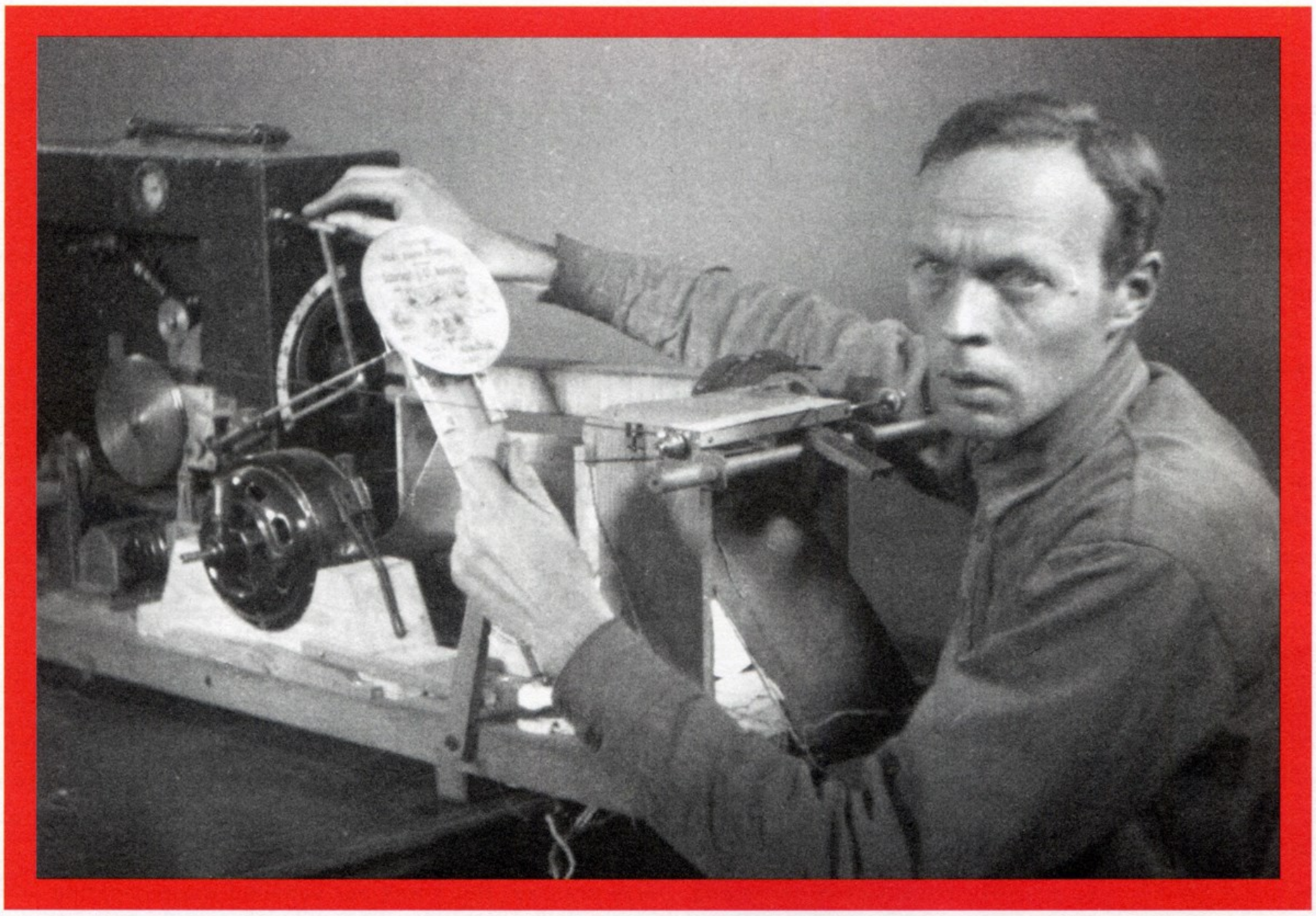
GENERATION Z : RENOISE

EXPERIMENTS IN SOUND AND ELECTRONIC MUSIC IN EARLY 20TH CENTURY RUSSIA

BY ANDREY SMIRNOV & LIUBOV PCHELKINA

»Generation Z« is an exhibition of audio, visual, and textual documentation material, dedicated to the lost and forgotten history of Russian experimental music and related technologies. The exhibition has been developed as a part of an ongoing namesake research project by Andrey Smirnov and Liubov Pchelkina. It attempts to restore the censored history and culture of Russia's artistic Utopia of the 1910-20s, which was destroyed through its collision with the totalitarian state of the 1930-40s. The title of the exhibition takes its name from the letter Z, which is in many ways emblematic of the period. Z is for zigzag, the spark; it is the symbol of energy, of radio transmissions and communications, of electrical charges, and of lightning.



This page: Evgeny Sholpo works with the first version of the Variophone, Leningrad, 1932. Photo courtesy of Marina Sholpo.
Left page: The third portable version of Leon Theremin's Rhythmicon, built at the Acoustical Laboratory of the Moscow Conservatory in 1965.

Following presentations in Paris[*1)], Budapest, St. Petersburg, and Moscow, and the publication of the book »Sound in Z : Experiments in Sound and Electronic Music in Early 20th Century Russia« (Walter König 2013), the Berlin instalment of the »Generation Z« exhibition, presented at CTM 2014 festival, has been expanded with the new section »ReNoise«, developed by artists Konstantin Dudakov-Kashuro, Peter Aidu, and Evgenia Vorobyeva, and based on select reconstructions of the more than 200 mechanical noise instruments invented by Vladimir Popov (1898–1969) between the 1920s and 1950s.

