

Synthesized Socialism: Soviet Modernity and the Politics of Timbre in the Cold War

GABRIELLE CORNISH

On January 2, 1962, Soviet listeners heard something extraordinary. To celebrate the New Year, the All-Union Radio broadcast a performance by Viacheslav Meshcherin's Ensemble of Electromusical Instruments.¹ Across the Soviet Union, the futuristic timbres of the Ekvodin synthesizer and mesmerizing vibrations of the Theremin emanated from radio sets. Entranced, one listener from Yaroslavl wrote in to suggest that Meshcherin's music was the "music of space," and that "only with electronic musical instruments can you . . . [feel] the limitlessness of music just like the limitlessness of the cosmos." A student in Tajikistan shared these otherworldly sensations, writing that "you feel a special and unique kind of cosmic beauty while listening to electronic music. It acts on you, as if calling you to distant worlds." More prophetically, a worker from Perm heard in the music a sort of endless temporality: "listening to this music, it's easy to dream about everything: the difficulty of the past, the joy of the present, and the happiness of the future."² For listeners at home, socialism, modernity, and utopia converged in the unique timbres of Meshcherin's music. For officials at the All-Union Radio, that was precisely the point.

Cosmic beauty, limitlessness, the future: although we do not know exactly what the program was that evening, it is possible that these listeners heard Meshcherin's rendition of "At the End of September" ("V kontse sentiabria"), composed by Vladimir Bukin in 1961.³ A far cry from the ethereal

1. Meshcherin's name (Мещерин) is often rendered as "Mescherin" in Latin letters. For the purposes of clarity and consistency, however, I have chosen to transliterate it according to Library of Congress guidelines.

2. State Archive of the Russian Federation (Gosudarstvennyi arkhiv Rossiiskoi federatsii, henceforth GARF), f. 6903, op. 10, d. 27, ll. 41–42: "Я считаю, что музыка электроинструментов, особенно электроорган — музыка космоса. Только на электроинструментах можно показать и в то же время почувствовать всю безграничность как музыки, так и космоса!"; "Особая, неповторимая, какая-то космическая красота ощущается при прослушивании электромузыки. Она волнует, словно зовет человека к неизведанным мирам"; "Под эту музыку очень легко мечтать обо всем: о тяжелом прошлом, о радостном настоящем, о счастливом будущем." Unless otherwise indicated, translations are mine.

3. The setlist and script for this radio program do not survive in the archival record, but given that Meshcherin's ensemble had recorded only a few popular pieces for Melodiya (the state recording company) by the early 1960s, it is likely that "At the End of September," which

sounds we might associate with electronic composers like Karlheinz Stockhausen and Milton Babbitt, “At the End of September” is a deliciously mundane tango for electronic soloists. A sea of electronic timbres combines in simple counterpoint, while the melody floats above a steady beat from the rhythm section. The Theremin and Ekvodin, trading fours, glide from pitch to pitch, as regular verse-chorus sections in F minor and A-flat major alternate. Perhaps unsurprisingly, another performance, for the All-Union Television in 1962, featured images of synchronized swimmers to accompany the tango.⁴ Endlessly pleasing and simple, the melody takes advantage of the wide range of timbres offered by the Ekvodin. This was socialist utopia amplified: elevator music, elevated to center stage.

What did Soviet modernity sound like? Or, rather, what did the Soviet government want its populace to hear as modernity’s sound? In most musical discourse, Stalinist socialist realism functions as the de facto tune of Soviet power: music had to serve the people and the state, and in order to do so, it had to be intelligible, easy to follow, and politically appropriate.⁵ The result, Marina Frolova-Walker tells us, was often a banal, ritualistic display of nationhood, party-mindedness, and ideology.⁶ This notion was reinforced and contraindicated in equal parts by Western European and North American cultural institutions, who positioned themselves in opposition to Soviet aesthetics. If the Soviets were to trade in tradition, then Western music would need to innovate. Thus, financed in large part by capitalist governments, modernist and experimentalist groups toured the world and were oftentimes held up as the artistic expressions of liberal democracy.⁷ The landscape of Soviet music changed dramatically, however, after Stalin’s death in 1953, which ushered in a period of relaxed cultural restrictions known as “the Thaw.” With Khrushchev’s ascent to power, the country made strides both in musical experimentation and in reinvigorating the utopian ideals of the Revolution. As Peter Schmelz has detailed, a younger generation of unofficial composers began to experiment with twelve-tone,

had been released on two separate pressings in 1962, was featured on the All-Union Radio program. The piece is representative of Meshcherin’s repertoire in these early years.

4. Archival footage of this performance may currently be found online.

5. On the rise of socialist realism in music, see Frolova-Walker, “From Modernism to Socialist Realism,” and Nelson, *Music for the Revolution*, esp. ch. 5.

6. Frolova-Walker, “Stalin and the Art of Boredom.”

7. The division between Western experimentalism and Soviet socialist realism is perhaps best described in Beal, *New Music, New Allies*, esp. ch. 1. For an example of the way American Cold War cultural politics played out in music, see DeLapp-Birkett, “Aaron Copland.” On CIA involvement with musical aesthetics, see Shreffler, “Ideologies of Serialism.” The “fault lines” between Western and Soviet aesthetics could be felt most viscerally within the Eastern Bloc along the Iron Curtain. Lisa Jakelski, for example, positions Poland (and specifically the Warsaw Autumn Festival) between the Western avant-garde and Soviet socialist realism: Jakelski, *Making New Music*.

aleatoric, and other Western modernist styles as the state somewhat grudgingly looked on.⁸

The creation and reception of electronic instruments like the Ekvodin, a multivoice synthesizer, and of ensembles like Meshcherin's offer a perspective for further inquiry that looks beyond dichotomies of socialist realism and experimentalism. To the Soviet cultural apparatus, experimentalism meant something other than new compositional techniques and serialist principles: it implied *both* futuristic sounds *and* mass comprehensibility. In this article, I demonstrate that, contrary to these enduring narratives, official institutions also reached beyond the symphonism and mass songs of high socialist realism. At the dawn of the space age and height of the nuclear arms race, Khrushchev promoted the idea of a "socialist modernity"—a socialist alternative to capitalist models of global development.⁹ And this included music, too: sounding "modern," the Soviet government believed, demanded more than just the modernist innovations in compositional technique that appeared to be taking place in the West. It meant, among other things, combining the new timbres of electronic music with the recognizable melodies of Soviet socialist realism.

Drawing on previously unexamined archival sources alongside organological methods, I argue here that the Soviet government cultivated a distinct politics of timbre—one that linked electronic sounds to Soviet modernity—through the creation of electronic musical instruments and state-sponsored ensembles. I begin by examining an order of 1955 from the Ministry of Culture, in which engineers were tasked with building and promoting electronic instruments. In the state's eyes, timbre—specifically electronic timbre—was key to the socialist modernizing project. It saw timbre as the most important facet of musical modernity—an inversion of the Western European and North American hierarchy whereby musical structure preceded instrumentation in musical meaning. I then follow the development of one such instrument, the Ekvodin, which the Ministry of Culture heralded as the future of Soviet music. Use of the Ekvodin as a case study reveals both the sonic and the political values at play in the design of electronic musical instruments. The Ekvodin's appeal to both listeners and state officials was due in no small part to its creator, Andrei Volodin, who positioned the creative manipulation of timbre as the primary outlet for aesthetic expression and auditory perception. Through debuts on both Soviet and

8. Schmelz, *Such Freedom*, 4–6.

9. As a concept, socialist modernity has elicited strong responses from historians in recent years. As Michael David-Fox has noted, the Soviet Union charted a shaky course between exceptionalism and shared modernity with the West. The country's attempt to surpass the United States in the space race by keeping pace technologically while maintaining ideological differences provides one example of this. On modernity, see David-Fox, *Crossing Borders*, 3–4. On the space race, see Andrews and Siddiqi, *Into the Cosmos*, 1–4, and Gerovitch, *Soviet Space Mythologies*, ch. 6.

international stages, the Ekvodin put acousticians' and engineers' theories of music psychology and physiology into practice. Timbre, officials at the Ministry of Culture argued, offered insight into listener perception that pitch, melody, and harmony alone could not. This, combined with the desire to compete with the capitalist West, fueled the instrument's popularity among Soviet bureaucrats, while its interstellar sounds and alluring melodies caught the imagination of the Soviet populace.

Studying the Ekvodin also provides a valuable foil to the electronic music composed by young avant-garde composers in Russia in the 1960s. As Schmelz has explored, Evgenii Murzin's ANS synthesizer, a photoelectronic instrument that allowed users to etch "sounds" into a coated glass plate, provided an exciting testing ground for young composers experimenting with electronic music.¹⁰ Located at the Scriabin House Museum in Moscow through the independent group the Moscow Experimental Studio for Electronic Music (MESEM), the ANS became a favorite for composers like Alfred Schnittke, Sofia Gubaidulina, and Edison Denisov while attracting a unique audience of young intellectuals for concerts and demonstrations. Yet despite its prominence in well-known films like *Solaris* (1972) and *Stalker* (1979), both directed by Andrei Tarkovsky and scored by Eduard Artem'ev, the ANS struggled to find a broader userbase and, as a result, stalled within the government's bureaucracy.¹¹ In contrast, the Ekvodin enjoyed robust support from the highest Soviet cultural institutions and became, through middlebrow and "light" (*legkaia*) musical ensembles, a ubiquitous feature of the Soviet soundscape. Such a disconnect between the highly educated and avant-garde stylings of the young generation of composers and state-produced popular music during the Thaw illuminates the tensions between official and unofficial spheres while also redirecting our critical lens toward the lived experience of "ordinary" Soviet citizens.¹²

Electronic instruments were (and are) more than just circuits, metal, and sounds. They both impact and are impacted by the humans who design, build, perform on, and listen to them. Through the process of creation, production, and dissemination, they assemble a "map of mediations"—air,

10. Schmelz, "From Scriabin to Pink Floyd."

11. The ANS and the MESEM lost much of what little institutional support they had enjoyed by the end of the decade. In 1973, the Ministry of Culture transferred control of the studio over to the Composers' Union, who seem to have lost interest in the instrument; see GARF, f. 5446, op. 107, d. 1096, ll. 22–24. The MESEM did not disappear from Moscow's music scene; rather it went underground (quite literally!) to be housed beneath the Monument to the Conquerors of Space. There, it sustained an active experimental music scene and drew together musicians, composers, artists, psychologists, and even psychics. Andrei Smirnov, interview with the author, February 15, 2018.

12. Led by Sheila Fitzpatrick, the study of everyday life in the Soviet Union has blossomed in the past several decades: Fitzpatrick, *Everyday Stalinism*. Other explorations of everyday life in the Stalin era that inform my study include Kiaer and Naiman, *Everyday Life*; Kotkin, *Magnetic Mountain*; Bittner, *Many Lives*; and Yurchak, *Everything Was Forever*.

vibration, composers, performers, listeners—on which the physical instrument itself is but one point.¹³ The Ekvodin had a “social life”: one that was contingent on time, place, and environment. Musical instruments, as Eliot Bates writes, are “entangled in webs of complex relationships—between humans and objects, between humans and humans, and between objects and other objects.”¹⁴ As a result, electronic musical instruments have the potential to illuminate both local and global relations during the Cold War. They embody the ideologies not only of the Soviet state that promoted them, but also of the domestic and international listeners who heard in their sounds the socialist project. I trace these negotiations through an organological exploration of the Ekvodin’s development that shows how many of the values of socialist realist music—accessibility, utility, and intelligibility—were at work in the design process.

Of course, not all instruments and sounds were created equal. For every invention that triumphed like the Ekvodin, there were several instruments that never made the jump from imagination to reality. The second part of this article explores two misfires in Soviet timbral politics. First, I demonstrate how the genesis of the Il’ston, an electronic keyboard that was rejected by the Ministry of Culture for its “lack of innovation,” illuminates the often divergent values that went into instrument creation and production. Bureaucratic delays as well as demands for novelty and production value meant that many instruments like the Il’ston would never be approved. Then, I turn to Alfred Schnittke’s *Poem about Space* (1960), a composition for orchestra and electronic instruments that was panned by critics for its “old-fashioned formalism.” A reconstruction and analysis of the manuscript score reveals the political relationship between timbre, modernism, and socialist realist aesthetics that was at the core of electronic music in the Soviet Union during the Thaw.

By focusing on the cultural politics of timbre, this article expands our understanding of Cold War aesthetics that have largely privileged pitch as the primary feature in musical analysis.¹⁵ I follow work by Emily Dolan that resists treating timbre as a “secondary parameter,” instead centering it within musical aesthetics—the Enlightenment and the music of Haydn, in Dolan’s case, and mid-century modernity and Cold War cultural politics in mine.¹⁶ But timbre is also more than just sound. It is, as Nina Eidsheim has argued

13. For a discussion of the “diverse ways of life” of musical instruments and their connections with science throughout history, see Tresch and Dolan, “Toward a New Organology.” (The phrase “map of mediations” first appears on page 285.)

14. Bates, “Social Life,” 364.

15. David Code, writing about Debussy’s *Prélude à l’après-midi d’un faune*, argues that shifting from pitch to timbre allows us “to restore the piece to its own moment of modernity”: Code, “Hearing Debussy Reading Mallarmé,” 497.

16. Dolan, *Orchestral Revolution*, 15. In many ways, like Rousseau and Diderot two centuries earlier, the Soviet government’s approach to timbre pays particular attention to perception

in relation to race, a powerful means for positioning oneself within the world—and for positioning others. “The ways in which we hear a particular voice,” she tells us, “are drawn as networks among people, genres, . . . and racialized conceptions of music.”¹⁷ Attention to timbre allows us to contextualize “modernism” within the Soviet state, to show that the Soviet apparatus did in fact encourage a certain kind of experimentalism—one that adhered to the parameters of a broader socialist ideology and modernity, more Meshcherin than Messiaen.¹⁸ Timbre enables us to view the Soviet sonic project on its own terms. When contextualized within the Soviet horizon of (listening) expectations, our Western-centric definitions of modernism and musical politics fail to account for Soviet audiences’ lived experience of their own sonic modernity. In order for “normal” Soviet citizens to believe in socialist modernity, they needed to hear it.¹⁹

Keeping Pace the Soviet Way

Paradoxically, perhaps, officials at the Ministry of Culture turned to the past in their quest to create the sounds of the future. Emerging hand in hand with early futurist thought, the search for new sounds began in earnest in 1908, in imperial St. Petersburg, where science-minded musicians like Nikolai Kulbin predicted the expansion of harmony, dissonance, and pitch.²⁰ Under Kulbin’s influence, the composer Arsenii Avraamov proposed a process for resynthesizing sounds using the phonograph and called for the mathematical modeling of the acoustics of musical instruments.²¹ Instead of the

and the immediacy of music for a listener; see *ibid.*, 56. Dolan is not the first author to point out primary and secondary parameters in music; see Meyer, *Style and Music*.

