

Soviet Space Culture

Cosmic Enthusiasm in Socialist Societies

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From Cosmic Enthusiasm to Nostalgia for the Future

A Tale of Soviet Space Culture

Asif Siddiqi

‘From flight to flight, the assignment will be harder and harder. Therefore each of us, on the way to launch, believes deeply that his work ... will make our science [and] our people even stronger, and get closer to a bright future ... a communist future for all of humanity. And yes, to achieve this great goal we still have much to do. But we are still young and can build that future.’¹

The Khrushchev period was the ‘most future-oriented in Soviet history’, notes Svetlana Boym in her meditation on *The Future of Nostalgia*. The post-Stalinist Thaw created a space for renewed expectations on the future of socialism, anticipations that were unencumbered by the heavy pallor of disappointment that suffused Soviet culture of the late-Stalin years. Boym amplifies her claim by noting that, ‘Khrushchev promised that the generation of the 1960s (my generation) would live in the era of communism and conquer the cosmos. As we were growing up it seemed that we would travel to the moon much sooner than we would go abroad. There was no time for nostalgia.’² The rhetoric that surrounded and promoted Soviet space exploits in the 1960s undeniably communicated a fascination for the future as underscored in language that explicitly linked socialism with the space programme; the former made the latter possible, while the latter made the former stronger. Both would take the Soviet Union into a glorious future.

Apart from social and technological optimism, Soviet cosmic enthusiasm of the 1960s also encompassed an equally potent but largely forgotten quality, one of looking to the past. This gaze backwards had an important function: it helped to create an ‘origins narrative’ for the Soviet space programme, a pre-history or childhood with appropriate father figures

(e.g. Tsiolkovskii) and adolescent traumas (e.g. the Revolution). It also delivered a teleological story to the masses on the history of the space programme, one that eliminated contingency from the story and gave Soviet cosmic enthusiasm a forward motion geared towards a singular goal that conflated the utopia of socialism with the utopia of spaceflight. From the very early days, spokespersons for the Soviet space programme engaged in the construction of a 'usable past', offering meditations galore on the glorious back story of Soviet cosmic triumphs. The past was as important as the future since the past not only gave the programme a form and narrative structure, but also produced dead heroes, such as Tsiolkovskii (and later, Korolev and Gagarin) whose lives could be moulded into legacies useful for prognosticating about the future.

This combination of forward-looking utopianism and backward-looking storytelling was central to the Soviet space narrative from its inception, and embodied in the very first communiqué on the launch of *Sputnik* on 4 October 1957. The past is communicated in a direct allusion to the 'father' of Soviet cosmonautics, Konstantin Eduardovich Tsiolkovskii, while the future is grounded in utopian expectations, specifying that 'artificial earth satellites will pave the way to interplanetary travel, and ... our contemporaries will witness how the freed and conscientious labour of the people of the new socialist society makes the most daring dreams of mankind a reality'.³ This link between the history of Russia and the future of socialism was a common trope that served a useful framing narrative that frequently omitted the present, a time that was difficult to illuminate in too much detail because of the draconian demands of secrecy surrounding the Soviet space programme.

Those who have studied the cosmic discourse of the 1960s have typically focused on some obvious characteristics – its explicit claim that socialism made the space programme possible, its use of space achievements as representing some ineffable quality of the Soviet people, its frequent claims about the peaceful nature of Soviet space exploits, and so forth.⁴ My goal here is to direct attention to the bundling of past and future that simultaneously, inescapably and dramatically gave form to Soviet space culture. I describe the nature of each of these rhetorical tropes, particularly how both shared common characteristics yet had key points of departure that were often contradictory. I argue that the particular role of the past and the future in the construction of early cosmic enthusiasm can be used to historicize and periodize the phenomenon itself. In the 1970s, when popular fascination with Soviet space achievements began to wane, these two threads of past and future began to merge. Soviet space rhetoric no longer looked to the future as

bright and inviting; instead, there was now a kind of nostalgia for the future, a fascination for the halcyon achievements of the 1960s that communicated an undeniable melancholia, a nostalgia for a time when the future was possible. This nostalgia for the future has survived, and even strengthened in the post-Soviet era, but now manifests itself in entirely unexpected and contradictory ways.

Cosmic enthusiasm in the 1960s

The vast outpouring of expression surrounding Soviet space achievements of the late 1950s and the 1960s was, first and foremost, 'future-oriented'. This discourse was grounded in the unprecedented run of space achievements in the wake of *Sputnik*, all of them, year after year, helping to reinforce the international image of the Soviet Union as a nation, not of dreary collective farms and obsolete technology, but one at the vanguard of a new dynamic future. The litany of material accomplishments of the Soviet space programme – the world's first satellite, the first probe to reach the moon, the first animal in space, the first human in space, the first woman in space, the first multi-person spaceship, the first 'walk' in space, and so on – invigorated a Soviet populace still reeling from the shocks of late Stalinism. The congruent nature of Khrushchev's Thaw and the first early burst of cosmic enthusiasm was not coincidental, as the former gave the (discursive) space for the latter to flourish. Both were characterized by an unequalled optimism about the future, a future that would finally align with the original (and still fully unrealized) dreams of the Bol'shevik Revolution. If for decades, the Soviet project was a project in the making, this period of cosmic enthusiasm signalled a brief period when it seemed to have *arrived*.

That Soviet cosmic enthusiasm was steeped in futuristic discourse is not surprising given the Revolution's explicit adoption of futuristic text and imagery from the very origins of the Soviet state, in 1917. By Stalin's time, posters, for example, had taken on a distinctive characteristic, with obvious renderings of expectations of the future; in People's Commissar of Enlightenment Anatolii Lunacharskii's words, they should depict not the grim reality of industrialization but rather 'the inner essence of life'. Historian Victoria Bonnell describes this quality as depicting 'the future in the guise of the present'.⁵ She adds, detailing the way in which posters showed the idealized new Soviet woman, that:

the image of the *kholkhoznitsa* was not supposed to be realistic. Its purpose was to provide a visual script and an incantation, engendering

a powerful illusion. To depict the rural woman was to invoke her. The image became a vehicle for anticipating and achieving the future. Stalinist propaganda created, in sum, a new political mythology. The picture, especially with the use of photomontage, acquired an unprecedented verisimilitude, not with the existing society but with the rural social world of the *imagined future*.⁶

Soviet space rhetoric from the 1960s built upon this practice but added a strong dose of technological utopianism; that is, a notion that technology was a panacea for all of society's ills. In the post-war years, and particularly beginning in the 1950s, this resurgent technological utopianism was abetted by an explosion of popular science journals and a general fascination with wartime technologies such as atomic energy, the jet engine and radar.⁷ In the Soviet context, this enthusiasm for technology, grounded in the belief that modern science and technology had the power fundamentally to transform society for the better and eliminate all its imperfections, had roots in Marxist thought predating the October Revolution as well as the millenarian utopianism of the 1920s.⁸ The link between technology and state was strengthened by Bol'shevik ideology that stressed machines as the key to modernity. Both of these antecedent historical strands and cultural tropes, the ubiquity of visual depictions of the socialist future and the utopian fascination with technology, were appropriated by the Soviet space programme when it arrived as a powerful force with the launch of *Sputnik* in 1957.