In many ways, the »Generation Z : ReNoise« exhibition tells a story of utopias and anti-utopias, of the avant-garde and the institution, of collaboration and personal achievement, of ambition, opportunity, and oppression of genius and bureaucracy, of intellectual freedom and totalitarianism. It is a story of remarkable personalities, curious inventions, astonishing performances, radical ideas, and experimentation. It is also a story of patents and funding applications, success and failure, support and rejection, optimism and disillusionment. Much interesting and significant material from this history will never come to light or has been forgotten or overlooked, whether for political or financial reasons, because stories are not well documented, or simply because they simply have not been heard by the right people at the right time. A lot of material from the first half of the 20th century was actively destroyed or written out of the history books because it did not fit within the Stalinist regime's vision of what sound and music technology should be. It is a story of which only fragments are known, not only in the West but also within Russia itself.

While the history of Russian post-revolutionary avant-garde in art is generally known, the inventions and discoveries, names and destinies of the community of sound researchers, apologists of musical machines and noise orchestras, and inventors of new musical technologies have until now remained largely forgotten and little-studied. The only project of its kind, the »Generation Z« exhibition offers an introduction to some of the period's key figures and their areas of research. It is an attempt to reconstruct the artistic utopian island in 1920s Russia that developed around a kind of »network culture« connecting revolutionaries in art. Within this network, seemingly unreal projects in sound and hardware were realized, and concepts and methods that offered a promising basis for future scientific and cultural development were created.

In the aftermath of the October Revolution (1917) both society and the State sought alternatives to the old religious values and bourgeois idealism to fill the vacuum that had been left by the Tsar's overthrowal. The ideology that emerged desired a new kind of art based primarily on materialism, natural science, and formal analysis rather than on abstract emotions or subjective taste. It was an objective, rationalist agenda with a scientific and technological approach to the arts. Special institutions were founded for the development and improvement of the »New Human«, engaged in the mastering and perfection of professional motion in sports, working life, military activity, musical performance, and so on.

Therefore, a unique opportunity arose: the State was keen to encourage art that broke with traditions and was being developed in entirely new ways. Government representatives including Leon Trotsky and the people's commissar of enlightenment Anatoly Lunacharsky, approved highly experimental projects, encouraged freedom of the creative community, and supported the so-called Left. In 1918 Lunacharsky officially proclaimed that the arts should be developed on an experimental basis. As he told the composer Sergei Prokofiev: »You are revolutionary in music as we are revolutionary in life – we should work together.«

In 1919 the painter Varvara Stepanova noted in her diary: »The principles of Russian painting are as anarchical as Russia with its spiritual movement. We have no schools, each painter is a creator, everyone, being an innovator, synthetic or realist, is original and highly individual.« This might be viewed as a metonym for the whole of the Russian revolutionary artistic utopia of the early 1920s, when the Russian State was almost at the point of collapse and society was structured as a kind of anarchical »network culture«, based on numerous cross-connected »creative units« comprising artists, scholars, and politicians.

A term that sought to capture the essence of the period was proposed by the artist and philosopher Solomon Nikritin (1898-1965). *Projectionism* (from the Latin »projectus«) was intended to reflect the urge to rush ahead, or more accurately, to rush into the future. He applied this term not only to new approaches in painting and methods of art criticism, but also to the methodology of constructing a new society, to which it was considered necessary to aspire.

In 1919 Nikritin developed his fundamental theory of Projectionism. According to his philosophy, the method becomes the purpose of the creative process. In the context of »projecting the method«, even faults and paradoxes gained a new constructive sense and value. In the early 1920s much project-based research took place that could be considered within the framework of Projectionism, including Alexei Gastev's »Art of Movement« exhibitions, the concert-lectures by Leon Theremin, and Arseny Avraamov's concert series »Music of the Future«, in which the author demonstrated his practical ideas regarding the future of musical harmony and techniques, rather than presenting finished musical pieces.

Artists, poets, musicians, and architects rushed enthusiastically into the new reality, studying physics and mathematics, embracing sciences concerning the nature of light and sound, and developing theories about what became known as »the Art of the Future«.

One of the main heroes of the epoch was Arseny Avraamov (Krasnokutsky) - an adventurer, scholar, composer, performance instigator, circus acrobat, music journalist, and creator of the first ever artificial soundtrack. In a series of articles from 1914-1916, he developed the theory of microtonal »Ultrachromatic« music and invented a special instrument with which to perform it. It was he who proposed, in 1916, the idea of spectral analysis of the shape of the gramophone groove, with the subsequent transformation of the spectrum and re-synthesis of the new artificial groove. Shortly after the October Revolution, Avraamov proposed to the Commissar of Enlightenment, Anatoly Lunacharsky, a project to burn all pianos - symbols of the despised twelve-tone, octave-based »well-tempered« scale, which he believed had adversely affected human hearing for several hundred years.

Meanwhile, in 1916 a student at the Neurological Institute in Petrograd, Denis Kaufman (aka Dziga Vertov, 1896-1954), attempted what would now be called sound poetry and audio art. As he put it: »I decided to include the entire audible world into the concept of ›Hearing‹. It was during this time that I attempted to draw up the sounds of a lumber-mill. [...] I tried to describe the audio impression of the lumber-mill in the way a blind person would perceive it. In the beginning I wrote down words, but then I attempted to capture all of these noises with letters. [...] It also concerned my experiments with gramophone recordings, where from separate fragments of recordings on gramophone disks a new composition was created. But I was not satisfied experimenting with available pre-recorded sounds.« Being frustrated, he has switched to film to organize not the audible, but the visible world.

In the spring of 1917 the Leonardo da Vinci Society was founded in Petrograd by Arseny Avraamov, inventor Evgeny Sholpo, and mathematician and musicologist Sergei Dianin. Their objective was to unite efforts to produce a revolution in musical theory and techniques based on the cross-connection of arts and science. They declared that academic views on music theory were dull and scholastic, and that techniques relating to it were old fashioned, proclaiming that both were becoming increasingly outdated.

