International Space Station: Terrestrial Confrontation to Orbital Cooperation

https://www.e-ir.info/2015/04/25/international-space-station-terrestrial-confrontation-to-orbital-cooperation/

AJEY LELE AND MUNISH SHARMA, APR 25 2015

The Russian Federal Space Agency, Roscosmos and National Aeronautics and Space Administration (NASA) of the U.S. have announced plans to build a new space station when the International Space Station (ISS) is scheduled to retire in 2024. Under the shadow of the Ukraine crisis, there were speculations whether both countries would continue to operate and finance the ISS. Russia-U.S. relations plunged to an all-time low in 2014 in the light of Russian support to separatists in eastern Ukraine and the subsequent annexation of Crimea. The relations hit a trough when Russia attracted sanctions from the U.S. and suspension of its membership in the G8, the group of leading industrialized nations.

The Genesis of the International Space Station

The space exploration activities began in 1957 with the launch of Sputnik 1, the first human-made object to orbit the Earth. In August 1957, the U.S.S.R. had successfully launched the world's first intercontinental ballistic missile and in October, launched Sputnik 1, the first satellite. This triggered a competition between the erstwhile U.S.S.R. and the U.S. to mark their presence in exploration of space and celestial bodies, often termed as "Space Race." The U.S. made a leap when the American Apollo 11 craft landed on the Moon in July 1969. The subsequent years witnessed phases of intense competition and confrontation between the two rivals of the Cold War era. As a consequence, space technology emerged as a game changer in both civilian and military domains with numerous applications for peaceful purposes as well as military uses in the form of intelligence gathering and communication.

After the end of the Cold War, space exploration moved in the direction of collaborative efforts. It took shape in the form of an International Space Station, the largest artificial body in orbit, and its assembly began in November 1998. The ISS is a multinational effort with participation of space agencies of the U.S., Russia, Japan, Canada, and 11 member states of the European Space Agency (ESA). In operational terms, the ISS was intended to be a laboratory, permanent observatory and a transportation node in Low Earth Orbit. It was also intended to provide servicing and maintenance capability for payloads and vehicles, a storage depot and a staging base for possible future missions to the Moon, Mars, planetary probes and asteroid surveys. The ISS has been the most politically complex space exploration program ever undertaken.

History of U.S.-Russia Joint Space Efforts

Despite having a troubled history of diplomatic relations, Russia and the U.S. have a long history of extensive and diverse cooperation. Most of NASA's cooperation with Russia is conducted through Roscosmos. Additionally, for human space flight activities, NASA cooperates with the following organisations: Rocket and Space Corporation (RSC) Energia, Khrunichev State Space Research and Production Center, Central Scientific Research Institute of Engineering (TsNIIMash), Mission Control Center-Moscow (TsUP), Gagarin Cosmonaut Training Center (GCTC), and the Institute of Bio-Medical Problems (IMBP). In space science, NASA also cooperates with the Russian Academy of Sciences (RAS), including the Institute of Space Science (IKI).

In space exploration, the cooperation in the research areas such as space biology and medicine, and geodesy and

geodynamics began in the 1960s. Later on, in the year 1972, the U.S. and the erstwhile U.S.S.R. signed the *Agreement Concerning Cooperation in the Exploration and Use of Outer Space for Peaceful Purposes* , commonly known as "Civil Space Agreement." This enabled expansion into other areas, including space science, Earth science, satellite-based search and rescue, and, later, human space flight. Specifically, cooperation in human space operations began with the Apollo-Soyuz Test Project in the 1970s. Although the human space flight programmes of both the countries parted ways in the late 1970s, with the dissolution of the U.S.S.R. in the early 1990s cooperation between Russia and the U.S. flourished through the Shuttle-Mir Program.

With the harmonization of East-West relations in 1991, the U.S. and Russia began to collaborate more on space projects. In December 1993, the countries involved in the space station project invited Russia to join them and the Russians agreed. This brought in 20 years of rich experience Russia had in the development and operations of space stations, from Salyut in 1971 to Mir. The primary goal of the Shuttle-Mir program was to give the U.S. valuable experience in operating a space station for long periods of time. Through Shuttle-Mir Program, NASA gained valuable experience in rendezvous and docking, spacewalks, and long-duration operation of large-scale space systems. The expanding U.S.-Russian cooperation in human space flight was anticipated to result in a better quality, faster-paced, less expensive space station program.

As part of the continuing cooperation, Russian made instruments have been incorporated as a part of NASA's robotic probes to the Moon and Mars. In Space Science, NASA has been having prolonged partnership with the Soviet and Russian space scientists in Mars exploration since the 1980s. Yet, the most distinguished project has been the International Space Station (ISS).

The overall U.S.-U.S.S.R. relationship in the years between 1957 and 1991 had varied characteristics – from the hostile phases of the Cuban Missile Crisis, the Vietnam War and the Soviet invasion of Afghanistan to the periods of détente that led to the Partial Test Ban Treaty in 1963, the Strategic Arms Limitation Treaty in 1972, and the emerging U.S.-Soviet rapprochement from 1985 to 1991.

Soon after the launch of Sputnik 1 and 2, the U.S. President Dwight Eisenhower prioritised space activities and laid down objectives to develop capabilities to observe the Soviet territory from space. A new civilian space agency, NASA was established in 1958, to develop fast-paced, expensive space programmes to compete with the U.S.S.R..

