

Lifting the veil on a secret life

Soviet rocket man was known in West

by Asif A. Siddiqi

Sergei Korolev is rightly considered the founder of the Soviet space programme. Not surprisingly, there has been an enormous amount of scholarship devoted to his life and activities. During his lifetime, the Soviet government took extraordinary efforts to ensure that his identity - and those of other prominent space designers - was completely unknown to the public.

Soviet Communist Party First Secretary Nikita Khrushchev famously noted in 1958 that: "When the time comes photographs and the names of these glorious people will be published and they will become broadly known among the people. We value and respect these people highly and assure their security from enemy agents who might be sent to destroy these outstanding people, our valuable cadres. But now, in order to guarantee the security of the country and the lives of these scholars, engineers, technicians, and other specialists, we cannot make their names public or print their pictures." [1]

Since that time, in history books, it has become an oft-repeated truism that during his lifetime, there was no indication about the true identity of the Chief Designer.

Westerners occasionally might hear about a 'chief designer' but until his death no one knew who he was. This is only partially true. While Korolev's identity was a closely guarded secret in the Soviet Union, his name was actually widely known in the West before his death.

A number of Western analysts, through intelligent deductions, had managed to correctly identify Korolev as the Chief Designer. In addition, these revelations appeared not only in obscure media but also in major publications such as *Spaceflight*, the *New York Times*, and *Fortune magazine*.

This article presents a history of how Korolev's name became known in the West. It explores how Western 'sleuths' both identified Korolev and also reconstructed Korolev's life after his death, particularly his time in the Gulag.

Naturally, given the dearth of information about Soviet space programme in the 1960s and 1970s, the literature on Korolev was incomplete and often full of mistakes. There are a number of reasons for this: Soviet

secrecy, inability to obtain officially published Soviet material, problems of language translation, Cold War tensions between the Soviet Union and the US, and the lack of knowledge in the West about Russian history and culture.

Despite some limitations, Korolev's legacy and importance has been growing very rapidly, especially in the years after the end of the Cold War.

Although Korolev's name may not be known to the larger Western public, he is undoubtedly the most famous Russian space personality in the West. It is, in fact, impossible to find a single book on the early history of space exploration in the English language which does not include a reference to his life and achievements.

Before his death

Historians typically claim that Korolev's name was unknown to the larger public during his lifetime, that his life was covered



Sergei Korolev relaxing in Kislovodsk, Russia, in April 1950.

under a veil of secrecy under the mysterious title of 'Chief Designer'.

In truth, Korolev's name and true position had leaked out in the Western world long before his death and was published in many different sources. Strangely enough, the declassified records of the Central Intelligence Agency (CIA) indicate very few references to Korolev's name. We see Korolev's name in some rare instances, but never as a leading scientist or a chief designer.

Most of the information on Soviet rocketry during the 1950s came from interviewing German specialists who returned to East and West Germany in the mid-1950s.

For example, in a massive CIA report on the Soviet guided missile programme issued in 1953, the CIA included a list of personalities involved in the Soviet missile programme, which included Boris Chertok, Lev Gaydukov, and Yuriy Pobedonostsev among others. Yet these names were listed in very general terms, and it is clear that the CIA knew little about what these men were

Sergei Korolev (left) and Igor Kurchatov (right) were two of the most important scientists of the Soviet military-industrial complex. Kurchatov was the 'father' of the Soviet atomic bomb. Unlike Korolev, however, Kurchatov's identity was widely known and he even travelled to the West.

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doing at the time. 'Korolov' (not 'Korolev'), for example, was listed only as "former deputy at Bleicherode" [2].

In another report on Soviet guided missile development issued in 1960, ie, presumably after more interviews with the returned Germans, the CIA once again listed several important leaders: Chertok, Gonor, Konoplev, Mishin, Pobedonostsev, Rudnev, Ryazanskiy, Tikhonravov, Tyulin and Voskresenskiy.

About Korolev, they wrote: "It was generally agreed that the most talented Soviet engineer-designer at NII-88 was a Colonel Sergei P. Korolev." However, one should note that all of these identifications still related to the late 1940s and early 1950s; the CIA had no information from the late 1950s. In the 1960 report, they noted that Korolev was a "chief designer as of 1951" but could not say what he was doing after that year [3].