The public image of the Soviet space programme depended to a large degree on the pronouncements of its primary spokespersons. As a result of the demands of secrecy, Soviet designers of spaceships were hidden from the public eye; in rare cases, they were allowed to write for newspapers but only under pseudonyms.⁹ As a result, two groups, cosmonauts and eminent scientists (usually with little or no connection to the space programme), assumed the mantle of being the most visible spokespersons for the Soviet space programme. Given their heroic status in the Soviet imagination, cosmonauts were especially powerful instruments of image-building, coming to symbolize in their bodies new Soviet power and prestige, and becoming ambassadors of Soviet socialism to both the Eastern bloc and the Western world.¹⁰ Their utterances, occasionally militaristic and politically minded, were more potent than a dozen *Pravda* editorials. Despite ruthless secrecy and censorship, the many cosmonaut biographies of the 1960s communicate an enthusiasm for the future, generalized but irresistible, which infused the great Soviet

cosmic project with a kind of fervour and mystique that a completely open programme might not have succeeded at.¹¹

Cosmonauts' public statements were a mix of the earthly and the cosmic, not so subtly connecting the vitality of Soviet youth with the incontrovertible promise of the future. For example, referring to Khrushchev's (in)famous Virgin Lands campaign to reclaim unused lands in Soviet Central Asia, first woman cosmonaut Valentina Tereshkova noted that 'our glorious youth have accomplished a terrestrial achievement by reclaiming millions of hectares ... This is the heroism of people who fear no odds, who undertake feats for the sake of the radiant future.'¹² Similarly, in a political cartoon published in *Pravda* soon after his flight, we see first cosmonaut Iurii Gagarin leading the way to a new Soviet future where regular citizens would routinely travel to space for tourism and shopping, activities which themselves were as much in the realm of dreaming as space exploration was for most Soviet citizens.¹³ In the early years, particularly, cosmonauts were not shy of invoking big goals for the years ahead. After his flight, when asked about his plans for the future, Gagarin noted that, 'I want to go to Venus, to see what happens with its clouds, to see Mars and make sure myself if there are canals there ... I think that we won't have long to wait to fly to the moon and on the moon.'¹⁴ Political leaders also routinely basked in the presence of cosmonauts, and used their achievements to promise a brighter future to Soviet citizens, thus explicitly linking successes in space with the future successes of the Soviet state. In his speech at Red Square with Gagarin after the latter's historic flight, Nikita Khrushchev noted that:

the success [of Gagarin] should not weaken our will, perseverance, [and] commitment to the further betterment of the national economy, [and] the development of science and technology. The creation of a solid material and technical base of communism as planned at the XXI Congress of the Communist Party [in January–February 1959] is daunting. It has immense historical significance. With the seven-year plan and the achievement of the results of this new expansion of our entire economy, [and] science and technology, we will create an environment where the economy will exceed the level of the most developed capitalist country – the United States of America – and many-fold exceed its advantages in science and technology.¹⁵

Only months later, at the convocation of the XXII Party Congress, Party leaders asserted that an ideal communist state would be achieved

by 1980, an optimistic claim partly influenced by the numerous successes in space during the previous four years. Many at the Congress mentioned *Sputnik* and Gagarin, and predicted a glorious future for the Soviet state encouraged by the successes in space so far.¹⁶

The most important pronouncements pushing the futuristic bent of Soviet space discourse in the 1960s were major annual articles on the Soviet space programme published in *Pravda*, often at the beginning of the year. These long essays, published by the author 'K. Sergeev,' were, in fact, authored by Sergei Korolev, the erstwhile chief designer of the Soviet space programme, under a pseudonym.¹⁷ These articles directly underscored that current Soviet accomplishments in space were laying the foundations for a better future. For example, in his very first article after the successes of the early *Sputniks*, Korolev noted that:

there will come a time when spaceships will leave the Earth to depart on a journey to the far planets [and] far worlds. Today many of the above [plans] seems only like a fantasy but this is not quite so. A reliable bridge from the Earth to space has already been opened by the first Soviet artificial satellites, and the road to the stars is open!¹⁸

Many of his articles were sprinkled with expectations of a bright future for the average Soviet citizen, with space technology as the remedy for a host of earthly problems. In his article on New Year's Day 1964, Korolev noted that:

there will come a time when mail, and then high-speed passenger flights will be made through nearest space. Indeed, why spend 10–15 hours on a flight, if you can get to your destination within 1–2 hours! ... So-called 'round-the-clock' artificial satellites will provide universal radio and television. Geophysical systems, heliophysical and other satellites will serve the Earth and the Sun, clearly follow weather formations, the radiation conditions in the Earth from space, etc.¹⁹

The following year he underscored that the impending future will be glorious precisely because of the successes of Soviet science:

The infinite cosmic ocean will, in the coming years, be one of the largest areas of application of the latest human knowledge from various fields of science and technology so that people can reliably and

safely work and play in space ... All of this is yet to come, but the first day of the coming new year I want to believe that these [goals] will be achieved by Soviet science!²⁰

Overall, this futuristic rhetoric had some common characteristics. Most of it was utopian, drawing from the technological utopianism of the 1950s. It privileged visionary improvements over the practical and mundane; wonder and dreaming trumped cold and rational benefits. In addition, the future brought about by new Soviet cosmic capabilities would only have peaceful intentions, in contrast to American militaristic ambitions in space which were said to be dangerously driving up tensions across the globe.²¹ According to Soviet space commentators, space technology was a neutral force, which in the hands of the socialist nation could be harnessed for the benefit of all humankind; capitalists could not be trusted to ensure a peaceful future. Furthermore, partly because of the utopian tinge, future prognostications were rather general; public spokespersons rarely alluded to specific programmes or projects but instead used language that was vague. Here, the future was both impending (which raised the hope for the current young generation that they would reap these benefits) and distant (for we could never know the entire range of benefits of the glorious Soviet space programme). This vagueness was reinforced by the strict regimes of secrecy surrounding the space programme. It was expressly forbidden to announce upcoming Soviet launches or plans, a practice inherited from the Soviet defence industry that oversaw the space programme. As a result of the military foundations of Soviet space research, cosmonauts or public spokespersons could hardly devote much attention to the current technical details of their exploits; as such, they devoted a large part of their public pronouncements to the future, which could be unspecific and inspiring at the same time. This lack of specificity was a fundamental feature of the futuristic discourse at the height of Soviet cosmic enthusiasm in the 1960s.

Invoking the past

At the very same time that cosmonauts and other public spokespersons of the Soviet space programme were articulating a glorious future, both in space and on earth, they were also creating a 'usable past' for the space programme.²² When *Sputnik* was launched, the larger public knew very little about how this success came to be. The long grand march of Soviet space successes required a history, one that followed acceptable

narratives as determined by both secrecy and ideology. Commentators began constructing this history soon after the launch of *Sputnik*. The making of history depended on some obvious tropes: first, the history was extremely selective – omitting, for example, aspects that involved military concerns (too sensitive) or still-living people (too secret); second, the history was made coincident with the history of Bol'shevism; and third, the history was constructed specifically to strengthen the futuristic rhetoric.