In the summer of 1917, Evgeny Sholpo wrote a science-fiction essay entitled »The Enemy of Music« in which he described an electro-optical sound machine named the Mechanical Orchestra, capable of synthesizing sounds with complex dynamical spectrums as well as producing music according to a special graphical score

CIT poster. »Let's take the snowstorm of the revolution in the USSR, let's put in the rhythm of American life and perform the well-adjusted work as a chronometer«. From the book »Youth, go!«, by A. Gastev, VCSPS, Moscow, 1923.

Evgeny Sholpo, Variophone, version two-three, late 1930s. Photo courtesy of Marina Sholpo.

without any need for a performer. Describing future music, Sholpo thought in categories of continuity, sonority, spectrum, and their temporal dynamics, erasing the difference between pitch-based harmony structures and the spectral tissue of a sound.

While some ideas from that period were little more than science fiction at the time, many projects and proposals were more immediately viable or actively sought to develop the technology necessary to deliver them.

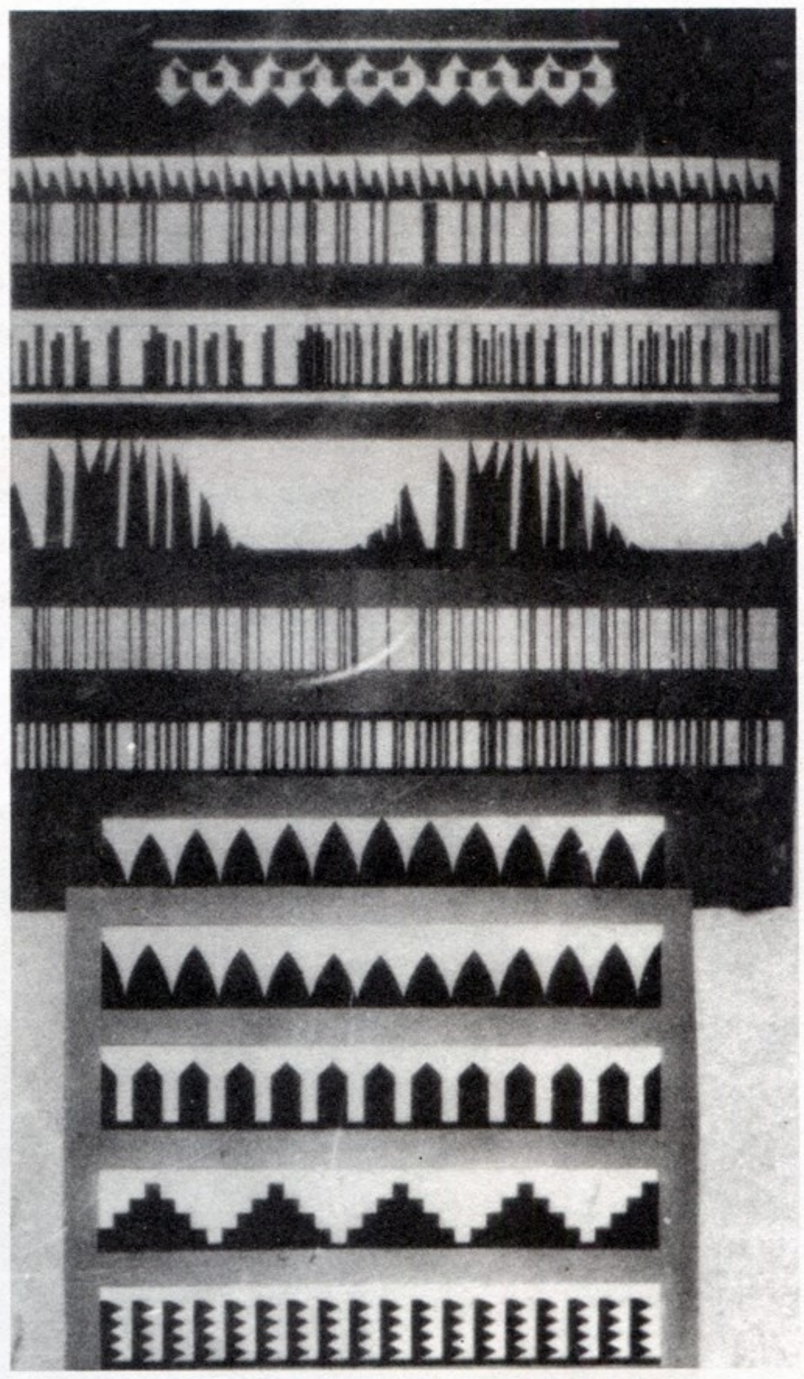
Perhaps one of the most charismatic figures in the history of electronic music and audio technology was Leon Theremin, well known as the inventor of the first commercially produced electronic musical instrument, the Theremin (also referred to as the Termenvox, 1919-20). As a physicist, musician, and engineer, Theremin worked at the crossroads of creative technology and espionage developing innumerable projects, often trying to combine music with colour, gesture, scent, and touch. It is hardly possible today to imagine any synthesizers, burglar alarms, or automatic doors, without his pioneering research.

Despite the fact that Leon Theremin initiated a new technology rather than a new aesthetic, his groundbreaking musical invention led not only to the application of the technology for a variety of civilian, military, surveillance, and espionage purposes, adding to his status as a cult figure in electronic music in the West, but also provoked new aesthetic trends and discoveries all over the world.

While the career of Leon Theremin the physicist began at the Institute for Physics and Technology in Petrograd, his musical career began in Moscow, at the State Institute for Musical Science (GIMN). The GIMN was founded in Moscow in 1921 in an attempt to centralize all activities related to musical science, including disciplines such as acoustics, musicology, psychology, physiology, the construction of new musical instruments, and ethnomusicology. Nikolai Garbuzov was appointed director.