Overall, while the CIA's understanding of the technological aspects of the Soviet space programme approximated reality, its view of the management of the programme was poor.

For example, as late as April 1961, the CIA claimed that the Soviet space programme was directed by the 'Inter-agency Commission for Interplanetary Communications under the Astronomy

Council of the Academy of Sciences', which actually was a 'cover' institution which had been used by the Soviets to publicise their participation in the International Geophysical Year (IGY) [4].

This rare photo shows Sergei Korolev less than three weeks before the launch of Sputnik on 15 September 1957 at a large meeting in the town of Kaluga to celebrate the 100th birthday of the Soviet patriarch of cosmonauts, Konstantin Tsiolkovskiy. At the time Korolev could still publish under his own name.

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Probably the most famous picture taken at seaside resort of Sochi in May 1961 soon after the historic mission of Yuri Gagarin. Sitting (from left) are: Andriyan Nikolayev, Yuri Gagarin, Sergei Korolev, Yevgeniy Karpov (director of the Cosmonaut Training Centre) and Nikolay Nikitin (a parachute trainer). Standing (from left) are: Pavel Popovich, Grigoriy Nelyubov, German Titov, and Valeriy Bykovskiy. At this time, Korolev's identity (as well as the names of unflown cosmonauts) was shrouded in secrecy.

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Tokayev had had little direct contact with the Soviet missile programme, and in fact later grossly exaggerated his role in the post-war missile effort by claiming that he was the "chief rocket scientist" of the Soviet Union in the post-war period [7].

Yet Tokaty did know a couple of key facts about the Soviet missile programme that were unknown to the general public. He was the very first person in the West to openly suggest that Sergei Korolev was involved with Sputnik and Vostok.

In his lecture to the BIS, Tokaty noted that Korolev "is one of the chief designers of rockets for carrying Sputniks and Vostok capsules" [8]. Besides Korolev, Tokayev also mentioned the name of Valentin Glushko, although he was unsure about the exact role of Glushko in the successes of Sputnik and Vostok. Although the text of the speech was published in a few different places, few paid

It was during the wedding reception of cosmonauts Valentina Tereshkova and Andriyan Nikolayev that Western journalists first heard rumours of the presence of the great 'Chief Designer.' Shown here during that occasion is (from left): Tereshkova, Nikolayev, Marshal Rodion Malinovskiy (the Soviet Minister of Defence), his wife, and Sergei Korolev (speaking).

Boris Chertok

attention, and it would be another few years before there was more public information on Korolev.

It should be noted that although the names of both Korolev and Glushko were state secrets, they wrote frequently in the Soviet media although under assumed names. Korolev used 'Prof K. Sergeyev'

while Glushko used 'Prof G. V. Petrovich', in essence flipping their names (Sergei P. Korolev and V. Petrovich Glushko).

French journalist Christian Lardier has already written an article on the various pseudonyms used by Soviet scientists such as Korolev and Glushko during the Cold War [9].

Korolev's articles usually appeared in the official Soviet party newspaper *Pravda*, a very high honour accorded to influential Soviet dignitaries. Korolev's first article under a pseudonym was published only weeks after the spectacular successes of the first Sputnik and Sputnik-2, in December 1957. Although his many articles were very general in nature, they typically anticipated new Soviet developments in space exploration in the following year [10].

Glushko's articles were often historical in nature, focusing on the activities of the Gas Dynamics Laboratory (GDL) of the late 1920s and early 1930s where Glushko served his apprenticeship.

For example, on the occasion of the Vostok-3/4 joint flight of cosmonauts Andriyan Nikolayev and Pavel Popovich, Glushko wrote a long two-part piece in the newspaper *Komsomol'skaya pravda* on the early history of Soviet rocketry under his pen name "G. Petrovich" [11].

Glushko also wrote many articles for the official journal of the Academy of Sciences which were closely scrutinised by Western analysts for information on Soviet space technology such as the early Sputniks or the Proton booster.

Reports on Korolev and Glushko's true identities emerged sporadically in the early 1960s. For example, in November 1963,





This image taken in the late 1950s shows the famous Council of Chief Designers, an informal organization that played an important role in the Soviet space program. Korolev was the only person on the Council whose name was revealed after his death. All the others lived to see their names in the open press. Pictured (from left) are: Aleksey Bogomolov, Mikhail Ryazanskiy, Nikolay Pilyugin, Sergei Korolev, Valentin Glushko, Vladimir Barmin, and Viktor Kuznetsov.