As the military aspects of Soviet cosmonautics had to be excised from the new history, there was no mention of the work on the development of ballistic missiles in the post-war period that led directly to the successes of *Sputnik* and Gagarin. Therefore, all the focus had to be on the pre-1945 period, particularly on the activities of amateur groups that formed in the 1920s and 1930s. The most important touchstone here was Konstantin Tsiolkovskii, the founder of Soviet cosmonautics – who was conveniently both famous and dead. Tsiolkovskii had first published the mathematical foundations of space travel in 1903, before the Revolution, but had been adopted as a 'home grown' genius by the Bol'sheviks in the early 1930s, just a few years before his death.²³ In the post-World War II years, a number of important space enthusiasts, including Sergei Korolev, had rallied to resurrect Tsiolkovskii's contribution to the science of space travel; as a result, the esteemed USSR Academy of Sciences had finally taken note of the late scientist and began publishing his collected works. In 1954, the Academy instituted the Tsiolkovskii medal, awarded to the individual for 'distinguished service in the area of interplanetary travel'.²⁴

During his life, Tsiolkovskii had displayed a distinct lack of enthusiasm for the Bol'shevik cause, but in death, his legacy was appropriated for the new Soviet future; his name was on the very first communiqué announcing the launch of *Sputnik* in 1957. All subsequent pronouncements on the space programme, from the most mundane press release to hefty tomes, invoked Tsiolkovskii's name as the very first person who had developed the mathematical foundations of space travel. That he had done this before contemporaries such as the American Robert Goddard and the German-Romanian Hermann Oberth was ideal for emphasizing the priority of Soviet science. One of the most important aspects of this appropriation was to note that Tsiolkovskii's genius had been recognized by the Bol'sheviks after being ignored by the Imperial government for decades. In other words, the Soviet space programme's birth was dated not so much to 1903 (when Tsiolkovskii first published his theories) but to 1917 (when his theories were allowed to

flourish). As a result, the history of the Soviet space programme became coterminous with the history of the Soviet Union itself.

In some cases, the creation of a 'usable past' also resurrected unlikely individuals because they fitted this alignment between the history of the space programme and the history of the Bol'shevik project. Nowhere was this more starkly underscored than in the case of Nikolai Kibal'chich, the one-time terrorist who was hailed as a hero of the Soviet space programme. Kibal'chich's story, the flipside to that of Tsiolkovskii, weaved together a number of useful tropes of the new Soviet space history. While Tsiolkovskii served as a patriarchal face for cosmic enthusiasm in the 1920s and 1930s, he was also apolitical and had, at least up to that point, declined explicitly to support the Bol'shevik cause – not surprising, given the lack of support they demonstrated for him immediately after the Revolution.²⁵ By contrast, Kibal'chich was a much better candidate for a revolutionary figure in the field of space exploration; with a relatively minor contribution to aeronautics, he was elevated to remarkable prominence from the 1960s. His story, often likened by Soviet commentators to that of Icarus, remains extant in the post-Soviet era; historians in both the East and West continue to trump up this lost figure as a contemporary of Tsiolkovskii, Fridrikh Tsander and other major Soviet theoreticians.²⁶

Kibal'chich, a certified engineer, deserves some prominence in Russian history but not for any contribution to astronautics. As a young revolutionary in the anti-Imperial *Narodnaia volia* (People's Will) terrorist organization, he was instrumental in building and placing the bomb that killed Tsar Aleksandr II on 1 March 1881. After his arrest and sentence, while in his prison chamber, Kibal'chich drew up a crude plan (with a single diagram) for an 'aerodynamic instrument' using powder rockets that he wanted a responsible government commission to examine. He wrote:

I am writing this project in imprisonment, a few days before my death. I believe in the realization of my idea, and this faith sustains me in my terrible predicament. Should my idea, after careful examination by scientific experts, be recognized as feasible, then I would be happy that I have rendered a service to my country and to mankind; I would then meet death peacefully.²⁷

The new government of Tsar Aleksandr III was not interested. After Kibal'chich's execution on 3 April 1881, news of this mysterious flying machine seeped through various sources in both Russia and the

West, but it was only in 1917 that the Bol'shevik government found his complete handwritten report, and asked Nikolai Rynin, a prominent aeronautics academic, to judge its value. Rynin found it promising and published the report along with his analysis of it in the journal *Byloe* (*The Past*) in 1918.²⁸ In an uncharacteristic lapse of hyperbole, Rynin noted that 'Kibal'chich must be given priority for the idea of using reactive engines in aviation ... and giving tempting prospects for the future, especially if one is dreaming of interplanetary voyages.'²⁹

Kibal'chich's idea to use a powder rocket attached to a platform to propel it was not new. Other Russian scientists had advanced similar plans far more sophisticated around the same time that Kibal'chich had.³⁰ In his exposition, Kibal'chich did not mention the cosmos or even the upper atmosphere; because his calculations omitted the effects of air, *post facto* interpreters assumed that he might have been thinking of a rocket working in vacuum. Although Kibal'chich's exposition had nothing to do with space, Rynin's original statement stuck. Eventually, the former revolutionary achieved an iconic status in the canon of Soviet space history that hardly distinguished between Kibal'chich's political and (alleged) scientific work. His dramatic, tragic and ultimately heroic story was retold dozens of times in speeches, articles, and books through the 1960s until it achieved a momentum that was divorced from the original events of the case.

Kibal'chich's story had obvious metaphoric value in the context of space, since his tale gave the new cosmic movement a hero who had given his life for *both* liberation from oppression and liberation from gravity. Rynin himself wrote of him in 1929, 'One cannot but help but genuflect before a man whose love for new invention and whose inventive thoughts were fully occupying him prior to being executed, and whose certainty of the correctness of the principle of flight supported and encouraged him before his death.'³¹ As the story was so compelling, the science – or, indeed, any appeal to evidence – was unnecessary. Embellishments to the story began to appear almost immediately, perhaps the most enduring being that Kibal'chich had feverishly and hurriedly drawn up the plans *the night* before his execution when in fact, he had done so eleven days before – a small detail perhaps, but one which made the story even more compelling. In many imagined representations of Kibal'chich's flying machine, artists exaggerated his original representations to depict spaceships flying over the moon which its original author would have hardly recognized.³² In the 1960s, these images proliferated as Kibal'chich's story was brought to the forefront of Soviet space history, uncomplicated by appeals to evidence.

In untangling the myths associated with Kibal'chich, one might argue that his effective contribution to the science of spaceflight is unimportant because he served a purpose that transcended questions of 'scientific value'. The conclusions that both Russian and Western historians have come to regarding Kibal'chich's role in the history – such as Michael Holquist's claim that he represents the nihilist impulse in Soviet space history – are not necessarily untrue, but obscure a deeper and perhaps more important process of myth-making.³³ The Kibal'chich myth is instructive precisely because it shows how the Soviet space community was willing to subvert its own tenets of scientific truth to bolster its case.³⁴ Even more striking, the community did this without any prompting from the state, whose interest in Kibal'chich's story would be understandable. The Kibal'chich case underlines the degree to which, first, the infant Soviet space community was not naïve but opportunistic when it served its purposes; and second, that they were skilled at remaking their own history – a practice that, with the not inconsiderable resources of the state, they mastered during the 1960s to reflect the perceptions of the most powerful designers, such as Sergei Korolev and Valentin Glushko.