Since the beginning the GIMN was oriented towards academic research. Among the many scholars and inventors active at the institute were Arseny Avraamov, Leonid Sabaneev, Peter Zimin, Nikolai Bernstein, Pavel Leiberg, Boris Krasin, Emily Rosenov, and Mikhail Gnesin. Numerous research projects were conducted, articles published, and experimental devices built, including a harmonium tuned to a natural (overtone) scale and a quarter-tone harmonium with two keyboards. Nikolai Garbuzov built a device to study the phenomena of synopsia (colour hearing). Sergei Rzevkin built his radio-harmonium on cathode valves, which was the second electronic musical instrument to be built in Russia after the invention of the Theremin. It was a sort of three-voice oscillator, capable of producing polyphonic chords in any temperament.

Working on the GIMN's draft programme, Arseny Avraamov proposed a project named »Topographical Acoustics«. He suggested building powerful electroacoustic systems that could be installed on airplanes, from which vast areas of land could be covered with sound. Some of his projects explored new genres of music devised specifically for urban contexts and presented around the built environment. One such project by Avraamov referenced in the »Generation Z« exhibition is the »Symphony of Sirens« - a large scale, open air performance of factory whistles, foghorns, artillery fire, and all manner of machine-made noises, first staged in the port town of Baku in 1922 in celebration of the fifth anniversary of the Revolution. This epic spectacle featured a cast of choirs, the foghorns of the entire Caspian flotilla, two batteries of artillery guns, a number of infantry regiments including a machine-gun division, hydroplanes, and all of the town's factory sirens. The conductor, posted on a purpose-built tower, signalled various sound units with coloured flags and pistol shots. A central sound-machine called the »Magistral« contained 50 steam whistles controlled by a crowd of musicians following »text-scores«. A second performance of the Symphony took place in Moscow in 1923.



First artificially drawn ornamental soundtracks by Arseny Avraamov (1930).

In 1921-23, performances of the Projection Theatre at the Foregger Studio and sound experiments at the Proletkult Studio, directed by Sergei Eisenstein, provoked a fashion of noise music and noise orchestras. Many inventors patented new sound machines specially intended for performance of noise music. Some devices based on electro-optical, electro-mechanical, and other new electronic technologies were ahead of their time by decades. Among them was »The mechanical keyboard instrument for the reproduction of speech, singing and various sounds«, invented in 1925 by D.G. Tambovtsev, which was a kind of proto-sampler very similar to the famous Mellotron popular in the 1970s. The »Electro-Optical Musical Instrument«, invented by Sergeev in 1926, was based on the principle of the optical siren. It was a kind of electro-optical sound synthesizer that incorporated a sequencer based on a graphical score to program the most complicated rhythms and harmonies.

In 1926-29 the first practical sound recording systems, based on sound-on-film technology, allowed access to sound as visible shapes on film strips that could be studied and manipulated. This new possibility paved the way for a systematic analysis of audio traces such that they could be used to produce any synthetic sound at will, which led to the invention of the »Graphical (Drawn) Sound« techniques. It also opened up a long-awaited opportunity for artists fascinated by the idea of sound as an art medium to edit, process, mix, and structure pre-recorded audio material, combining any sound at will, which led to the creation of numerous soundtracks based on the aesthetics of noise music.

The film critic Alexander Andrievsky noted in 1931: »While abroad the first works related to sound cinema were mainly based on music material, in the USSR we had another trend. The main audio material of the first sound movies was based on *noise and various rumblings*.«

In 1928 Sergei Eisenstein, Vsevolod Pudovkin, and Grigory Aleksandrov published the major aesthetic document *The Future of Sound Film*, in which the main emphasis was placed on the idea of the contrapuntal method of combining sound and imagery. »... ONLY A CONTRAPUNTAL USE of sound in relation to the visual montage piece will afford a new potentiality of montage development and perfection.«

In 1929 Dziga Vertov made the first field sound recordings by means of portable sound-on-film equipment, which was specially built for him by inventor Alexander Shorin. The equipment allowed him to record actual urban sounds and industrial noises, which he used to score his film *Enthusiasm* (1930). The score became the first approach to what would later be called musique concrète, which was invented by Pierre Schaeffer in France in 1948 and initiated the development of electroacoustic music.

Meanwhile, in 1929 the first Soviet experimental sound film *Piatiletka. Plan velikih rabot* (The Plan of Great Works), directed by Abram Room with a soundtrack by Arseny Avraamov, was released. As Room pointed out, »For us, the visual material played a secondary, supporting role, being an outline for sound design... each of us had to apply himself to the theory of radio and acoustics.« Avraamov in turn noted, »I should also say that I don't see any contradictions at all between music and noise... I did not want to involve any conventionally organized music in the film (slipping into melodic symphonic moments).«

It was Avraamov who completed the first artificial drawn ornamental soundtrack in 1930. That same year Evgeny Sholpo invented the Variophone. It was a continuation of research that Sholpo had been conducting since the 1910s while working on »Performer-less music«.

By 1936 there were four main trends of Graphical Sound in Soviet Russia: hand-drawn Ornamental Sound (Avraamov, early Boris Yankovsky); hand-made Paper Sound (Nikolai Voinov); Variophone or automated Paper Sound (Evgeny Sholpo, Georgy Rimsky-Korsakov); and the method of Syntones, based of spectral analysis, decomposition, and re-synthesis techniques (Boris Yankovsky).