17. Eidsheim, *Race of Sound*, 35. Megan Lavengood has also compellingly called for the incorporation of timbral analysis into music-theoretical frameworks, suggesting that it is a key element in understanding the cultural narratives around 1980s pop music: Lavengood, “Cultural Significance.” Timbre is often discussed by histories of electronic music as a crucial parameter, but these histories overwhelmingly ignore developments in the Soviet Union; see Manning, *Electronic and Computer Music*, and Holmes, *Electronic and Experimental Music*.

18. Here I follow Benjamin Piekut, who, drawing on Actor-Network Theory, argues that experimentalism was best understood within its specific contexts and networks: Piekut, *Experimentalism Otherwise*.

19. I borrow this term from Fürst, “Where Did All the Normal People Go?” Fürst specifies the historical origins of her use of “normal”: “It explicitly did not stand for people who were living by the official norms. Rather, ‘normal’ became an adjective to denote adherence to the particular norms of late socialism, whose exact content was a question of individual choice. As such, its connotations were quite different from the derogatory ‘normality’ of 1970s Western parlance” (638).

20. For an overview of Russian futurism at the beginning of the twentieth century and the philosophical origins of futurist art, see Lawton, *Russian Futurism*.

21. Avraamov, “Griadushchaia muzykal’naia nauka.” Avraamov is most famous for his *Symphony of Sirens* (1922), which enlisted “musicians” to play battleships, train whistles, cannons,

twelve-tone chromatic scale, Avraamov advocated for a forty-eight-tone microtonal scale by which to expand the colors and possibilities of musical instruments. Implementation, the composer quixotically opined to Anatolii Lunacharsky, who would soon be appointed People's Commissar of a nascent Soviet state, would be simple: it merely required the burning of all the pianos in Russia.²² (Such a project was, surely to the delight of Russia's famed pianists, never realized.) In lieu of such destruction, Avraamov worked with Sergei Rzhevkin, an accomplished acoustician, to create a microtonal version of Rzhevkin's Cathodic Harmonium, an electronic instrument that could produce a variety of tones adjusted to any pitch. Yet Avraamov's emphasis on microtonality was a means to an end; timbre, more than pitch, would push music into the future. He went on to argue, "Timbre is the soul of a musical sound. To create abstract harmonic schemes and then 'orchestrate' them is no longer sufficiently creative. . . . In the act of true creativity, each sound must be born as it is already incarnated."²³ For Avraamov, only by destroying the past could one hope to energize the future.

Avraamov and Rzhevkin were joined by a group of other composers, acousticians, and engineers at the Soviet State Institute for Musical Science (Gosudarstvennyi institut muzykal'noi nauki), known by its Russian acronym, GIMN. Founded in Moscow in 1921, GIMN assumed oversight of all scientific research pertaining to musical instruments, hearing, sound (re)production, and phonetics. The institute shared few researchers with the Moscow Conservatory, which remained primarily invested in performance and composition. (Mikhail Gnessin, who participated in both institutions, was one notable exception.) At GIMN, Avraamov worked alongside Lev Termen, Boris Krasin, and Nikolai Garbuzov to pioneer technological advances in the field of radioelectronics. By 1923, the institute had its own radio station, which broadcast discussions about musical science. GIMN was renamed NIMI (for Nauchno-issledovatel'skii muzykal'nyi institut, or Scientific-Research Musical Institute) in 1933, at which point engineers combined their research on timbre with developing musical instruments in support of national cultural initiatives. Aleksandr Sovevov's "Single-Person Orchestra," for example, enabled a single person to play a set of acoustic instruments, which allowed for robust orchestrations

and more in massive performances. The myth of this piece is perhaps even more powerful than the reality, which has come under scrutiny in recent years; see Schwartz, "Between Sound and Silence."

22. See Smirnov, *Sound in Z*, 90. As head of the People's Commissariat for Education (Narkompros), Lunacharsky shaped cultural and education policy throughout the nascent Soviet Union, and the organization would later transform into the Ministry of Education.

23. Avraamov, "Griadushchaia muzykal'naia nauka": "Тембр — душа музыкального звука. Творить отвлеченные гармонические схемы и затем 'оркестровать' их — уже в сущности, не творчество. . . . В акте истинного творчества каждый звук рождается уже до конца воплощенным."

to be performed even in small villages. Likewise, Mikhail Matiushin's "straight violin," also an acoustic invention, sought to expedite the industrial production of violins in order to solve instrument shortages around the country.²⁴ Key to the missions of both GIMN and NIMI throughout was an interest in expanding the sonic possibilities of Soviet music—and, in turn, the sonic palates of Soviet listeners—be it through entirely new synthesized sounds or electronic imitations of acoustic instruments difficult to find in regions distant from Moscow or St. Petersburg.

At the outset, support for electronic music came from the very highest echelons of the Soviet state. In late 1920, Termen had demonstrated his "etherphone" to the most important man in Russia—perhaps the world—at the time: Vladimir Lenin. Lenin himself even gave the instrument a try, with Termen guiding him through a few melodies before the leader exclaimed that the instrument needed to be performed across the country. "Communism," Lenin declared, repeating one of his more frequent catchphrases, "equals Soviet power plus electrification."²⁵ Electronic music (sometimes called "radio music") could help to electrify the nascent nation. Thus began a massive state campaign to bring the sounds and sights of Termen's invention—what would come to be called the Termenvox or Theremin—to the Soviet people (see figure 1).²⁶ The instrument would not only help bring electricity to the country. It would help to create socialism itself.

As with many forms of Revolutionary art, however, official support for musical-scientific research stalled in the mid-1930s with the onset of Stalinist repressions.²⁷ Many members of NIMI either lost their positions or were imprisoned. Aleksei Gast'ev, whose biomechanics experiments with motion, visual art, and sound had invigorated inventors at the start of the decade, was arrested in September 1938. The following April, he was shot. Kliment Kvitka, a professor at the Moscow Conservatory who researched nonchromatic scales and microtones, was also arrested. Even after his release, he was forced to live well outside Moscow's center in internal exile. And perhaps most famously, Termen was arrested in March 1939 and sent to a *sharashka*, a labor camp dedicated to scientific research, where he was tasked with applying the same physical principles he had used in the Theremin to military and surveillance technologies.²⁸ While there, he invented "the Thing," one of the first passive (i.e., unpowered) covert listening devices, which was then planted in the Great Seal of the United States at the US embassy in Moscow in 1945. It was only removed seven years later, when discovered by chance

24. See Smirnov, *Sound in Z*, 82–95.

25. Quoted in Kotkin, "Istoriia o tom," 134: "Коммунизм — это есть советская власть плюс электрификация всей страны."

26. Figure 1 is reproduced from Kotkin, "Istoriia o tom," 135.

27. On the transformation of cultural currents under Stalin, see Groys, *Total Art of Stalinism*.

28. On scientific research in the Soviet labor camps, see Siddiqi, "Scientists and Specialists."



Figure 1 Poster for Theremin concert of December 19, 1922

by a diplomatic aide.²⁹ After his release in 1947, Termen worked for the KGB as a researcher until he retired in 1963, at which point he returned to the Moscow Conservatory to head the Laboratory for Musical Acoustics. In the eyes of the state, creating new sounds was a hobby at best—and a deviation from socialist norms at worst. This crackdown was almost certainly exacerbated by an increase in supply chain problems, state finances, and limited access to Western technologies, all of which made it difficult to attain electronic components.³⁰

The research that did continue throughout the 1930s and '40s was largely centered on developing more efficient forms of existing instruments as well as pedagogical technologies. In 1947, for example, Petr Kirilovich Aleksandrov sent a letter to the Ministry of Local Industry from his home in Tashkent to share that he had invented a “chord calculator” (“prisposoblenie dlia rasshifrovki akkordov”). Part piano, part accordion, Aleksandrov’s device could “read” a chord and suggest a series of possible harmonic analyses: major,

29. “The Thing” is the name Western commentators have given to Termen’s invention. In the original Russian, it was simply called the “endovibrator”; see Smirnov, *Sound in Z*, 44–62, 257.

30. For a discussion, see the documentary film by Dominik Spritzendorfer and Elena Tikhonova, *Elektro Moskva*.

minor, or dominant seventh. It could be used, he argued, in secondary music schools all over the country to increase musical literacy among high schoolers who had no access to local higher educational musical institutions. The project stalled, getting caught up in bureaucratic rigamarole, and would never be realized.³¹ Lightweight accordions, too, took priority in engineering initiatives, especially during the Second World War. Deemed necessary for soldier morale, accordions in their many forms (garmon', baian, akkordeon, khromka) were sent to the front.³² The priority during these sparse Stalinist years was not so much creating the sounds of the cosmos as bringing the sounds of the orchestra to the masses.

It was only in the 1950s that inventors and engineers once again began to receive significant state support for the development of new sounds by means of electronic instruments. Nikolai Petrovich From, a master accordion maker based in Moscow, filed for an Author's Certificate (similar to a patent) from the Ministry of Local Industry for his musical-timbral instrument ("muzykal'nyi tembroyvi instrument") the "Gartemfrom" in March 1952. (The name was a portmanteau of "garmon' tembroyvaia Froma," or "From's timbral accordion.") The official of the Sector of Inventions and Rationalization of Technical Affairs (Sektor izobretanii i ratsionalizatsii tekhnicheskogo del) at the Ministry of Local Industry used timbre in particular to justify granting From the Author's Certificate. Imitating the sounds of the bassoon, French horn, and other wind instruments, the Gartemfrom enabled local ensembles to explore new orchestrations and arrangements of orchestral repertoire. Despite looking like a traditional accordion and being made from conventional components, the Sector of Inventions argued, the instrument's new timbral possibilities made it a unique contribution to the Soviet musical landscape. In fact, that the instrument functioned like a typical accordion made it all the more appealing, as it brought the sounds of Soviet symphonies to the fingertips of amateur performers.³³ It made classical orchestral repertoire accessible to those without a conservatory education and in doing so made tangible the ethical underpinnings of post-Zhdanov socialist realism.

The postwar period also saw a return to the development of electronic musical instruments specifically. The most popular of these was the Emirinton, a single-voice instrument that combined the technological principles of the Theremin with a fingerboard similar to that of the Ondes Martenot, which allowed for fluid melodies in performance.³⁴ Though first designed in

31. See GARF, f. 44, op. 1, d. 3214.

32. See, for example, Central State Archive of Moscow (Tsentral'nyi gosudarstvennyi arkhiv Moskvyy, henceforth TsGAM), f. 2962, op. 1, for the holdings of the Moscow Red Army Factory of Accordions. Despite its cultural significance, a comprehensive history of the accordion in Russia has yet to be written.

33. See GARF, f. 44, op. 1, d. 4619, ll. 2–19.

34. This instrument is sometimes referred to in documentation as the Melodin. I have chosen to follow the naming convention of its designers.

1936 by Andrei Rimsky-Korsakov (grandson of Nikolai) and Aleksandr Ivanov, the Emiriton enjoyed something of a renaissance in the late 1940s and early 1950s thanks to a surge in popular science publications in which it featured.³⁵ The most widespread model of the instrument, the Emiriton no. 8, combined the original fingerboard with a standard keyboard for easy performance (see figure 2).³⁶ The addition of the latter ensured that it was one of the first electronic musical instruments that could be appreciated by specialists and amateurs alike. Composers who had otherwise mostly kept their distance from new musical instruments were attracted to the Emiriton's familiar interface. "The richness of timbres, the

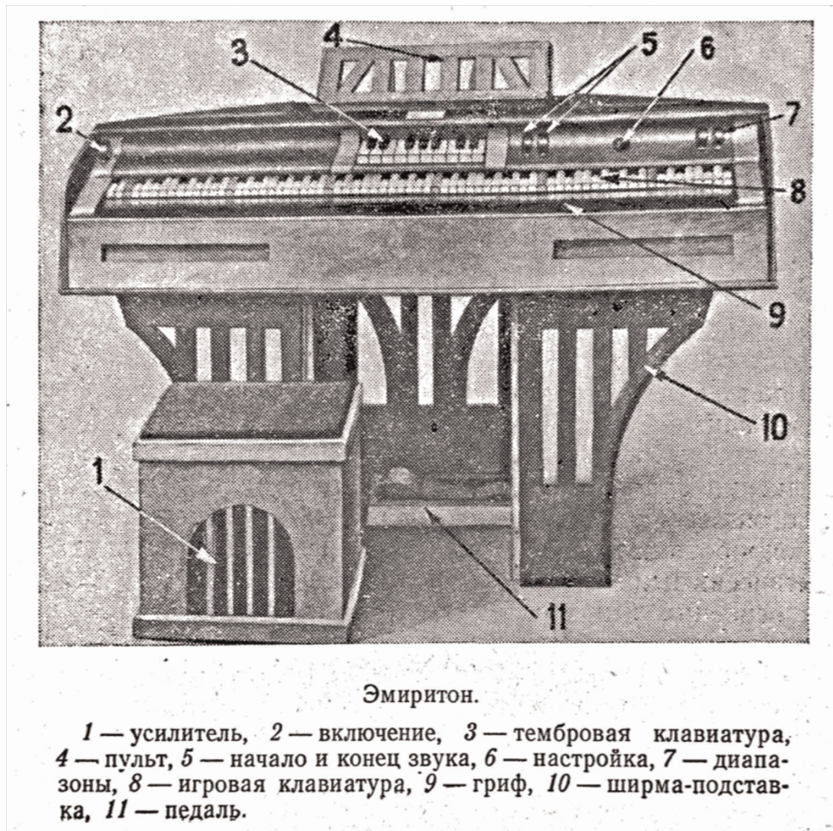


Figure 2 Diagram of the Emiriton (1—amplifier, 2—power button, 3—timbre keyboard, 4—control panel, 5—attack and decay, 6—tuning, 7—sound options, 8—performance keyboard, 9—fingerboard, 10—stand, 11—pedal)

35. Emphasizing the instrument's timbral possibilities, in 1946 the magazine *Iunyi tekhnik* featured the Emiriton in an article extolling recent Soviet inventions: "Zametki o tekhnike."

