

ICONIC COMMUNICATION SYSTEMS AS A WAY OF AN ARTISTIC IDEA IMPLEMENTATION

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Abstract

The article describes the history of the semiotic and its reflection as a science. Brief characteristics of the periods of the formation of semiotics from Plato and Aristotle to the present day. This article contains an explanation of fundamentals on evolution of sound as part of complex communicative system for transferring message from author to audience, its' concept, and correlation of semiotics and semiotics of sound. The article presents the features of noise design and sound design and gives the dialectics of their development. Traced the way to introduce noise design in the production process. The appearance of sound design as one of the types of noise design is shown. This article describes the signs' mechanisms for complex communicative systems dynamically appearing in theatrical arts. This article also shows the history of sound semiotics, as an additional way to get the message and idea from author to audience on the level of emotions and the mood.

Keywords: semiotics, semiotics of sound, theater, cinema, silent cinema, genesis of semiotics of sound, sound machines, history of sound, communication systems.

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INTRODUCTION

The history of the concepts of semiotics and semiotics as a science began at the moment when the very first communicative information transfer systems shown up and there was a need to classify these systems and bring them to a common denominator [1].

The matter of correlations and interactions of the "name", "meaning" and "symbol" were the subjects of debate and discussion among ancient Greek philosophers [2]. For example, the "Cratylus" Dialogue of Plato [3], which discusses whether names can serve in the knowledge of things, as well as Aristotle's treatise "On Interpretation" [4]. In which the author claims that the name is a sound combination with an agreed meaning and therefore the name comes as a sign. Moreover, Aristotle argued that thought is not true or false until it is attributed to the predicate of existence. Even the ancient Greek philosophers set the vector "thought-name-sign-understanding" and determined that an unmarked thought has no truth or falsehood and basically is nothing.

Big successes of the transformation of "uncertain nothing" into concrete philosophical and linguistic constructions were achieved by the early theologians of the Judeo-Alexandrian school led by Philo of Alexandria. The Alexandrian school and its logical systems trended to early hermeneutics [5] and exegetics [6] - the directions of theology, which brought the interpretation of biblical texts to a new level - "An analogical interpretation."

An analogical interpretation laid the foundation for words understanding not in their literal, but in the highest analogous meaning. Based on the principles of an analogical interpretation, the prominent theologian of those times John Cassian deduced his four levels of the meaning of the Bible [7], which became very popular among medieval scholastics who were the great lovers of combining Aristotle's logic and Christian theology. Generally, almost any philosophical school of that time was somehow connected with theology, because the literacy in those centuries was a matter of either very wealthy parts of the population, or religious figures and people like them.

Monks in monasteries, hermit theologians and clerical personalities of all sorts had a pretty good education at that time and being free from the hard work that the vast majority of mankind called "simpletons" had at their disposal a sufficient

amount of free time and knowledge in order to turn idleness in research and the search for truth, which at that time began to be associated with religion and its dogmas.

Actually, owing to the search for theological truth those two main philosophical movements of that time arose - realists on the example of Anselm of Canterbury [8] and nominalists on the example of William Ockham [9]. When two theological movements arise somewhere, disputes immediately arise on the topic whose movement goes in the right direction. The disputes between realists and nominalists on the triune nature of God, in addition to the mass of religious arguments, contained both philosophical and semiotic problems. A chain of disputes led by periodically alternating participants leads us to gentlemen Poinsot and Locke, who are homonyms and proudly bearing the name John.

DOCTRINAL PERIOD

It would seem that there may be something in common between the disputes of these gentlemen of the seventeenth century and the topic of this dissertation, but the fact is that, John Locke [10] and John Poinsot [11] anticipated the logic of Pierce and Saussure, respectively.

The genius of Ferdinand De Saussure is not in doubt and moreover, served as the basis for structural linguistics [12] and had a great influence on the humanitarian thought of the twentieth century, but we will leave it a little aside in order to avoid disputes and oppositions of semiotics and semiology. What about Charles Senders Pearce? This gentleman stood at the foundations of semiotics in the form we know it now, and launched the so-called "Doctrinal Period" of semiotics.

In fact, Charles Pearce can be called the founding father of semiotics as a science, for this enlightened man created the basic classification of the signs of semiotics.

- Iconic symbols (signs) (icons) containing the image of the subject.

A striking example of the use of an iconic sign (symbol) in advertising is the Airbus logo (layout), using an icon in which the aircraft is easily recognizable. We should note that a more saturated advertising effect is achieved by merging this iconic sign with the symbolic sign "pacific" - an international symbol of peace and tranquility.