The first version of the Variophone was built in 1931 by Sholpo together with composer Georgy Rimsky-Korsakov, grandson of the famous composer Nikolai Rimsky-Korsakov. It was capable of producing artificial soundtracks by means of automated Paper Sound techniques. Many soundtracks for movies and cartoons were created using the Variophone. Among the most accomplished pieces recorded with the Variophone in 1933-34 were »The Carburettor Suite« by G. Rimsky-Korsakov, »Waltz« by N.Timofeev, »Flight of the Valkyries« by Richard Wagner, and Franz Liszt's sixth Rhapsody. During the blockade of Leningrad in 1941, together with composer Igor Boldirev, Sholpo synthesized one of his most experimental pieces - the soundtrack to the cartoon »Sterviatniki« (»The Vultures«). Although aesthetically these works are similar to Walter Carlos' »Switched-on Bach« from 1968 and sounded like 8-bit music, the main difference was in their timing. In 1918 Sholpo developed special tools - the Melograph and Autopianograph - to register the temporal characteristics of live musical performance. Much electronic music has a rigid tempo, like a metronome; Sholpo was able to simulate more subtle variations in tempo such as Rubato, Rallentando, and Accelerando, based on his carful analyses of live piano performances by the most accomplished pianists.

In 1932-35 Boris Yankovsky proposed the Syntone method, based on research into structural similarities and distinctions among spectrums of sounds of different character to limit, as far as possible, the number of calculations needed for the additive synthesis of various complex sounds. This method was based on pure audio computing techniques and possessed properties very common for digital technologies, such as discretization and quantization of audio signals and related spectral data, manipulation with ready-made parts, and operations with selections from databases of the basic primitives (templates), that distinguished it from the methods of analogue signal processing. It can be considered as a sort of proto-computer for music techniques, with many of the typical features of modern digital technology in sound and music computing.

Yankovsky developed several sound processing techniques, including pitch shifting and time stretching, based on the separation of spectral content and formants and resembling the recent computer music techniques of cross synthesis and the phase vocoder.

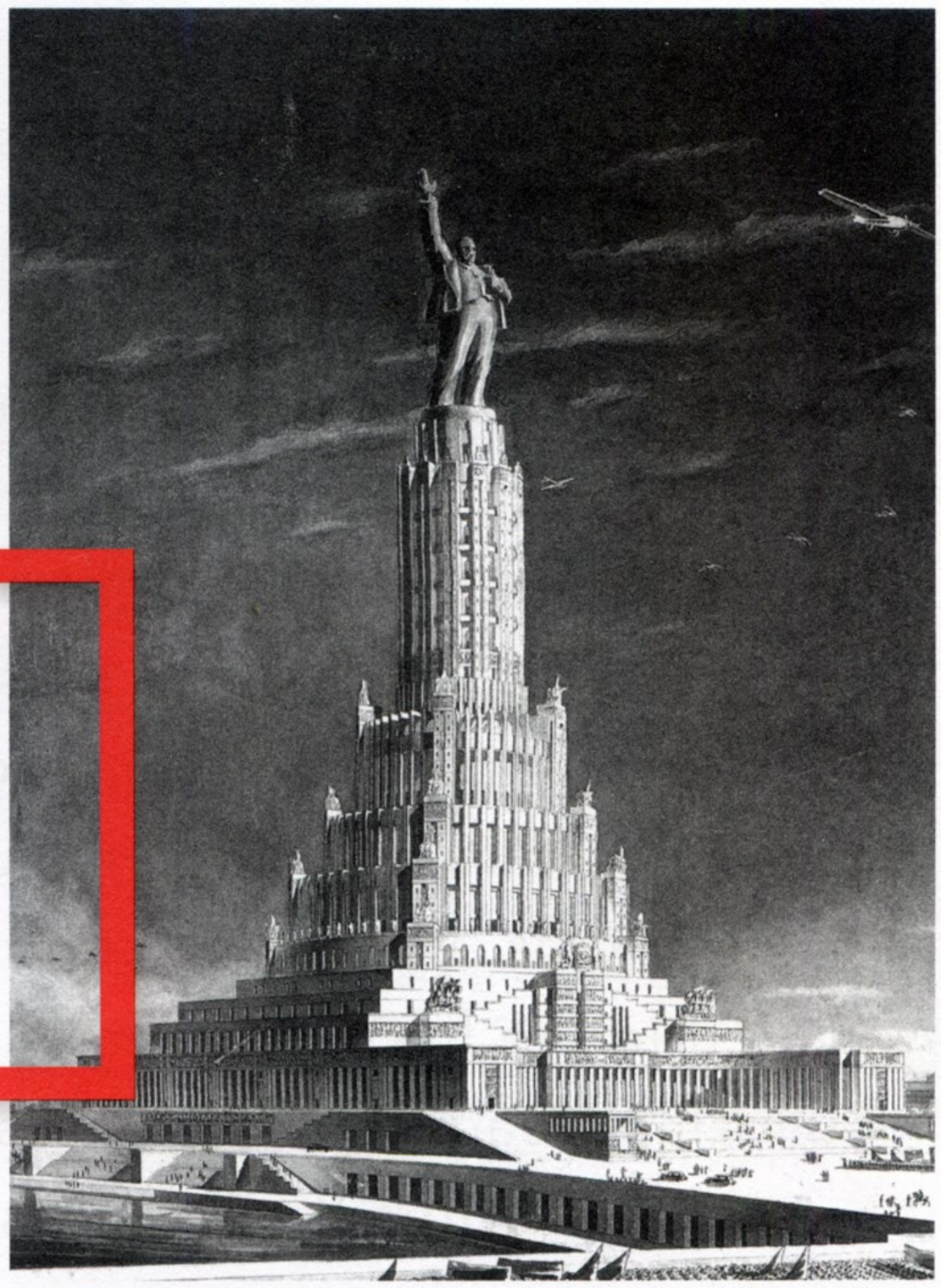
To perform complex mathematical calculations of waveforms as well as other important parameters of sound and automated musical performance such as rhythm, there were special »employee-computers« on staff in the laboratories of Boris Yankovsky and Evgeny Sholpo. These were mathematicians whose specific task was to make calculations. To realize these ideas, Yankovsky invented a special instrument, the Vibroexponator - the most paradigm-shifting proposal of the mid-1930s.