Apart from Tsiolkovskii and Kibal'chich, articles in the post-*Sputnik* era gradually revealed the activities of young enthusiasts who aspired to build rockets and reach the cosmos in the 1920s and 1930s, and who were provided material support by the Bol'shevik government. These accounts, while revealing the names of long-forgotten pioneers such as Fridrikh Tander and Iurii Kondratiuk, made a direct connection between the past and the future, suggesting that the Soviet path to the cosmos had been long and deliberate with the ultimate goal of cosmic conquest always in mind.³⁵ The architects of this history-making were usually journalists who had been given special access to the top leaders of the Soviet space programme, or in some cases the managers themselves, writing under pseudonyms. In other words, those in charge of the Soviet space programme were actively complicit in creating their own myths and stories. Valentin Glushko, the chief designer of rocket engines, was one of the most prolific in this respect, writing an abundance of historical articles in the early 1960s under the pseudonym 'G.V. Petrovich' that highlighted his earlier apprenticeship work at the Gas Dynamics Laboratory in the 1930s.³⁶

Once the Soviet space programme had accumulated a substantive post-*Sputnik* history that included the achievements of new Soviet cosmonauts and spaceships headed out to the moon and the planets, the campaign to connect the past with the future was rendered stronger

by the coincidence of anniversaries. In 1967, the Soviet Union simultaneously celebrated the 50th anniversary of the Revolution and the 10th anniversary of *Sputnik*. In an article written at the time, Mstislav Keldysh, the then-President of the Academy of Sciences noted that 'in October 1967, we commemorate the 10th anniversary of the beginning of the space era – 10 years since the launch of the world's first artificial satellite. This great feat accomplished by Soviet science and technology is inextricably connected with all the progress our nation has achieved in the 50 years of its existence.'³⁷

By the late 1960s and early 1970s, the discourse of Soviet cosmic enthusiasm had already developed the backbone of a master narrative. This story arc appealed to both the past and the future. The past existed to create a narrative that made the story of Soviet space travel coincident with the Bol'shevik project and Soviet history in general; the future reflected the hopeful ethos of general Soviet expectations in the post-Stalinist era, especially those released in the openness of the Khrushchev Thaw. Both the past and the future were seamlessly folded into a single narrative, as in an essay on 'K. E. Tsiolkovskii and the Future' in which Soviet space pioneer Mikhail Tikhonravov described Tsiolkovskii's half-century old Malthusian justifications for human expansion and settlement in outer space.³⁸ The past provided a precedent for the new futuristic cosmic enthusiasm to appropriate older phenomena, such as the technological utopianism of the 1920s and the iconography of Soviet aviators of the 1930s.³⁹ It also provided, in the form of the Bol'shevik Revolution, a powerful organizing framework for the futuristic and frequently optimistic tone of the cosmic enthusiasm of the 1960s. This striking connection between the past and the future, enabled by the strict secrecy regime in the Soviet space programme that prevented a full recounting of the events of the present, was a unique creation of Soviet space culture during its first 15 years. It began to fall apart in the 1970s and eventually took on a completely new form by the 1980s when nostalgia replaced enthusiasm.

Nostalgia for the future

Soviet cosmic enthusiasm had begun fragmenting by the late 1960s after a series of traumas that unravelled the hope of the early years. These losses first confused, then dampened, and ultimately tore apart the optimism that had carried the programme on a wave of national euphoria. First, there was the passing of Sergei Korolev in 1966, unknown in life but a hero in death as he was finally identified as the mysterious

'chief designer' of the Soviet space programme. The biggest and most heart-wrenching trauma was the untimely death of Iurii Gagarin, aged 34, in 1968. His funeral, attended by tens of thousands of Muscovites, was a mirror image of the parades that greeted Gagarin after his flight in 1961; instead of mass jubilation there was now the deepest sorrow. Gagarin's death, and the consequent uncertainty over exactly how he died, unleashed, slowly at first, but with ever more firm certainty in the coming years, a sense of lost chances and abandoned expectations among those who had earlier believed that anything was possible. The cottage industry of rumours surrounding Gagarin's death ignited a spark of deep cynicism among the populace regarding the official propaganda of the space programme and, by proxy, a suspicion of the legitimacy of the Party's place in Soviet society.

As the economy entered a period of great stagnation, this scepticism was linked to people's daily lives. In February 1971, for example, a large portion of potatoes sold in Moscow was too rotten to eat. Outraged by the poor quality of a staple Russian food item, one indignant grandmother declared to a crowd waiting to buy potatoes at a central farm market, that, '[w]e have rockets, right? Of course, right. We have *Sputniks*, right? Of course, right. They fly beautifully in outer space. So I say to you, dear friends. Why don't we just send these rotten potatoes into outer space too'. The small crowd gathered around gave her a round of applause.⁴⁰ Soon, prominent Soviet spokespersons were forced to defend in public the massive state expenditures on the space programme, an unthinkable proposition in the early years. With uncharacteristic defensiveness, Academician Leonid Sedov wrote in 1971 that:

One runs into the point of view that space research is a luxury and that the heavy allocations spent on it should be applied to the satisfying of the critical needs on earth – the fight against hunger and disease, the development of education, agriculture, and so forth. I cannot agree with that. Space research has become one of the most essential factors in the modern technological revolution. One can say that it is the child of this revolution.⁴¹

This scepticism of the master narrative of the Soviet space programme was abetted by the increased circulation of *samizdat* dissident literature that began the long process of introducing a parallel counter-narrative of the history of the Soviet space programme, one that included many missing and unsavoury chapters. 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; that is, until Stalin's death. Days later, this news made the pages of the *Washington Post*.⁴² 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 Finkel'shtein) had much to say about Korolev's life (including his time in prison) in a number of publications. Finkel'shtein's book *The Russian Space Bluff* was quite a sensation in the West.⁴³ This book, and others by Roy Medvedev, Leonid Kerber and Aleksandr Solzhenitsyn that contained suppressed information about the origins of the Soviet space programme, were reproduced illegally and distributed furtively among Soviet intelligentsia throughout the 1970s as part of the growing *samizdat* culture.⁴⁴ This system of underground publishing served as the backbone of an emerging counter-narrative of the Soviet space programme, which was reinforced by derisive jokes, persistent rumours and reflexive cynicism; it was a counter-narrative that was antitriumphantist, often dystopian, but invariably unimpressed with Soviet space exploits.

The belief that the Soviet cosmic project was the vanguard force in global science and technology was given a further blow by the loss of the moon race; the ghostly visage of an American astronaut on the moon in 1969 – a Soviet flag was nowhere in sight – was a shock to popular confidence in the programme. As the decade drew on, Brezhnev's stagnation set in, and the Soviet populace's general lack of interest coincided with a broader disillusionment. Svetlana Boym remembers 'that we were the generation that was supposed to live in the era of communism and travel to the moon. We did not fulfil our mission. Instead we were forced to confront the ruins of utopia ... The fairy tales of our childhood were deprived of a happy ending.'⁴⁵

On the one hand, the loss of cosmic enthusiasm was a response to the visible failures in the Soviet space programme and the material disappointments of the socialist project as manifested in the dreary living standards of most Soviet citizens. The era of jet packs and interplanetary travel for all never came. Yet, on a deeper level, the transition from an era of optimism into the era of cynicism and disappointment was occasioned by the *merger* of the two very forces that characterized the earlier era: unbridled optimism for the future and the creation of a 'usable past' for the Soviet space programme. By this, I mean that the loss of cosmic enthusiasm gave way to a kind of 'nostalgia for the future' that encompassed both a backwards glance and a forward gaze. In an entirely different context, Jonathan Bach notes that 'modernist nostalgia' is 'less a longing for an unredeemable past ... than a longing for the fantasies

and desires that were once possible in the past'. Mapped on to the Soviet space programme of the 1970s, this can be understood as 'modernist nostalgia [where] a longing for a mode of longing is no longer possible.'⁴⁶

In the period after the 1960s, the most striking ethos of Soviet space culture was a yearning for the kind of aspiration that was once attainable but no longer an option. We see this manifested in the growing fascination in the 1970s and 1980s for the halcyon days of *Sputnik*, Gagarin and Tereshkova; this was nostalgia for a time (the 1960s) when it was possible to hope. This is not to say that the Soviets did not achieve significant achievements in the 1970s and 1980s, neither that there was no publicity of these accomplishments. On the contrary, media attention to the space programme showed a sharp increase in that period; each Soyuz mission to a Salyut space station was given its due with formal portraits of newer cosmonauts featured on the first page of *Pravda* and *Izvestiia* upon launch. However, the language of the space programme evinced a distinct turn from humanistic wonder to rational practicality, from the inspiring to the mundane. In a lengthy piece ('Looking into the Future') written for *Pravda* on the 10th anniversary of the Gagarin flight in 1971, Academician Leonid Sedov's predictions were couched in uninspiring prose. He emphasized that automatic stations and not cosmonauts 'are now assigned the leading role in the study of space, the moon and the other heavenly bodies of the solar system', that these robots would be 'the true scouts of the universe'. He added that, while the first era of space travel was one of breakthrough for humanity into space, the second era was one of 'orbital stations and systematic research work by man in space laboratories [and] a decade of the extensive use of automatic stations'.⁴⁷ Gone was Korolev's utopian rhetoric about transforming society; now the goal was sober scientific and practical research. Certainly, cosmonauts ventured forth to the orbital stations year after year, but the dreary images of Leonid Brezhnev bestowing awards on these new hero cosmonauts was shadowed and eventually *overshadowed* by the machinery of producing and then *reproducing* the past.