- Index signs (index), directly pointing to the subject.

Their action is based on the real adjacency of the signifier and the signified. For example, moaning is an index of injury or illness. Cheerful laughter - an index of joy or happiness. Index signs can also point to an object - pointing with a finger.
- Signs-symbols (symbol), arbitrarily and on the basis of the convention designating an object.

Their action is based on a conditional relationship established by agreement between the signified and the signifier. For example, a nod of the head usually means an affirmative answer. However, this movement is characterized as a negative answer in some nationalities.

This is the main classification of the semiotic system in the form of iconic signs, symbols and indexes according to Pierce. I would also like to pay attention to the term "semiosis", which was born long before Pierce, but it was thanks to him that it acquired its stable application.

Well, semiosis is a term accepted in semiotics and denotes the "process of interpreting the sign", or the process of meaning generating. It is known that ancient Greek physiologists used this term, in particular Galen from Pergamum to make a diagnosis: semiosis used for the symptoms interpretation.

The ancient Greeks included in semiosis:

1. Something which acts as a sign
2. The sign points to or what it refers to (designate)
3. The impact by which the given subject is a sign (interpreter) for the interpreter [13].

Unfortunately, as it usually happens, the articles and publications of Pierce were very rare during his lifetime and for the most part inaccessible. However, after his death, when archives and records were published, semiotics had a serious impulse in development, which led to the transition from the doctrinal period to the institutional one.

INSTITUTIONAL PERIOD

The institutional period of semiotics can be described as the "blossoming period of a young science." During this period, two main schools were formed: the Moscow-Tartu and the French school of semiotics. Important differences between these two schools were the approach to the classification of sign systems and the use of semiotic principles, based on the principles of Pierce (in the case of the Moscow-Tartu school) and the principles of Roland Barthes (French school of semiotics). These schools debated between each other, and as a result, the International Organization for Semiotics Research (IASS) was created, as well as the Semiotica magazine.

As an expected outcome of all these events, the first International Semiotics Congress took place in Milan in 1974 and 21 years later (in 1995), which is not very much on a historical scale, a symposium on applied semiotics was held. In the context of intellectually controlled systems, semiotics has acquired its applied aspect. We can see the applied aspect of semiotics now in the cooperation with machine translation systems, which are largely embodied due to the AI (artificial intelligence) and the principles of neural networks in machine learning.

The emergence of processors which were capable to process huge amounts of information and using new algorithms, which are based on the principles of structural linguistics, as well as the principles of collective intelligence, collecting and systematizing information in many languages from around the world [14] - all this has led to new approaches in the field of communication systems.

In this case, the introduction of semiotic modules using sign systems could and can contribute to the maximum accuracy of the translation and delivery of information as close as possible

to the original, but at the same time adapted to the recipient's language with great accuracy [15].

The description of an object with perfect accuracy in any language, the translation of a message from one language to another while preserving all information, context, thought, description, sign and symbolism are the tasks of applied semiotics in the context of intellectually controlled systems.

Sign systems also got their assignment in the user interfaces of a huge variety of programs and mobile applications. We can see them every day as so-called icons in any operating system or software environment. These signs show us the way; say what to do or not to do, confirm the correctness of the action and give an idea of what is happening [16].

MATERIALS AND METHODS

That is, through signs and integrated sign systems, we get a flexible, convenient and importantly useful navigation system. These navigation systems are used everywhere, from simple children's electronic watches to user interfaces of production equipment and spacecraft.

THE GENESIS OF SEMIOTICS OF SOUND IN CINEMA

Starting from the shadow theater in Japan and China [17], as well as the obscure camera [18], humanity began to understand that spoken and written language and linguistic structures in general - all this can be supplemented and can even be changed to obtain a more complete description of the image, object, subject and directly thought.

Language and all communicative systems have evolved throughout their existence, which indicates a person's constant desire to most accurately and maximally correctly convey not only a specific description of an object, but also descriptions of thoughts and images that exist in the head of descriptor [19].

It was never difficult for authors who were well versed in the written syllable to transfer their thoughts to paper. But the problem was always in mental and visual images which were created individually in each person's mind, even if the person describing them had clear frames and criteria.

Moreover, it would seem that there is nothing wrong when the written language develops the imagination, but as we said above, the language as a communicative system has always evolved, and people needed to invent as many ways as possible to improve the efficiency of perception of the author's thought.

To see an example of such an evolution, we should look at ancient books and manuscripts in which miniatures reflecting key moments of the message or plot, depending on the subject of the work, were given with jewelry accuracy.