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during the wedding of cosmonauts Andriyan Nikolayev and Valentina Tereshkova, Western news correspondents were invited to the reception, and learned through informal conversation that two important scientists from the Soviet space programme were in attendance and that their names were 'S. P. Korolev' and 'V. P. Glushko'.

Soon after, Theodore Shabad, an enterprising journalist for the *New York Times*, published a story identifying Korolev and Glushko as "likely two figures in the Soviet space programme". Shabad could not be sure which one was the Chief Designer of Rocket-Space Systems and which one the Chief Designer of Rocket Engines but his news item seemed to suggest that both Korolev and Glushko were equally important. Shabad incorrectly claimed that Glushko had worked with Soviet rocket engineer Fridrikh Tsander in

The rift between Chief Designers Sergei Korolev and Valentin Glushko during the 1960s is well-known. This is a rare photo as it is one of the few existing that show Korolev (left) and Glushko (right) in the same picture. Taken in 1965, the photo shows Voskhod-2 cosmonauts Pavel Belyayev and Aleksey Leonov (in the middle) soon after their flight.

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the 1930s [12].

In 1964, quite independently, the Aerospace Information Division (AID) at the Library of Congress came to the same conclusion about Korolev's identity.

Where the *New York Times* had felt unsure of their guess, AID was the first Western organisation to confidently pinpoint the identity of the mysterious 'Chief Designer'. They based their research on an in-depth study of all open Russian language literature on rocketry between 1934 and 1964 [13].

The strategy they used to identify Korolev was rather interesting. In 1962, Sovetskaya rossiya publishers in Moscow had issued a book by the title *Nashi kosmicheskiye puti* (Our Paths in Space) containing essays and

documents from the early years of the Soviet space programme.

One of the articles 'Vse li my znayem o tsiolkovsom?' ('Do we know everything about Tsiolkovskiy?') was by Mikhail Arlazorov, a biographer of Konstantin Tsiolkovskiy.

In the piece, Arlazorov mentioned that Tsiolkovskiy had been invited to the 'All-Union Conference on the Use of Reactive Vehicles for the Study of the Upper Layers of the Atmosphere' in 1935 in Moscow but that he was unable to attend.

Arlazorov noted that "among those who presented papers at the conference [was] the chief designer of the Vostok spaceship". This was a key piece of the puzzle for the investigators at the Library of Congress, since the names of the presenters had been published openly in the 1930s. But they needed some more information.

Later in the article, Arlazorov described a letter that Tsiolkovskiy had received from the semi-governmental GIRD rocketry group led by Korolev in the early 1930s. According to Arlazorov, GIRD had written to Tsiolkovskiy that: "Many qualified engineers are working with us [at GIRD], but the best of them is..."

Here, Arlazorov did not want to reveal the name from the original letter, so instead he noted that: "Here follow[ed] the name of the chief designer of the Vostok spaceship... The future chief designer mailed [his recent] book to Kaluga [where Tsiolkovskiy lived] but without his return address."



Cosmonauts Andriyan Nikolayev (left), Valentina Tereshkova and Pavel Popovich, and Chief Designer Sergei Korolev after Tereshkova's Vostok-6 flight in June 1963. By this time there were already rumours in the west that a man named Sergei Korolev was Chief Designer of the Soviet space programme.

"I do not know how to thank him for his kindness," Tsiolkovskiy [wrote back to GIRD], "Thank him for me, if possible, or send me his address." [14]

Based on this information, the Library of Congress concluded that, (1) the Chief Designer was the best engineer working at GIRD, (2) that he read his paper at the All-Union Conference in 1935, and (3) he had sent his recent book to Tsiolkovskiy in Kaluga.

The last piece of information proved particularly useful. The Library of Congress found that only two major monographs were published in 1934-35 by Soviet authors on the topic of rocket technology, M. K. Tikhonravov's *Raketnaya tekhnika (Rocket Technology)* and S. P. Korolev's *Raketnyy polet v stratosfere (Rocket Flight in the Stratosphere)*. Therefore, one of them was quite likely the mysterious Chief Designer.

