

# The Soviet Space Program and its Fictional Counterpart: Achievements, Secrets and Cover-ups

An Essay By  
Paulette Bessette, Jennifer Gillon & Emma Satterfield

## ~Introduction~

*“I'd often read how all the cosmonauts were astounded by the sight of our planet from space. They wrote about some fabulously beautiful misty effect, and how the cities with their shining electric lights on the dark side reminded them of huge bonfires, and how they could see the rivers on the daylight side—well, none of it's true.” (Pelevin 111)*

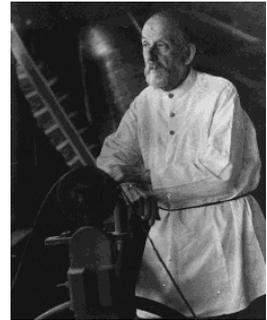
Starting in the late 1950's, the Soviet Union's greatest glory was the exploration of space. It was at the forefront of innovation. The Soviets captured many firsts: orbiting satellite in 1957, man in space in 1961, woman in space in 1963, spacewalk in 1965, and space station in 1971. Along with these great achievements came cover-ups and conspiracies.

Victor Pelevin takes this image of the great Soviet space program and turns it on its head in *Omon Ra*. The title character dreams of being a cosmonaut and is chosen to follow this dream to the Moon. Except that it's a one way trip for Omon. He is the person hiding inside the moonwalker, making it look as if it is an autonomous rover. As Omon does his final heroic duty and shoots himself, he misses. He soon figures out that he had never been on the Moon at all, he was pedalling the moonwalker down a stretch of underground tunnel. While on the run from his superiors, he also sees two cosmonauts doing a “spacewalk” outside a space station. Omon ultimately makes it out of the nightmare and into a real metro station. Pelevin mocks anything connected to space. Equipment, facilities, and situations are distorted and made to look ridiculous. The spacesuits look silly, the mission sounds absurd and the Soviet desire to conquer space looks comical. However Pelevin is not all that far-fetched. These things that he satirizes are similar to actual events and conditions. The greatness and heroic feats of the Soviet cosmonauts

the citizens were told about, were often not the reality.

### ~Konstantin Tsiolkovsky~

The roots of the Soviet space program are quite often traced back to Tsarist Russia, in the late 19<sup>th</sup> century, to Konstantin Tsiolkovsky. Tsiolkovsky, known as the “first serious rocketry theoretician,” (Siddiqi, *The Rocket’s Red Glare* 471), and the “father of human space travel” (West 1501).



He developed several theories and mathematical equations, which have become rudimentary to modern day space travel. Though, it was not until after his lifetime that his concepts came to fruition.

After the 1917 Bolshevik Revolution, Tsiolkovsky’s ideas became valued for the part they could play in a new political order (Siddiqi, *Challenge to Apollo 2*). Space exploration and rocketry were used to politically embody the Soviet leadership’s future role in technological progress (Siddiqi, *Challenge to Apollo 2*). The ideas of modern science represented a new age of hopefulness, opposite to the long tradition of the Tsarist regime’s repression and stagnant power.

That is not to say that there was no more to Tsiolkovsky’s work than a political ploy; he is responsible for equations that explain rocket dynamics, orbital velocity, and escape velocity, as well as the “realization that spaceflight would require liquid propellants because of their greater efficiency compared with solid propellants” (West 1501). This work created a foundation for the future engineers of the Soviet space program. Unluckily, Tsiolkovsky died in 1935, and it would be another decade until his ideas were able to help put a man-made object into space.

### ~The Beginnings of the Space Program~

The early 1930s saw a time of increased interest in space related fields of study. The figures linked with the period formed “small rocketry societies in Moscow and Leningrad, dedicated to the design and construction of short-ranged liquid-fueled rockets.” (Siddiqi, *Challenge to Apollo 3*). Within these societies, there were two main focuses of research: military purposed rocketry and rocketry aimed for space exploration (Siddiqi, *The Rocket’s Red Glare* 475).

