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The Space Race: Different Technology Leads To A Different Relationship

The year is 1957. The Soviet Union has just launched Sputnik into space. Sputnik is the first ever satellite to break the Earth's atmosphere and go into orbit. The "supposedly backwards Russians" (Goodby) had actually beaten the "powerful, intelligent" Americans. This could not happen. The United States is thrown into a state of panic. If the Russians could accomplish this, imagine what else they had up their sleeves. Millions of dollars are invested in science education and aeronautical training. NASA is created. Everything possible is done to catch up. Eighteen years pass. General Thomas Stafford reaches out and shakes General Alexei Leonov's hand. Russian and American space stations have just docked and the Soviets and Americans have begun the first joint space program. In only eighteen years, the public saw the US and Soviet space programs go from bitter rivalry to complete cooperation. 1957 marked the start of a race for space program supremacy. It ended less than two decades later because there was no reason to be in contest. The original fear of creating high - powered rockets to destroy each other had branched off into technological achievements for the betterment of mankind or, in other words, pure publicity. The Space Race marked a shift in the way weapons and space technologies were used and, therefore, a shift in the relationship between the United States and the Soviet Union. The origins of the race and the shift in relationship have their roots in World War II. After the German surrender to the Allies, land was not the only thing being fought over between the United States and the Soviet Union. Germany had major developments in its missile program. In fact, the V-3, the first short-range missile had been used on Britain during the London Blitz. The missile was 46 feet tall and carried a thrust of 56,000 pounds. Upon hearing of the development, Adolf Hitler stated only: "It was impressive" (Breuer 15). Major Robert Staver, the man in charge of gathering information for the Rocket Section of the Research and Development branch of the military (Grigorieff), thought this quite the

understatement: "The thinking of scientific directors in this group is 25 years ahead of ours" (Breuer 90). By the end of the war, in May 1945, these weapons and the minds behind these weapons were as important as anything else.

By the end of the war, the Germans had developed the V-2, which was the most advanced missile of its time. The United States had intercepted a shipment of 100 V-2's and had made its own rockets modeled after the V-2 before the war was over (Grigorieff). However, now the United States and the Soviet Union were racing for the rest of the missiles and the scientists who made them. Dr. Wernher von Braun was the leading missile scientist in Germany. He had been captured along with other leading scientists by the Nazis in the beginning of the war. They were forced to invent new weapons, when their main goal in missile technology was space exploration. "The rocket worked perfectly except for landing on the wrong planet", said Dr. von Braun, after the V-2 struck in London (Shepard 31).

Dr. von Braun and his fellow scientists realized that after the war, they would be in great demand by the two major powers. They also realized that their greatest chance for further space exploration lay with the United States. So, in May, 1945, Dr. von Braun and 117 of his scientists surrendered to the United States military and were put in contract to further their missile technology (Lethbridge). The Soviet Union pursued a similar path. In June, 1945, the Soviet Union occupied Mittelwerk, the production plant for the V-2 bomber. They were able to sign Helmut Gottrup, a principal German scientist, under contract to continue research for the Soviet Union. Along with him, they held 3,500 workers. However, these were mostly lower-level workers of little value. Most of the others had already fled. In October, 1945, Helmut Gottrup, along with 200 other "contractors" were brought to the Soviet Union without warning to continue their research (Lethbridge).

The groundwork was laid for a race for something. The United States and the Soviet Union had snatched up all the weapons and intelligence they could. However, no one was clear on the exact purpose of this. Each side only saw danger looming from the opposite side of the ideological spectrum.

Sergei Korolev led the missile efforts in Russia, milking all the information he could out of the German scientists. They soon developed long range missiles capable of firing from Europe to the United States. The

United States rocket program remained, for the most part, dormant until 1950, when it was confirmed that the Soviets had been busy in developing their own rocket program. The missile projects in both countries developed and got more advanced. They were both fearful of major advancement by the enemy and of being left far behind in the weapons race. However, the situation soon began to take a different route.