36. Figure 2 is reproduced from Ivanov, *Sovetskii elektricheskii muzykal'nyi instrument*, 12.

expressive beautiful sounds, and the impressive technical possibilities,” wrote Dmitri Shostakovich in 1953, “all go to show what a magnificent invention the Emirton is.”³⁷

The composer was not alone in his admiration for the Emirton’s new timbral possibilities. Indeed, Ivanov and Rimsky-Korsakov drew explicit inspiration from work on the topic by the latter’s grandfather. In his 1891 treatise on orchestration, Nikolai Rimsky-Korsakov detailed how precise instrumentation could create new sounds and thus new expressive potential. Describing timbre in sensory terms, he theorized how sound and affect could combine in persuasive ways. “It is a difficult matter to define tone quality in words,” he wrote. “We must encroach upon the domain of sight, feeling, and even taste.” No musical sounds were “ugly” in Rimsky-Korsakov’s formulation. Rather, sounds either carried meaning or were devoid of it:

No condemnatory meaning . . . should be attached to my descriptions, for in using the terms thick, piercing, shrill, dry, etc. my object is to express *artistic* fitness in words, rather than material exactitude. Instrumental sounds which have no musical meaning are classed by me in the category of *useless sounds*, and I refer to them as such, giving my reasons. With the exception of these, the reader is advised to consider all other orchestral timbres beautiful from an artistic point of view, although it is necessary, at times, to put them to other uses.³⁸

In many ways, Rimsky-Korsakov’s approach to timbre as one that relied largely on intertextual meanings—meanings expressed through sociocultural and aesthetic associations—presaged that of the Ministry of Culture sixty years later.

In a pamphlet released in 1953, Ivanov explained how the Emirton put the elder Rimsky-Korsakov’s methods into practice:

To realize one’s creative designs, however, a composer is frequently compelled to create a blend of timbres through doubling or tripling instruments in unison, so as to achieve a new timbral combination. In doing so, one encounters the obstacles of working with dissimilar registers, volumes, performance capabilities, and so on. When blended, the timbres of instruments in the same register are deprived of and lose their expressiveness.³⁹

37. *Ibid.*, 1: “Богатство тембров, выразительный красивый звук, большие технические возможности — все это говорит за то, что эмиртон — выдающееся изобретение.” Shostakovich does not appear to have written any substantial music for the instrument, despite his mark of approval.

38. Rimsky-Korsakov, *Principles of Orchestration*, 18 (italics in source).

39. Ivanov, *Sovetskii elektricheskii muzykal’nyi instrument*, 8: “Однако для осуществления своих творческих замыслов композитор зачастую вынужден прибегать к смешению тембров, к удвоению, утроению инструментов, звучащих в унисон, чтобы получить новый смешанный тембр. При этом возникают препятствия в несоответствии регистров, громкостей, способов

Through the ability to deploy various combinations of sounds through the push of a key on the instrument's keyboard interface, the Emiriton was able to provide a single performer with an orchestra of timbral possibilities.

While electronic instruments gave voice to modern musical aspirations, they also spoke to important developments in radioelectronic technologies. These technologies—as much a development in communication as in global military industrialization—were entangled in broader Cold War discourses of science and progress.⁴⁰ As such, they became a crucial point of competition between the Soviet Union and the West (i.e., the United States). Thus, when on March 3, 1955, officials at the Ministry of Culture passed an order to stimulate the production of electronic musical instruments in the country, they did so for both domestic and international political reasons.

Order no. 104, “On Electronic Musical Instruments” (“Ob elektromuzykal'nykh instrumentakh”), pointed to a dearth of oversight and organization in the production of electronic musical instruments—a dearth that, according to the report, had originated as early as the 1920s, when artistic research institutions had not yet been centralized. Many fascinating instruments had been invented, officials acknowledged, but they lacked efficient production procedures and widespread distribution and had therefore remained little more than hobbyist trifles. Signed by Georgii Aleksandrov (the short-lived Minister of Culture from 1954 to 1955), Order no. 104 identified four instruments that had the potential to form the foundation of Soviet electronic music: the Theremin, the Emiriton, the Ekvodin, and the Electronic Harmonium (a recent invention by Saul Korsunskii and Igor Simonov). These instruments stood out for their timbral and dynamic possibilities, which, the report argued, deserved both greater artistic interest and sustained technological development.⁴¹

Representing a coordinated effort on multiple fronts, the order addressed four primary areas in need of improvement that spanned the creation, dissemination, and proliferation of electronic musical instruments. First, Aleksandrov instructed the Main Bureau of Radioinformation (Glavnoe upravlenie radioinformatsii) to work alongside the All-Union Scientific Research Institute for Sound Recording (Vsesoiuznyi nauchno-issledovatel'skii institut zvukozapisi, VNAIZ) to improve existing instruments. By the end of June 1956, the two organizations needed to have developed a multivoice electronic keyboard. Additionally, the Main Bureau of Radioinformation was tasked with coordinating its work with the heads of theaters and musical organizations; the new instruments, after all, needed somewhere to be heard—and someone

игры и пр. Тембры инструментов в одной тесситуре при смешении обезличиваются и теряют в выразительности.”

40. See Iverson, *Electronic Inspirations*, 2.

41. Russian State Archive of Literature and Art (Rossiiskii gosudarstvennyi arkhiv literatury i iskusstva, henceforth RGALI), f. 2329, op. 3, d. 433, l. 143.

to play them. Second, the Main Bureau of Theaters and Musical Organizations (Glavnoe upravlenie teatrov i muzykal'nykh uchrezhdenii) was charged with working alongside technical organizations to improve the industrial output of two instruments in particular: the Ekvodin and the Emiriton. It was not enough to rely on science and engineering alone; these instruments had musical and performance duties that needed to be addressed. With this advance, the order called for the cultivation of practice and performance spaces for musicians and composers interested in the new instruments. Third, together with attempts to bring these new instruments into the mainstream, the order called for the creation of textbooks to educate performers on the techniques, science, and possibilities of electronic musical instruments. And finally—and perhaps most importantly—the order established strategies for popularizing electronic musical instruments throughout the Soviet Union. Concise and direct as it may have been, the order played a crucial role in establishing a centralized series of bureaucratic and institutional networks relating to electronic musical performance in the country unlike anything it had seen before.

The Ministry of Culture's approach to popularizing the instruments reached across media and audiences. First, the film serial *Science and Technology* would incorporate the Ekvodin into a future episode. Second, Nikolai Danilovich, then editor of the newspaper *Sovetskaia kul'tura*, was to publish an article about electronic instruments as well as "to continue to highlight their improvement in the future."⁴² And third, heads at the Main Bureau of Theaters and Musical Organizations were tasked with finding opportunities for lectures and performances in concert halls as well as on the radio and television.⁴³ Order no. 104 was remarkable not only for its scope, intensity, and urgency in Ministry of Culture policy making, but also because it betrayed a desire to keep pace with Western musical innovations in technology. Developments in synthesis and electronic music at institutes like the Columbia-Princeton Electronic Music Center in the United States, Radiodiffusion-Télévision Française in Paris, and Nordwestdeutscher Rundfunk in Cologne had cemented Western Europe and North America as centers for musical innovation. Meanwhile, electronic instruments both big (like the RCA Mark II synthesizer at Columbia) and small (like Raymond Scott's Clavivox) were being touted as major accomplishments around the world. Kick-starting electronic music with the Theremin nearly half a century earlier, many in the country felt that the Soviet Union had invented electronic musical instruments. In the face of increasing competition and one-upmanship in the Cold War, the country would need to take the lead once again.

42. RGALI, f. 2329, op. 3, d. 433, l. 143: "Поручить главному редактору газеты 'Советская культура' т. Данилову опубликовать статью об электромузыкальных инструментах и в дальнейшем освещать в газете работу над их усовершенствованием."

43. See RGALI, f. 2329, op. 3, d. 433, ll. 143–44.

Sounding Space the Socialist Way

Cultivating these electronic timbres, both imitative and entirely new, would thus be key to regaining Soviet primacy in electronic music. And for those who heard these sounds, it meant being able, even if only for a moment, to “listen” to the sounds of space—the infinite potential of cosmic exploration. Even if most Soviets would never don their own cosmonautics suits, electronic music and its connections to futuristic utopias could resonate firmly on planet earth.

Of the four instruments mentioned by Order no. 104, it was the Ekvodin that represented the best chance the Soviets had to take the lead in the synthesized cold war. Invented by Andrei Volodin, a radio engineer based in Moscow, the Ekvodin was a multivoice synthesizer with a standard keyboard that went through a series of models in the 1940s and '50s. Its range encompassed seven octaves and it could create timbres that imitated several instruments in the modern orchestra. It would become the most popular electronic musical instrument in the Soviet Union—outstripping even the Theremin—and its traditional interface meant that it could be played by amateurs and professionals alike. Featured in movies, television shows, and radio performances, the Ekvodin provided the soundtrack to much of the Soviet fifties and sixties.

Volodin was born into a family of artists on September 26, 1914. A precocious student, he completed his studies in electroacoustics and radio broadcasting at the Moscow Engineering Institute, during which time he worked with Nikolai Garbuzov at the Laboratory for Musical Acoustics at the Moscow Conservatory. After graduating, he began working at the Moscow Radio Factory, where he developed his musical endeavors by experimenting with electronic synthesis. Over the course of his career, he authored hundreds of publications and earned forty Author's Certificates.⁴⁴ He later became the head of the Laboratory for Musical Acoustics and went on to earn his doctorate in psychology in 1969 with a dissertation titled “Psychological Aspects of Musical Sound Perception,” which drew on much of his work in the realm of electroacoustic research and electronic musical instruments.⁴⁵ Under his tutelage, several young engineers and acousticians developed new musical instruments and techniques in sound synthesis, making him one of the most influential figures in Soviet electronic music for generations to come.

The Ekvodin had undergone two decades of development by the time it caught the attention of the Ministry of Culture (see table 1).⁴⁶ Volodin had begun to develop some of the instrument's principal features in 1931, while

44. See “Nekrolog Volodina A. A.”

45. Volodin, “Psikhologicheskie aspekty vospriiatiia muzykal'nykh zvukov.”

46. The information presented in table 1 derives from RGALI, f. 2329, op. 3, d. 433, l. 142.

Table 1 Development of the Ekvodin synthesizer

Model number	Primary characteristics listed	Inventor	Inventor's certificate number and priority date
1	A keyed electromusical instrument allowing for the smooth gliding of sounds	A. Volodin	No. 72652 with priority from June 24, 1944
2	An electromusical instrument with fingerboard adjustable by chromatic half tones	A. Volodin	No. 69233 with priority from February 19, 1945
3	An electromusical instrument with soft sound cutoff using the principle of the preservation of generator frequency	A. Volodin	No. 69235 with priority from October 20, 1944
4	A model in which the neck of the electromusical instrument contains internal contact and a plastic rim for stretching and winding	V. Gurov A. Volodin	No. 37154 No. 69806 with priority from February 19, 1945
5	An electromusical instrument with a group of timbres on the fractional spectrum [<i>drobnygo spectra</i>]	A. Volodin	Author's Certificate awarded on February 26, 1957, by Order no. 1028 (State Organization of Radioinformation) with priority from February 19, 1954
6	An electromusical instrument with harmonic formants (formant relaxers)	A. Volodin	Author's Certificate awarded on February 18, 1957, by Order no. 434870-1062 with priority from September 20, 1950
7	An electromusical instrument with pressure-based [<i>udarnyy</i> —literally, "percussive"] control of sound volume	A. Volodin	Author's Certificate awarded on February 16, 1957, by Order no. 1029 (State Organization of Radioinformation) with priority from January 19, 1954
8	[An instrument with] the ability to silently adjust the electromusical instrument with the use of an optical indicator	A. Volodin	No. 92211 with priority from August 2, 1949

still a student. Its first iteration, the Ekvodin V-1, was submitted for consideration for an Author's Certificate in June 1944, though the design would undergo several revisions in quick succession in the following four years. The V-2 added a keyboard; the original, with just an amplified wire and no discrete pitches, resembled the earliest versions of the Ondes Martenot, and minor modifications prompted the rapid development of the V-3 and V-4. The V-5 was the first Ekvodin to successfully receive an Author's Certificate, which was granted in 1957. In the application he had submitted three years earlier, Volodin stressed the V-5's "unique" ability to create a wide variety of timbres—both imitative and entirely new.⁴⁷ In terms of logistics, the V-5's versatility made it appealing to circuses, schools, and clubs around the country. But more than that, its ability to create new sounds—sounds previously unheard—was key to its modernity. Indeed, timbre and sound fidelity were at the center of the Ekvodin's development throughout much of the 1950s: the V-6, which also received its Author's Certificate in 1957, improved on the V-5's harmonic formants. The V-7, awarded an Author's Certificate that same year, allowed for greater dynamic manipulation. Gaining prominence in both music schools and concert halls, this version of the Ekvodin was featured in roughly two thousand performances in the Soviet Union between 1947 and 1952.⁴⁸

Volodin cemented his instrument's importance on November 23, 1954, when he demonstrated the V-8, which added a second voice that could deploy a different timbral setting to allow for richer combinations of sounds, to officials from the Ministry of Culture and the Composers' Union.⁴⁹ The performance also featured the other three instruments named in Order no. 104—and in fact it was this event that inspired the Ministry of Culture to pass that order and make sweeping changes.⁵⁰ Boris Vladimirkii, composer and chair of the committee, lauded the artistic quality of the performance, saying that "by virtue of their unique timbres, melodic potential, and dynamic possibilities, electronic musical instruments are of definitive artistic interest" for Soviet composers.⁵¹ With this endorsement, improvements to the instrument began to quickly take shape with support from the Ministry of Culture, which approved mass production and allowed Volodin's team to focus on the Ekvodin entirely.

47. A. A. Volodin, "Elektromuzykal'nyi instrument s gruppoi tembrov drobnogo spektra," Soviet Author's Certificate no. 113536, filed February 19, 1954, and issued February 26, 1957.

48. See RGALI, f. 2329, op. 3, d. 433, l. 9.

49. See RGALI, f. 2329, op. 3, d. 433, l. 142.

50. See RGALI, f. 2329, op. 3, d. 433, l. 10.

51. RGALI, f. 2329, op. 3, d. 433, l. 145: "Электромuзыкальные инструменты по своим тембровым, мелодическим и динамическим возможностям представляют определенный художественный интерес."