By the late 1970s, the Soviet space programme had a trinity of dead heroes, Tsiolkovskii (died 1935), Korolev (died 1966) and Gagarin (died 1968). Works about them increased at a dramatic pace, many by contemporaries remembering them or by journalists recounting their lives in ever greater detail.⁴⁸ Annual conferences became major venues where the past was instrumentalized as an active element of the Soviet space programme. In 1978, the Academy of Sciences established a 'Commission for the Development of Scientific Contributions of the Pioneers of the Mastery of Space' that sponsored an annual meeting in

Moscow dedicated to space history.⁴⁹ Unsurprisingly, the three major yearly conferences dedicated to the Soviet space programme were held in honour of Korolev (in January), Gagarin (in April) and Tsiolkovskii (in September). Commemorating an endless series of jubilees and anniversaries of historic events or figures took up most of the activity of these meetings. Many former veterans of the space programme, some of whom took up pen and paper to record their impressions of their younger days, participated. Gagarin's brother, Korolev's associates, Tsiolkovskii's friends, all wrote with yearning paeans to their respective heroes.⁵⁰ Memoirs invoking the cosmic enthusiasm of bygone years gave the nostalgia a deeply personal sheen.

On the one hand, the proliferation of these works on the triumvirate of Tsiolkovskii, Korolev and Gagarin – as well as a never-ending stream of books on the early years of the Soviet space programme – drowned the public in nostalgia. On the other hand, the tone of these works was melancholy and full of pregnant hope, remembering a time when the Soviet space programme dreamed of more than simply mundane and lengthy orbital trips in rickety Salyut stations that circled the Earth month after month in the 1980s. Susan Stewart's comment, made in an entirely different context about everyday objects that mediate our understanding of time and space, is apropos here. She notes that, 'nostalgia wears a distinctly utopian face, a face that turns toward a future-past, a past which has only ideological reality'; nostalgia is 'hostile to history and its invisible origins, and yet longing for an impossibly pure context of lived experience at a place of origin'. At its very basic level, 'nostalgia is the desire for desire'.⁵¹

That this 'desire for a desire' was laid at the memory of dead heroes such as Tsiolkovski, Korolev and Gagarin is not an accident. Both Korolev and Gagarin died untimely deaths, one might say at the prime of their lives, at the peak of their strengths. As with the passing of any cultural icon, the deaths of Korolev and Gagarin were suffused with regret. In the case of Korolev, everything written about him implicitly – or, more often, explicitly – touched upon his forced anonymity during his life. Because he achieved his greatest fame upon his death, descriptions of his life, especially his time as the 'Chief Designer' of the Soviet space programme, were encumbered with a mournful tone. In the case of Gagarin, his life was cut short at the very moment when he was returning from a period of drink and philandering. He had returned to a disciplined life of academic work and cosmonaut training, and hoped to fly a second space mission. These circumstances imbue the many dozens of works on Korolev and Gagarin with the inevitable lament of

'if only they had lived'. Such unfulfilled expectations were at the heart of this nostalgia for the future; having grown into middle age in the 1980s, the Khrushchev generation felt a deep nostalgia for a time when the future was still ahead, while subsequent generations identified Soviet exploits of the 1980s with economic stagnation; for them, the past was as mysterious as the present was mundane.⁵²

After the collapse: the nostalgia of interruption

The collapse of the Soviet Union reinforced *and* countered the late Soviet period's nostalgia for the (cosmic) future. The unending anniversaries commemorating bygone events underscored both the richness of Soviet space history and the essential failure of the current Russian space programme to generate more than passing interest.⁵³ Looking deeper into these frequent and ubiquitous anniversary celebrations, we find nostalgia for the future reformed in new ways in the post-Soviet context.

After the collapse, one symptom of the loosening of information about the older history of the Soviet space programme was the proliferation of accounts of projects that never were. A cottage of industry of publications, websites and groups emerged whose only focus were abandoned, cancelled, never built, or ended-in-disaster Soviet space projects.⁵⁴ This trend is the most striking characteristic of the post-Soviet phenomenon of nostalgia for the future; it puts lost chances and abandoned paths central in the history of the Soviet space programme. Along with what happened and what will happen in the future, the most powerful narrative of the 1990s was what might have happened *but didn't*. In the case of the space programme, the fascination for catastrophes, cancellations and abandoned paths suggests a subcategory of nostalgia for the future, what might be best termed 'a nostalgia of interruption', where the past exists only in the space of regret between the path taken (disaster, cancellation, death, etc.) and the path not taken (triumphs, parades, life, etc.). We might situate this nostalgia of interruption as part of the resurgent postsocialist nostalgia for with its complexities, contradictions and nuances.⁵⁵

There is a second newer dimension to the postsocialist nostalgia that reflects and refracts the new economic realities of the day. In the aftermath of the collapse of the Soviet Union, Soviet space history disintegrated into messy fragments. As I have noted elsewhere, the state's withdrawal from managing history – that is, their relinquishment of the master narrative – 'produced conditions where memory was "privatised" [and where] atomized and decentralized views of history populated the landscape of remembrance'.⁵⁶ If, in the Soviet period, there was a master narrative and

a (smaller dissenting) counter-narrative, in the post-Soviet era, there was a proliferation of equally powerful contradictory stories – usually propagated through the hundreds of memoirs by former participants of the Soviet space programme. Almost all of these memoirs sought to refute older claims and also fill in the blank holes of official Soviet space history. As a result of wildly contradictory accounts, the memoirs created a jumbled up, non-linear and discrepant morass that became highly personality-centred. The authors of these memoirs are, in their own way, nostalgic to return to a single master narrative of Soviet space history; that is, a narrative that elevated their own favoured personality over others, a narrative that was as estranged from the ‘truth’ as the official version of the Soviet space programme propagated during the communist era.