In 1954, Dr. von Braun was asked by the United States about possible contributions to the International Geophysical Year, from July, 1957 to December, 1958. The IGY, as it was called, was proposed in 1952 by the International Council of Scientific Unions to enable scientists from all over the world to come together and study the Earth's geophysical properties (The International Geophysical Year). Dr. von Braun declared that he would be able to put a five-pound satellite into orbit to study the upper atmosphere (Shepard 34). However, to accomplish this he required non-military missiles, for which President Eisenhower was not willing to provide funding. At the same time, the Soviets kept issuing reports of their advancement in satellite/missile technology. The Pentagon took it as a bluff. So, on October 4th, 1957, Prostreshiy Sputnik, or Simple Satellite, was launched by the world's first Inter Continental Ballistic Missile and broadcast it's first three beeps over the radio. This occurred two days before the United States was scheduled to hold a conference announcing their "progressive plans" to launch a satellite into orbit.

These events and the situation that followed marked a branch from the military missile technology. The Cold War was taking an odd turn. There was a great deal of fear of what could happen with this new space technology. However, it was not as straightforward as having a weapon that could hit the enemy. This branch of the Cold War included a build-up of defense and incorporated a boasting of greatness. This boasting was shown in the form of the newest technology to come out and the new age the world had entered: the Space Age. All of a sudden both countries had to be careful of two things: that they were on par with each other technologically and that the world's view was in their favor. This change in usage of missile technology has been studied throughout history. "Historian Walter A. McDougall coined a name for the transition between the two. He called it a media riot" (Schefter 23). "The day is not far distant when they could deliver a death-dealing warhead onto a predetermined target almost

anywhere on the earth's surface." - The Chicago Daily News Sputniks with nuclear bombs could "spew their lethal fallout over the U.S. and Europe." - Newsweek The Soviets will be "dropping bombs on us from space like kids dropping rocks onto cars from freeway overpasses." - Lyndon Johnson "What is at stake is nothing less than our survival." - Senator Mike Mansfield (Guillemette)

The people and politicians in the United States were scared. A foreign enemy aircraft was flying overhead every 100 minutes and there was nothing the American public could do about it. "It soared with what seemed to me inexorable and dangerous purpose, as if there were no power in the universe that could stop it... Sputnik was right there in front of my eyes in my backyard" (Hickam). With the country on the verge of panic from the shock of the Soviet's accomplishment, something had to be done. The only course of action possible in a battle for the public's opinion is to play into their views. The United States began it's path towards this goal.

President Eisenhower was under enormous pressure from the American public and his rival politicians. They accused him of allowing a "missile gap" (Goodby) and doing nothing while the Soviet Union was advancing technologically and working on launching a satellite. In reality, the technology was available to the United States many years before. However, top politicians and generals failed to realize the importance and the immediacy of launching a satellite. Even the Soviet Union did not completely understand the ramifications. Pravda, the national newspaper of the Soviet Union published a subtle acknowledgement of the launch on the front page on October 5th, the day after Sputnik was launched. However, after seeing the reaction in the United States and abroad, they followed suit and milked the publicity. "World's First Artificial Satellite of Earth Created in Soviet Nation" read the top of the front page of Pravda on October 6th (Guillemette). The United States needed to prove they could catch up quickly. Partly to improve the United States' technological programs but mostly to improve public opinion of the United States' technology, President Eisenhower poured 2 billion dollars a year into education (Cold War Glossary). New curriculums were established that were more math and science-heavy (Goodby). The National Defense Education Act was

passed, which provided millions of dollars for student loans and scientific instruments for educational institutions. In addition, NASA was created to centralize the space effort. Prior to NASA's creation in 1958, control of the space program was somewhat unclear between the Army, Navy and Air Force (Timeline).

The most obvious publicity-driven move by President Eisenhower was countering the launch of Sputnik and the subsequent Sputnik II, which was launched thirty days later, with the launch of the Vanguard. On December 6th, 1957, the much-publicized Vanguard launched a few feet into the air before it fell back down in flames (Shepard 45). Just as the launching of Sputnik was huge news, the United States' failure to catch up with the Soviet Union caused just as much of a stir and added to the public's feeling that the Soviet Union was more technologically advanced than anyone thought. With the urgent need to catch up to the Soviet Union, President Eisenhower called upon Dr. von Braun to get an American satellite into orbit.