In 1939 Yankovsky met Evgeny Murzin (1914-70), a young inventor fascinated by the idea of a universal tool for sound synthesis, and after a year of conversation the final concept of their future instrument was formulated. In 1957 Murzin completed and patented a photo-electronic musical instrument called the ANS Synthesizer. It was remarkably close to the concept of Evgeny Sholpo's *Mechanical Orchestra*. The instrument was based on Boris Yankovsky's proposed scale of 72 steps per octave, and incorporated a set of 576 optical sine wave oscillators, adjusted on fixed frequencies and forming a discrete scale, covering the whole audible range with intervals between successive pitches undertactable to the human ear. Control over the system and the process of sound synthesis was carried out by means of a special graphical score, with a diagram representing the spectrum of a sound by means of drawn transparent strips with appropriate shape and slopes. A principle similar to this graphical score was used in the legendary UPIC computer system, developed by Iannis Xenakis in 1977 at the Centre d'études de mathématique et automatique musicales (CEMAMu) in Paris.

Researchers involved in Graphical Sound had to overcome enormous technical and theoretical (as well as more mundane) difficulties during its short existence. The results of their work were surprising and unexpected, and ahead of their time by decades. However, after Lenin's death in 1924 and Stalin's rise to power, collision with the increasingly totalitarian state was fatal. In less than ten years, all of their work had ended and was almost instantly forgotten. By the late 1930s, the cultural and intellectual elite of the previous two decades had been rendered powerless or effectively written out of »official« histories and excluded from textbooks as though they had never existed. The last phase of Stalin's epoch was entirely fruitless for music technology. All the talent that emerged during this period was directed towards the ideas and projects of the 1910-20s. The new generation of engineers, living in cultural and informational isolation, was primarily engaged in attempts to copy or follow Western developments. It became a time synonymous with poor quality fakes and considerable frustration. No significant inventions were made in the realm of musical technology in Russia until the turn of the millennium.

Life has since confirmed the value and significance of the work and foresight of the lost pioneers. Many ideas and inventions, which at the time might have been considered utopian, were reinvented decades later. We use them today without knowing their origins, and many ideas from this period appear to still be awaiting fresh consideration.

*1) The first version of the exhibition was shown between September 2008 and January 2009 under the title »Sound in Z« at the Palais De Tokyo in Paris within the framework of the exhibition project »From One Revolution To Another« by British Turner Prize winner Jeremy Deller.



Palace of the Soviets. Drawing of one of the approved projects, 1934, by Boris Iofan, Vladimir Gelfreikh, Vladimir Shuko, and the sculptor Sergey Merkulov.

Andrey Smirnov is an interdisciplinary artist, independent curator, collector, writer, composer, researcher, and developer of new techniques in computer music. He is the former founding director of the Theremin Center for Electroacoustic Music at the Moscow State Conservatory and head of its Sector for Media Technology. He is also the author of *Sound In Z : Experiments In Sound And Electronic Music In Early 20th Century Russia* (Walther Koenig, 2013) and curator of the »Generation Z : ReNoise« exhibition at CTM 2014.

RENOISE – RECONSTRUCTING THE HIDDEN HISTORY OF REVOLUTIONARY NOISE MUSIC

BY KONSTANTIN DUDAKOV-KASHURO

The year 1913 marked the 100th anniversary of Luigi Russolo's seminal manifesto, *The Art of Noises*, in which the famous Italian futurist anticipated the radical sound experimentation that evolved throughout the 20th century and beyond. This centenary, however, did not shed light on one of the most obscure histories of early sound art, which for the most part occured independently of the influences of Italian Futurism, that is, noise experiments undertaken in Soviet Russia in the 1920s and 1930s. This particular history has remained hidden until today, partly due to the neglect typical of the Socialist Realism era, and partly because only a small amount of evidence has been preserved. »ReNoise« – the complementary project to Andrey Sminrov and Liubov Pchelkina's »Generation Z« research project – sheds light on two main components of early Soviet noise art: amateur noise bands, widely spread across post-revolutionary Russia, and new forms of sound design used in theatre and film production over several decades, up to the 1960s. It is noteworthy that both trends were intertwined in the first sound movies of the early 1930s, directed by former leaders of theatrical avant-garde. So what was essential and original about this noise breakout?

Peter Aidu plays the chairphone, a proletarian amateur instrument, at a Reconstructing Utopia performance, Moscow, 2013. Photo: N. Cheban.