All the multiple threads and contradictions of nostalgia in post-Soviet times – the innumerable and unending celebrations of anniversaries, the nostalgia for interruption, and the jumbled nature of the personality-centred privatized memory of post-Soviet times – were seamlessly embodied in the 2005 Russian movie *Pervye na lune* (*First on the Moon*).⁵⁷ The movie, produced exactly like a documentary that might have been made in the late 1930s, is about a forgotten and fictional episode to send a Soviet man to the moon.⁵⁸ What should have been a triumph (the cosmonaut actually reached the moon) of Stalinist hubris ends in ignominy and indifference when the populace quickly forgets about the exploit. The account of lost triumphs is heightened by the metanarrative: the film acts as both ‘documentary’ and ‘fiction’, and there is no clear linear storyline; the film makes demands on the viewer to assemble some sense out of the conflicting messages about image and reality, failure and success.⁵⁹ Ultimately, the movie is a project of a historical recovery that exists in the margins between what happened and was lost, and what never happened but was re-created; that is, a perfect summation of the conflicting forces acting on space nostalgia in the post-Soviet space. Like the oft-invoked Gagarin-themed rave parties of 1990s-era Moscow, *Pervye na lune* shows how the cosmic enthusiasm of the 1960s has endured (and laboured) into the post-Soviet era, but in ways in which nostalgia, now mashed up and even further from ‘history’, remains a central defining trope.⁶⁰

Conclusion

The brief burst of cosmic enthusiasm in the Soviet Union, lasting from the late 1950s to the late 1960s, remains an iconic period, even today. Russian historians remain fascinated with this period, mining it for ever

deeper reflections and commentary on a time when the Soviet Union was first in the world. For a short time, there appeared to be unbounded optimism among the Soviet populace, a buoyancy tied directly to the many Soviet successes in space. Karl Gil'zin, a popular science writer who specialized in writing about space topics, noted in 1959 that:

We are living in a remarkable period. Under the firm but friendly guidance of the Soviet people, armed with the latest scientific and technical achievements, deserts are receding, age-old virgin lands are being ploughed up, rivers are finding new courses, and the world is miraculously changing face ... life for the Soviet people is daily becoming more prosperous and more satisfying.⁶¹

Such utopian expectations were reflected in much of the futuristic public discourse surrounding the Soviet space programme in the late 1950s and 1960s. At the same time, those in charge of the Soviet space programme sought to produce a usable past for the space programme, one whose implicit goal was to align the achievements of the space programme with the achievements of the Soviet state. This history was sanitized of any military overtones and thus had a selective nature; events that were further back in time – and, thus, less of a security risk – were emphasized while more recent events – that is, the present – were rendered invisible. In this way, the emergent historical narrative produced a childhood for the Soviet space programme with its attendant father figures such as Tsiolkovskii and Kibal'chich. The latter's dubious legacy was recruited for the express purpose of ideologically mapping the birth of the Soviet space programme onto the revolutionary spirit of the Bol'shevik cause.

In time, by the 1970s, Soviet popular enthusiasm for the cosmos waned. Boym has noted, 'the revolutionary cosmic mission was forgotten by the Soviet leaders themselves [and] as the Thaw was followed by stagnation, nostalgia returned'.⁶² The Soviet space programme itself lost much of its lustre even as the names of more and more unknown cosmonauts filled the pages of *Pravda* and *Izvestiia*, and space travel attained an ordinariness unthinkable in the preceding decade. The malaise was further weighed down by the relatively poor showing of cosmonaut achievements, at least in contrast to the halcyon heights of the American space programme in the late 1960s and 1970s. Soon after, there appeared a new kind of nostalgia, best described as nostalgia for the future, a longing for desires that were once possible in the past but now no longer feasible or realistic. In the older days of cosmic

enthusiasm, the Soviet space programme had been about *creating* a past that gave form and history to enthusiasm for the future; after the 1970s, these two strands collapsed in on themselves, and much of the public rhetoric was about *re-creating* a past *in* which the future could be visualized. The death of Soviet cosmic enthusiasm was the most visible manifestation of this change. By the post-Soviet era, this nostalgia for the future had become even stronger, even as it folded into new obsessions such as the fascination with failure. New economic conditions permitted unprecedented iterations and transformations of nostalgia. The (now) Russian space programme still continues to imagine possible futures, but these futures are marred by cynicism, fed by disappointment and, most important of all, shackled to the past.

Notes

I would like to thank Esther Liberman-Cuenca and Eva Maurer for their useful comments during preparation of this chapter.

1. 'O poletakh sovetskikh kosmonavtov,' *Tekhnika-molodezhi*, [Soviet cosmonauts to the readers of *Tekhnika-molodezhi* (Technology for Youth)] 1963, 7: 1–2.
2. Svetlana Boym, *The Future of Nostalgia*, New York: Basic Books, 2001, p. 60.
3. 'Announcement of the First Satellite' in *Behind the Sputniks: A Survey of Soviet Space Science*, ed. F. J. Krieger, Washington, DC: Public Affairs Press, 1958, pp. 311–12.
4. For older examples, see Martin Caidin, *Red Star in Space*, New York: Crowell-Collier Press, 1963; William Shelton, *Soviet Space Exploration: The First Decade*, New York: Washington Square Press, 1968; Michael Stoiko, *Soviet Rocketry: Past, Present, and Future*, New York: Holt, Rinehart, and Winston, 1970; Leonid Vladimirov, *The Russian Space Bluff: The Inside Story of the Soviet Drive to the Moon*, New York: The Dial Press, 1973; James E. Oberg, *Red Star In Orbit*, New York: Random House, 1981. For more recent overviews, see David Easton Potts, 'Soviet Man in Space: Politics and Technology From Stalin to Gorbachev (Volumes I and II),' PhD dissertation, Georgetown University, 1992; James Harford, *Korolev: How One Man Masterminded the Soviet Drive to Beat America to the Moon*, New York: John Wiley & Sons, 1997; Cathy Susan Lewis, 'The Red Stuff: A History of the Public and Material Culture of Early Human Spaceflight in the U.S.S.R.,' Ph.D. dissertation, Georgetown University, 2008.
5. Victoria E. Bonnell, *Iconography of Power: Political Posters under Lenin and Stalin*, Berkeley, CA: University of California Press, 1997, p. 105.
6. Bonnell, *Iconography of Power*, p. 123. Emphasis mine.
7. Asif A. Siddiqi, *The Red Rockets' Glare: Spaceflight and the Soviet Imagination, 1857–1957*, New York: Cambridge University Press, 2010, pp. 301–13.
8. Richard Stites, *Revolutionary Dreams: Utopian Vision and Experimental Life in the Russian Revolution*, Oxford: Oxford University Press, 1989; Paul Josephson, *Would Trotsky Wear a Bluetooth? Technological Utopian under Socialism*, Baltimore, MD: Johns Hopkins University Press, 2010.