From these societies, Sergei Korolyov stood out. Korolyov was responsible for many of the significant developments in rocketry as well as manned space travel within the USSR (West, 1504). In 1933, he launched the Soviet Union’s first liquid-fuelled rocket and for the next four years he experimented with rocket engines (West 1504).



Sergei Korolyov (on the left)

In the late 1930's, Korolyov’s upwards trajectory, as well as the success of many others in the field, was soon interrupted by the Great Purges. In 1938, he was arrested for being an enemy of the people, and not until 1944 was he able to continue his work. This period coincided with a time where the state had become increasingly disinterested in funding the rocketry program. This was mostly due to a lack of military interest, and less than effective foreign intelligence in regards to the development of other space programs (Siddiqi, *Challenge to Apollo* 489).

World War II “provided an unexpected setting for the organization of sporadic and disparate rocketry efforts,” mostly comprised of work for military projects (Siddiqi, *Challenge to Apollo 15*). It was also around this time, when many of those arrested were released and able to continue their work. Stalin was still weary of technical innovation (West 1505), and many of the engineers released were made to focus on rockets that would aid military efforts (Siddiqi,

*Challenge to Apollo 16*). This was the trend well into the next decade.

As the war came to an end, the Soviet leadership began to grow interested in the developments within German rocketry (Siddiqi, *Challenge to Apollo 18*). The primary work of Korolyov and his peers, at this time, was the recreation of German rocket technology - particularly the German A4 rocket. In 1946, Korolyov was made to start on a Soviet version of the A4, called the R-1, a rocket that did not differ much from the German original (Siddiqi, *Challenge to Apollo 42*). This was all done within Germany and with the help of German engineers who had been captured at the end of the war. After its completion, these German scientists, as well as many others of various fields, were taken back to the USSR to work on Soviet projects (Siddiqi, *Challenge to Apollo 42*).

The rocket engineers of the Soviet Union, continued working on long range ballistic missiles. While Korolyov was working on improving earth-bound rockets, an old colleague of his, Mikhail Tikhonravov, began to talk of sending a rocket to space. In 1948, Tikhonravov gave a report claiming that the feat was possible using Soviet technology; a report, which reopened communications between Tikhonravov and Korolyov (Siddiqi, *Challenge to Apollo 68*). This was the beginning of an unofficial partnership, which ten years later, would help realize the goal of launching a rocket into space.

In 1946, Korolyov had become the 'chief designer' and political head of the Soviet space program. From this point forward he became indispensable to the Soviet leadership, he remained anonymous in the public and even within his circle of peers and colleagues – known only as 'chief designer' (West 1505). His value originally stemmed from his work on intercontinental ballistic missiles, and later from the role he would play in Soviet space exploration technology. At around the same time, Tikhonravov was working on packet based long-range rockets (Siddiqi, *Challenge to Apollo 68*). Another contemporary of this time, was Valentin Glushko, an engine designer with great interest in space (Harvey 19). Glushko, like Korolyov, also remained hidden

from the public eye and had been arrested during the Great Purge. Glushko was also part of the team sent to Germany, but “to oversee the work on A4 engines” (Siddiqi, *Challenge to Apollo* 31).

### ~The Space Program Under Khrushchev~

After the death of Stalin in 1953, the new party leadership was able to get a better idea of what Korolyov, and his peers were working on. The “massive and complex program of research” had been “completely concealed from them” (Siddiqi, *Challenge to Apollo* 117). Such work would not be lost on Stalin’s successors. In 1956, while overseeing the work on the R-7 (an intercontinental ballistic missile), Nikita Khrushchev met with both Korolyov and Glushko. Instead of showing only their progress on the current project, the two engineers talked about the R-7 as a means to launch a satellite (Siddiqi, *Challenge to Apollo* 150).

As soon as the R-7 was complete, Sputnik, the world’s first space satellite, would be launched. The R-7, at the time it launched in 1957, was the world’s first intercontinental missile – travelling 6,400 km (West 1505). This missile would be used to launch the Sputnik, and would also be the “main booster in the Soviet rocket program right into the 1980s, with over 600 successful firings” (Harvey 29).

