

U.S.-Russia Space Cooperation: Eroding Interdependence Followed by Symbolic Partnership

Luzin, Pavel

Veröffentlichungsversion / Published Version

Zeitschriftenartikel / journal article

Empfohlene Zitierung / Suggested Citation:

Luzin, P. (2020). U.S.-Russia Space Cooperation: Eroding Interdependence Followed by Symbolic Partnership. *Russian Analytical Digest*, 253, 6-8. <https://doi.org/10.3929/ethz-b-000420927>

Nutzungsbedingungen:

Dieser Text wird unter einer CC BY-NC-ND Lizenz (Namensnennung-Nicht-kommerziell-Keine Bearbeitung) zur Verfügung gestellt. Nähere Auskünfte zu den CC-Lizenzen finden Sie hier:

<https://creativecommons.org/licenses/by-nc-nd/4.0/deed.de>

Terms of use:

This document is made available under a CC BY-NC-ND Licence (Attribution-Non Commercial-NoDerivatives). For more information see:

<https://creativecommons.org/licenses/by-nc-nd/4.0>

U.S.–Russia Space Cooperation: Eroding Interdependence Followed by Symbolic Partnership

By Pavel Luzin

DOI: [10.3929/ethz-b-000420927](https://doi.org/10.3929/ethz-b-000420927)

Abstract

The current phase of U.S.–Russia space partnership is coming to an end as American companies begin to produce spacecraft for the U.S. to return to manned space flight and reduce dependence on Russian rocket engines. In the new era, both countries may seek to continue this relationship, even if its main benefit is symbolic rather than economic or technological.

A Fraying Post-Soviet Partnership

In 1992, almost three decades ago, the United States and Russia established a partnership in outer space. During the better years, the partnership included manned expeditions to the International Space Station (ISS), sales of Russian rocket engines to American companies, cooperation in space exploration, common commercial launch projects, and supplies of American-made components for Russian satellites.

The United States sought to maintain American global leadership in space activity by cooperating with its former adversary, giving Russia additional opportunities to modernize and pursue a democratic transition, and preventing the proliferation of Soviet missile technologies through the involvement of Russian engineers and factories in joint space projects. For its part, Russia needed to become one of the main American collaborators in outer space because this partnership maintained Russia's great power status in international relations (as a UN Security Council permanent member and in the area of nuclear arms) and provided support for carrying out market reforms in the national space industry.

Even though American companies had withdrawn from the International Launch Services and Sea Launch joint ventures before 2014, when Russia launched its aggression against Ukraine, and subsequent American sanctions barred electronic supplies for Russian-made satellites, Moscow still remains an essential partner for Washington in outer space. Ironically, despite the ongoing confrontation, the partnership with the United States seems to become even more important for the Russian side. Nevertheless, the main issue here is how will bilateral cooperation develop in the coming years?

The End of Russia's Monopoly in Manned Spaceflights

The delivery of astronauts to the ISS fully depended on Russia for nine years. However, Russia's monopoly on manned space flight will come to an end in 2020, when

the first manned flight of the Dragon spacecraft, developed by the American company SpaceX, will finally take place. Later in 2020 or in 2021, Boeing's CST-100 Starliner manned spacecraft also will begin operations. Even if these missions are delayed temporarily, the eventual launches will become a turning point for the space station project by allowing the U.S. to resume manned spaceflights. This development will have a profound impact on Russia's space industry and, consequently, its civil space program.

The problem is that Russia's long-running leadership in manned space flight led to neither deeper space cooperation with the United States and other foreign partners, nor the further development of Russian space capabilities. For instance, in 2019 three launches of the manned three-seat Soyuz spacecraft brought four American astronauts and one Italian to the ISS. NASA paid for each astronaut and that year the cost was \$86 million for each spot. Russia earned \$430 million in 2019 for delivering its partners to the space station. Moreover, the U.S. has been paying Russia for Soyuz seats since 2006, even before it retired the Space Shuttle in 2011. Hence, Russia's total revenue from these contracts during 2006–2020 reached \$3.9 billion with the sale of 70 seats.