The instrument's design reflects the ideological and aesthetic values of the Ministry of Culture. Both the earliest and latest changes to the Ekvodin were cosmetic and tactile. The earliest development, of course, removed the smooth glide between tones on the V-1, exchanging it for chromatic half steps in the V-2. Likewise, the V-7 brought with it a mechanical button for controlling the master volume, while the V-8 incorporated an optical indicator that provided visual confirmation of settings. While the bulk of internal changes occurred in versions 3–6, the external, physical changes to the instrument gained the most attention from the bureau responsible for granting Author's Certificates. In this way, we see that accessibility—not just sound—was key to the Ekvodin's support from the Ministry of Culture.⁵²

With the Ministry of Culture's attention and, crucially, its financial and legal support, Volodin redoubled his efforts to develop the next version of the Ekvodin. He justified the V-9 in both modernist and teleological terms, writing that "Electronic musical instruments have arrived at precisely the time when conventional [i.e., acoustic] musical instruments, having reached their ultimate perfection, have exhausted their fundamental possibilities."⁵³ Thus, the inventor argued, the V-9's increased timbral potential represented an essential—and inevitable—continuation of musical progress. Making such a statement under the auspices of technological research, moreover, afforded Volodin financial and political support from the state apparatus, for whom "progress" meant keeping pace with the West. In this way, the Ekvodin bridged the gap between art and science in a way that Soviet institutions, which were notoriously discrete and siloed, did not.

Its success shored up at home, the V-9 landed in Brussels for the World's Fair in 1958, where it made its international debut.⁵⁴ That exposition provided an invaluable opportunity for the Soviet state to perform its technological, cultural, and ideological superiority on the world stage at the

52. The prioritization of accessibility in the production of Soviet synthesizers constitutes a significant divergence from the approach in many major European and North American centers for electronic music, where synthesizers were by and large the domain of specialist performers and composers, not ordinary amateurs. Although taking place within the realm of state sponsorship, this course of development—one that privileged accessibility over pure sound—is not entirely unlike that of the Moog synthesizer (nearly a decade later, of course) in the United States. On the development of the Moog's external appearance, see Pinch, "Why You Go to a Music Store."

53. RGALI, f. 2329, op. 3, d. 433, ll. 6–7: "Электромusыкальные инструменты появились в момент, когда классические средства музыкальной техники достигнув своего предельного совершенства исчерпали заложенные в них принципиальные возможности."

54. Music's role in international exhibitions has increasingly become a site for musicological inquiry in recent years; see, for example, Fauser, *Musical Encounters*; Willson, "Hearing Things"; and Blazskiewicz, "City Myths," esp. ch. 1. For a discussion of the Soviet exhibition at the 1939 World's Fair in New York City, see Honegger, "Bad Vibrations."

height of the Cold War.⁵⁵ This was no doubt aided by the recent successful launch of Sputnik, the first artificial satellite to orbit the earth, the preceding autumn. Indeed, although the Soviet pavilion had been in the works since 1955, Sputnik's launch prompted a massive and rapid restructuring of plans so as to foreground the gleaming satellite. In more ways than one, then, the 1958 exposition portrayed the Soviet Union as a modern, forward-thinking country that could keep up with its capitalist (i.e., American) counterparts. The Soviet pavilion, historian Lewis Siegelbaum tells us, displayed a power "whose modernity was literally out of this world."⁵⁶

The Soviet exhibition had four primary goals: to show that the country was a socialist, multinational, peace-loving state; to display industrial innovation and agricultural farming; to demonstrate the quality of life of the Soviet people; and to promote advances in socialist culture on the global stage.⁵⁷ Beyond these ideological goals, the exposition also offered a valuable commercial opportunity: it was a chance for the country to market its goods to other socialist, nonaligned, and friendly capitalist countries.⁵⁸ Although science took center stage, the Soviet organizing commission took great pride in the country's cultural offerings—especially when compared to America's submissions. (The Soviet delegation scoffed at some of the performances staged as part of the United States' exhibition, especially those by the Harlem Globetrotters and a synchronized swimming show.)⁵⁹ America may have been the new, exciting player on the global stage, but the Soviet Union (and, in the eyes of both countries' leadership, the Russians in particular) had centuries of cultural excellence behind it.⁶⁰

Yet perhaps no cultural offering elicited more disgust from the Soviet delegation than the Le Corbusier–designed Philips Pavilion, which housed the premiere of Edgard Varèse's *Poème électronique*. Varèse's composition, combining sounds, video, and visual art with avant-garde architectural design, intrigued and befuddled the Soviet delegation. Although some on the Soviet organizing commission had initially been skeptical of the entire endeavor, they were apparently persuaded by glowing local coverage during the exposition.⁶¹ Looking at the pavilion as a technological and architectural feat,

55. For a general overview of the role of technological and scientific innovation at the Brussels World's Fair, see Schroeder-Gudehus and Cloutier, "Popularizing Science and Technology."

56. Siegelbaum, "Sputnik Goes to Brussels," 129.

57. See GARF, f. 9470, op. 1, d. 1, l. 7.

58. See GARF, f. 9470, op. 1, d. 1, l. 1.

59. See Dmitriev, *Iskusstvo na Vsemirnoi vystavke v Briussele 1958*.

60. On the Soviets' emphasis on cultural tradition on both domestic and international stages, see Fairclough, *Classics for the Masses*; Tomoff, *Virtuosi Abroad*; and Searcy, *Ballet in the Cold War*. For a broader exploration of the cultural capital of music on the world stage during the Cold War, see Fosler-Lussier, *Music in America's Cold War Diplomacy*, esp. chs. 1 and 2.

61. See GARF, f. 9470, op. 1, d. 3, l. 173. An article published in *Le soir* on May 9, 1957, was translated into Russian as part of the press packet sent back to Moscow.

they were greatly impressed.⁶² As an aesthetic object, however, it failed to convince. Vasiliï Zakharchenko, the editor of *Sputnik*, a magazine published especially for dissemination at the exposition, wrote a particularly scathing review for the Soviet newspaper *Literaturnaia gazeta* in which he compared the structure to a “giant human stomach” that made him question his own sanity. His take on Varèse was even more blistering: “A sea of strange, disturbing, amelodic sounds surrounds you. No, this is not music—these are noises, and yet even they too lack the usual naturalness [*privychnoi estestvennosti*]. Electric machines have transformed artificial electronic sound into rustles, smacks, howls, and crashes. The stupendous [*potriiasaiushchie*] acoustic properties of the hall, lapped by the mystical waves of sound, overwhelm you.”⁶³ Perhaps unsurprisingly, given such strong reactions, the Soviet delegation did not submit to the exposition’s Experimental Music Festival.⁶⁴

It was precisely at this nexus between scientific and aesthetic experimentation—between utility and excess—that the Ekvodin V-9 fell. The Soviet planning committee felt secure in their country’s cultural offerings—and the foreign press seemed to agree.⁶⁵ With their scientific achievements, however, they needed to persuade the rest of the world of the country’s growth and development since the Second World War. Designed not by a composer but by an engineer, the Ekvodin was thus placed in the Radioelectronics Hall of the Soviet exhibition—not in the cultural section. Alongside gramophone records, radio sets, and televisions, the Ekvodin represented advances in Soviet consumer technology rather than the tried-and-true musical works of cultural dominance. A recording of the instrument was played alongside it, though official documentation does not specify what repertoire was performed. And yet in the eyes of the World’s Fair judges, the Ekvodin was still at its core a musical instrument. By the end of the exposition, they had

62. See, for example, material in *Pavil’on firmy “Filips.”*

63. The article, originally published on October 2, 1958, was reprinted in Bol’shakov, *Vse-mirnyi smotr*, 46–47: “Море странных, тревожных, лишенных мелодий звуков окружает вас. Нет, это не музыка, это шумы, но и они лишены привычной естественности. Электрические машины преобразовали искусственный электронный звук в шорохи, чмокание, вой и грохот. Потрясающие акустические свойства зала, по которому плещутся мистические волны звуков, подавляют вас.”

64. See Russian State Archive of Contemporary History (Rossiiskii gosudarstvennyi arkhiv noveishei istorii, henceforth RGANI), f. 5, op. 36, d. 66, l. 55.

65. See, for example a comparison of the classical music performances of the American and Soviet exhibitions by Rolan Darcy in *La libre Belgique*, February 23, 1958. Indeed, the supremacy of Soviet (and in this case Russian) classical music over American had long been understood by the American cultural envoy to Russia as well, as noted in a State Department telegram from Ambassador Harriman on the effectiveness of radio broadcasts in the Soviet Union from 1945, in which he frankly admits that American classical music proves no competition for its Soviet counterparts: *Foreign Relations of the United States: Diplomatic Papers, 1945, Europe*, vol. 5, 811.20200 (D)/12–2145: Telegram, <https://history.state.gov/historicaldocuments/frus1945v05/d697>.

awarded Volodin a gold medal for his invention in the *cultural* category—not in the radioelectronics section.⁶⁶ Surely to the surprise of those in charge, the Ekvodin had garnered the same award as both the Composers' and Writers' Unions.⁶⁷ Volodin's technological wonder was deemed on a par with the canonical figures of Russian culture—the likes of Pushkin, Tchaikovsky, and Gogol.

Festival attendees also noted the instrument's exciting sounds and were wildly enthusiastic about its design. Exhibit comment books preserve a variety of responses from those who visited the different sections of the Soviet pavilion.⁶⁸ Some consisted of little more than generic praise, such as "Hello to the Soviet Union!" or "Glory to Russia." Others were decidedly less celebratory; many remarked on the Soviet invasion of Hungary (and, less frequently, of Poznań, Poland) that had taken place just two years earlier. The more engaged attendees took to creating their own dialogues in the comment books. After one writer exclaimed, "We won't forget Hungary," another, shifting the blame to the United States, pointedly replied, "And Little Rock?"⁶⁹ Comments about the Ekvodin, however, were entirely positive and enthusiastic. A number of visitors—many of them musicians or composers—asked where they could purchase the instrument. Many even left their addresses in hopes that the Soviet government would ship them one in due course. Lans, from Yugoslavia, boasted that even though he had traveled "all over the world," he had never seen as unique an instrument as the Ekvodin. Others took the instrument as proof of broader Soviet supremacy in both the sciences and the arts. As Toufik Ben Abdallah, an attendee from Tunisia, wrote, the Ekvodin's sounds were "worthy of the country that produced Sputnik."⁷⁰ With a replica of the famous satellite hanging overhead, the Ekvodin gave sound to the Soviets' primacy in the space race—and, by that measure, in the Cold War as well.⁷¹

66. For a record of the certificate Volodin received, see Russian National Museum of Music (Rossiiskii natsional'nyi muzei muzyki, formerly the Glinka Museum, henceforth RNMM), f. 420, op. 1, yed. khr. 7.

67. See GARF, f. 9470, op. 1, d. 1, l. 255.

68. For a wide selection of comments, see GARF, f. 9470, op. 1, d. 18. Comment books represent a valuable source of unmediated (or at least less mediated) types of immediate feedback. For a parallel example within the Soviet Union, see Reid, "Exhibition *Art of Socialist Countries*."

69. GARF, f. 9470, op. 1, d. 18, l. 102: "Не забудем Венгрию! Долой палачей! Да здравствует свобода! / приписка в скобках, сделанная другими чернилами: 'Литтл-Рок?'"

70. These comments on the Ekvodin specifically come from Volodin's collection at RNMM, f. 420, op. 1, yed. khr. 1, ll. 1–5: "Браво этому необычному инструменту, достойному создателей Спутника!"

71. On music and the Soviet space program's entanglements with Cold War imperialism, see Cornish, "Music and the Making of the Cosmonaut Everyman." The association between electronic music and space exploration extended beyond the Ekvodin, many commentators making similar claims with regard to the ANS synthesizer in its earliest days; see Schmelz, "From Scriabin to Pink Floyd," 260.

The Ekvodin's success in Brussels kick-started plans to mass-produce the instrument. On July 8, 1959, members of a special commission at VNAIZ used the World's Fair results to justify a decision for an initial run of five thousand instruments.⁷² Such a run would be expensive—estimates put the cost of the V-9 at 7,470 rubles per instrument—but worthwhile.⁷³ Volodin had fielded requests to ship ten thousand Ekvodins to the United States alone, the commission's report claimed. As an absence of Ekvodins in American music schools and ensembles might suggest, however, these orders were never fulfilled, and officials at VNAIZ noted that the United States, like France, already had a booming electronic musical instrument industry. (The report mentions the Soviet purchase several years earlier of several Clavio-lines, an electronic keyboard instrument invented by the French engineer Constant Martin.)⁷⁴ But more than funding was required. Indeed, the commission called for a multipronged approach that included not just printed marketing materials for international audiences, but also endorsements from qualified performers (without specifying whom) and concerts.⁷⁵ Such an international undertaking, it is worth noting, seems never to have materialized. But the Soviet government did not give up on the instrument's international appeal. With an impressive 660 different combinations of tones, the V-11 was a centerpiece at the World Exhibition of Technology in New York City in 1959. With it, officials at the Ministry of Culture's Bureau of Radioelectronics published information booklets in Russian, English, French, and Japanese. Such attempts to market the Ekvodin, as unsuccessful as they may have ultimately been, are testament to the high esteem in which Volodin was held by the Ministry of Culture and show that they viewed the instrument as both a cultural tool and an international commodity (not to mention, of course, that foreign sales would bring much needed hard currency to the USSR).

Seeking to capitalize on these foreign sales, in 1960 the Ministry of Culture tasked Volodin to work with the All-Union Recording Studio to produce a demonstration album for both the V-9 and the V-11.⁷⁶ (Melodiya, the state recording company, would not be formed until 1964.) The A-side,

72. See RNMM, f. 420, op. 1, yed. khr. 3, l. 4.

73. In 1961 (the earliest year for which data is available), 7,470 Soviet rubles would have been roughly equivalent to \$20,000 today. Even this estimate, however, is questionable: the order is unclear as to whether these are "bank" or "currency" rubles, and conversion rates are particularly fickle given the currency reforms of the mid-twentieth century. For example, in a budget for composer Vladimir Ussachevsky's visit to the Soviet Union the very same year, the official Cosmos Travel Agency estimated a one-to-one dollar to ruble conversion ratio; see Unprocessed Vladimir Ussachevsky Archives, box "Business Materials 10," folder "Russia Trip 1961," Performing Arts Division, Library of Congress, Washington, DC.

74. RNMM, f. 420, op. 1, yed. khr. 3.

75. Such concerts often featured famous songs and lyrical pieces arranged for the instrument; for a list of such works selected by VNAIZ for performance, see the appendix, below.