On October 4<sup>th</sup>, 1957, Sputnik I launched. The preparation, the planning and the science were all done in secrecy; but once the satellite had launched, the whole world knew.



Khrushchev immediately requested Korolyov to launch something else, on the anniversary of the October revolution. The launching of Sputnik had worked out well for Khrushchev; he capitalized on the public success and morale boost, and consolidated his power base (Harvey 32). His request did not allow for much time. On November 3, 1957, Sputnik 2 was launched – but this time it carried a dog, named Laika. She did not survive past a week for

lack of oxygen (Harvey 33). This fact was kept secret from the public for quite some time. Still, in some older historical sources, the dog Laika came back alive and well.

Proposals were put forward to establish policy directions for the new Soviet space program from 1958 to 1960. In a January 1959 meeting, a set of criteria was decided upon for selecting the volunteers for the Soviet human space program. The candidates were from similar backgrounds, such as aviation, navy, rocketry and car racing (Siddiqi, *Challenge to Apollo* 243). Pilots from the Soviet Air Force were preferred due to their military training. The Soviet Committee was very secretive in this process: the doctors went through the files of the more than 3,000 pilots. Most were eliminated due to medical history, weight or height not meeting the set of criteria of the space program policy. Starting September 3, 1959, the remaining pilots were interviewed as possible candidates for “special flights” and this narrowed the list to 200 volunteers. One successful candidate was Lieutenant General Nikolai Kamanin who was officially appointed the Deputy Chief of the Air Force’s General Staff for Combat Preparation. Another 20 pilots were selected, including Senior Lieutenant Yuri Gagarin (Siddiqi, *Challenge to Apollo* 246). With the selection now completed, a special facility was built outside Moscow, in what is now referred to as Star City (Siddiqi, *Challenge to Apollo* 248). By July 1960, six pilots were selected as the core cosmonaut team: Yuri Gagarin, Anatoliy Kartashov, Andriyan Nikolayev, Pavel Popovich, Gherman Titov, and Valentin Varlamov. One of these six would become the first person in space to fly in the Vostok 1.

By April 1960, the engineers had completed the draft plans for the rocket series. Before man would fly into space, two dogs were trained for the purpose of testing man’s spacecraft. Dogs Chayka and Lisichka were launched on July 28, 1960. Nineteen seconds into the launch, a fire started in one of the engines, causing an explosion. This unfortunate accident led to design changes that allowed the cosmonauts to abort the mission at four different stages (Siddiqi, *Challenge to Apollo* 252). The next testing mission, the Korabl-Sputnik 2, also included two

dogs, Belka and Strelka, along with mice, insects, plants and other specimens (Siddiqi, *Challenge to Apollo 253*). The dogs and specimens returned intact and the success of this mission made it possible to plan for the launch of the first human into space for December 1960.

### ~The Soviets Come First~



On April 12, 1961, Yuri Gagarin made history as the first human in space, when he was launched aboard the Vostok 1. Gagarin spent almost two hours in space. After his successful launch, Gagarin became an international celebrity. Gagarin's flight is considered to be:

One of the major milestones in not only the history of space exploration, but also the history of the human race itself. The fact that this accomplishment was successfully carried out by the Soviet Union, a country completely devastated by war just sixteen years prior, makes the achievement even more impressive. (Siddiqi, *Challenge to Apollo 282*)

In May 1962, a Soviet delegation, which included Gherman Titov, cosmonaut of Vostok 2 and Cosmonaut Chief Nikolai Kamanin, visited Washington, DC. Titov and Kamanin were invited to a barbecue at the home of astronaut John Glenn. Kamanin overheard a conversation that the first American female astronaut would make a three-orbit Mercury flight by the end of 1962. Within weeks of his return, armed with the threat the Americans would beat the Soviet, Kamanin was able to obtain a decision to go ahead with the launch of the first Soviet female cosmonaut. Kamanin believed it was their patriotic duty to beat the Americans. Under the direction of Soviet Premier Nikita Khrushchev, five women were to be selected and trained for the special female cosmonaut program (Shayler 44). When the decision had been announced to send a female cosmonaut into space, Valentina Tereshkova submitted an application with the government agency responsible for the selection of candidates. She was selected as one of the top five out of 1200 applicants and on June 16, 1963, Tereshkova was launched into space on the

