

Space Race

by Arghya Dutta - Wednesday, March 18, 2015

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Human beings are curious in nature. This inquisitive species has been challenging natural roadblocks since time immemorial not just for survival, but also, for collecting information which would help them in future in order to lead better lives. As humans, we have conquered the highest peak on the planet, Mt. Everest. We have dived straight into the heart of the deepest point on Earth - Mariana Trench. We have crossed the mighty seas by swimming fearlessly in the dangerous waters. We have lived in the hottest and the coldest places in the Earth. We have crossed a 100m distance in just 9.51 seconds. In whichever field humans have shown interest, they always did something that not only tests the human limits, but also pushes them to expand the boundary limits.

But once you know a lot about your family, you obviously want to know something about the neighbors. That's what we as humans do. So once we came to know about our planet Earth, what next did we have? To know more about other planets, stars or whether life exists someplace else or not. This led to space exploration. Earlier things were lot unclear, since astronomers and physicists made observations based on hypotheses - what they saw from the telescopes and their calculations as per their observations. To physically reach into space and find out more about the vast emptiness, one needed to physically either go there or send a probe. This gave rise to one of the historic competitions ever to have happened in the entire mankind - Space Race.

It was the era of Nazi Germany when World War II operations were going on in full swing. Wernher von Braun in 1930s was the Chief Engineer of the rocket development section of German army. While Germany was looking towards rocket development as a means to bypass a treaty which didn't allow them to fire long range cannons, von Braun was unaware of the rocket's military aspects. He was inspired by the solid fuel and liquid fuel rockets of Dr. Robert H Goddard, an American scientist, and was more into sending a missile off into outer space. He and his team were successful in making A-4 and V-2 rockets, which were extensively used by the Army to bombard in parts of England. After the war ended in 1945, there was a competition among American, British and Soviet intelligence scientists to capture German rocket scientists and their developed missiles. Americans were able to grab von Braun and his team along with an arsenal of already developed V2 rockets. They housed the entire rocket expert team in New Mexico. On the other hand, Soviet captured another set of German rocket scientists, and along with other Soviet scientists under the leadership of Sergei Kolorev, they were transported to Gordomlya Island, situated northwest of Mexico. The German scientists however were used as problem solving consultants to the engineers.

The Cold War (1947–1991) developed between two former allies, the Soviet Union and the United States, soon after the end of the Second World War. Although the primary participants' military forces never clashed directly, they expressed this conflict through military coalitions, strategic conventional force deployments, extensive aid to states deemed vulnerable, proxy wars, espionage, propaganda, a nuclear arms race, and economic and technological competitions, such as the Space Race. The Americans found that Soviets had already tested the atomic bomb. Since Americans never want to come second, they

started strengthening their Air Force fleet and launched many missile programs under various names. To counter such threats, Stalin back in Soviet Union called all scientists to work on the Inter Continental Ballistic Missile (ICBM). 1950s was also the time when both nations developed well charted space policies. The intention was clear - it was less of exploration here and more about supremacy.

On August 30, 1955, Korolev managed to get the Soviet Academy of Sciences to create a commission whose purpose was to beat the Americans into Earth orbit: this was the de facto start date for the Space Race. Seeing this, Americans announced that as a part of the International Geophysical Year, they plan to launch artificial satellites revolving around the Earth in between 1957-58. . They were aware of the fact that if they used the Jupiter C rocket, they would be branded as warmongers, since Jupiter rockets were for military use. So, they went for booster-only Vanguard rocket. But before they could launch a payload, Korolev and his team had already started working on satellite prototypes, tweaking them to reduce their weights. Once Soviets came to know that US intended to launch their satellite on 4th or 5th October, 1957. Soviets launched their Sputnik 1 on 4th October, 1957 successfully. The Soviet success caused controversy and panic in US public. The then President DD Eisenhower asked the scientists to move up the schedule. The Project Vanguard on 6th December 1957, from Cape Canaveral, Florida was broadcasted live on television. It turned out to be a disaster as it exploded in a few seconds after the launch and became an international joke. In Britain, the reaction was mixed: some members of the population celebrated the fact that the Soviets had reached space first, while others feared the destructive potential that military uses of spacecraft might bring.