9. Christian Lardier, 'Soviet Space Designers When They Were Secret' in *History of Rocketry and Astronautics, AAS History Series, Vol. 25*, ed. Herve Moulin and Donald C. Elder, Novato, CA: Univelt, 2003, pp. 319–34.
10. Slava Gerovitch, "'New Soviet Man" Inside Machine: Human Engineering, Spacecraft Design and the Construction of Communism,' *Osiris* 22, 2007, pp. 135–57.
11. For some early cosmonaut biographies or biographical works, see Iu. Gagarin, *Doroga v kosmos: zapiski letchika-kosmonavta sssr*, Moskva: Pravda, 1961; G. S. Titov, *700 tysiach kilometrov v kosmose*, Moskva: Izvestiia, 1961; M. A. Gerd and N. N. Gurovskii, *Pervye kosmonavty i pervye razvedchiki kosmosa*, Moskva: AN SSSR, 1962; Iu. Dokuchaev, *Idushchie k zvezdam*, Moskva: Molodaia gvardiia, 1963; E. Petrov, *Kosmonavty*, Moskva: Krasnaia zvezda, 1963; Iu. N. P. Kamanin and M. F. Rebrov, *Semero na orbite (11-18 oktiabria 1969 goda)*, Moskva: Molodaia gvardiia, 1969; N. Kamanin, *Letchiki i kosmonavty*, Moskva: Politizdat, 1971.
12. *Soviet Space Programs, 1962–1965; Goals and Purposes, Achievements, Plans, and International Implications*, Prepared for the Committee on Aeronautical and Space Sciences, U.S. Senate, 89th Cong., 2nd Sess., Washington, DC: U.S. Government Printing Office, December 1966, p. 58.
13. Cited in C. Lewis, 'The Red Stuff,' pp. 134–5, 167.
14. A. N. Kiselev and M. F. Rebrov, *Ukhodiat v kosmos korabli*, Moskva: Voenizdat, pp. 159–160.
15. "'Rech" tovarishcha N. S. Khrushcheva' in *Nashi kosmicheskie puti*, eds. S. V. Kupliandskaia and N. Ts. Stepanian, Moskva: Sovetskaia rossiia, 1962, p. 17.
16. *The Road to Communism: Documents of the 22nd Congress of the Communist Party of the Soviet Union. October 17–31*, Moskva: Foreign Languages Publishing House, 1961.
17. Korolev published these articles in *Pravda* on 10 December 1957, 10 November 1960, 14 October 1961, 31 December 1961, 1 January 1964, 1 January 1965, and 1 January 1966.
18. K. Sergeev [S. P. Korolev], 'Issledovanie kosmicheskogo prostranstva,' *Pravda*, December 10, 1957.
19. K. Sergeev [S. P. Korolev], 'S novym kosmicheskim godom!' *Pravda*, January 1, 1964.
20. K. Sergeev [S. P. Korolev], 'Kosmicheskie dali,' *Pravda*, 1 January 1965.
21. For examples of Soviet public statements accusing the US space programme of being militaristic, see *Soviet Space Programs, 1962–1965*.
22. For an exploration of the creation of a 'usable past' in a different Soviet context, see Jay Bergman, 'Soviet Dissidents on the Russian Intelligentsia, 1956–1985: The Search for a Usable Past,' *Russian Review*, 51, no. 1, January 1992, pp. 16–35.
23. For a detailed examination of Tsiolkovskii's journey from obscurity to fame, see Siddiqi, *The Red Rockets' Glare*, Chapters 1 and 2.
24. Siddiqi, *The Red Rockets' Glare*, p. 301.
25. Although uncritically repeated by historians, journalists, and writers, the notion that the Bol'sheviks supported Tsiolkovskii after coming to power in 1917 is grossly untrue. Tsiolkovskii lived a largely destitute existence until three years before his death, in 1932, when the Bol'sheviks finally bestowed their support to the old man as a cynical ploy to advance the cause of stratospheric exploration. See Siddiqi, *The Rockets' Red Glare*, pp. 43–73.

26. The reference to Icarus is from Valerii Rodikov, 'Ot ikara do sputnika,' in *Zagadki zvezdnykh ostrovov: kniga pervaiia*, ed. S. Alymov, Moskva: Molodaia gvardiia, 1982, pp. 14–20.
27. N. I. Kibal'chich, 'Proekt' vozdukhoplavatel'nago pribora,' *Byloe* nos. 4-5, April-May 1918, pp. 115–21.
28. The publication consisted of three parts, an introduction, Kibal'chich's report, and Rynin's assessment of it. See *Byloe* nos. 4-5, April-May, 1918: P. Shch, 'Proekt' vozdukhoplavatel'nago apparata N. I. Kibal'chicha,' pp. 113–15; N. I. Kibal'chich, 'Proekt' vozdukhoplavatel'nago pribora,' pp. 115–21; N. Rynin, 'O proekt' vozdukhoplavatel'nago pribora sistemy N. I. Kibal'chicha,' pp. 122–4.
29. Rynin, 'O proekt' vozdukhoplavatel'nago ...,' p. 123.
30. For example, S. S. Nezhdanovskii (1850–1940) proposed a similar 'reactive flying machine' powered by gunpowder in 1880. In 1882–1884, Nezhdanovskii even proposed using liquid propellants to propel a flying machine. See V. N. Sokol'skii, 'Raboty otechestvennykh uchenykh pionerov raketnoi tekhniki (istoricheskii ocherk),' in *Pionery raketnoi tekhniki: Kibal'chich Tsiolkovskii Tsander Kondratiuk: izbrannye trudy*, ed. B. N. Vorob'ev and V. N. Sokol'skii, Moskva: Nauka, 1964, pp. 604–7.
31. N. A. Rynin, *Mezhplanetnye soobshcheniia. Kniga 4. Rakety i dvigateli priamoi reaktivnoi (istoriia, teoriia i tekhnika)*, Leningrad: N. A. Rynin, 1929, p. 47.
32. These exaggerated representations appeared already in the 1930s. See for example Ia. I. Perel'man, *Mezhplanetnye putestviiia*, 10th edn, Leningrad: ONTI, 1935, p. 93.
33. Michael Holquist, 'Konstantin Tsiolkovsky: Science Fiction and Philosophy in the History of Soviet Space Exploration' in *Intersections: Fantasy and Science Fiction*, ed. George E. Slusser and Eric S. Rabkin, Carbondale, IL: Southern Illinois University Press, 1987, pp. 74–86.
34. In 1964, when the Academy of Sciences published a volume of collected works by notable Russian and Soviet space pioneers, it placed Kibal'chich on the same level as others such as Tsiolkovskii and Tsander. See B. N. Vorob'ev and V. N. Sokol'skii, eds., *Pionery raketnoi tekhniki: Kibal'chich Tsiolkovskii Tsander Kondratiuk: izbrannye trudy*, Moskva: Nauka, 1964.
35. See for example one of the earliest historical essays on the Soviet space programme: E. Riabchikov, 'Da zdravstvuet razum!,' *Znamia* no. 11, 1959, pp. 174–84; Harry Schwartz, '2 Rocket Experts Hailed by Soviet,' *New York Times*, 23 November, 1959, p. 13.
36. See his two-part article 'Vlasteliny ognennogo vodopada,' *Komsomol'skaia pravda*, August 14 and 15, 1962. For a Western evaluation of this 'new' history, see Theodore Shabad, 'Soviet Lifts Edge of Rocket Shroud,' *New York Times*, 7 November, 1965, 16.
37. 'Akademik M. Keldysh, president Akademii nauk SSSR,' *Tekhnika-molodezhi*, no. 10, 1967, pp. 3–5.
38. M. K. Tikhonravov, 'K. E. Tsiolkovsky and the Future' in *Tsiolkovsky's Ideas on Cosmonautic Problems*, ed. A. D. Ursal et al., Washington, DC: NASA Technical Translation TT-F16118, 1977, pp. 140–51. Paper originally presented in 1971.
39. For Soviet aviation, see Scott Palmer, *Dictatorship of the Air: Aviation Culture and the Fate of Modern Russia*, New York: Cambridge University Press, 2006;

