

# Providing Inspiration through International Cooperation

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# Outline

- How are current space exploration plans different from earlier space endeavours?
- A new paradigm for international cooperation in space exploration
- Benefits of international cooperation
- Metaprinciples for space exploration
- Rationales for international cooperation in space exploration plans
- Inspirational potential of international cooperation
- Conclusions

# How are current space exploration plans different from earlier space endeavours?

- Proto-space Age (before WWII)
  - **Leadership** of **individuals** (and **societies**) such as Goddard, Tsiolkovsky, Oberth etc. influenced by HG Wells, Jules Verne and other SciFi authors
- Space exploration 1.0 (Cold War)
  - **Competition** between the **United States** and the **U.S.S.R.** with **cooperation** limited to **intra-blocs partnerships** driven primarily by **political reasons** (duopoly situation)
- Space exploration 2.0 (1990s - now)
  - **Exploration plans** with **new actors** willing to participate driven primarily by **scientific motives** (oligopoly situation)
- Space exploration 3.0 (soon)
  - Era of **participatory human exploration** (States + industries and others NGOs) driven primarily by a **quest of knowledge** (including Arts and Humanities disciplines) as well as **economic potential** (open-market situation)

# How are current space exploration plans different from earlier space endeavours?

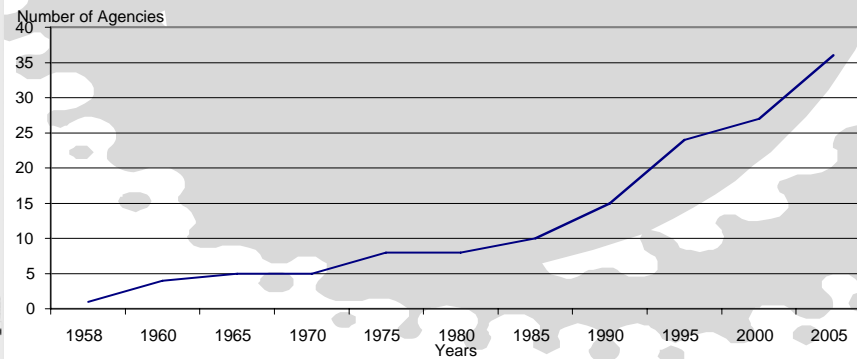
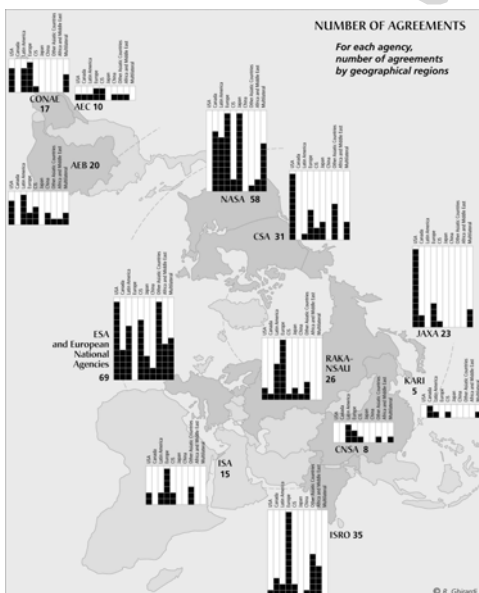
## Space exploration 1.0 (Cold War)

- Late 1950s - late 1980s limited number of **international sciences missions** consisting of in-kind contribution and **ad-hoc coordination mechanisms** (i.e. 1975 Apollo-Soyuz Test Project)
- Cooperation in **human spaceflight activities** in LEO offered to **political allies** (i.e. Intercosmos programme)
- Between 1968 and 1972 only 27 **astronauts** travelled to the **Moon** and 12 walked on the lunar surface (1 country, 1 geologist, 1 gender) ... for **political reasons**

# How are current space exploration plans different from earlier space endeavours?

## Space exploration 2.0 (1990s - now)

- A changing space context in the post Cold War era
  - Internationalization and globalization of space activities
  - Increasing pool of potential partners for international space exploration cooperation
  - Experience of long-term space programme (i.e. International Space Station)
  - All planets of the solar system have already been visited by unmanned probes
    - First cycle of space exploration is almost finished



# A new paradigm for international cooperation in space exploration

- **Numerous** existing **exploration plans/aspirations** of the United States, Europe (ESA+national space agencies), Japan, China, India, Russia
- **Catalyst** for **coordinated efforts** is the January 2004 President G. W. Bush **Moon Mars and beyond exploration Vision** inviting “*other nations to share the challenge and opportunities of this new era of discovery*”
- **Global Space Exploration Strategy - A Framework for International Cooperation** published in May 2007 (14 space agencies) that defines space exploration as “*a global, societal project driven by the goal to extend human presence in Earth-Moon-Mars space*”

# Benefits of international cooperation

- Opportunity to **rationalise** and **optimise resources**
- **Enlarge spectrum** of **missions possibilities** and **capabilities**
- **Enhance** domestic and international **legitimacy** and **credibility** of **missions** and **programmes**
- **International cooperation** is increasingly being recognised has a **critical enabler** and one of the **building blocks** of **future long-term space exploration activities**

# Metaprinciples for space exploration

- To be successful a long-term space exploration programme needs to be :
  - Flexible i.e. open-system architecture
  - Mix of robotic and human missions
  - Visible and robust
  - Affordable
  - Multifaceted and inspirational to involve a broad stakeholder community
  - Based on international partnerships



# Rationales for international cooperation in space exploration plans

- **Space exploration** is a **difficult endeavour** that requires **international partnerships** (**bilateral** or **multilateral**)
  - The sum can be greater than the parts
  
- **Space exploration** encompasses a **complex set of activities** and offers **opportunities** for broad **international engagement** and **participation**
  - The more the merrier
  
- **Space exploration** (particularly human space exploration) is a **source of inspiration** permitting to **foster excitement** and encourage **discovery** in a **cooperative** and **international fashion**
  - Visible and unifying challenge to humanity - Mankind's next "grand challenge"

# Inspirational potential of international cooperation

- **Human space exploration** will allow to assemble humanity behind a **peaceful goal** and increase the level of **international involvement**
- Future endeavours will not only be restricted to current **space faring countries** because they will **transcend all disciplines** and not only consist of S&T-related activities
  - Offer new possibilities of involvement
- Partnerships will enable countries to develop a **common understanding** of their respective interests, to share lessons learned and demonstrate goodwill
  - International space exploration will allow to increase **cultural awareness** and improved **amity** and **fraternalism**
  - Provide direct **Earthly benefit** (i.e. increased and shared prosperity)

# Conclusions

- **Human space exploration** beyond Earth orbits will be one of the challenge of the 21st century
- **Mankind** is on the threshold of stepping off into space for a **unique Odyssey**
  - “Earth is the cradle of humanity, but one cannot remain in the cradle forever”  
– Konstantin Tsiolkovsky
- To ensure the **sustainability of long-term exploration** necessity to inspire a broad **stakeholders/constituency base** (*intra* and *inter* countries)
- Should not oppose an utilitarian and exploratory vision since the future of space will be an **utilitarian exploration**
- The future of space exploration (**space exploration 3.0**) will be **international, human centric, trans-disciplinary** and **participatory**
  - The horizon provide opportunity to inspire, motivate and involve an ever increasing number of countries