Dr. von Braun continued work on his satellite project that had been scrapped a few years prior due to a lack of interest by the government. However, now Eisenhower was sparing no expense. The better missile that was needed for this kind of launch was provided and on January 31st, 1958, the Explorer 1 was launched into orbit. One hour and fifty-three minutes after launch, the first signal from the satellite was heard in California. The United States had proven to the world and to its own people that they were on par with the Soviet Union. The United States' triumph was acknowledged but there was still much more work for them to do to be able to say the United States was more advanced than the Soviet Union and win the media war. As the years passed, both countries continued developing new space technology in hopes that they would come out ahead of the other country. In 1961, Soviet cosmonaut Yuri Gagarin became the first man in space. One month later, Alan B. Shepard became the first American in space. In March, 1965, Soviet cosmonaut Alexei Leonov performed the first space walk. In June, 1965, NASA astronaut Ed White performed the first American space walk. In April, 1966, the Soviet's Luna 10 made the first ever orbit of the moon. In August, 1966, the American Lunar Orbiter completed its orbit around the moon (Timeline). The race went on and on. One country would make a groundbreaking achievement and the other country would accomplish something just

as impressive so as to keep the public opinion behind them and to make sure the other country did not become too advanced. This all ended in 1969 when the technology in the Space Race branched out once again. On July 20th of that year, Neil Armstrong and Buzz Aldrin became the first men to land and walk on the moon. This was an enormous achievement and had the potential for the biggest publicity of the whole Space Race. America took full advantage of this. President Nixon summed up America's feelings about this achievement very nicely: "This is the greatest week in the history of the world since the Creation!" (Breuer 195). Americans were calling this the end of the Space Race and in many ways it was. However, it was not because the Americans had beaten the Russians to the moon. It was because the technology in the Soviet Union and the United States was moving in different directions. While the Americans were pursuing their Apollo space program, with Apollo 11 landing on the moon and many missions thereafter accomplishing the same feat, the Soviets had moved into space station technology.

The first steps towards a transfer in space were accomplished with the Soyuz missions. In January of 1969, the Soyuz 4 and 5 docked in space and the crews were able to walk from one ship to another. Two years later in April, 1971, the Soyuz 10 docked with the Salyut 1 space station. The crew was able to enter the space station and the lab on board (Cold War Glossary). This was the first manned space station and an example of the new path the Soviet Union was on.

With the technologies growing farther and farther apart, there was no need and, in reality, no possible way to have a Space Race. The United States claimed their victory with the first moon landing and worked towards more missions to the moon. The Soviet Union continued to improve their Soyuz missions and accomplished more and more with their space station program. As the technology began to move in different directions once again, so too did it bring about a change in relationship: an end to the Space Race and the beginning of the first cooperative effort between the United States and the Soviet Union, an effort that could not be accomplished until the United States' and Soviet's technological directions parted ways. Discussion for possible cooperation between the United States and the Soviet Union began as early as the end of the 1950's. The United States was very interested in pursuing cooperation due to their lagging in the space

program and the positive possibilities if the two countries worked together. These talks developed extremely slowly and fell apart over and over again. In the early 1960's, the US had tried to initialize talks, but the Soviet Union refused to discuss anything outside of the United Nations.

Realizing that public talks in the UN would only lead to positive propaganda for the Soviet Union's more advanced space program, the US ended talks before they even got off the ground (Ezell).

On February 20th, 1962, John Glenn became the first man to enter Earth's orbit. This was a major accomplishment by NASA and Premier Krushchev was well aware:

If our countries pooled their efforts - scientific, technical, and material - to master the universe, this would be very beneficial for the advance of science and would be joyfully acclaimed by all peoples who would like to see scientific achievements benefit man and not be used for "cold war" purposes and the arms race (Ezell).