Vostok 6. Upon reaching orbit, Tereshkova radioed “It is I, Chaika”, using Chaika (seagull) as her call sign. Tereshkova spent almost three days in space. During that time, she orbited Earth 48 times (Siddiqi, *Challenge to Apollo* 370). In comparison, Gagarin’s launch lasted less than two hours, orbiting Earth only once. Not only was Tereshkova the first female in space, but in her single launch, she had spent more time in space than the flight time of all the American astronauts, at the time, put together. Kamanin later referred to Tereshkova as “Gagarin in a skirt” (Shayler 50). The Soviets did beat the Americans with the 1963 female flight program, as the Americans did not send their first female astronaut into space until Sally Ride on June 18, 1983, 20 years after the Soviets. The Soviets had planned another propaganda program of an all-female flight to be accomplished in 1966 with the launch of Voskhod 5, but women would not be considered for another spaceflight for another 20 years (Shayler 66). Throughout the Soviet period, flights of women cosmonauts into space were considered only for propaganda purposes and therefore were not integrated into the male cosmonaut program.

Alexei Leonov, another of the first pilots selected for the secret space training in 1960, was launched into space on the Voskhod 2 on March 18, 1965. When he stepped outside his spacecraft for 12 minutes and nine seconds, he became the first man to do a spacewalk. While on his spacewalk, Leonov’s spacesuit inflated and he was unable to re-enter the airlock. Leonov had to remove some air from his spacesuit by opening a valve. He was barely able to get back onboard the Voskhod 2 (Siddiqi, *Challenge to Apollo* 456). Leonov was selected to be part of other launches, but most of those projects failed or were cancelled.

Like Leonov's spacesuit, substandard equipment is also portrayed in *Omon Ra*. During Omon's time on the “Moon”, his final task is to go outside the supposed protection of his moonwalker, place the radio buoy on the “Moon” and switch it on. It sends out signals of “Lenin,” “peace” and “USSR.” Omon is then supposed to shoot himself. In preparation of the harsh elements of the Moon, Omon is provided with “special hydrocompensatory tampons made

of greased cotton wool” to seal his ears and nose closed (Pelevin, 137). He is also instructed to make sure that his simple jacket is buttoned up tight, wrap his scarf around his head, then put on his cap, tie up his sleeves, and wear gloves. Omon also has goggles to cover his eyes. Colonel Khalmuradov tells him that he “can't mess around with a vacuum” (Pelevin, 134). It's obvious that the protective gear given to Omon would not allow him to last any time in the atmosphere on the Moon.

In the early 1960s, Korolyov pushed to send a man into space. He "struck a balance between caution and bold, attainable steps," taking the position that a man could safely orbit Earth in space (Daniloff 106); a point of view that was widely disputed as being too risky. An interview with Korolyov in 1963, contains his views on the future of the soviet space program at the time. He expressed that a space station orbiting around the Earth would be an integral part of an eventual manned Moon landing (Daniloff 114). He would not live to see either a space station or a manned Moon landing. Korolyov died in 1966, having left a legacy of pushing man's scientific innovations to the perceived limits of the time.

### **~The Soviets Visit Other Planets~**

The Soviets not only sent men into space, exploratory missions were sent to the Moon and other planets. In 1959, after only one failed attempt, the Soviets succeeded in sending a Lunar probe to the Moon. The name of this probe was 'Lunik 2,' and although it crash landed, the precision and accuracy of its flight was beyond anything achieved before this point. The probes took pictures and showed for the first time what the dark side of the Moon looked like (Harvey 37). Later in the Luna missions, rovers were sent to explore the surface of the Moon. The Soviets have one first on the Moon: Lunokhod 1 became the first lunar rover in 1970. It was controlled by a team on Earth for 77 days and sent back important information that was then used to calculate the distance between the Earth and Moon to the centimetre (Siddiqi, *Challenge to*

*Apollo 741*). Missions were also sent to Venus and Mars, the Venera and Mars programs respectively. At first these attempts were not successful, there were 17 shots made to Venus and Mars before the first probe reached Venus in 1966 (Harvey 89).