But from Tsiolkovskiy's letter it was clear that Tsiolkovskiy did not know the author of the book personally and did not know his address. Yet, the American researchers also knew (from newspaper accounts in the 1930s) that Tsiolkovskiy had actually met Tikhonravov and corresponded with him.

Therefore, the Library of Congress concluded that the Chief Designer must be S. P. Korolev, who as it turned out was also one of those present at the 1935 conference. They used several hundred other published sources to corroborate this claim, and found no inconsistencies. In the end, an actual Soviet book, passed through the official Soviet censors, gave Americans the first reliable inkling on the true identity of the mysterious Chief Designer.

The Library of Congress study essentially opened the door for much more widespread identification of Korolev. In November 1965, the *New York Times* once again openly identified Korolev and Glushko as the two leading chief designers [15]. It is not known if these major press reports were communicated back to Korolev.

Finally, just eight days before Korolev's death, *Fortune magazine*, one of the most important popular journals in the United States came out with a story identifying Korolev as the mysterious Soviet Chief Designer of Rocket-Space Systems [16].

Undoubtedly, if Korolev had lived past January 1966, his identity would have been widely known all over the world. It is ironic coincidence that just at the time that his name and title were coming into widespread knowledge in the West, he passed away, and the Soviets themselves confirmed the information.

Since then, a myth of sorts has been cultivated around this disclosure, as if the official Soviet announcement was a defining moment in Korolev's recognition in the West. But the evidence shows that Korolev was already a known name-not particularly famous-but known just the same.

Korolev's death

When Sergei Pavlovich Korolev passed away on 14 January 1966, news of his death was reported widely in the American press. Yet, reports at the time still lacked certain key pieces of information, and many American newspapers did not immediately perceive the importance of his accomplishments.

For example, the *New York Times* reported news of his passing on page 82 of the Sunday news edition, nothing that he was a "leading Soviet space scientist" [17].

NASA, in fact, had no official reaction to Korolev's death. Administrator James E. Webb, upon being informed of Korolev's death, discussed whether to send a message of condolence to Moscow - specifically to Academician Blagonravov - one of the 'public' spokespersons for the Soviet space programme.

But after discussions with several senior NASA officials, Webb decided not to send a condolence letter since, "Korolev had never been known and we do not know what the relationship between him and Blagonravov was" [18].

Within days, the scope of Korolev's contributions became evident. In a major editorial in the *New York Times*, the editors noted that "Death has finally declassified the role and identity of academician Sergei P. Korolev, the man who provided the scientific and technical leadership of the Soviet rocket programme."

They added that "Korolev's rockets were powerful enough to send men into orbit and to put cameras into position to photograph the back side of the Moon. But they were too weak to break the chains of secrecy that denied him, while he lived, the world applause he deserved" [19].

The 1960s and 1970s

In the first years after Korolev's death, Westerners discovered a few details of Korolev's but almost all the information was limited to his life before World War II, ie, before the space age, and was based on the brief obituary published at the time of his death.

The few pieces of information on his life after the war were connected with the dates of various awards and honours. To add insult to injury, even as late as 1968, some newspapers were still claiming that Academician Leonid Sedov was the 'father of Sputnik' [20].

A number of books on the history of the Soviet space programme were published in the United States in the late 1960s and early 1970s and in these books, the authors began to piece together a chronology of Korolev's life although a lot of the information was still based on rumour and hearsay.

Perhaps the most controversial aspect of Korolev's life was his incarceration as a prisoner of the Stalinist Gulag system between 1938 and 1944. Details of his time

as a prisoner are now well-known but in the 1970s there was much that was uncertain.

Less than five months after Korolev's death, a Hungarian publication made the sensational claim that Korolev had been in prison from 1940 to 1953, ie, until Stalin's death.

Days later this news made the pages of the *Washington Post* [21]. More details emerged in the late 1960s and early 1970s from a former Soviet journalist named 'Leonid Vladimirov' who had defected to Great Britain in 1966. Vladimirov (whose real name was Leonid Finkelstein) had much to say on Korolev's life (including his time in prison) in a number of publications.