- K. E. Bailes, 'Technology and Legitimacy: Soviet Aviation and Stalinism in the 1930s,' *Technology and Culture* 17.1, January 1976, pp. 55–81.
40. Susan Jacoby, 'Russian Stomachs Grumble: The Potatoes Are Bad,' *The Washington Post*, 5 March, 1971, p. A11.
 41. Bernard Gwertzman, 'High Space Costs Backed in Soviet,' *The New York Times*, 28 February, 1971, p. 20.
 42. Stephen S. Rosenfeld, 'Top Soviet Space Designer Worked in a Stalin Prison,' *Washington Post*, 16 June, 1966, p. A27. Korolev was actually incarcerated from 1938 to 1944.
 43. Vladimirov, *The Russian Space Bluff*. See also L. Vladimirov, 'From Sputnik to Apollo' (in Russian), *Posev*, September 1969, pp. 47–51.
 44. For *samizdat* culture, see Ann Komaromi, 'The Material Existence of Soviet Samizdat,' *Slavic Review*, 63, 2004, pp. 597–618; Gordon Johnson, 'What is the History of Samizdat?,' *Social History*, 24, 1999, pp. 115–33; Valeria D. Stelmakh, 'Reading in the Context of Censorship in the Soviet Union,' *Libraries & Culture*, 36, 2001, pp. 143–51.
 45. Svetlana Boym, 'Kosmos: Remembrances of the Future' in Adam Bartos, *Kosmos*, Princeton, NJ: Princeton Architectural Press, 2001, p. 85.
 46. Jonathan Bach, "'The Taste Remains": Consumption, (N)ostalgia, and the Production of East Germany,' *Public Culture* 14(3): 545–56. For more on modernist nostalgia, see Frederic Jameson, 'Postmodernism, Or, the Cultural Logic of Late Capitalism,' *New Left Review*, no. 146, 1984, pp. 59–92.
 47. B. Petrov, 'Smotrit v budushchee,' *Pravda*, 12 April, 1971, p. 3.
 48. For a bibliography of the massive number of works on Tsiolkovskii up to 1983, see T. A. Al'tman et al, eds., *Konstantin Eduardovich Tsiolkovskii (1857–1935): bibliograficheskii ukazatel'*, Moskva: Kaluga, 1983. Biographies of Korolev during the Soviet era included some of the following: Ol'ga Apenchenko *Sergei Korolev*, Moskva: Politizdat, 1969; A. P. Romanov, *Konstruktor kosmicheskikh korablei*, Moskva: Politizdat, 1969, revised in six more editions up to 1996; P. T. Astashenkov, *Akademik S. P. Korolev*, Moskva: Mashinostroenie, 1969, revised in two more editions up to 1975; Ia. K. Golovanov, *Korolev*, Moskva: Molodaia gvardiia, 1973, revised and expanded in 1994; and A. S. Starostin, *Admiral vselenoi: Korolev: rasskaz o vremeni i cheloveke*, Moskva: Molodaia gvardiia, 1973. In addition, there were several edited volumes on Korolev and his works published in the 1970s and 1980s. There were at least 50 books published on Gagarin during the same period, a number which does not include the hundreds of articles in the print media.
 49. 'Rossiiskaia akademiia nauk: komissii RAN po razrabotke nauchnogo naslediiia pionerov osvoeniia kosmicheskogo prostranstva,' <http://www.ihst.ru/personal/akm/> (last accessed 28 May 2010).
 50. V. A. Gagarin, *Moi brat Iurii*, Moskva: Moskovskii rabochii, 1972; Aleksei Ivanov [O. G. Ivanovskii] *Pervye stupeni*, Moskva: Molodaia gvardiia, 1970; Aleksei Ivanov [O. G. Ivanovskii], *Vpervye: zapiski vedushchego konstruktora*, Moskva: Moskovskii rabochii, 1982; V. S. Zotov et al., eds., *Tsiolkovskii: v vospominaniiakh sovremennikov*, Tula: Priokskoe knizhoe izdatel'stvo, 1971.
 51. Susan Stewart, *On Longing: Narratives of the Miniature, the Gigantic, the Souvenir, the Collection*, Durham, NC: Duke University Press, 1993, p. 23.
 52. For personal testimonies of the early hopes and subsequent disillusionment of the so-called *Sputnik* generation, i.e., those who began schooling in the

- year after *Sputnik* and graduated from secondary school ten years later, see Donald J. Raleigh, ed., *Russia's Sputnik Generation: Soviet Baby Boomers Talk about Their Lives*, Bloomington, IN: Indiana University Press, 2006.
53. Asif Siddiqi, 'From Russia with History,' *NASA News & Notes*, 24 no. 2 (May 2007): 1–2, 4–5.
 54. The first major work in this field was Igor' Afanas'ev's *Neizvestnyye korabli* [Unknown Spacecraft], Moskva: Znanie, 1991. See also such monographs Mikhail Rebrov *Kosmicheskie katastrofe: stranichki iz sekretnogo dos'e*, Moskva: Eksprint NV, 1996; M. D. Evstaf'ev, *Dolgi put' k 'bure'*, Moskva: Vuzovskaia kniga, 1999; Aleksandr Zhelezniakov, *Tainy raketnykh katastrof: plata za proryv v kosmos*, Moskva: Iauza/Eksmo, 2004; Vladimir Bugrov, *Marsianskii proekt S. P. Koroleva*, Moskva: Russkie vitiazi, 2007; V. P. Lukashevich and I. B. Afanas'ev, *Kosmicheskie kryl'ia*, Moskva: LenTa Stranstvii, 2009.
 55. There is a vast canon of literature on post-socialist nostalgia. For only a small sampling, see Boym *The Future of Nostalgia*; Svetlana Boym, 'From the Russian Soul to Post-Communist Nostalgia,' *Representations* 49, Winter 1995, pp. 133–66; Bach, 'The Taste Remains'; Karen Hörschelmann, 'History after the End: Post-Socialist Difference in a (Post)modern World,' *Transactions of the Institute of British Geographers*, 27 no. 1, 2002, pp. 52–66; Gregory Feifer 'Utopian Nostalgia: Russia's 'New Idea',' *World Policy Journal* 16, no. 3, 1999, pp. 111–18; Daphne Berdahl "'(N)Ostalgie" for the Present: Memory, Longing, and East German Things,' *Ethnos*, 64: 2, 1999, pp. 192–211; Paul Betts, 'The Twilight of the Idols: East German Memory and Material Culture,' *Journal of Modern History* 72, 2000, pp. 731–65; Serguei Alex Oushakine, "'We're Nostalgic but We're not Crazy": Retrofitting the Past in Russia,' *The Russian Review*, 66, 3, July: 2007, pp. 451–82.
 56. Asif A. Siddiqi, 'Privatising Memory: The Soviet Space Programme through Museums and Memoirs' in *Showcasing Space: Artefacts Series: Studies in the History of Science and Technology*, ed. Martin Collins and Douglas Millard, London: The Science Museum, 2005, pp. 98–115.
 57. *Pervye na lune*, dir. Aleksei Fedorchenko, Sverdlovsk Film Studio, 2005.
 58. For an analysis of the role of the cosmonauts in the movie, see Darren Jorgensen, 'States of weightlessness: cosmonauts in film and television,' *Science Fiction Film and Television* 2 no. 2 (Spring 2009): 205–24.
 59. *Pervyye la lune* is similar in tone to the other major cultural critique of the Soviet space programme, *Omon Ra*, Victor Pevelin's 1991 novel parodying the Soviet space programme, which also toyed with meta-narratives of image versus reality. See Victor Pelevin, *Omon Ra*, New York: Farrar, Straus & Giroux, 1996. See also Gerovitch, 'Creating Memories'.
 60. For the Gagarin parties, see Alexei Yurchak, 'Gagarin and the Rave Kids: Transforming Power, Identity, and Aesthetics in Post-Soviet Nightlife' in *Consuming Russia: Popular Culture, Sex, and Society since Gorbachev*, ed. Adele Marie Barker, Durham, NC: Duke University Press, 1999, pp. 76–109.
 61. Karl Gilzin, *Sputniks and After*, trans. Pauline Rose, London: Macdonald, 1959, p. 23 as cited in Raleigh, *Russia's Sputnik Generation*, p. 2.
 62. Boym, *The Future of Nostalgia*, p. 60.