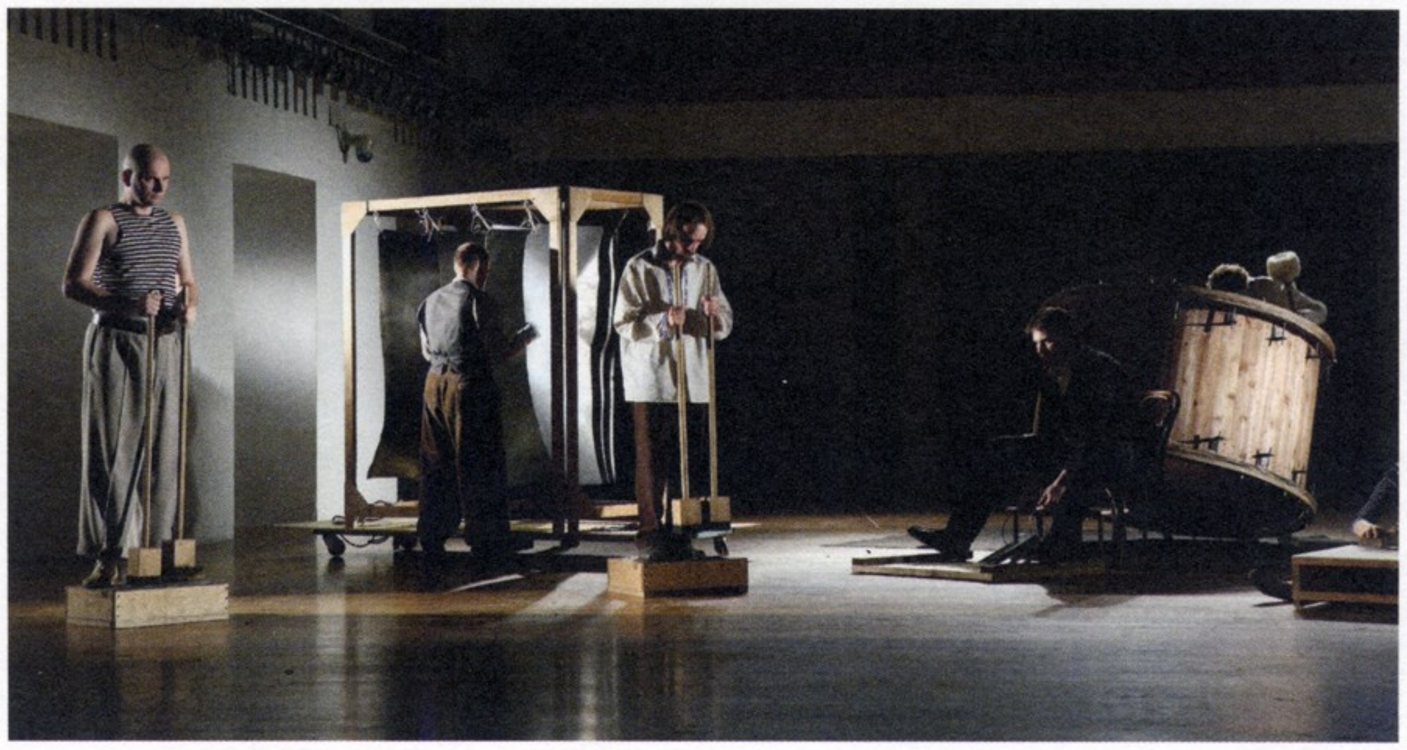
Probably one of the most distinct features of the Russian noise movements of the time is the absence of a single predominant tendency, whether rooted in Futurist ideas or other schools. One may refer to Constantin Stanislavski's autobiography, *My Life in Art*, in which the theatre director recalls a production entitled *The Snow Maiden* from 1900, which featured a backstage noise orchestra consisting of »whistles, castanets, and other machines, many of them invented by ourselves for the purpose of making peculiar noises«. This and other references to stage practices at the turn of the 20th century reveal that theatre in particular made increasing use of noises. Yet the case of *The Snow Maiden* shows a fascinating correspondence with noise accompaniment not uncommon in medieval Russian folk traditions. Relics of the vast *skomorokh* tradition, which is characterized by the use of unconventional self-made instruments or just ordinary objects, have partially survived in the practice of musical eccentrics. Many such traditions, employed by musical clowns at the turn of the century, shifted to avant-garde theatrical circles in the early 1920s. Within the exhibition »Generation Z : ReNoise«, a number of such eccentric musical devices, reconstructed by The Music Laboratory group*) will be exhibited: a bottlephone (a percussion instrument with hanging bottles), a pig bladder and vein »string« attached to a mop, a saucepan drum, and others.

Although it is difficult to trace the origins of Soviet noise orchestras, they seemingly first appeared in 1921 as part of small agitational theatre troupes. Others, such as the nearly obscure Poekhma, which played brooms, doorbells, car horns, sticks, etc., imitating steam engines or the soundscapes of metropolises, and which even held concerts in the Saratov Conservatory, stayed closer to the late Futurist scene and to Proletkult (proletarian culture movement) in particular. The year 1922 saw the further emergence of noise orchestras that performed as a part of the Moscow Proletkult Theatre and Mastfor (the workshop of Nikolai Foregger). Under Sergei Eisenstein's guidance, the Proletkult comic noise band was set up along with a project that strove to create »orchestras of the separate industry sector«, where the instruments should have represented particular types of (industrial) production. Foregger's orchestra, according to some recollections, must have represented a comic trait as well as an industrial one, especially when accompanying the machine and electrical dances for which Mastfor was renowned. Even though Mastfor soon disbanded and Eisenstein became more and more involved in motion picture production, the practice of noise orchestras, combining harsh noises with imitations of standard instruments, spilled over into other theatrical groups, particularly in the genre of a »Living Newspaper«, of which The Blue Blouse group attained the most fame. Das Rote Sprachrohr and Rote Fahne, two allied agitprop groups in Germany, had similar noise initiatives.

These eccentric noise orchestras survived until the mid-1930s. However, they gradually shifted from small avant-garde theatres and agitprop brigades to larger proletarian masses, and appealed especially to the younger generation, for whom noise bands served as the initial step to musical education. It is remarkable that Eisenstein's former colleague and Proletkult actor Boris Yurtsev contrib-

uted greatly to this shift. In his plays for Proletkult and other pioneering theatres of the mid-1920s, he insisted on using the same instruments and adhering to Eisenstein's approach. According to Yurtsev, noise music as a simple organization of sound that requires merely everyday objects and work tools, and can even be made using trash, provides the best entrance into musical education. Thus, routed through ancient folklore and musical clownery, avant-garde sound art, and, in some ways, a taste for jazz, noise music entered the terrain of Bolshevik mass education. It fell on fertile ground, since rural traditions of amateur music-making had survived until that day. Another reason for the rapid growth of proletarian noise ensembles was the deficiency of professionally manufactured instruments, especially after the World War I and the Civil War. Amateur instruments meant to substitute for professional ones coincidentally conformed to the Marxist concept of overcoming the alienation from the products of labour, caused by specialization and division of work. Even more importantly, these amateur practices advanced »art into life«, by making no distinction between everyday life and art, production and culture, work and leisure, musical instruments and working tools. In this regard, the amateur noise movement partly satisfied what was proclaimed in 1923 by the productivist theoretician Boris Arvatov, »that for the first time musicians hadn't a desire to organize artificial non-vital sound material, but material of life as such (street and factory noises etc.), noises of everyday life«.