Finkelstein's book *The Russian Space Bluff* was quite a sensation in the West [22]. Although we now know that Vladimirov's book is chockfull of inaccuracies (eg, he called Soviet rocket designer Mikhail Yangel' a German!), it was very influential in the English-speaking world, inspiring others to conduct historical research on Korolev's years in the sharashka (sharaga) prison system.

Western historians combined bits of pieces of information from many different sources - including the books of Roy Medvedev, Leonid Kerber, and Aleksandr Solzhenitsyn, and rumours from other sources-to try and reconstruct Korolev's whereabouts and activities in the 1930s and 1940s.

The most important historical work in this regard was American journalist James E. Oberg's classic article 'Korolev and Khrushchev and Sputnik' published in *Spaceflight* in 1978 [23].

Besides details on Korolev's incarceration, Oberg's article contained the first account of Korolev's activities in the post-war years, particularly the development of the R-7.

There were a few inconsistencies in the biography. For example, Oberg speculated that Korolev might have been arrested a second time in the late 1940s (he was not). In addition, although Oberg gave details of the infamous R-16 (Nedelin) ICBM disaster in 1960, he claimed that it occurred during the launch of a Mars automatic interplanetary station.

In general, however, this short article was the first substantive biography of Korolev published probably anywhere in the world. Oberg argued that Korolev was a pawn of politics - particularly of the whims of Nikita Khrushchev - and was forced to accomplish many space missions against his will.

Oberg later expanded these observations



Vasily Mishin took over as Chief Designer of OKB-1 after the death of Sergei Korolev in 1966. Mishin, still disliked by many in the Russian space history community for the failed Soviet manned lunar programme, is shown here in 1967 at Baykonur. Behind him in military uniforms are (from left): Major General Aleksandr Kurushin, the commander of the Baykonur Cosmodrome and (right) Major General Anatoliy Kirillov, Kurushin's deputy. Asif Siddiqi

into a major book *Red Star in Orbit* which was published in 1981. In it, he noted that "Korolev's premature death... may have been the most important contributing factor which prevented [a] cosmonaut lunar flight from occurring" [24]. Oberg's book was the most influential book on the history of the Soviet space programme published in the English language in the 1980s.

Other major designers

It is common knowledge that Korolev's name was officially revealed by the Soviet government after his death in 1966 but less is known about how the names of other major Soviet designers such as Valentin Glushko, Mikhail Yangel', Vladimir Chelomey and Vasily Mishin came to light.

Through the late 1960s, Glushko continued to publish under his assumed name of 'Prof G. V. Petrovich' and even edited the first major encyclopedia of spaceflight in 1968.

For reasons that still remain unknown, in 1971, just before the first Salyut station missions, the Soviet censors decided to declassify his name in a dramatic way. They not only identified him as the Chief Designer of Rocket Engines but also confirmed that 'Prof G. V. Petrovich' had been a pseudonym that Glushko had used for many years.

Soviet official sources naturally declined

to explain why Glushko had needed a pseudonym for so long [25]. The first open interview of Glushko was published in the Moscow communist youth daily *Moskovskiy kosmomolets* in October 1972.

In the interview, Glushko spoke at length about the future of chemical, nuclear, and electrical rocket propulsion [26]. Since that time, Glushko featured prominently in many Soviet articles and became a staple-especially of historical pieces-until his death in 1989.

Revealing Glushko's identity in 1971, ie, while he was still alive and very much in active as a space programme designer, was unprecedented and an anomaly. The identities of very few designers from the Soviet defense industry were revealed during their lifetimes; the usual custom was for death to 'reveal' a designer's identity and work.

The revelation about Glushko in 1971 was a striking example of the enormous power which the rocket engine designer wielded in the Soviet space programme, a level of influence matched by few of his contemporaries.

Mikhail Yangel', the famous Soviet rocket designer responsible for several generations of strategic ICBMs, space launch vehicles and automated military and scientific satellites, is less well-known than Korolev but was a giant in the Soviet missile and space programme.

In fact, just five months after Korolev's



A rare photo of two of the giants of the Soviet space programme - Valentin Glushko and Mikhail Yangel. Glushko's name was officially declassified in 1971, the same year that Yangel passed away and his name was revealed. Asif Siddiqi

death in 1966, some Western sources speculated that it was Yangel' who had become the new 'scientific head' of the Soviet space programme.