76. *Elektromuzykal'nyi instrument Ekvodin*.

consisting of simple tunes and timbral explorations, demonstrates the many sounds the Ekvodin could produce. These included sounds that mimicked orchestral instruments like the violin, bassoon, and French horn as well as folk instruments like the duduk, surnay, and balalaika. Some of these timbral imitations were particularly convincing (the duduk and guitar stand out) while others, like the clarinet, were less successful. The B-side put these sonic potentialities into practice with an assortment of performances of Russian music that range from the folk song “Ne kukuet kukushechka” (The cuckoo isn’t cuckooing), played on the duduk setting, to an impressive demonstration of Nikolai Rimsky-Korsakov’s famous “Flight of the Bumblebee.”

But given the Ekvodin’s status as part musical instrument, part scientific experiment, no media were quite as effective in marketing it as the various popular scientific magazines for amateur hobbyists. Publications like *Tekhnika—molodezhi* (Technology—youth) and *Iunyi tekhnik* (Young technician) presented the Ekvodin both as a musical instrument—one with the potential to redefine the sounds of socialism—and as a technological product. Colorful illustrations of the inner and outer workings of the instrument reinforced its image as a modern marvel (see figures 3a and 3b).⁷⁷ This was “music for the twentieth century,” one headline declared: the perfect marriage of art and science, of aesthetics and technique.⁷⁸ These endorsements, targeted at the highly scientifically literate populace of the USSR, reiterated the belief that technological progress underpinned cultural progress, and that only through both spheres could Soviet socialism defeat Western capitalism in the Cold War.⁷⁹

Failure to Launch: The Il’ston

Not all electronic musical instruments or inventors were quite so warmly received by officials. The circuitous and ill-defined bureaucratic path that each new idea had to take gave the Ministry of Culture plenty of chances to reject designs and stymie production. A typical path from conception to production looked something like the following. When an engineer or technician at a radioelectronics factory came up with an idea, he could pitch it to his supervisors who, if intrigued, could give him the permission and materials to build a prototype. If the prototype was successful—either at first or through subsequent iterations—the inventor could request the support of his superiors to approach the Ministry of Culture’s Committee on Radioelectronics. Once additional minutiae had been bypassed, hoops jumped through, and

77. Figures 3a and 3b are reproduced from *Iunyi tekhnik*, 1959, no. 3, 49, 48.

78. “Muzyka XX veka.”

79. On scientific and technological literature, see Clark, “Changing Image,” and Graham, “Introduction: The Impact of Science.”

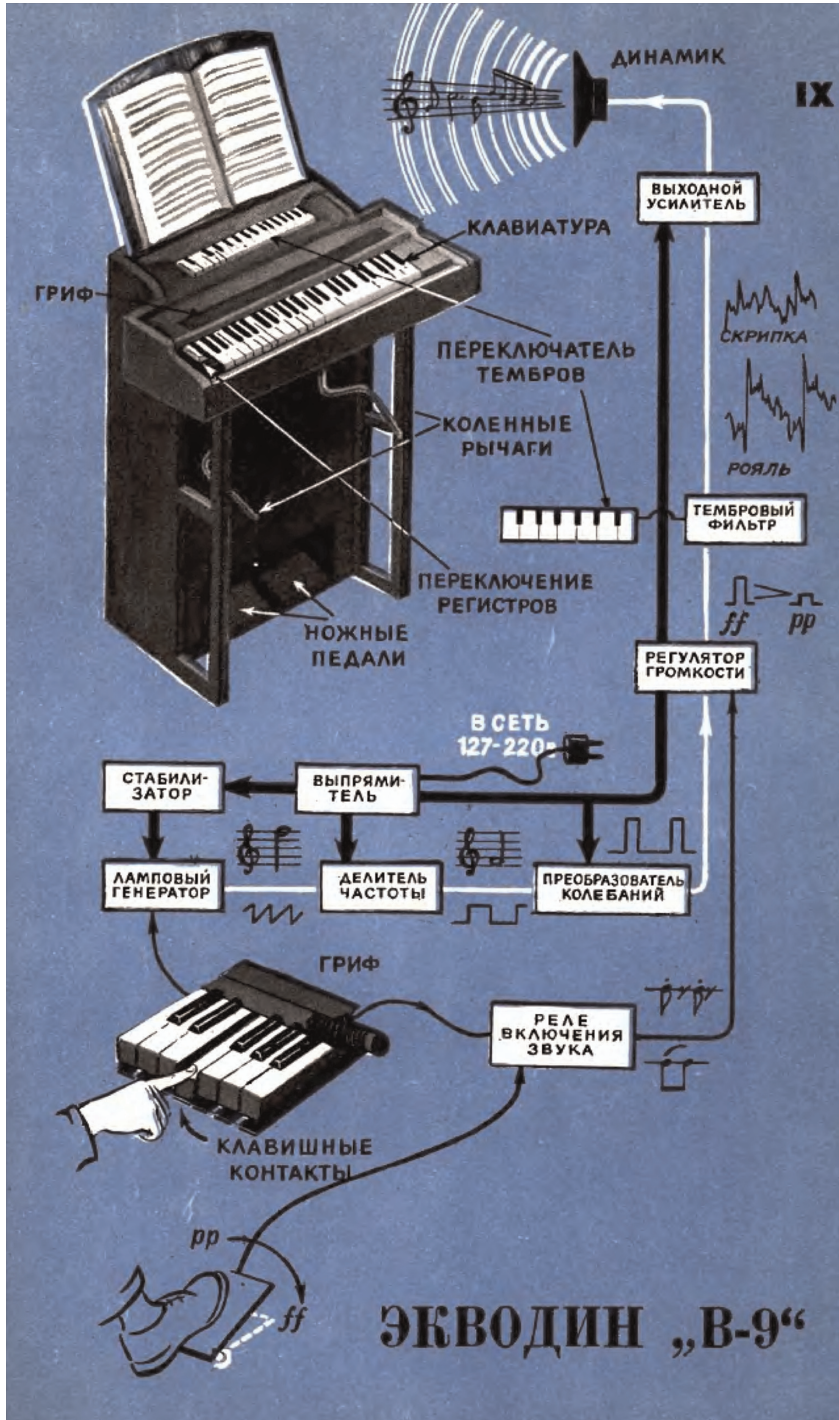


Figure 3a Illustration in *Iunyi tekhnika* (1959) showing the workings of the Ekvodin V-9.

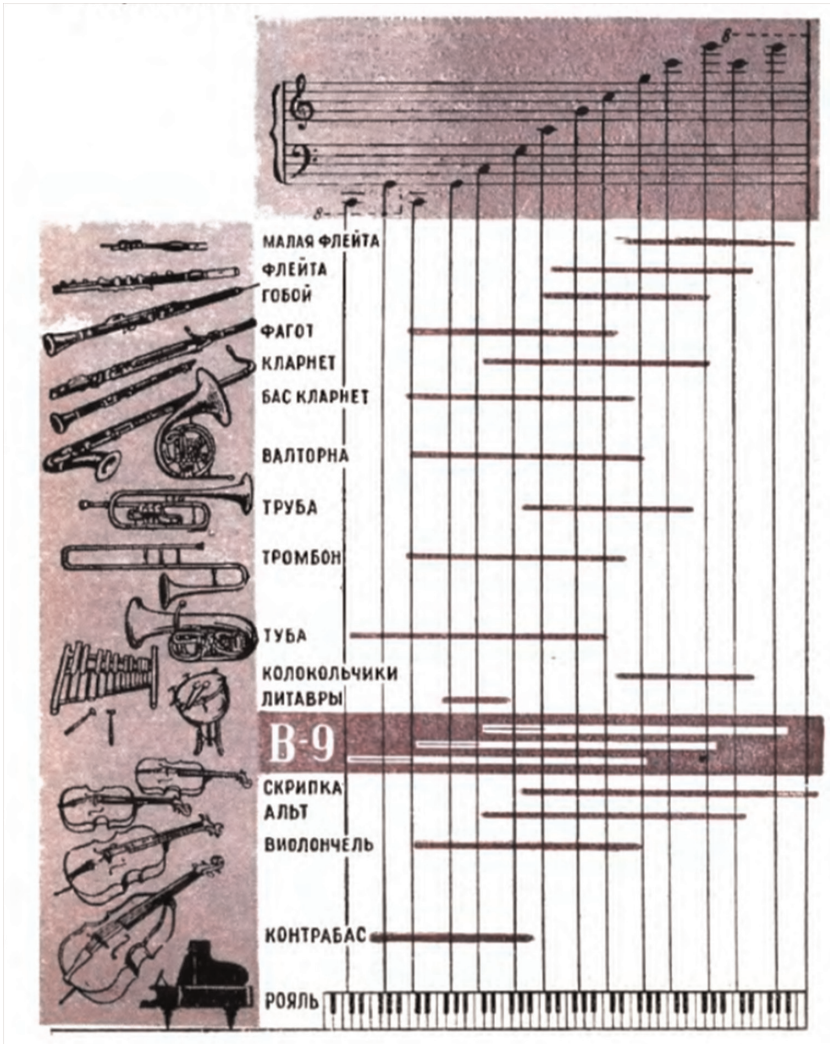


Figure 3b Illustration in *Iunyi tekhnika* (1959) showing the range of the Ekvodin V-9.

a thorough description of the technology written up, a panel of experts would judge the instrument for its potential contribution to musical culture, ease of production, and technological quality. Only then would the Ministry of Culture decide to support production of the instrument and the Ministry of Light Industry grant an Author's Certificate.⁸⁰ Ultimately, an instrument's success in this process came down to two primary qualities: novelty

80. I have reconstructed this process from a comparison of the Il'ston and Iunost' synthesizers in RGALI, f. 2329, op. 3, d. 1972.

and utility. If it too closely resembled an existing instrument, no case would be made for its creation. Likewise, if an instrument was perceived to take a technological step backward (such as using more vacuum tubes or weighing more), then it was deemed superfluous. Through these decisions about electronic musical instruments, we can trace a hierarchy of scientific, aesthetic, and sonic values that emerged in the Ministry of Culture's technological apparatuses. Like the music they were invented to play, these instruments needed to fulfill a socialist realist function that was both entertaining and useful, enjoyable and productive, intelligible and edifying.

Early misfires in the design and production of electronic musical instruments, then, prove instructive, even though the instruments never entered the everyday consciousness and listening contexts of ordinary Soviets. They illuminate the gaps in official aesthetic values, while simultaneously shedding light on the boundaries of the Ministry of Culture's rubric for judging electronic instruments, which, on the whole, presented a list of standards to be met rather than pitfalls to be avoided. Indeed, in many ways failed instruments demonstrate more about what made musical instruments successful than those instruments that actually succeeded in securing official support. Through it all, much like the notion of socialist realism itself, these aesthetic values were easily adapted and negotiated according to interpersonal connections and relationships. Categories of "uniqueness" and "innovation" were moving targets that could ebb and flow with bureaucrats' moods.

One early failure to launch was the Il'ston, an electric piano invented by the composer and circus artist Il'ia Grigorievich Il'sarov. Il'sarov's forays into instrument design dated back to 1929, when the monthly trade journal *Rabochii i teatr* (Workers and the theater) reported on his new musical inventions. He had enjoyed a prominent compositional career before the 1917 Revolution, though he struggled to make his mass music and worker songs stand out in the 1920s. In consequence, Il'sarov withdrew from composition and performance and instead devoted himself to invention.⁸¹ The earliest iteration of the Il'ston closely mimicked the mechanics of the Theremin, with two electromagnetic axes that enabled the performer to craft continuous melodies and glissandi. But Il'sarov ran into trouble shortly after his featured profile in *Rabochii i teatr*, when the specialist magazine *Tsirk i estrada* (Circus and popular song) ran an article called "Inventor or Swindler," in which the author accused Il'sarov of copying an instrument design from another circus performer, identified only by the family name of Slezkin.⁸² The article harshly concluded that in his brief period of fame, Il'sarov had attained "no place among artists" and had "deceived both the public and

81. This biographical information, from *Rabochii i teatr* 19 (1929), is reproduced in Kravchinskii, *Pesni i razvlecheniia epokha NEPa*, 697.

82. See *ibid.*

the state.”⁸³ As a result of the publication of the *Tsirk i estrada* article, Il’sarov was unable to secure performance opportunities for nearly a year, until finally, in 1930, the Leningrad-based journal *Novyi zritel’* (New audience) published an article in his defense. It explained that Il’sarov had worked alongside Slezkin, an instrument maker, and that it had been a collaborative process from the start.⁸⁴ The author’s advocacy made a difference, and Il’sarov was once again able to secure performance opportunities.

It was not until decades later that Il’sarov caught the attention of the Ministry of Culture—and then with an instrument that barely resembled the original iteration of the Il’ston. Rather than imitating the Theremin’s technological design, by the end of the 1950s the updated Il’ston had become a small, lightweight electric keyboard. This version made its way into the popular scientific press, where authors praised it for its utility. Writing for *Tekhnika—molodezhi* in 1960, Vladimir Orlov placed the Il’ston on an equal footing with the Ekvodin V-9, even praising the Il’ston’s portability and simplicity by comparison with the V-9.⁸⁵ And the instrument would receive top billing in an article published in the magazine *Smena* (Change) that same year, in which, in effusive metaphors, author Vasilii Zakharchenko juxtaposed the aging Il’sarov with the modern sounds of his instrument.⁸⁶ The photograph that accompanied the article reinforced this unconventional pairing: it featured a balding Il’sarov sitting at a baby grand piano—a symbol of traditional musical aesthetics—while playing a sleek Il’ston perched on the piano’s lid (see figure 4). Zakharchenko’s article is a study in contrasts: the “pensive,” “elderly” Il’sarov shows off an old photo album, one “turned yellow by time,” while sitting at a series of small, shiny boxes connected by wires. “Understand me,” Il’sarov says—*slowly*, noted Zakharchenko. “This is only the beginning.”⁸⁷

Past, present, and future: notions of time and progress underscored the whole of Zakharchenko’s article. Setting primordial drums and Paganini’s violin in dialogue with the Il’ston, he argued that electronic music—and synthesized timbres specifically—represented the natural next step in musical evolution. Il’sarov freely admitted his shortcomings and age: “I am not a master. I do not know how to make musical instruments. But I love this work and dream of perfecting it, and I need help [in doing so]. It’s hard to work alone, and I’m just an amateur with regard to electronics. I’d like to pass [the Il’ston] on to reliable hands!” Continuing, the two men speculated as to what sonic boundaries might be the next to be broken down. “We think about that wonderful time,” Zakharchenko reflected wistfully, “when,

83. Quoted *ibid.*, 699: “Ильсарову не место среди работников искусств. Он обманул и государство, и общественность.”

84. See *ibid.*, 696–99.

85. Orlov, “Na puti k elektromuzyke.”

86. Zakharchenko, “Razgovor u elektronnoogo roialia.”

87. *Ibid.*, 12: “Поймите меня, это только начало.”