Author Pelevin made fun of the actual Lunokhod rover used in the Soviet Moon exploration missions. When Omon is first being introduced to the program, the flight leader Pkhadzer Vladlenovich, describes it as a “moonwalker, which will travel along the bottom of the [Lenin] [F]issure and transmit scientific information back to earth” (Pelevin 42). This explanation of the space vehicle sounds technologically sophisticated, especially if it is to send and receive data from Earth. The moonwalker is also supposed to be self-automated. The real thing pales in comparison to these lofty expectations. When Omon gets his first glimpse at the moonwalker, he calls it a “laundry tank set on eight heavy tram wheels” (Pelevin 63). The outer layer is not made with any special material either. The metal is the very same metal used on the floors of the metro cars. To give the impression that the moonwalker is actually capable of sending information back to Earth, it is fitted with antennae and other high tech looking appendages. These are merely decorations, “really there only for television” (Pelevin, 64). Inside of the moonwalker is a bike frame. The vehicle that is supposed to be automated, is actually run by a human being, Omon. His job essentially amounts to riding a glorified bicycle. The real Soviet rover looked much the same as the fictional one described by Omon. Leonid Vladimirov notes that the Soviets never gave the press the actual dimensions for the Lunokhod (158). Any depictions of it showed nothing surrounding it that could give an idea of the rover's size. With nothing to compare it to, journalists built it up as a large and powerful rover. In truth was that the real moonwalker was small, only about six feet long and self-automated.

### ~New Directions After Korolyov~

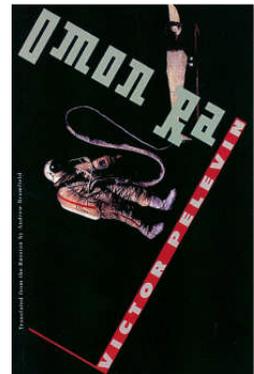
On April 23, 1967 Soyuz 1, the next generation of spacecraft, was launched with Vladimir Komarov. It was launched even though Gagarin protested, saying it needed more safety precautions, as he was aware of design flaws. The Soyuz 1 crashed on its return to Earth, killing Komarov (Siddiqi, *Challenge to Apollo* 585). After this disaster, to which Gagarin was a backup cosmonaut, he never flew into space again. The committee decided he would be banned from further training and participation in space flights and was returned to flying fighter jets. On March 27, 1968, Gagarin was killed doing a routine MIG training flight (Siddiqi, *Challenge to Apollo* 627-8). The KGB conducted an investigation into the crash and concluded there were no conspiracies surrounding his death. Despite the outcome of the investigation, there were still many people that believed that Gagarin's death was suspicious. On April 12, 2007, the Russian Government vetoed any further investigation into Gagarin's death.

The space race changed after the United States was able to put Neil Armstrong and the Apollo 11 crew on the Moon in 1969. The Soviets had lost the race to get to the Moon first. However the race was not over quite yet. They decided to focus their attention on building a space station. Plans for an orbital station were originally conceived by Vladimir Chelomey, head of a rival design bureau to Korolyov, in 1963, as a way to keep an eye on American military facilities (Ivanovich 6). The designs and the building of the first space station began in 1970 and the finished product was launched into space in April 1971. It was called Salyut 1. Soyuz 10 was launched later in April with the goal of being the first space station crew. However, the craft was not able to dock to the station and had to return to Earth two days later. Another attempt was set in June with Soyuz 11. Days before launch, when it was discovered that a crew member possibly had tuberculosis, the crew was replaced by their backups: Georgi Dobrovolski, Vladislav Volkov and Viktor Patsayev. This time the Soyuz was able to dock and the first space station had its first crew. While onboard for 23 days, the crew completed experiments and their pictures were

beamed back to Earth for the Soviet public to see. The mission had been a success after losing out on the Moon.