For reference, in 2019 the Russian government planned to spend almost \$1.67 billion for the federal space program that includes manned and unmanned space exploration, and R&D related to civil space activity. However, due to some financial and programmatic delays, the actual spending was just under \$1.4 billion. At the same time this figure does not include spending for the launch sites (almost \$983 million was planned, but only \$358 million actually spent), GLONASS satellite navigation system (\$437 million as planned, with \$421 million spent) and military space program (estimated to be \$1 billion) that are financed through separate programs. Consequently, it is evident that the deal with NASA for seats in Soyuz provided Russia's space industry with significant financing. Over time, that significance increased as Russia raised the price of the

Soyuz seat from \$21.3 million in 2006 to \$86 million in 2019, and the exchange rate dropped from 27.17 rubles per \$1 in 2006 to 64.66 rubles per \$1 in 2019. Also, the role of the current model of U.S.–Russia cooperation in the ISS hardly may be overestimated if we take into account that Russia's government paid about \$70 million for manufacturing each Soyuz spacecraft and launch vehicle in 2019.

Despite this favorable environment, Russia has many problems developing new spacecraft and launch vehicles to replace the old-fashioned Soyuz. Moreover, during these years, Russia's space industry did not establish any new ties with American companies. If in previous decades, Russia's contribution to the U.S.–Russia partnership were experience and technologies for long-term manned missions in Earth orbit, currently it is not clear what Russia can contribute to future bilateral and multi-lateral cooperation in manned spaceflights by the end of the ISS era. Nevertheless, for the near-term, as long as the ISS remains in orbit, Russia is hoping to provide touristic flights to the space station to recoup its lost business.

The Decreasing Role of Rocket Engine Supplies

The situation is nearly identical in terms of rocket engines supplies to the United States. Since the end of the 1990s, the Russian company Energomash (a subsidiary of the state-owned corporation Roscosmos) supplied 116 RD-180 rocket engines for the Atlas V heavy launch vehicle that is mainly used for U.S. national security programs. In 2020, 6 more engines will be supplied. As of April 2020 88 launches had taken place, so United Launch Alliance, the American manufacturer of the Atlas V, should have 28 engines in storage. The stored and any newly purchased engines will last until the Vulcan, the new American heavy launch vehicle, replaces the Atlas V.

The importance of this contract for Russia's company is more evident if we look at the numbers. For instance, 11 of the 18 engines manufactured by the Energomash plant in 2018 were RD-180s, and the actual price of these engines was an estimated \$15 million per unit. These sales provided more than half of the company's revenue in 2018: \$319 million. However, the cooperation between Energomash and ULA is coming to an end, so Energomash is only manufacturing six RD-180 engines each year in 2019–2020. Consequently, the company is losing a crucial part of its revenue.

The second main customer of Energomash engines is Northrop Grumman, which uses the RD-181 engines for its Antares launch vehicle. This launch vehicle powers Cygnus unmanned spacecraft to the ISS for commercial resupply missions. The Russian company supplied

22 of these engines in 2014–2019 (14 of them have been used as of April 2020), and the annual manufacturing of RD-181 increased to 5 units in 2018–2019. While cooperation with Northrop Grumman definitely will continue in the coming years, there is not much room for additional RD-181 sales. Therefore, Roscosmos needs either to find new foreign customers for its engines (the most probable are China and India), or to cut production at one of its key companies and reduce the economic inefficiency of the entire corporation.

With these changes, the interdependence in space activity between the United States and Russia is weakening, and the ISS remains the only source of bilateral cooperation. The original motivations driving space cooperation between the two countries has changed. The Americans no longer subscribe to the illusion that Russia is making a democratic transition and worry less about the proliferation of Russia's missile technologies due to the changes in global security environment: previous troublemakers like Iraq's Saddam Hussein and Libya's Muammar Qaddafi have left the stage, while the remaining rogue leaders apparently have their own missiles. Russians are no longer interested in market reforms, and the country's policies are trending toward political and economic self-isolation. In this environment, deeper economic cooperation between Russian and American space companies is off the table.