The late 1920s saw the peak of these rural and urban amateur noise ensembles, whose repertoire might have included revolutionary marches, folklore songs, or even imitations of approaching trains or an iron factory, as took place in Moscow in the First Experimental School in honour of Karl Marx. Throughout the second half of the 1920s, some musical educators published a small number of handouts for those involved in amateur noise activities. These hard-to-get brochures remain a basic resource on instrument construction. Some of the most exotic and acoustically advanced are presented in the Berlin version of the »Generation Z : ReNoise« exhibition.



The Music Laboratory performs »Steam Train«, playing noise instruments devised by Vladimir Popov for the staging of Anna Karenina *in 1937, Moscow, 2013. Photo: N. Cheban.*

The evolution of noise practices in the first years of the Soviet Union, however, would not be considered accomplished had there been no revival of the early Proletkult projects, a revival that occured with the advent of sound in film in the early 1930s. Apart from Dziga Vertov's field recordings (particularly his recordings of industrial sound sources, best represented in his celebrated 1930 film *Enthusiasm*), another noise method, which became quickly outdated, was to create soundtracks by theatrical means resembling a more complex version of Foley art. In the »Generation Z : ReNoise« exhibition, this method is demonstrated in two movies: Boris Yurtsev's *An Elegant Life* and Alexander Macheret's *Men and Deals* (both 1932). Accoustically, Yurtsev and Macheret attempted to restore the noise utopias of the early 1920s. It is thanks to their efforts that we may still witness today how noise orchestras (especially the industrial ones) might have sounded in Proletkult, Mastfor (in which Macheret acted), or The Blue Blouse (where Macheret supervised one of its groups in the mid-1920s).

There is no doubt that the experiences of Yurtsev and Macheret in avant-garde and agitprop theatres laid the foundation for their »industrial symphonies«, admittedly impossible without contributions from one of the leading experts in theatrical sound design - Vladimir Aleksandrovich Popov (1889-1968). Throughout his career as an actor in the MKhT (Stanislavsky Moscow Art Theatre), Popov was encouraged by Stanslavski to invent various devices that could give more vivid sound impressions on stage as early as 1908. Throughout the next decade, the number of his inventions increased, so that by the 1920s they shaped the sound of plays presented by MKhT-2, Vakhtangov Theatre, or Gabim Jewish Theatre. Popov not only brought existing devices up to scratch, but also worked as a true originator of hundreds of machines, from simple handy devices to complex machines such as pipe organs, which produced sounds through factory and steam engine whistles. What is perhaps more important is that special brigades, supervised by Popov himself, staged the »noise symphonies« for each production, so that they were regarded not as mere sound effects, but as characters onstage. His thorough approach to noise production made

Popov's undertakings indispensable for sound movies, particularly where rich and complex soundtracks were needed, as the natural environment in those days could by no means be reproduced perfectly through sound recordings. Moreover, since »noise symphonies« had to be composed rather than recorded, versatile sound textures were created, such as the one from the »Battle on the Ice« scene in Eisenstein's *Alexander Nevsky*.

The »ReNoise« section of the exhibition offers an opportunity to examine some of these devices, mainly constructed to reproduce industrial and machine noises, and also try them out. As was the case at the major exhibition at the Polytechnic Museum in Moscow in 2012 as well as other venues, visitors are invited to compose their own soundtracks. Screened performances by The Music Laboratory and a workshop leading to a live performance exemplify contemporary usages of these machines. The performance will connect both amateur and »professional« noise making, thus making them historically and aesthetically coherent. Unexpectedly, early Soviet noise machines recreated by the group of musicians, stage designers, and researchers resemble modern sound installations, demonstrating the continuity of utopias of the past and contemporary sound practises.

ReNoise is a project by Peter Aidu, Konstantin Dudakov-Kashuro, and Evgenia Vorobyeva.

*) »The Music Laboratory« is a group of musicians and researchers in Moscow, who, over the past five years, have been studying various early Soviet sound ventures, reconstructing instruments and performing the music of the time.

Tank sound device, invented by Vladimir Popov. Photographer unknown.

Peter Aidu is a musician, curator, and the head of The Music Laboratory. A laureate of several international contests, he teaches piano, harpsichord, and chamber orchestra groups at the Moscow Conservatory. In 2007 he established The Piano Shelter – a collection of specially conserved pianos. In 2009, Aidu with The Music Laboratory initiated the revival of »PerSimfAns – Symphony Orchestra without a Conductor«. He is the director of the performance project »Reconstructing Utopia«, and curators of the »ReConstruction of Noise« exhibition, which was shown in Moscow, St. Petersburg, Vladivostok, and other Russian cities.

Konstantin Dudakov-Kashuro is a scholar, assistant professor at Lomonosov Moscow State University, member of The Music Laboratory, and DJ. In 2006 he completed his Ph.D. in Cultural Studies, comparatively studying Italian Futurism and German Dada poetics. His main research interests – cultural philosophy, modernism, and avant-garde aesthetics – motivate his involvement in PerSimfAns, »Reconstructing Utopia«, and »ReConstruction of Noise« (together with Peter Aidu). He is a member of the European Network for Avant-Garde and Modernism Studies and The Centre for Avant-Garde Studies at the University of Iceland, and currently writes on the history of early Soviet noise music.

Evgenia Vorobyeva studied at the P. I. Tschaikovsky Conservatory in Moscow, where she currently holds the position of director of the Department of Foreign Affairs. Since 2010 she is active as producer, manager, and curator of various projects, a.o. the exhibitions »Noise Orchestras of the 1920s. Unkown Proletarian Music» at the Moscow Jewish Museum, and »Reconstruction of Noise« at the Moscow Polytechnical Museum.