This feeling of success was not to last. Coming back from their stay on Salyut 1, the crew was met with catastrophe. During re-entry, the capsule depressurized and all three cosmonauts suffocated. They were given a grand state funeral and laid to rest in the Kremlin Wall. It was supposed to be the triumphant return of prestige to the Soviet program, after the American Apollo missions to the Moon. James Oberg relates that it was similar to the John F. Kennedy assassination, the Soviet people were grief struck at the sudden deaths of such young and happy men (103). After their deaths, an investigation was conducted and revealed that wearing spacesuits during the descent would have helped to save the men. The suit could have supplied the crew with oxygen, in the case of the capsule depressurizing. This new safety measure was heralded as one of the few good things to come from the deaths of the crew of Soyuz 11. Their deaths became heroic as the focus of the disaster shifted to the future lives of cosmonauts that would be saved from this experience.

Pelevin ridiculed the Soviet attitude that death is the ultimate sacrifice in the cosmonaut group. In the novel, the only thing to come out of the supposed “Moon” mission are the deaths of all of the cosmonauts involved. They are told time and time again by their trainers that simply by giving their lives to the glory of the Soviet space program, they will be looked on as heroic.



When Omon asks incredulously what heroism could exist in giving up his life, Colonel Urchagin, one of his trainers, responds that “the more consciously you perform your feat of heroism, the greater will be the degree of its truth, the greater will be the meaning of your brief and beautiful life” (Pelevin 44). Omon continues to be sceptical of this burden that has been placed on him. He is asked by another trainer how he feels about suicide. He replies “I don't

really know ... I never thought about it” (Pelevin 49). Omon soon comes to terms with his eventual demise by listening to the stories of heroism in class and from the lectures of the trainers. It becomes “like a note reminding [him] of something [he] had to do that had been hanging on [his] wall for ages—[he] knew it was still there, but [he] never paused to look at it” (Pelevin 63).

### **~What the Space Program Was Hiding~**

On October 24, 1960, the scientists were repairing a missile on the launch pad when it exploded, causing a ball of fire that had a temperature of 3,000 degrees, killing 126 people. The disaster was kept secret by the government until 1990. At the time, it was reported that one of the casualties, Strategic Missile Forces Commander-in-Chief Marshal Nedelin had died in an aircraft accident, instead of admitting the disaster (Siddiqi, *Challenge to Apollo* 258). This accident, though not part of the Vostok testing, delayed the piloted space mission until February 1961.

On March 23, 1961, a training accident claimed the life of Valentin Bondarenko. He was training in a soundproof chamber which simulated the atmosphere in a spaceship. He died as a result of a fire in the chamber. His death was kept from the other training cosmonauts as to not affect their morale and it was not revealed to the public until 1986 (Siddiqi, *Challenge to Apollo* 266).

Grigori Nelyubov was also one of the first pilots selected for the secret space training in 1960. For the Vostok 1 flight, Nelyubov was chosen as Gagarin’s second double. On March 27, 1963, Nelyubov, along with Ivan Anikeyev and Valentin Filatev, were arrested by the officers of the security patrol for being drunk and disorderly. The officers were willing to ignore the situation if the cosmonauts apologized. Nelyubov refused to apologize and they were reported to the authorities. Due to previous similar incidents, Nelyubov and the other two cosmonauts were dismissed from the space program. After the dismissal Nelyubov returned to flying jets in Siberia. On February 18, 1966, intoxicated at the time, Nelyubov stepped in front of a train

(Siddiqi, *Challenge to Apollo* 374). His death was ruled a suicide. To protect the space program, Nelyubov's dismissal and suicide were covered up. Nelyubov's image was airbrushed out of a photo, which showed the top members of the original selected cosmonauts. This airbrushing led to speculation of lost cosmonauts.