Their speculation was based on Yangel's promotion in the Communist Party hierarchy, which in truth, did reflect Yangel's very powerful status in the Soviet missile and space programme [27].

There was little information on Yangel' until his death in 1971 when his identity was officially revealed. Western media outlets continued to tout him as Korolev's successor rather than the head of an entirely different organisation [28]. At the time, most Western observers continued to believe that a single Soviet organization directed the Soviet space programme.

The name of Vladimir Chelomey had been mentioned by both the spy Oleg Penkovskiy in *The Penkovskiy Papers* (1965) and the defector Finkelstein in his 1971 book (once again, with many inaccuracies) but a more substantive identification that Chelomey was a major chief designer in the Soviet space programme came from Nicholas Daniloff in his book *The Kremlin and the Cosmos* in 1972 [29].

A couple of years later, in 1974, Chelomey's promotion within the Communist Party hierarchy prompted the *New York*

Former Chief Designer Vasily Mishin shown here just a few months before his death in 2001. He is holding a copy of this author's book Challenge to Apollo: The Soviet Union and the Space Race which had just been published by NASA. Dmitry Payson

Times to claim that Chelomey was "the new head of Russia's secrecy-shrouded space programme... [a] job that was previously held by Mikhail K. Yangel" [30].

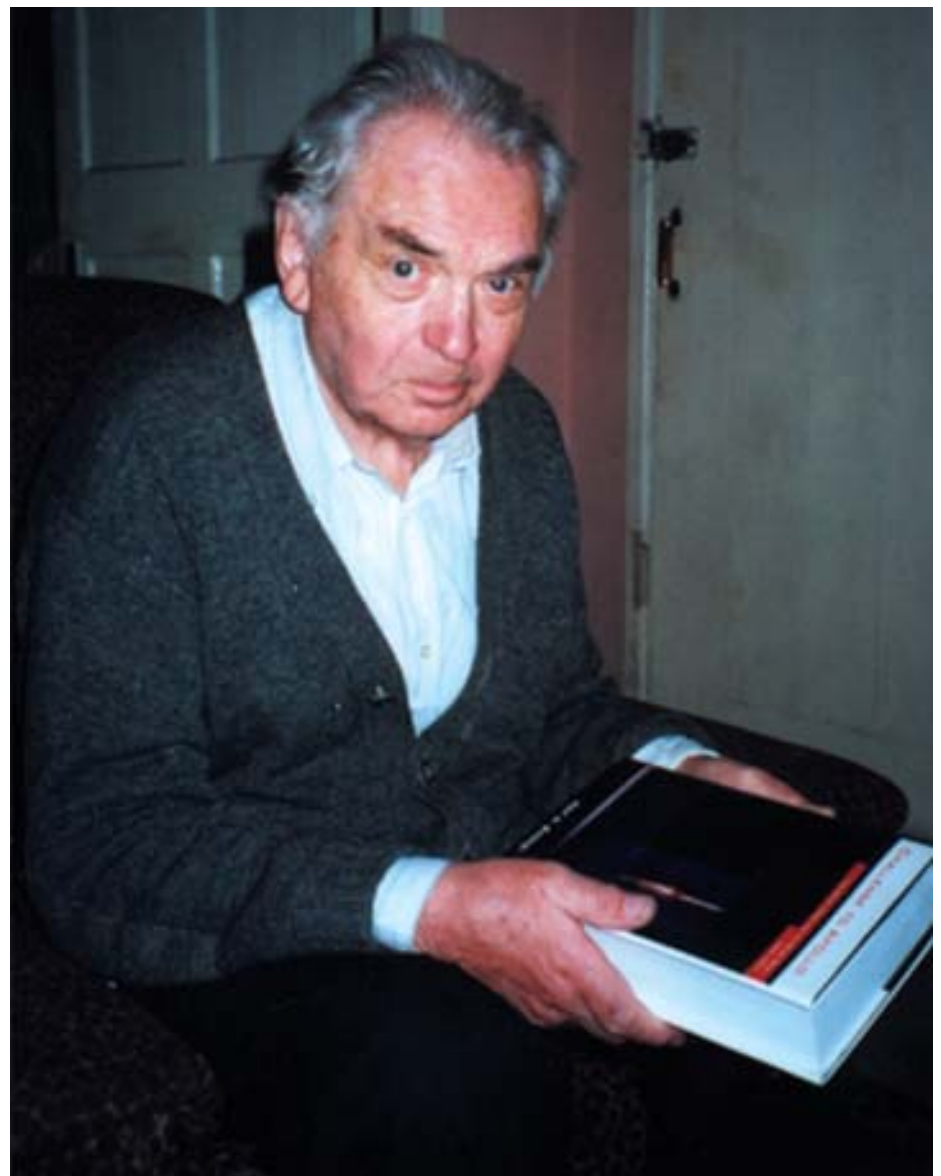
Chelomey's official identity was only

revealed upon his death ten years later in 1984. Soon after, articles began appearing linking Chelomey particularly with the Proton launch vehicle. It took several more years to obtain more details of his life, and only in the late 1980s did Soviet journalists begin to reveal more details about Chelomey's colourful and rich career as a designer of cruise missiles, ICBMs, space launch vehicles, manned spacecraft, and military satellites.

Perhaps the most enigmatic trajectory of a Soviet space programme designer was that of Vasily Mishin who succeeded Korolev as Chief Designer of the OKB-1 design bureau.

Mishin was hardly known in the West until the revelations about the massive Soviet manned lunar landing programme in 1989. Yet, even Mishin's name was linked to the Soviet space programme in the early 1970s while he was still a Chief Designer.

Like a few other designers, Mishin wrote or edited many arcane mathematical textbooks under his own name in the 1970s and 1980s but few suspected that the author might have anything to do with the Soviet space programme. On the other hand, when writing on space topics, he used a pseudonym (M. Vasil'yev).



During his tenure as Chief Designer, he edited a number of important books on the Soviet space programme, including *Salyut In Orbit* (1973) and *Steps to the Stars* (1972) and wrote major articles for newspapers such as *Pravda*, *Izvestiya*, and *Krasnaya zvezda* [31].