Figure 4 Il'sarov at the Il'ston

in a broad torrent, all the achievements of human thought will gush as vigorously into our art as they do into other areas of our lives. Scriabin once dreamt of a 'music of lights' [*svetomuzyka*], and now the engineer [Konstantin] Leontiev is already designing the light-music of tomorrow—a flickering combination of sound and color.” Until that time in the (hopefully) not so distant future, the author bemoaned, Il'sarov would sit by himself at the Il'ston. No one from the government, he noted sadly, seemed to have any interest in assisting the wizened inventor.⁸⁸

Spurred by complaints like Zakharchenko's, the Ministry of Culture eventually heeded calls to help Il'sarov, though by then it was too late: Il'sarov died in 1962, before officials were able to come to any sort of decision

88. *Ibid.*, 13: “Я не мастер, я не умею делать музыкальные инструменты. Но я люблю это дело, мечтаю довести его до конца, и мне нужна помощь. Одному трудно работать, да и в электронике я лишь любитель. Как бы хотелось передать в надежные руки то, чему я посвятил многие годы! Мы сидим и мечтаем о будущем. Мы думаем о том замечательном времени, когда в наше искусство так же энергично, как и в другие области жизни, широким потоком хлынут все достижения человеческой мысли. Некогда Скрябин мечтал о светомузыке. Сейчас инженер К. Леонтьев уже проектирует светомузыку завтрашнего дня — трепетное сочетание звука и цвета.”

about the instrument's value.⁸⁹ The next year, the Ministry of Culture resumed talks about licensing the instrument at the request of F. Bardian and Z. Vartanian, colleagues of Il'sarov who had petitioned the ministry on behalf of his widow.⁹⁰ Echoing earlier arguments used to lobby the ministry for the instrument's production, the two men suggested that the light weight of the Il'ston would enable it to be easily sent to both amateur and professional ensembles—especially circuses—in more rural parts of the country. For compensation, they requested that the ministry give Il'sarov's widow 10,000 rubles in exchange for two ready-made versions of the Il'ston and all extant technical documentation—a hefty sum, no doubt. Perhaps because of such demands, talks stalled once again, until Bardian and Vartanian followed up in January 1964. At that point, they encountered a bureaucratic villain, Ivan Tsvetkov, who somewhat controversially asserted that rather than put time and money into the Il'ston, the Soviet Union might be better served by purchasing a comparable instrument from abroad (specifically from the German Democratic Republic).⁹¹ Yet Il'sarov's widow's advocates stood up to Tsvetkov's perceived lack of patriotism: "According to current practice," Bardian and Vartanian argued, "all inventors must receive appropriate compensation from the state if their inventions are implemented." Failure by the Ministry of Culture to pass that compensation on to Il'sarov's widow would mean that the state was neither caring for its citizens nor doing what it needed to do to cultivate scientific growth at home.⁹²

Eager to dispel doubts about its concern for citizen welfare, the Ministry of Culture formed a committee of experts that included Termen and Evgenii Murzin, inventor of the ANS synthesizer, to evaluate the Il'ston. The process took several months, and in November 1964 the committee wrote to Bardian and Vartanian to inform them that it would be several months more before they reached a decision; they were waiting for the Ministry of Finance to complete its budget for 1965.⁹³ Finally, in June 1965, the bureaucratic slog came to an end when the committee recommended that the ministry *not* commission (i.e., financially sponsor and allow mass production of) the Il'ston. True, the instrument was lightweight and convenient, but it lacked

89. Zakharchenko would mourn Il'sarov—and the neglect of his instrument—several years later in a summary of electronic musical developments: Zakharchenko, "Tekhnika zametki pisatel'ia."

90. RGALI, f. 2329, op. 3, d. 1972, ll. 3–5. Unfortunately, the letter submitted to the ministry by Bardian and Vartanian lists only Il'sarov's wife's initials, S. I., and not her first name or patronymic.

91. RGALI, f. 2329, op. 3, d. 1972, l. 4. This document does not specify which instrument from the GDR Tsvetkov had in mind.

92. RGALI, f. 2329, op. 3, d. 1972, l. 5: "По существующему положению все изобретатели получают соответствующее вознаграждение от государства, если их изобретения принимаются и реализуются на практике."

93. RGALI, f. 2329, op. 3, d. 1972, l. 6.

the timbral possibilities afforded by other electronic keyboards. It was only as useful as it was sonically new. Moreover, the Il'ston's design, the committee cautioned, too closely resembled previously designed instruments from the 1950s in the United States.⁹⁴ "Paying the deepest respect for I. G. Il'sarov's purposeful and useful promotion of new musical instruments," they concluded, "representatives of the Acoustics Laboratory believe that, in connection with the rapid development of radio technology and electronics, there are real opportunities to create far more sophisticated electronic musical instruments at the present time, with regard to both the technical as well as musical aspects."⁹⁵ Convenience was only one part of the equation: without proper attention to sound—and above all timbre—the instrument was doomed to obsolescence before it even arrived on the factory floor.

As the dust settled around the Il'ston, the committee pointed to the Iunost' (Youth), a polyphonic electric keyboard in the early stages of development at a factory in Murom, as the future of Soviet electronic music.⁹⁶ The Iunost' was heavier than the Il'ston but still portable, which made it well suited to amateur and cultural clubs around the country. Importantly, however, the Iunost' was capable of producing a wide variety of timbres that both imitated existing orchestral instruments and sounded entirely new.⁹⁷ The instrument thus marked a decisive step forward in the development of electronic keyboards in the USSR—an instrument that was still user-friendly but could produce a seemingly limitless quantity of new sounds. In the end, the Il'ston might have looked and felt modern, but it did not sound it.

Failure to Launch: *Poem about Space*

If the Il'ston was doomed by insufficient innovation, then Alfred Schnittke's *Poem about Space* failed for an excess of it. Written in 1961 as part of the composer's graduate study at the Moscow Conservatory, the *Poem about*

94. It is not immediately clear to which American instrument the committee is referring. A preliminary examination suggests that it may have been the Clavivox (1952). Termen would also have certainly been aware of developments relating to the RCA Mark I and Mark II synthesizers, and so it is possible that the committee had in mind specific techniques of sound synthesis rather than physical instrument design.

95. RGALI, f. 2329, op. 3, d. 1972, ll. 7–8: "Отдавая дань глубокого уважения целеустремленной и полезной деятельности И. Г. Ильсарова по пропаганде новых музыкальных средств, представители Акустической лаборатории считают, что в настоящее время в связи с бурным ростом радио-техники и электроники имеются реальные возможности для создания значительно более совершенных в техническом и музыкальном отношении электромзыкальных инструментов."

96. The Iunost' would go on to become one of the most popular electronic keyboards in the Soviet Union; see, for example, Gazarian, "Golosa elektroniki."

97. See RGALI, f. 2329, op. 3, d. 1972, ll. 9–12.

Space incorporated a variety of electronic instruments, including the Ekvodin and Theremin, alongside a small chamber orchestra.⁹⁸ Although commissioned by the Ministry of Culture—likely in celebration of Soviet successes in the space race—the work was never performed.⁹⁹ Even Shostakovich denounced the piece for its “old-fashioned modernism,” despite having eagerly announced its upcoming composition in *Pravda* earlier that year.¹⁰⁰ The Composers’ Union, too, which Schnittke had only recently joined, panned it. Schnittke later suggested that the *Poem*’s failure earned him a place on a “blacklist” within the Composers’ Union.¹⁰¹ His foray into music on “official subjects,” which he saw as inevitably doomed despite having begun just a few years earlier, would steadily decline after the *Poem*.¹⁰² Thus when Luigi Nono visited Moscow in 1962 and brought with him his dodecaphonic compositions, it was no great leap for Schnittke to leave the dicta of the Moscow Conservatory behind and embrace serialism.¹⁰³ The *Poem about Space* sat untouched, collecting dust.

The *Poem* was not Schnittke’s first foray into electronic music composition nor would it be his last, but it was certainly the composition that drew the most scrutiny from the Composers’ Union. Schnittke had worked with Meshcherin’s ensemble on his Concerto for electric instruments, completed in 1960, which called for Theremin, Shumaphone (“noisephone” in Russian, a monophonic electronic instrument), Crystadin (a sort of radio receiver), an electric keyboard, and four Ekvodins.¹⁰⁴ The concerto shares some features with the *Poem*—namely, an interplay between instrumental voices and repetitive ostinato figures—but it also sounds more focused and traditionally orchestrated, in that the instruments trade soloistic passages and melodies rather than combining to explore new harmonic possibilities, as in the *Poem*. The concerto, however, was not performed until it was rediscovered and

98. Schnittke’s *Poem about Space* exists as an autograph held at the Alexander Ivashkin–Alfred Schnittke Archive, Special Collections & Archives, Goldsmiths, University of London.

99. The work is mentioned in a list of Composers’ Union commissions in RGALI, f. 2077, op. 1, d. 1908, l. 33, and RGALI, f. 2077, op. 1, d. 1909, l. 145.

100. On Shostakovich’s denunciation, see Schnittke, *Schnittke Reader*, xx. For his earlier celebration of the piece, see Shostakovich, “Muzyka i sovremennost’.” Shostakovich had previously defended Schnittke’s *Nagasaki* against claims of modernism, even helping facilitate a recording of the work in 1959; see Schmelz, *Such Freedom*, 38. On the domestic and international reception of *Nagasaki*, see Schmelz, “Alfred Schnittke’s *Nagasaki*.”

101. See Kholopova, *Kompozitor Alfred Shnitke*, 66.

102. See Shnitke and Shul’gin, *Gody neizvestnosti Alfreda Shmitke*, 17.

103. Nono enjoyed a unique place among both official and unofficial Soviet composers. On one hand, a fervent Communist, he aligned with official ideological causes. On the other, Nono’s devotion to avant-garde musical techniques made him an icon among the younger generation of unofficial composers. See Schmelz, *Such Freedom*, 62.

104. Sketches for the work are available through the Alexander Ivashkin–Alfred Schnittke Archive, Special Collections & Archives, Goldsmiths, University of London. I am grateful to Lesley Ruthven for her help in accessing these materials.

reconstructed by Alexander Ivashkin in 2009.¹⁰⁵ Several years after he tabled the *Poem*, Schnittke returned to electronic music at the MESEM, where in 1969 he composed a six-minute-long electroacoustic work titled *Stream* (*Potok*) on the ANS synthesizer.¹⁰⁶ As in the *Poem*, Schnittke explored new timbral combinations in *Stream*,¹⁰⁷ which suited the ANS: the instrument had a range of twelve octaves and, with its visual interface on which composers could “draw” sound, resembled a spectrogram.¹⁰⁸ Yet this work, too, differed from the *Poem* not only in instrumentation but also in compositional approach. *Stream* is less a programmatic piece than an exploration of natural and artificial sounds, and sounds more like a study of the ANS than any sort of triumphant (or not so triumphant) narrative.

Even though the *Poem about Space* was ultimately seen as falling short, Schnittke privileged programmatic elements in the work in a way that seemed to align with the aesthetics of socialist realism. The fervor that grew around the Soviet space program—both organically and through careful state curation—approached that of religious ecstasy.¹⁰⁹ The magnitude of Soviet successes in the cosmos was not lost on Schnittke, who claimed that in the *Poem* he had sought to amplify the “relationship between the dead [*mertvoi*] nature of the cosmos and humankind, which [was] fighting for its development.”¹¹⁰ The conquest of the cosmos inspired experimentation by many artists, writers, and composers, and Schnittke was no exception.¹¹¹ Insofar as it encompassed both the dead and the living—the vacant and the abundant—space provided a valuable *tabula rasa* for Schnittke’s forays into electronic music.¹¹²

Taking advantage of these new electronic soundworlds, the *Poem* is, at its core, a meditation on the acoustic properties of the overtone series. In keeping with the spirit of scientific exploration, Schnittke drew on techniques outside of traditional melody and harmony. Unlike his earlier *Nagasaki* (1958–59), which, despite having proved contentious among certain factions within the Composers’ Union, still foregrounded narrative and text,

105. It was premiered as part of the London Philharmonic’s Schnittke Festival at the Southbank Centre on November 22, 2009.

106. See Schmelz, “From Scriabin to Pink Floyd,” 263.

107. See Schnittke and Shul’gin, *Gody neizvestnosti Al’freda Smitke*, 57.

108. See Kholopova and Chigareva, *Al’fred Smitke*, 45–46.

109. On the popular obsession with Yuri Gagarin as a hero of the Soviet Union, see Jenks, “Conquering Space,” 136.

110. Quoted in Kholopova and Chigareva, *Al’fred Smitke*, 10: “соотношение мертвой природы космоса и человека, борющегося за его освоение.”

