements on selenic soil, today, we are constructing the way of living of tomorrow. Laws and rules included (although still lacking).

EPILOGUE – BACK TO THE FIRST

APPENDIX

Space Law: A Few Laws and No Sheriff