In 1958, reacting to Soviet's lead in Space Race, US President Eisenhower recommended the Congress to setup a civilian agency that would look after the non-military space exploration aspects. This was instrumental as it gave rise to National Aeronautics and Space Administration (NASA).

Already running behind USSR, the US Air Force had started working on sending humans in space under Project Mercury from 1958. This was a bit complex, since it involved the reentry of human capsule back into Earth. It was turning out to be a lengthy process, with selection of able candidates from defense and shortlisting them multiple times. American observers believed that Soviets would again win this time, and they were correct too. Soviets sprang up with a surprise when on April 12, 1961, Soviets sent cosmonaut Yuri Gagarin into space via Vostok 1 craft to orbit the Earth. Gagarin's flight was a triumph for the Soviet space program. 3 weeks later, Alan Shepard from America went up into space in a Mercury Redstone 3 space craft. Both became national heroes in their own countries.

After Gagarin's flight, President John F. Kennedy sensed the humiliation and fear on the part of the American public over the Soviet lead. He wanted to explore other options in space flights which could put them back in the race. The two major options at the time seemed to be, either establishment of an Earth orbital space station, or a manned landing on the Moon. Under von Braun's estimates, it was decided that manned landing on Moon may turn out to be in USs favour. Soviets on the other hand were mum about their upcoming space programs. Meanwhile, Both US and Soviet Union were developing their Mercury and Vostok programs respectively, improving their missile designs and sending men, women and even animals into space. In 1963, Kennedy proposed a joint program between US and Soviet Union for manned landing on moon, which was rejected by the then Soviet Premier Nikita Khrushchev.

So both countries started developing their own manned mission to Moon missiles (Apollo program for US and Soyuz for Soviet). But the rat race caused them to neglect on the technical glitches in the space

crafts which cost them a lot of lives, specially in 1967 (Apollo 1 fire during ground test, for example). So they started fixing all the technical snags, the parachutes and the command modules. After a temporary halt, US carried out Apollo 7 mission to check the command module in Earth's orbit. It's success paved US's way further towards lunar mission. Meanwhile, Soviets were having problems with their lunar command modules and most of their resources went towards debugging their modules. It was after lots of test flights and delays when on 16 July, 1969, Apollo 11 carried Neil Armstrong, Edwin Aldrin and Michael Collins to Moon. They landed on the Sea of Tranquility on 19 July 1969, etching the line "One small step for man, one giant leap for mankind" for eternity. This was the first for any space program and US space mission finally got a taste of success of being first at a space program.

NASA had ambitious follow-on human spaceflight plans as it reached its lunar goal, but soon discovered it had expended most of its political capital to do so. After a lot of lunar missions, they had called curtains to it. And on losing the Moon race to US, Soviets decided to concentrate more on orbital space stations. While they worked on Salyuts, high-on-success Americans started their work on orbital workstation Skylab. Both worked for finite amount of time after which, they became useless.

While the Sputnik 1 launch can be called the start of the Space Race, its end is harder to pinpoint. In May 1972, President Richard M. Nixon and Soviet Premier Leonid Brezhnev negotiated an easing of relations known as detente, creating a temporary "thaw" in the Cold War. In the spirit of good sportsmanship, the time seemed right for cooperation rather than competition, and the notion of a continuing "race" began to subside. It was an Apollo-Soyuz Test Project, where they were creating common docking ports and similar atmospheric conditions in their space crafts to work together. Once they docked together in space, the astronaut and cosmonaut team put aside their differences, shook hands and exchanged gifts and memorabilia.

Whatever had sparked the race, mankind has definitely benefitted from it. We now have International Space Station and Mir Space Station, NASA and Russian Space Agency working together in collaboration with other space agencies, sharing technologies to gain more knowledge about extra-terrestrial bodies. So, this is a perfect example of how a competition turned out beneficial for science and acted as a channel to quench human thirst of knowing about the vast emptiness surrounding us.

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