111. See Cornish, “Music and the Making of the Cosmonaut Everyman,” 465–67.

112. Kholopova and Chigareva claim that the *Poem about Space* was “experimental” in its pursuit of the depiction of cosmic conquest: Kholopova and Chigareva, *Al’fred Smitke*, 10. Even in its program, the *Poem* anticipates the composer’s later spiritual inclinations, such as his conversion to Catholicism in 1982 and his interest in theosophy, which manifested in works like *Zheltyi zvuk* (The yellow sound, 1974).

the *Poem* probed the limits of modernist compositional techniques. As Schnittke later recounted to musicologist Dmitrii Shul'gin,

What I continued to be interested in [after *Poem about Space*], and would somehow be expressed later on, was how the chords were fashioned from high overtones up to the fifteenth, as well as the dialogue between the tutti and organ, somewhat resembling the climax of the finale of the fourth movement of the symphony. In the outer parts [of the *Poem*], electronic instruments are used fairly successfully: the Ekvadin [*sic*] (a monophonic type of electric organ), the campanola (polyphonic), the Theremin, and the multivoice “tuning fork piano” [*kamertonnoe pianino*], which was the best among them on account of its excellent timbral possibilities. There was also an electronic piano. Each of these instruments is based, in one way or another, on the inclusion of a specific overtone spectrum—like any organ. It was interesting for me to connect the vertical range [*vertikal'*] of the orchestra with these instruments through the use of chords consisting of many pitches that drew on the high overtones.¹¹³

Mirroring responses to the Ekvadin in Brussels that had emphasized both its aesthetic and its technological merits, the *Poem about Space* bridges the gap between art and science. The piece is more about timbre than about any narrative of cosmic conquest. Space sounds electronic, dense, atmospheric: not merely heroic or triumphant. In this sense, the *Poem* foreshadowed many spectralist experiments in composition that would take place in Western Europe and America in the 1970s. It also connects Schnittke to a broader Eastern European fascination with sound and sonority at the time.¹¹⁴

The *Poem* is structured around the overtone series, which unfolds over a succession of five segments that ebb and flow in a sort of weightless dance (see table 2). The introduction, extending to rehearsal 8, gradually unfurls as instruments combine in dissonant pairings. This nebulous organization of the overtones is then reprised in the coda (rehearsal 57). Following the

113. Shnitke and Shul'gin, *Gody neizvestnosti Alfreda Smitke*, 35: “Что интересным осталось здесь для меня и как-то сказалось потом, так это аккорды, построенные из высоких обертонов вплоть до пятнадцатого и, кроме того, некий диалог tutti и органа, похожий отчасти на кульминацию в финале четвертой части симфонии. В крайних частях довольно успешно использованы электронные инструменты: эквадин (одноголосный вид электрооргана), кампанолла (многоголосный), терменвокс и многоголосный инструмент — камертонное пианино — наилучший среди них с прекрасными тембровыми возможностями; есть также и электрофортепиано. Все эти инструменты так или иначе основаны, как и всякий орган, на включении определенного обертонового спектра, и мне было интересно связать вертикаль в оркестре с этими инструментами через использование в оркестре многозвучных аккордов из высоких обертонов.” Schnittke does not specify which symphony he is referring to here, but it is probably his Symphony no. 0, which was the only one he had composed at the time of this interview with Shul'gin.

114. See, for example, the sonorist works of Polish composers like Górecki, Penderecki, and Lutoslawski, as well as pieces like *Atmosphères* by Hungarian composer György Ligeti. On the ways in which Ligeti's acoustic compositions influenced his electronic works, see Iverson, “Learning the Studio.”

Table 2 Structure of Schnittke's *Poem about Space*

Section	Rehearsal number	Textures	Characteristics
Introduction	0	Sparse; growing	Twelve-tone oscillations
Section A	8	Full brass; building to full orchestra	Minor and major seconds; percussive
Section B	18	Sparse; woodwinds; builds to full orchestra around rehearsal 42	Atmospheric; irregular meters
Section C	43	Begins <i>piano</i> with sparse instrumentation; grows steadily to full orchestra	<i>Maestoso</i> ; solo electroorgan chords
Coda	57	Wide, open chords in winds tracing harmonic overtone series, underscored by eighth-note patterns in keyboards	Repeating thematic material from introduction; completes twelve-tone aggregate

introduction, Schnittke scores a triumphant brass announcement (marked “*maestoso*”), which introduces the primary tonal center of the *Poem*: a tenuous C, with a pedal in the timpani and low brass that the trumpets and trombones, ascending chromatically from D and C respectively, unsettle. Anchored between the C pedal and octave Gs in the horns, these chromatic ascents fill the orchestra with the resonances of the overtone series. (Just as he reprises the introduction in the coda, so Schnittke recalls this moment later in the *Poem*, at rehearsal 43, where he once again elaborates on major and minor seconds between instruments.) Harmonic exploration gives way to rhythmic variation, as driving percussion and changing meters begin the Allegro section at rehearsal 10. Together, these elements imply a narrative ascent—one befitting the conquest of the cosmos.

Schnittke combines these atmospheric moments with twelve-tone rows, though he treats serial procedures loosely rather than strictly. A tone row gradually unfolds between the first two themes (see example 1a).¹¹⁵ The opening theme, occurring in the electroorgan, traces the first eight pitch classes of the row: B \flat , A, A \flat , G, B, C, G \flat , and F (see example 1b). After several repeats, the contrabassoon and Polifon introduce the remaining four pitches in the row: C \sharp , D \sharp , E, and D (see example 1c). These four pitches rest atop the organ's theme, outlining a minor third between the two lines (B \flat and C \sharp /D \flat). Notably, too, Schnittke sets into motion an isorhythmic pattern in these four pitches: a dotted half note followed by two dotted quarter notes. This durational pattern repeats, such that the four pitches change position in the measure with each iteration. These ostinato serial rotations permeate the entire work, often signaling the beginning of a major textural build oriented around the overtone series. When these different

115. Examples 1a–d are transcribed from Schnittke's autograph manuscript; see note 98 above.

Example 1a Schnittke, *Poem about Space*, twelve-tone row condensed and transposed (row in gray note heads)

Example 1b Schnittke, *Poem about Space*, opening theme in electroorgan (mm. 1–4)

Example 1c Schnittke, *Poem about Space*, presentation of the row at rehearsal 1

rotations (between the contrabassoon/Polifon and organ in example 1c) align, they coincide with the major structural moments noted in table 2.

All the while, strings and a Shumaphone (set to a pitched wind sound) add ornamentation. And yet, almost as soon as it appears, the tone row begins to dissolve at rehearsal 2 (see example 1d). Entering with descending major thirds, the cello breaks the tone row into sets of four pitches ([E \flat , G, D, F \sharp] and [D \flat , F, C, E]), before ascending on [A, G \flat , B \flat]. The electroorgan then follows the cello at a major third below. With the

Example 1d Schnittke, *Poem about Space*, dissolution of the row at rehearsal 2

The musical score for Example 1d is presented in three systems. The first system, marked with a rehearsal sign '2', shows the beginning of the passage. The Contrabassoon and Polifon part (bass clef) starts with a series of notes: G2, A2, B2, C3, D3, E3, F3, G3, A3, B3, C4, D4. The Electroorgan part (treble and bass clefs) plays a complex melodic line. The Violoncello part (bass clef) plays a series of chords: G2, A2, B2, C3, D3, E3, F3, G3, A3, B3, C4, D4. The second system, marked with a rehearsal sign '5', continues the passage. The Contrabassoon and Polifon part continues with notes: E3, F3, G3, A3, B3, C4, D4, E4, F4, G4, A4, B4, C5. The Electroorgan part continues with a complex melodic line. The Violoncello part continues with chords: G2, A2, B2, C3, D3, E3, F3, G3, A3, B3, C4, D4.

harmonic center now gesturing toward E-flat, the inclusion of the C \sharp /D \flat in the contrabassoon and Polifon outlines a series of seventh chords.¹¹⁶ Our twelve-tone row—which was, from the outset, a guiding idea rather than a prescription—evaporates into quasi-tonal harmony. This mixture of compositional affinities is not altogether surprising: Schnittke would have been aware of twelve-tone experiments taking place in Moscow’s so-called “second conservatory,” a group of young composers led by Andrey Volkonsky who explored serialist techniques.¹¹⁷ In many ways, Schnittke’s compositional language can be heard very clearly in the *Poem*, and his attention to the orchestration presages his later works. But it is clear, too, both from the opening of *Poem about Space* and from Schnittke’s reflections decades later, that the young composer sought to

116. Grappling with the triad in his atonal works for many years, Schnittke would begin to formalize his compositional approaches in the 1970s; see Segall, “Alfred Schnittke’s Triadic Practice.”

117. See Schmelz, “Andrey Volkonsky.”

combine the necessary narrative of socialist realism with these new, abstract techniques.

Schnittke's exploration of electronic timbres and the overtone series comes to a head in the *Poem's* final sections. Beginning at rehearsal 52, he treats listeners to stacked perfect fifths that begin on F (through C, G, D, and A). He intensifies stacked fifths at rehearsal 54 (see figure 5), when a

The image shows a page of handwritten musical notation for rehearsal 54. At the top, it is marked with a rehearsal number '8' and a dynamic marking 'ff (54)'. The score consists of several systems of staves. The upper systems contain complex rhythmic patterns with notes and rests. A section is marked with a large 'ff' and the handwritten note '(boom, explosive attack)'. Below this, there is a section for 'Organ' with a 'solo' marking and a 'ff' dynamic. The score is written in a dense, handwritten style with various musical notations including notes, rests, and dynamic markings.

Figure 5 Schnittke, *Poem about Space*, autograph, first of organ hits at rehearsal 54. © Schnittke Estate. Used by permission of the Schnittke Estate and Special Collections & Archives, Goldsmiths, University of London.

series of three massive chords in the electroorgan punctures the orchestra's surface to sound first a D-flat¹³ chord, then an F minor seventh against C major seventh chord, and finally a B-flat major seventh against C minor chord. With the coda at rehearsal 57, however, these jarring polytonalities give way to the opening theme in the electroorgan, electropiano, and Polifon. Gradually, the theme becomes stretched out before ending with a C pedal and F in the right hand of the electroorgan while the remaining electronic instruments play every note in the chromatic scale (see figure 6). The final chord is dissonant—as nonfunctional as a chord could be—but firmly grounded above the organ's C pedal. It is, in this way, an exploration of sound itself. The cosmos encompasses everything, including all audible tones, and is simultaneously intransigent and transparent. More than any serial rotation or pitch set, it is the massive potential of sound—in all its acoustic properties—that bookends the *Poem*.

Clearly, however, the Composers' Union did not hear the cosmos in Schnittke's overtone meditation. The *Poem about Space* thus reveals one of the central paradoxes of Soviet electronic music: timbres could be modern, as they were in the case of the Ekvodin, but the works themselves still needed to be intelligible and grounded in traditional musical forms and narrative. The relationship between timbre, modernism, and socialist realism was still complex—and still political. Socialist in form, intergalactic in content.

Timbral Politics and Political Timbres

Of course, Schnittke's piece was never performed, let alone recorded and shared with the broader Soviet public. Like the Il'ston, it was a misfire in Soviet electronic music. But for Soviet music—and indeed for Soviet socialism as both idea and ideology—to sound modern, it needed to do just that: it needed to *sound*. Even if Schnittke's piece had succeeded in clearing the censors, there was no guarantee that it would have found a listener base—especially outside of the intelligentsia. Given the demands in instrumentation and performance, the *Poem about Space* might have sounded once in a Moscow concert hall, only to never sound again. Even if his work had literally sounded, electronic music might never have gained a broader resonance and instead remained an experimental hobby for a few curious composers.

Yet, thanks to “light music” ensembles like Viacheslav Meshcherin's Ensemble of Electromusical Instruments, electronic music did find a foothold among the Soviet public.¹¹⁸ Founded in 1957, the ensemble initially

118. “Light music” (*legkaia muzyka*) was a designation used within the Composers' Union to denote nonsymphonic or nonoperatic compositions that were considered more “popular” or “entertaining” than edifying.

Figure 6 Schnittke, *Poem about Space*, autograph, final measures. © Schnittke Estate. Used by permission of the Schnittke Estate and Special Collections & Archives, Goldsmiths, University of London.

rehearsed at VNAIZ, though they did so informally without any significant oversight.¹¹⁹ Meshcherin, who had studied composition during secondary

119. See “V bratskikh respublikakh.”

school at the Gnessin Institute, became an engineer and was intrigued by musical technologies after World War II.¹²⁰ He began to experiment with amplifying traditional instruments (guitars, accordions, even balalaikas) while working for the All-Union Radio. In the mid-1950s, however, he founded the ensemble with friends and sought out more advanced electronic instruments like the Ekvodin, the Theremin, and others.¹²¹ With its metallic timbres, futuristic instruments, and easygoing melodies, Meshcherin's ensemble fitted in perfectly with the age of cosmonauts and new frontiers. By setting catchy tunes to danceable rhythms like the bossa nova and the waltz, Meshcherin created music that was just as easy to listen to on the television as it was to have playing in the background while doing household chores. The ensemble was a staple in Soviet daily life: it was piped into shopping areas, public parks, factories, cafeterias, and the home via television and radio shows. It was, in many ways, a socialist version of Muzak, and as such it turned the Soviet landscape into a pseudo-musical score.¹²² Yet as much as the ensemble was heard everywhere, it remained mostly anonymous. As composer Polina Skovoroda-Shepherd later recalled in an interview, "We all knew this music, but we never knew who the [composer] was. . . . We didn't necessarily know his name, but he was present in everyone's life, every day's life of every person in the Soviet Union."¹²³ Meshcherin's music was a world away from Schnittke's, despite deploying similar timbres. With easy-to-sing melodies and simple harmonies, listeners could focus on the timbres themselves, rather than try to wade through layers of dense harmonies and textures. Meshcherin's music was, to bureaucrats and listeners alike, the sound of socialist modernity: easy, leisurely, and out of this world.

Indeed, even the KGB is said to have recognized the many resonances between Meshcherin's music and the new socialist everyday life during the Thaw. The organization allegedly approached Meshcherin in 1957 to record

120. Meshcherin was actually sent to the front as punishment after being accused of trespassing in abandoned apartments during the war. (He himself claimed to have been collecting a roster of present and missing individuals who studied at Gnessin.) For the case file, see GARF, f. 7863, op. 6, d. 3933.

121. For information on the ensemble as well as interviews with Soviet music critics and Meshcherin's widow Liuba, see Charles Maynes, "File under Soviet Bizarre: Vyacheslav Meshcherin's Orchestra of Electro-Musical Instruments," Third Coast International Audio Festival, 2004, <http://www.thirdcoastfestival.org/explore/feature/file-under-soviet-bizarre-vyacheslav-mescherins-orchestra-of-electro-musical-instruments>. At the time of writing, the whereabouts of Liuba Meshcherin are unknown and I have not therefore been able to reach out for an interview.

122. Gregory Camp has similarly argued that the Muzak of Walt Disney World turned the park into "the most complex musical text in history: a forty-square-mile space in which everything has a score": Camp, "Mickey Mouse Muzak," 53. On Muzak as a cultural and aesthetic phenomenon, see Anderson, "Neo-Muzak"; Jones and Schumacher, "Muzak"; Lanza, *Elevator Music*; and Radano, "Interpreting Muzak."