Whether this was a call for cooperation or a propaganda ploy, President Kennedy treated it as a proposition. Kennedy sent a delegation headed by Hugh Dryden to meet with Anatoly Blagonravov, the head of a similar delegation in the Soviet Union. Several talks resulted from these meetings and plans for joint weather satellite, geomagnetic, and communications technologies were crafted (Logsdon). However, these projects never got off the ground. The reason for the failure of these projects was policy issues. Both countries were still pursuing similar technology, not as friends but as rivals. Both countries were afraid to make more than the first step in cooperation. The "primary concern ... was the goal of placing a man on the moon ahead of the Soviet Union. As the U.S. and the U.S.S.R. ventured forth on their ... routes to the conquest of space, the idea of cooperation remained, but only as a dream" (Ezell).

The United States' and Soviet Union's similarities in technology made a joint venture impossible. The "Cold War" mentality prevailed through the talks. Even though it seemed like the perfect opportunity for cooperation, many officials saw it as a greater opportunity to prove supremacy in the same area. "The plain fact is that the Soviets have been competitors in this field", said NASA Administrator James Webb in 1965 in response to the deterioration of cooperation efforts (Logsdon). The

talks had reached a blockade and were completely halted.

This all changed in April, 1969, when NASA Administrator Thomas Paine sent a series of letters expressing hopes for joint missions to Mstislav Keldysh, head of the Soviet Academy of Sciences, the Soviet Union's equivalent of NASA. This time, talks took off very quickly. Both parties were enthusiastic to be working with each other and on May 24th, 1972, President Nixon and Chairman Kosygin signed an agreement for joint exploration. The teams met and began working together.

The year 1975 finally brought a cooperative mission between the United States and the Soviet Union. The space programs had grown far enough apart at this point that the relationship could be a cooperative one. On July 17th, 1975, the Soyuz 19 and the Apollo probe docked in space and started performing joint experiments. For four days, the cosmonauts and the astronauts worked together in what is known as the ASTP (Apollo- Soyuz Test Project).

The ASTP marked the end of the Space Race. The two superpowers were no longer in competition. It marked a huge change in a long and revolving relationship. At the end of the war, both countries were fearful of missile superiority, making for a hostile relationship. As the space program began to take off, the relationship turned into rivalry, seeing who could outperform the other. The superpowers fought for greater technology to combat the possibility of an attack and greater public opinion as the missile technology branched from pure defense to rocket-propelled satellites. Finally in the early 1970's the relationship of the two countries changed once again. The Soviets were now working towards space station technology while the United States pursued lunar landing missions. In this light, there was no way to avoid working with each other. It was the obvious conclusion due to the change in technology.

After returning from the ASTP mission, cosmonaut Alexei Leonov said, "The Apollo-Soyuz people were clever people who decided to demonstrate to mankind that we -- as Russians and Americans -- can surpass our mutual mistrust and work together" (Golightly). Leonov was right in one respect. It was the first demonstration of it's kind that showed the Americans and the Soviets could work together. "Americans now realized that cooperation was possible" (Herken). However, there was little interest and "as a publicity stunt it was an

abject failure" (Goodby). Leonov gives credit to the people involved in putting the mission together, but nobody deserves great credit for diplomatically arranging the mission. It was just the logical end to a technological parting of ways by the United States and the Soviet Union, as was each dramatic shift in the Space Race.

The Space Race's dependence on the changing technology separated it from every other part of the Cold War. The mid 1970's were a very dramatic and dire time for the United States and the Soviet Union. "The Soviets surged ahead in nuclear and missile prowess... Ford's tenure saw the decline in US defense spending reverse itself and become a period of real increases in defense spending" (Goodby). It was a tense time for both countries and, yet, in the middle of all this, American astronauts and Soviet cosmonauts were able to work together in space. On Earth, the two countries were still fighting over the same thing, world influence. However, in space, the two countries were after different goals, which nullified the need for competition and allowed them to work together to, as Krushchev said "benefit man" (Ezell). In the middle of the Cold War, the Space Race stood as a message that unless the two countries worked towards different goals there would always be competition and the war would continue until there was a winner and a loser.

Interviews Questions 1) What was the general mood of the American public and the United States government concerning the launching of Sputnik in 1957?

2) What did the American public think of the meeting of the American and Soviet spacecraft (The Apollo-Soyuz Test Project) in 1975? For example, was it thought of as a publicity stunt? As a real chance for cooperation? An opportunity to learn from each other? Something other?

