

THE HISTORY OF DRAWN SOUND IN SOVIET RUSSIA

by Nikolai Izvolov

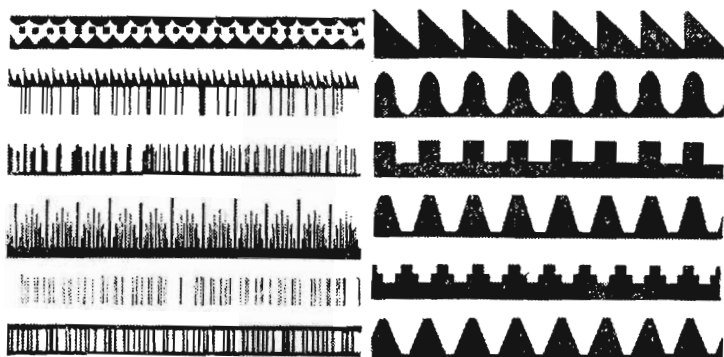
translated into English by James Mann

If we were to study seriously certain little known events, we would discover one strange law: like the social history of mankind in general, the history of cinema develops in cycles. And when a new phase of cinema's development begins, technical discoveries as a rule precede aesthetic ones. Often, extremely important technical discoveries are made on the basis of the non-photographic use of images one and a half to two years before the completion of any new aesthetic breakthroughs. Sometimes things which are normally achieved by photography imitate a non-photographic origin. This is both the case in the wider history of cinema and in relation to the history of sound in cinema.

When we talk about the history of cinema, we normally understand this to be exclusively films which have been transferred onto celluloid by photographic means. Unfortunately, to this day very little has been written about drawn on film animation, and especially about those films which have sound drawn directly onto the celluloid. Certain inventors even went so far as to attempt to edit sound as they had edited visual images creating a melody from individually recorded sounds. There are examples of this means of working with celluloid in the Muzei Kino in Moscow.

Arsenii Avraamov was the originator of many ideas which influenced the development of drawn sound. He was a composer, a musical theoretician, a man with a distinctly unusual and interesting life, and the organizer of events which would today be called 'performances' (these were the so-called 'siren symphonies' in which the industrial factories of whole towns participated). Avraamov himself described his invention of the 'Weltonsystem,' a universal 48-tone musical system, as one of his most important achievements. It was intended to incorporate all existing musical systems: the 12-tone European system, Java's 5-step system, India's 22-step system and all other existing variations.

In 1917, Avraamov organized the Leonardo da Vinci Scientific and Artistic Society, to which his future assistant Evgenii Sholpo also belonged. At that time, many people in Russia thought that revolution could replace evolution, and that this was not only the case in society, but in all the arts and sciences as well. If Avraamov was supposed to conceive the philosophical basis for this revolution, Sholpo's task was to



create the necessary technical apparatus. This equipment was intended not only to make it possible to perform 'universal' music, but to do so without the aid of a musical performer, so that the composer's ideas could be conveyed to the listener in a uniquely precise and adequate form. This work continued with varying success until 1929 when sound cinema began to spread quickly throughout the whole world and the new sound technology was to exert a strong influence on the ideas of Avraamov and Sholpo.

In Leningrad, in the autumn of 1929, three men met in the studio laboratory during the sound recording of Abram Room's film *The Plan For Great Works*, which was supposed to become the first Soviet sound film: they were the composer Avraamov, the book illustrator Mikhail Tsekhanovskii (who recently had begun to work in animation), and Avraamov's technical assistant, the engineer Sholpo. The developed film was brought back from the laboratory and, when they examined it, they suddenly saw for the first time that the sound track was in the form of a curved line. Each of these three men at the same time had the idea that if they drew a curved line of their own instead, it should in some way generate sound.