In 1972, French journalist Pierre Dumas was the first Westerner to link Mishin's name with the Soviet space programme in connection with an article on Soviet plans for future manned Mars expeditions [32].

Based on this article, a few months later, a Ukrainian émigré for the first time correctly argued that Mishin was the Chief Designer of the Soviet manned space programme [33]. Yet, despite these prominent claims, most Western analysts remained unaware of Mishin well into the 1980s. Mishin's real identity as a successor of Korolev was officially revealed only in 1987, in connection with the twentieth anniversary of the beginning of the space age.

In general, most Soviet designers' names were already in the public domain - either in lists of the Academy of Sciences, on signature lists in obituaries of their colleagues, in Communist Party meeting

lists, or in lists of awards [34].

But their names were rarely linked to the space programme. There were only two ways that actual names were identified and linked with the space programme: after they died (Voskresenskiy, Korolev, Isayev, Babakin, Yangel', Okhapkin, Chelomey, etc) or in rare cases, while they were alive (Glushko, Raushenbakh, Bushuyev, Pilyugin, Syromyatnikov, etc).

The latter group included individuals who were very powerful (Glushko and Pilyugin, for example) or whose identity had to be revealed since they were involved in international cooperation programmes (Bushuyev and Syromyatnikov were both involved in the Apollo-Soyuz Test Project).

Based on a careful reading of many different sources, by 1985, French writer Claude Wachtel was able to piece together a fairly comprehensive list of Soviet designers that still holds together remarkably well even to this day [35].

A number of Western analysts and journalists had clearly and conclusively identified Korolev during his lifetime as the mysterious 'Chief Designer' of the Soviet space programme.

The new evidence shows that already by the time of his death, a number of popular Western publications had begun to refer to the Chief Designer as Korolev. Historians need to dispense with the myth that Korolev was a complete unknown during his life. Undoubtedly, had Korolev lived past January 1966, his real job would have become common knowledge; we might have witnessed space books written in the late 1960s beginning with a biography of Korolev. One wonders what Korolev would have thought seeing such publications.

On the other hand, it is also clear that the Soviet government took great pains to hide the names of their leading space scientists and engineers.

Although Korolev's name might have been known in the West, westerners would have known few details of his life or his real accomplishments. As with the lives of other important designers such as Glushko, Chelomey, or Mishin, it took the collapse of the Soviet Union to reveal the true complexity of their undoubtedly significant contributions to the beginning of the Space Age.

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