123. Interview in Tim Key, "Tim Key's Easy USSR," BBC Radio 4, November 16, 2013, <http://www.bbc.co.uk/programmes/b03h30gb>.

a rendition of the “Internationale”—socialism’s sonic calling card—to send into space aboard Sputnik. Although there is no official record of this (at least not one available to scholars), the myth remains strongly attached to the ensemble to this day.¹²⁴ More importantly, though, the association with the KGB, be it literal or mythologized, might well have afforded the ensemble state resources and official support. The group soon moved to All-Union Radio and Television, which oversaw its administration, expansion, and promotion throughout the country. It quickly became a regular fixture in television and radio programming, with featured performances for holidays and special events.¹²⁵

Regardless of whether the KGB had approached the ensemble to record the “Internationale” to send aboard Sputnik, Meshcherin’s association with the Soviet space program in the popular imagination was undeniable. As his widow Liuba Meshcherin recounted, “The cosmonauts were all close to the band, I think, because space produced in them a new set of emotions, a new set of colors that they felt there, up in the sky. After that, maybe simple earthbound music wasn’t enough for them.”¹²⁶ Alexei Leonov, the first man to make a space walk, reiterated this idea in greater detail:

Space travel coincided with the emergence of electronic music—synthesized music. I used to invite Viacheslav Meshcherin to my house when I lived at the Chkalovsky Center for testing flight technology. We showed him our training rockets, he even sat in one. We sent music into space for pilots to listen to during long flights, including Meshcherin’s music. And by the time we flew to the space station we had a cassette player with a big memory and recordings by the Meshcherin ensemble. It corresponded perfectly to the feeling you got of being on a space station in orbit. I floated freely and around me enveloping me was Meshcherin’s music. No other kind of music goes so well with the feeling of weightlessness that a person has in space. There are ventilators that never stopped running, and every ventilator produces a certain sound, and suddenly you start hearing Meshcherin’s music inside your head. Not Scriabin or a Prokofiev symphony, but electronic music as if it was written into the sound of the ventilators. Then you shake your head, all you hear is humming—just a noise.¹²⁷

Buoyed by its association with the successes of the Soviet space program, the ensemble remained an officially sponsored group in the Soviet musical ecosystem for decades until its dissolution in 1991.

Weightlessness, ventilators, and planetary orbits: perhaps Leonov had a track like “Persistent Robot” in mind during his reminiscences about Meshcherin.

124. See Ivanov, “Viacheslav Meshcherin.”

125. Others have pointed to ways in which perceived KGB connections could open opportunities for creative individuals or divert attention from problematic behaviors among those associated with the Soviet hippie and disco movements of the 1960s and 1970s; see Zhuk, *Rock and Roll*, 170–71, and Karnes, *Sounds Beyond*, 38.

126. Interview in Maynes, “File under Soviet Bizarre.”

127. Interview in Key, “Tim Key’s Easy USSR.”

Beginning with a series of ethereal, cosmic arpeggios on synthesizer, the song quickly builds into an up-tempo mix of fun and rock 'n' roll—cloaked in round, metallic timbres, phasing drum machine beats, and decidedly 8-bit quality. “Persistent Robot” follows a straightforward form: it consists of alternating sections that are separated by either drum fills or the gentle ticking of synthesized temple blocks. A sort of timelessness arises out of these repeated sections, their predictability, and the easy-to-follow melody. This is not boring music per se, but neither does it demand a listener’s attention—much like the “ambient music” of Brian Eno in the 1970s.¹²⁸ The track is fun, fleeting, and light. It strives for nothing more—and nothing less—than the carefreeness of the late socialist everyday (at least as it was imagined by state institutions).

Despite some early critical reviews, including one that claimed, “Meshcherin turns on an iron and out comes Tchaikovsky’s First Symphony,” the ensemble rapidly gained popularity throughout the country.¹²⁹ This was music to be enjoyed without ever becoming the object of focus. It was unobtrusively normal. In this way, it represents a sonic version of the Thaw-era emphasis on ergonomics in design. Beginning in 1959, domestic comfort became a measure of progress for Soviet citizens. Furniture and textile design shifted from the bulky, ornate styles of grand Stalinism to the clean, functional lines of mid-century.¹³⁰ Designers crafted physical objects with their human users in mind, and ideas of biological feedback were popular in both expert and amateur circles. Practitioners of cybernetics envisioned socialism as an organism in itself and an important tool in the cultivation of a Communist utopia.¹³¹ Like mid-century furniture, Meshcherin’s music was simple but comfortable. The ensemble thus intersected with competing strains of knowledge and ideology: a leisure-based socialist society that was marketed to Soviet citizens, and the science-founded world of socialist modernity and the Cold War.¹³² Above all, Meshcherin’s music was happy—perhaps even too happy. As Skovoroda-Shepherd later remarked, this music “made everything seem so happy and good” that it was “almost propagandistic.”¹³³ Meshcherin’s easy music combined both modern timbres and the principles of its socialist realist predecessors. It was everyday and space-age, utterly predictable yet entirely new. In this way, it succeeded as neither Il’zarov nor Schnittke had done in giving voice to the socialist modernizing project.

128. Victor Szabo has also made the connection between Eno and (American) Muzak: Szabo, “Unsettling Brian Eno’s *Music for Airports*,” 308–9.

129. Quoted in an interview in Maynes, “File under Soviet Bizarre.”

130. See Gerchuk, “Aesthetics of Everyday Life.”

131. See, for example, Peters, “Normalizing Soviet Cybernetics.”

132. On this shift to a consumer culture in the Soviet Union, see Bren and Neuberger, introduction to *Communism Unwrapped*.

133. Interview in Key, “Tim Key’s Easy USSR.”

Synthesized Socialism

Officials at various divisions of the Ministry of Culture understood timbre as both a sonic and a psychological phenomenon. Yet the ways in which they defined it were pliant. Timbre was something that had a magical, almost ineffable quality. Even in popular scientific journals, romantic imagery saturated discussions of electronic musical instruments. Take, for example, the final illustration in Vladimir Orlov's article on the history of electronic music, published in *Tekhnika—molodezhi* in March 1960 (see figure 7). Rather than simply outlining the schematics of the ANS or depicting the instrument's range, Orlov shows us an unnamed man in traditional concert attire, who, standing above the ANS's surface, calls forth colors, clouds, and the spectral figure of Prometheus (no doubt a reference to Scriabin's tone poem of that name). This was music—and these were timbres—of endless potential, with the ability to transfigure the lives of millions through sound.

Volodin came to a similar conclusion about timbre's psychological power, which he explored in his dissertation of 1969. Much of the tome works toward an understanding of acoustics and the ways in which humans hear overtones, harmonics, and other physiological elements of sound. Volodin was, after all, an engineer first, psychologist and musician second. Yet he applied these principles to human perception in ways that illuminate the Ministry of Culture's approach to electronic musical instruments. First, Volodin argued that because humans are limited physiologically to hearing only a specific spectrum of sound, musical perception relies exclusively on "real" (i.e., audible) sounds and timbres that stem from the human voice.¹³⁴ His approach to the Ekvodin—especially when contrasted with that of Murzin to the ANS synthesizer—confirms this line of thought; Volodin was in search not so much of completely new sounds as of modernized variants of existing ones. But he augmented this claim by destabilizing common notions of musical tone and timbre: "When we listen to a famous musical instrument or voice, it appears to be a single, differentiated quality. . . . But in reality, the spectral contents of the sound are exceedingly varied in range, volume, and time."¹³⁵ Volodin thus advocated for a complex understanding of timbre that allows for a multifaceted psychological engagement with a single sound. Timbre, he tells us, is the most important element of sound. Humans hear it first, above all else, and it directs our musical perception

134. Volodin, "Psikhologicheskie aspekty vospriiatia muzykal'nykh zvukov: avtoreferat," 19. This citation relates to Volodin's dissertation abstract, which was published in 1972; he filed his dissertation (cited in note 45 above) in 1969.

135. *Ibid.*, 23: "Когда мы слушаем известный музыкальный инструмент или голос, его характерность представляется нам вполне определенным единством, отличительным качеством. . . . В действительности же спектральное содержание звука для различных моментов высоты, громкости и времени является весьма различным."



Figure 7 Summoning ecstasy from electronic sounds: illustration for Vladimir Orlov's article on the history of electronic music in *Tekhnika—molodezhi* (1960).

accordingly. And in the history of music, for so long dominated by acoustic technologies, electronic music represented the final frontier.

In this way, officials and engineers believed that they were, like their millenarian predecessors at the dawn of the Revolution, taking the next—perhaps even the ultimate—step in musical development. Conventional acoustic

instruments had simply left musicians with too many timbral gaps and simplicities. “The orchestra’s palette,” wrote Orlov in his history, “is intermittent and incomplete. It resembles Mendeleev’s periodic table at a time when the spaces in its ranks were far from filled.”¹³⁶ Electronic music in the wake of Stalin could pick up where the avant-garde had left off: to create new music—and new sounds—for a new society. Within the context of Cold War aesthetics, too, it provided an opportunity to expand beyond musical debates between traditionalism and modernism to cultivate a truly modern sound. That similar experiments were taking place elsewhere in the world did not faze the Soviets. As it had done for nearly half a century, the Soviet Union was to forge its own path forward—one that was laid with impossibly utopian bricks.

Timbre was a powerful means of constructing the Soviet Union as a modern state during the Cold War. Officials knew this, and they adjusted their priorities accordingly. Thus, when thinking about musical socialist realism, we might do well to recognize more than just melodies and harmonies, notes on the page, or critical discourses. Timbre was—and is—laced with social meaning. To deploy musical timbres is to enact political and cultural relations. In order for the Soviet Union to sound modern—and thereby to sound like the superior political system in the Cold War—it needed a timbre to match. Such was the process of making the Soviet Union sound, well, Soviet.

Appendix Sample list of pieces for Ekvodin performance selected by VNAIZ (RNMM, f. 420, op. 1, yed. khr. 2, ll. 1–4)

I. Ekvodin with piano accompaniment

1. Handel, “Arioso”
2. Daken, “Kukushka”
3. Schubert, “Ave Maria”
4. Schubert, “The Bumblebee”
5. Chopin, Prelude in B-flat Minor
6. Chopin, Nocturne in E-flat Major
7. Liszt, “Oh quand je dors!”
8. Schumann, *Waldszenen*, “Vogel als Prophet”
9. Tchaikovsky, “Melody”
10. Tchaikovsky, “Song without Words”
11. Glière, “Romance”
12. Rakov, “Vocalise”
13. Chebotarian, “Prelude”
14. Shostakovich, Fantasia Dance no. 2, op. 1
15. Babadjanian, “Impromptu”

136. Orlov, “Na puti k elektromuzyke,” 34: “Звуковая палитра оркестра прерывиста, её состояние напоминает периодическую систему элементов Менделеева в то время, когда пробелы в её рядах были ещё далеко не заполнены.”

16. Russian song, "The Cliff" (special arrangement)
17. Sams, "Slow Waltz"

II. Ekvodin (solo) with orchestra

1. Vasilenko, Concerto for Ekvodin and orchestra
2. Kriukov, selection from the film *Bread and Roses*
3. Weinberg, selection from the film *Trial of the Mad*
4. Petrov, selections from the film *Man-Amphibian*
5. Sevast'ianov, selection from the film *At the Turn of the Century*
6. Morozov, selections from the ballet *Doctor Ibolit*
7. Imitation of orchestral instruments (informational recording)

III. Ekvodin quartet

1. Bach, Bourrée
2. Daken, "Kukushka"
3. Schubert, "The Bumblebee"
4. Cui, "Oriental"
5. Glazunov, "Spanish Serenade"
6. Lyadov, "The Snuffbox"
7. Musorgsky, "Ballet of the Unhatched Chicks"
8. Russian [folk]song, "The Cuckoo Is Cuckooing"
9. Russian [folk]song, "Winter, oh Winter"
10. Prokofiev, Scherzo for four bassoons
11. Kabalevsky, "Improvisation"
12. Knipper, "Singing Fields"
13. Kadomtsev, "Prelude"
14. Kadomtsev, "Toccatà"
15. Shengelia, "Dance of the Girl and Lezunga"
16. Prokofiev, "Pushkin Waltz"
17. Balaef, "Intermezzo"

IV. Mixed ensemble of electronic instruments

1. Chopin, Waltz no. 6
2. Tchaikovsky, "Dance of the Sugarplum Fairy"
3. Weinberg, selections from the film *The Last Inch*
4. Shchedrin, selected music for the play *Spring Love*
5. Muravlev, "Mazurka-Caprice"
6. Kadomtsev, "Elegy"

V. Mixed ensemble of electronic and classical instruments

1. Petrov, selections from the film *Man-Amphibian* ("Game with Meduza," "Gutierre," etc.)
2. Chernov, selections from the film *Planet of the Storms* ("Meeting with an Octopus," "Requiem," etc.)

3. Bogoslovskii, selected music for the play *The Divine Comedy*
4. Kuznetsov, “In the Clear Sky”
5. Khrennikov, “Moscow Window”

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Archival abbreviations

- GARF State Archive of the Russian Federation (Gosudarstvennyi arkhiv Rossiiskoi federatsii)
- RGALI Russian State Archive of Literature and Art (Rossiiskii gosudarstvennyi arkhiv literatury i iskusstva)
- RGANI Russian State Archive of Recent History (Rossiiskii gosudarstvennyi arkhiv noveishei istorii)
- RNMM Russian National Museum of Music (Rossiiskii natsional’nyi muzei muzyki, formerly the Glinka Museum)
- TsGAM Central State Archive of Moscow (Tsentral’nyi gosudarstvennyi arkhiv Moskvy)
- f. = fond (collection); op. = opis (box); d. = delo (folder); yed. khr. = yedinnoe khranitsa (folder); l. = list (page)

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Abstract

In this article, I show that contrary to enduring Cold War binaries between Western experimentalism and Soviet socialist realism, the Soviet government strategically deployed electronic music to bolster its image as a modern, forward-looking nation during the early Cold War. Drawing on previously unseen archival sources, oral history interviews, and organological methods, I argue that the Soviet government cultivated a specific politics of timbre through the creation of state-sponsored electronic musical instruments and

ensembles. I begin by examining a 1955 order from the Ministry of Culture, by which engineers and inventors were tasked with building electronic instruments that sounded “modern.” I then follow the development of the Ekvodin, a multivoice synthesizer with a keyboard for easy performance, which the Ministry of Culture heralded as the future of Soviet music. Using the Ekvodin as a case study reveals both the sonic and the ideological values at play in the design of electronic musical instruments. I also explore two “misfires” in Soviet electronic music: the invention of the Il’ston synthesizer and Alfred Schnittke’s *Poem about Space*. Finally, I analyze the reception of the Ekvodin and the All-Union Radio and Television’s Ensemble of Electromusical Instruments to highlight the ideological debates over how best to “sound modern” in global networks of musical creation. In doing so, the article invites a broad reconsideration of musical aesthetics and politics in the Cold War.

Keywords: Soviet Union, Cold War, Alfred Schnittke, organology, electronic music, timbre