Each of these men, and some others, began to develop ideas in their own ways and thus, by the beginning of the 1930s, a minimum of four separate 'schools' of artificial sound existed in the USSR, each of which employed its own technique. These methods were developed by Avraamov and Sholpo, as well as Nikolai Voinov and Boris (?) Iankovskii. The latter two worked with Avraamov when he returned to Moscow, where he organized the artificial sound laboratory at the Scientific Research Cinema and Photographic Institute, which existed until 1932. Avraamov worked there with the animation artists

Voinov and Nikolai Zhilinskii, and also the inventor Iankovskii, about whom practically nothing is known.

In the course of their investigations into the key elements of both film visuals and sound, the researchers at Avraamov's laboratory made numerous discoveries:

... the usual system of three spacial coordinates is undoubtedly synonymous with the system of sound coordinates. In music, sounds are distinguishable by their pitch, strength, length and timbre. What does this tell us when it is translated into the language of visual forms?

The approach of a sound-emitting body directly towards the viewer from the back of the screen (the coordinate which is horizontal and perpendicular to the screen) indicates the increase in the strength of a sound.

Perpendicular (i.e. vertical) movement across the plane of the screen indicates the pitch of the tone.

Horizontal transference across the plane of the screen (from right to left and vice versa) along the time axis indicates the length of a sound.

A change in the very object emitting the sound indicates a change in timbre, the tint of the sound (an area which is developing in color film).¹

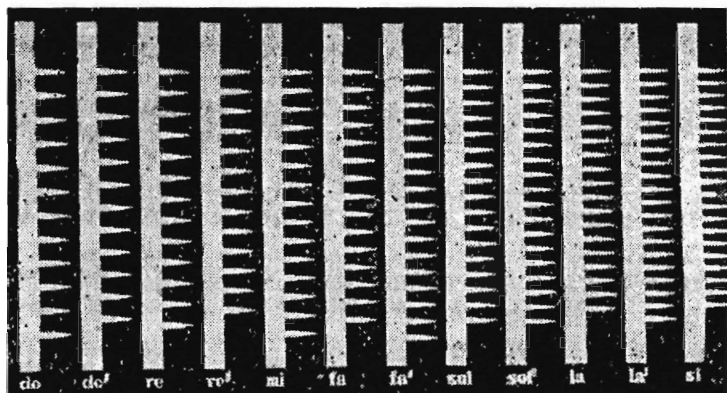
They also made some interesting observations while examining the artificial synthesis of human speech: "the new regrouping of classical 'vowels' and 'consonants' noticeably simplifies the problem by, for example, reducing all 'consonants' to four types of graphic forms, and 'vowels' to two types. The rest can then be achieved through combinations of these six basic 'elements.'"²

The four Russian schools of drawn sound had their own distinctive ideology. Avraamov, who was absolutely Futuristic by nature, was interested above all in the sounds of the simplest, basic geometrical forms:

We are constructing a 'siren symphony' out of right-angled triangles and its sound will be more harmonious and powerful than my 'documentary' siren symphonies—both in Baku and Moscow (in celebration of the 5th and 6th anniversaries of the October Revolution). For 'The International' we selected the timbres offered by squares and rectangles. These are the most powerful and distinctive timbres and can not be achieved by any natural recording. Trapezes and isosceles triangles produce softer, 'more lyrical' touches—we have thought about 'The Funeral March' using these shapes.³

Furthermore, for Avraamov's technique, a traditional animation stand was perfectly adequate.

Evgenii Sholpo, who had remained in Leningrad, continued his experiments firstly at the Leningrad Conservatoire and later at the Lenfil'm Studio. The composer Georgii Rimskii-Korsakov also took part in Sholpo's work. Being a technician and inventor, Sholpo was interested most of all in the manufacture of a universal machine, producing melodies of any complexity, which itself removed the need for a musical performer. He was,



therefore, particularly proud of the invention which he named the 'Variophon.'