The dismissal of unfit cosmonauts is also portrayed in Pelevin's *Omon Ra*. This happens to Omon's friend Mitiok after their "reincarnation check." If a cosmonaut showed evidence of having a previous life of some sort, he was dismissed. Not a normal type of dismissal, Mitiok is shot and killed. He is not only dismissed from the cosmonaut group, but also from life, the most extreme dismissal. After, Mitiok is never mentioned again. The next day everyone carries on as usual. The only presence left was "the coloured pictures from the magazines [that] were left hanging on the wall to remind [them] that a boy called Mitiok had ever existed" (Pelevin 92). In Pelevin's novel he criticized the disposal of cosmonauts who, according to the Soviet Space Agency had questionable backgrounds or were deemed unsavoury characters.

### **~The Space Race Comes to an End~**

The ceremonial end of the space race came in 1975, with the Apollo-Soyuz Test Project. The Soviet crew consisted of Alexei Leonov and Valery Kubasov, part of the original Soyuz 11 crew. The American spacecraft Apollo docked with the Soviet Soyuz while orbiting the Earth. They stayed docked together for two days. The Americans and Russians moved freely between the two spacecraft; eating and conversing in Russian and English. It not only heralded more openness between the former competing countries, it also brought more openness between the space program and Soviet public. The launch, docking and the landing were all broadcast live on TV for the first time (Ivanovich 375). The exploration of space was on more friendly terms at home and abroad, a great contrast between the period before where even the most influential figures remained anonymous in the public eye.

### ~Conclusion~

*“And me, I thought, all my life I've been journeying towards the moment when I would soar up over the crowds of what the slogans called the workers and the peasants, the soldiers and the intelligentsia, and now here I am hanging in brilliant blackness on the invisible threads of fate and trajectory- and now I see that becoming a heavenly body is not much different from serving a life sentence in a prison carriage that travels round and round a circular highway line without ever stopping.” (Pelevin 112)*

The tales that Omon tells the reader in *Omon Ra* may seem too distorted and bizarre to be actually drawn from the real Soviet space program. The truth is much more in line with what Pelevin has written. Real events of lost cosmonauts never to be heard from again, bad equipment and facilities, inadequate training and death being the pinnacle of greatness were all true. Much of this information about the dark side of the space program was only coming out during Gorbachev's Perestroika and after the Soviet Union collapsed. This is around the time that Pelevin was writing his novel. The Soviets were willing to do anything to keep up a well-polished reputation for their space program by suppressing information. *Omon Ra* could read like the tell-all tale of a real cosmonaut, there is no need to stretch the imagination that far.

### Bibliography

Daniloff, Nicholas. *The Kremlin and the Cosmos*. New York: Alfred A. Knopf, 1972.

Harvey, Brian. *Race Into Space: the Soviet Space Programme*. Chichester, Eng.: Ellis Horwood Lt., 1988.

Ivanovich, Gruzica S. *Salyut – The First Space Station: Triumph and Tragedy*. Chichester, Eng.: Praxis Publishing, 2008.

Oberg, James E. *Red Star in Orbit*. New York: Random House, 1981.

Pelevin, Victor. *Omon Ra*. Trans. Andrew Bromfield. New York: New Directions Books, 1994.

Shayler, David, Ian Moule. *Women in Space – Following Valentina*. New York: Springer Praxis Books, 2005.

Siddiqi, Asif. *Challenge to Apollo: The Soviet Union and the Space Race, 1945-1974*.

Washington D.C.: NASA History Division, 2000.

--- . "The Rockets' Red Glare: Technology, Conflict, and Terror in the Soviet Union." *Technology and Culture*. 44.3 (2003): 470-501. <<http://www.jstor.org/stable/25148158>>.

Vladimirov, Leonid. *The Russian Space Bluff*. Trans. David Floyd. London: Tom Stacey, 1971.

West, John B. "Historical Aspects of the Early Soviet/Russian Manned Space Program." *Journal of Applied Physiology*. 91.4 (2001): 1501-1511.

---

Images from *Wikipedia*.