3) How far was the United States willing to go in terms of military technology in space?

4) Generally speaking, what was the tone between the United States and the Soviet Union in the mid-1970's?

5) Many believe the Space Race was merely ideological boasting of strength and technological achievement between the United States and the Soviet Union. What do you think about that opinion?

6) Did diplomatic relations improve as a result of the meeting in space in 1975?

Response by Greg Herken, Greg Herken is a professor in the School of Social Science, Humanities and Arts at the University of California, Merced and a curator of the Smithsonian Institution's National Air and Space Museum. Greg Herken has written four books on the Cold War and continues to do extensive research on the topic.

1) Near panic--there was a widespread public belief that the US had no serious rivals in science and technology at the time. Sputnik came out of the blue for most in the US. 2) I think most people believed that there was something substantial in the ASTP mission. In retrospect, it seems like purely a PR stunt, but, in fact, there was still serious concern for a Soviet-American nuclear war at that time. 3) What most in the US didn't know is that the country was already spending much more on military space than on NASA. Because the recon satellite program was secret through the sixties and seventies, it was only when LBJ made the comment that we are saving money by not building things to counter the Soviet threat, because we know the threat is not as dire as previously believed--it was only then that people began to be aware of satellite reconnaissance. 4) Bluster and hostility, but with occasional flashes of hope for 'detente.' 5) The Space Race became a symbol of the ideological conflict between East and West, and hence a lot hinged on it, symbolically. 6) Probably not; but most Americans now realized that cooperation was possible.

Response by Ambassador James Goodby, James Goodby is a Cold War expert and top US arms negotiator. He has spent most of his life working out arms negotiations and was very influential in the Cold War.

Now, I will give you some thoughts on the questions you posed, noting that these are only partial answers to your questions. As to Sputnik, it is hard to overstate the shock it gave to the American people. Here were these supposedly backward Russian communists who had beaten the most technologically advanced country in the world in getting a satellite into space. It led later to the "missile gap" charge and affected the presidential election of 1960. As a consequence of the shock, Americans began to question the educational system in the US, which led to greatly increased Federal funding for education, especially for science. Congress, of course, began to push for more spending on missile research and development. Eisenhower, to his

credit, resisted the panic and kept the government and its spending on a steady course. This did not help his reputation at the time but I think that events proved him right.

As to the tone of US-USSR relations in the mid-1970s, it was a period of disillusionment regarding Nixon's detente policy. Ford even abolished the term from his official vocabulary. Reagan tried to wrest the GOP nomination from Ford in 1975-76 on grounds that the US was becoming a second-class power, as the Soviets surged ahead in nuclear and missile prowess. Soviet meddling in Africa was seen as the natural result of Moscow's assumption of superiority over the US. And the fall of Saigon in 1975 added to the unhappiness with the course of US-Soviet relations. Not surprisingly, Ford's tenure saw the decline in US defense spending reverse itself and become a period of real increases in defense spending.

I'm sorry that I cannot answer your questions about the 1975 Apollo-Soyuz Project and the US-Soviet Space Race because I remember nothing at all about it. Perhaps that tells you that as a publicity stunt it was an abject failure. Perhaps that tells you, too, that the American people had overcome the shock of Sputnik and were more focused on restoring the "natural order of things" in the defense field. It is clear (to me) from the Washington perspective that the space project had little to do with the tenor of US-Soviet relations, which did not really begin to improve until Reagan's second term, from 1985 onwards, when Gorbachev decided to end the Cold War. But those Americans who follow space activities more closely than I do may have a different take on all that.

It is possible that there was a major effect there which made it easier for Gorbachev ultimately take the bold action he did. One of his key science advisors was a man named Velikhov, who ran their space program together with Roald Sagdeyev. I would like to think that they had a political influence for the good when Gorbachev gave them an opportunity to do so and that they, in turn, were influenced by the cooperation they had experienced with the Americans. By the way, Sagdeyev married Ike's grand- daughter, Susan, and is now at the University of Maryland. Perhaps your bottom line, after all, could be that this investment in the habit of cooperation paid off in unexpected ways.

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