Nevertheless, both sides continue to pursue foreign political strategies that once led to cooperation. The United States still wants to preserve its global leadership that includes leadership in space exploration. And Russia, or to be precise, the Kremlin, still works to maintain its great power status, thereby giving Russia's current leaders foreign influence which they use to secure domestic legitimacy for their authoritarian governance. The question is how these two contradictory approaches can be realized in bilateral space cooperation?

Political Prospects for a Bilateral Space Partnership

In the near term, when SpaceX and Boeing start to operate their new spacecraft, Russia proposes manned spaceflights on an exchange basis: some American astronauts will ride to the ISS in Soyuz spacecraft, and some Russian cosmonauts will travel in American ones. Russia is ready to lose the payments it receives for seats in its spacecraft, but is not ready to give up the symbolic meaning of the space partnership with the United States.

Moreover, Russia supports prolonging ISS operations as long as possible. Currently the United States is planning to commercialize the station after 2024, meaning that NASA will decrease its spending for manned operations in low-Earth orbit and increase support for manned Moon missions. If this plan is viable, the Ameri-

can astronauts definitely will continue to participate in maintaining the commercialized station. Therefore, U.S.–Russia ISS cooperation could continue until the day the station de-orbits despite the various disputes and even confrontations in other aspects of the bilateral relationship.

At the same time, if American private companies broaden their activity in the ISS after 2024, there is little chance that Russia will be able to cooperate with them successfully. The political and economic nature of Russia's authoritarianism orients it toward inter-governmental relations with the participation of state-owned companies and joint ventures under the umbrella of bilateral or multilateral international agreements rather than cooperation between private entities. In other words, Russia's key political priority here is keeping the cooperation between Roscosmos and NASA.

For the long-term, Russia wants to be a part of the Gateway project, NASA's manned station in a Moon orbit. There is a high probability for this because the United States is not going to eliminate its space partnership with Moscow. However, the Kremlin insists on a formally equal partnership, the same as during the ISS project, but Washington proposes to make Russia a contractor, which will allow Russian cosmonauts to participate in missions to the station. Besides the political aspect of this issue, the problem is that Roscosmos' subsidiary companies can neither conform to NASA's manufacturing standards, nor compete with American companies in technologies that are necessary for the Gateway project.

To bolster its position during the ongoing bargaining with the United States, Russia is trying to acceler-

ate its efforts in building new manned spacecraft and heavy launch vehicles. These projects seek to allow Russian cosmonauts to achieve Moon orbit and consequently to make Russia's participation in the Gateway inevitable for the Americans. Moreover, the Kremlin holds one more powerful card. For many years, though with a lot of delays, Roscosmos has been manufacturing three orbital modules for the Russian segment of the ISS. These modules may be used not only in low-Earth orbit but also in Moon orbit. Despite the fact that it remains uncertain whether this option is viable, it may turn out that Russia's industrial inefficiency can be converted into a diplomatic tool.

Therefore, the two countries have significant chances for prolonging their space cooperation. Political reasons are the main drivers here. If the United States wants to reduce its dependence on Russia while still leading an international Moon exploration, and if Russia wants to cooperate with the U.S. for the sake of symbolic cooperation, even when there is no economic or technological basis for these ties, Washington and Moscow may find a way to compromise, assuming that there is no new crisis in their relations. Russia may gain an opportunity to become a special part of Gateway with its own module or at least spacecraft, but without equal status and with the option of canceling (undocking) if necessary, and the United States will be able to keep some sustainable political ties with Russia. Maintaining such a relationship may become even more important if Russia's political system begins to adopt significant changes.

About the Author

Pavel Luzin, PhD in international relations (IMEMO, 2012), is an expert on Russia's foreign policy and defense.