The U.S. President John F. Kennedy was explicit about his preference for space cooperation, while speaking at his Inaugural Address, he said, "Let both sides seek to invoke the wonders of science instead of its terrors. Together let us explore the stars." Following the Cuban Missile Crisis, when both the superpowers came to the brink of a nuclear war, the relations between them reconciled soon thereafter. The Partial Test Ban Treaty was signed in August 1963; later on the Outer Space Treaty came into existence in January 1967, and the Nuclear Non-Proliferation Treaty in July 1968, which were the building blocks of détente – the phase from 1962 to 1979. They signed the Strategic Arms Limitation Treaty (SALT I) in 1972. In the same year that SALT I was signed, the Biological Weapons Convention and the Anti-Ballistic Missile (ABM) Treaty were also concluded and Talks on SALT II also began. It is noteworthy that the "Civil Space Agreement" was also signed in 1972.

The improvement in relations indicated the potential for a cooperative space mission. The Apollo-Soyuz Test Project of 1975 was made possible by the thaw in these relations. It had great significance as it brought an end to the "Space Race," and it was perceived more as a symbolic outcome of the détente. The collaborative effort in space was an outcome of ease of tensions in diplomatic relations.

The phase of détente did not last long and it collapsed by the end of 1970s with the Soviet invasion of Afghanistan which began in December, and triggered another phase of hostility, which lasted till 1985. The Soviet intervention in Afghanistan attracted harsh criticism, including a boycott of the Summer Olympics of 1980, which were to be held in Moscow. As a consequence, the U.S. did not ratify SALT II, although the talks had resulted in an agreement in 1979. The impact of prevailing tensions was reflected in the space domain as well. Consequently the human space flight programmes of both the countries split in the late 1970s.

As tensions subsided by the mid-1980s, the two sides signed the Strategic Arms Reduction Treaty, START I (a 1991 completed agreement between the U.S. and the Soviet Union) and START II (a 1993 agreement which was never ratified by the U.S.). In 1992, and in particularly 1993, the two years following the dissolution of the Soviet Union, the U.S. entered into a number of agreements with the Russian Government and the emerging Russian private sector related to expanded cooperation in outer space activities. The centrepiece of those agreements was a December 1993 invitation to Russia to become a full partner, in the international space station project. The involvement of Russia and the Shuttle-Mir Program were again resultant of the new beginning in the relations of the U.S. and Russia in the post-Cold War era.

The New International Space Station: Improvement in Relations?

The year 2014 witnessed deterioration in Russia-U.S. relations in the aftermath of the Crimea crisis. The relations further plunged in July when Malaysia Airlines Flight 17 was brought down by a suspected surface-to-air missile in eastern Ukraine, near the Russian border.

With respect to the ISS, the U.S. is significantly dependent on the Russians for transporting their astronauts to the ISS. After the U.S. had wound up their Space Shuttle programme in 2010, they are totally dependent on the Soyuz craft for a to-and-fro journey to the ISS. Even before the Ukraine crisis there have been a few occasions when the Russia-U.S. relations went through a rough patch.

The Russia-U.S. relations have been defined and redefined by the dynamics of regional conflicts and crisis, where national interests have always reigned. The cooperation between the two in space exploration has stood the test of time, and the ISS is the prime example. It could be concluded that space has not driven the relations between the two countries, rather the diplomatic relations have shaped their space programmes to a greater extent; from the beginning of the “Space Race” to collaboration in Apollo-Soyuz, and from the militarization of space to execution of the ISS project. The decision of NASA and Roscosmos to build a new Space Station could be seen in the pretext of the thaw in relations after the Crimea Crisis. Russia’s all-weather friend China is also proposing to build a space station in the near future and already have ‘tested’ a prototype for the same in the space. However, the Russians are still looking for partnership with the U.S. for building a new international space station.

It is important to look at the proposal of jointly building the new space station by Russia and the U.S. at the backdrop of their ongoing ISS collaboration. Even after the latest post-Cold War low in the bilateral relationship owing to the Ukraine issue both the states have displayed significant maturity and have ensured that the “experiment” called the ISS would not fail. Interestingly, the ISS is the only project in outer space that remains insulated from the “sanctions” regime. Russia fully understands that this is one project where the U.S. is more dependent on it. This project has a unique achievement – for the last 13 consecutive years there has been permanent human presence on board the ISS. Today, this presence could be continued for non-Russian citizens only if Russia cooperates. It is likely that the ISS programme would continue till 2024 and Russia realises that just because the U.S. is depending on it for the transportation of astronauts does not mean that it could sustain the ISS till that time on its own. It is probably dependent on the U.S. both in terms of handling the space station and also for some spare parts required to maintain the Russian section of the space station. Also, economic sanctions do not warrant an extreme action like leaving the U.S. astronauts stranded at the ISS and exploiting their safety for any bargaining purposes. Russia recognises the fact that any action of this nature would dent its global image.

For the U.S. military, Atlas-V rocket is important for specific launches; however, the supply of Russian-made RD-180 rocket engines is likely to be stopped. This indicates that Russia is becoming ‘selective’ about its acts of cooperation in the outer space. The proposal for potential collaboration on the new ISS also appears to be a selective approach. It is important to note that the new ISS is a multilateral proposal and various other countries are expected to join too. Russia is fully aware of its financial and technological limitations in terms of going solo for the new ISS. At the same time it is not very keen to allow other players like the U.S. or the European Space Agency to dominate the future of global activities in space. Hence, the best option for Russia is to engage with the others in a constructive manner. Now, it is the test of the U.S. diplomacy to find the best way engage Russia in the outer space to resolve the confrontational issues on the Earth!

About the author:

Ajey Lele is the author of the book titled: *Asian Space Race: Rhetoric or Reality?* (Springer, 2013) and works with the Institute for Defence Studies and Analyses (IDSA), New Delhi, India.

Munish Sharma, is a Doctoral Candidate at the Department of Geopolitics and International Relations, Manipal University, India.