Nikolai Voinov, being an animation artist, was not interested in the philosophy of music or the invention of a complex new technology. His system was, perhaps, the most practical and most easily applicable in the production of animated films. He used prepared shapes of future sounds cut out of paper. When filming, he placed these sounds (resembling a comb) side by side with the visual images, thus achieving a perfect synchronization of the former and the latter. Hence, for the recording of sound he re-used the animation technique of 'cut-outs' which were traditional at that time.⁴

As regards Iankovskii, it was he who invented the original artificial sound producing apparatus known as a "Vibro-Ekspnator." This device was joined to the animation stand and it seems that it united the technological simplicity of Voinov's method with the rich variety offered by Sholpo's method. However, it is unknown whether this method was put to any practical use and it is possible that it did not progress beyond the experimental stage.

These experiments were of course interesting enough on their own but, unfortunately, they were not put to any practical use with one exception. Sholpo tried to put his own system to a wider use over the course of ten years, but did not receive any support from the studios. Sholpo was remembered only at the end of the summer of 1941, when the Leningrad studio had been evacuated and no sound laboratory remained, and the sound track for an animated propaganda film urgently had to be recorded. In one and a half days he managed to record the film's entire soundtrack on his own.

Avraamov's experiments were successful while he received support from the state, but they were halted as soon as the laboratory was expected to cover its costs. This was unfortunate because in 1932 the staff of the laboratory was ready to synthesize human speech using circles, triangles and squares. However, they did make a number of discoveries in acoustics which later were to prove very useful, particularly in the manufacture of electrical musical instruments.

These experiments with drawn sound are also noteworthy because they exerted an influence on the development of world animation—in particular on Norman McLaren. He later confided in the Russian animator Ivan Ivanov-Vano that he was particularly well acquainted with the experiments of the Russian inventors of drawn sound because he had helped to translate the Russian text *Animated Film* into English—the only book in which all these experiments had been systematically described.⁵

In the summer of 1930, Avraamov gave a paper about his discoveries at an international gathering of cinematographers in Moscow and, evidently, then showed his first experiments. Incidentally, it is possible that it was a recording of a popular song of the day, related to the famous town romance “Marusiia has poisoned herself.” His paper was the object of some interest, but it remains unknown whether it provoked any practical response. In April 1936, an article by Russian V. Solev appeared in *American Cinematographer*, briefly explaining Avraamov's initial ideas.⁶ It is possible that Norman McLaren knew about this article.

However, it was practically impossible to make any experimental films in the USSR of the 1930s and industrial sound recording methods dominated film production. Artificial (or drawn) sound, therefore, was to be another example of unrealized creative potential and, for a long time, was practically forgotten. Even in the seminal study *The Aesthetic of Film Music* by Zof'ia Lissa, an author well acquainted with Russian language sources, the information regarding drawn sound is almost completely incorrect—the names, the chronology of events and even the intentions of the inventors are confused.

¹ A.M. Avraamov, “Syntonfilm,” *Proletarskoe kino* 9-10 (1932), 49.

² Avraamov, “Syntonfilm,” *Proletarskoe kino* 9-10 (1932), 50-51.

³ Avraamov, “Syntonfilm,” *Proletarskoe kino* 7 (1932), 47.

⁴ Cut-outs were also the favourite method of the artist Aleksandr Ivanov who, like Voinov, belonged to the IVVOS group (which was to be known as IVVOSTON during the sound period). Bela Balazs, who lived in the Soviet Union during the 1930s, participated in the writing of two films by the IVVOSTON group. The name translates this way: IV = Alexander Ivanov, VO = Nikolai Voinov, S = P. Sazonov, and TON = sound.

⁵ The discussion between Ivan Ivanov-Vano and Norman McLaren is

published in *Frame by Frame* (Moscow: n.p., 1980), 92. The book to which McLaren refers is probably *The Animated Film* (Moscow: Moscow Press, 1936).

⁶ V. Soley, "Absolute Music by Designed Sound," *American Cinematographer* (April 1936), 146-48, 154-55.

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