Some people are sure that the images or miniatures in books were made for beauty and simply reflected the aesthetic requirements of that time, but in my opinion the appearance of images in books is precisely the evolution of communication systems in which the written language and alphabet were supplemented by visual images and elements for a more effective understanding of message enclosed in the text.

In fact, illustrations in books can be described as the first "emoticons". That is, a system of visual signs that reinforce a text message. If we talk about modern realities, emoticons from their distant ancestors (illustrations and miniatures in ancient books) have evolved into the so-called emojis or smiles, which are very popular in modern messengers. Emoticons and smiles became animated, and sometimes even use a specific in the form of a moving character to convey the atmosphere of the messages.

So, let's go back to the development of the cinema and the media industry.

The first films, as you know, were "dumb", they did not contain a soundtrack at all [20]. It's hard to imagine such a thing now, but in those days, existing technologies could not integrate sound into the image. What was happening on the screen could be judged and perceived based on the image itself [21], and sometimes from the captions that accompanied the film [22].

At the same time, all people who were involved in that industry were well aware that in a certain period of time, in the wake of novelty, such a situation would bring results and good profit and pretty soon the audience, which is already full with silent films, will demand something new and this new should be provided as soon as possible [23].

Of course, technology developed tremendously fast for the industrial era, but still could not keep up with the desires of people and the ambitions of film companies. Therefore, a compromise was found and the so-called "tappers" appeared in the film industry - pianists playing background music in the cinema. This feature was not an invention of the film industry, but was brought from the theater, where sound was always an integral part of the action taking place on stage [24].

It is impossible to imagine a theater where everything that happens on stage has no sound - words, noise design, music, etc. Of course, there are some performances where the action takes place in silence, but such scenes are made intentionally, based on the author's ideas, and it's not because there is a lack of technologies or it's a standard of the theater industry [25].

It turns that in those days it was the theater that became the supplier of ideas and some technologies for the world of cinema. It is difficult to realize today, when film companies are pioneers of new technologies and innovative solutions in the field of multimedia, but then it was the theater, which is considered conservative and classical art today, that brought musical and inter-noise accompaniment to the cinema.

The tappers played background music throughout the film, occasionally replacing one melody with another. Basically, these were light obsessive comedic playing, because most of the silent films of that time were in comedic genre.

But later the repertoire of film companies expanded and tappers began to change the background music, depending on what was happening on the screen. The music could be dramatic, neutral, humorous or another style. The repertoire depended on the content, the dramatic line of the film and the director's idea, but basically just followed what was displayed on the screen.

Anyway, with the advent of tappers, industry of cinema has gone very far and musical design, which was appeared as a purely entertaining moment, has become an integral attribute of almost any film [26]. The image language evolved and combined together with the language of sound, and in fact created a completely independent language - a communicative system of transmitting messages from the author to the viewer.

Music supplemented the language of cinema and became one of the elements of the sign system, reinforcing and making more accurate what is happening on the screen. Dramatic or comedic musical parties significantly influenced the accuracy of the language of cinema, which is the beginning of the use of semiotics of sound as a phenomenon in the media industry [27].

Semiotics was only emerging as an institutional science [28] in those times and it was very early to even speak of semiotics, especially of the semiotics of sound. But looking back, we can trace this phenomenon, and we can determine the appearance of the semiotics of sound as it is based on historical experience, comparison and analysis, even if it is not defined as a separate phenomenon.

SOUND AND NOISE DESIGN - DEVELOPMENT AND FORMATION AS ESSENTIAL PARTS OF THE PRODUCTION PROCESS

For a long time, noise design was an appendage to what is happening on stage and in the frame. According to its priority, it was at the lowest level after image, text and music. For many directors, noise design was a kind of toy, some kind of "pampering," spending time on which was considered unreasonable, ineffective, and even economically inexpedient.

As a result, the noise design got stereotype ideas according to the principle: "If there are free time after all stages of production, then you can devote some time to noise". Accordingly, it slowed down and even stopped the development of noise design in some areas.

Noise design initially had two main types or varieties [29]:

1. Sounds of nature - the sound of rain; noise of the wind; sounds of the forest and other similar sounds associated with one or another natural event or phenomenon.
2. Sounds of objects - noise of dishes; the noise of pouring water; car engine sound; shots; door sounds, etc.

It means that the noise design was an auxiliary element, the phenomenon just going in parallel with what is happening on the screen or on the stage, but not changing its meaning. The noise design was within the context and followed the series of events or dramaturgy [30]. Moreover, it was not an independent process and it could not go beyond the above framework.

In process of time, the effectiveness of noise design began to be gradually recognized even by the most ossified supporters of "classical art in its original form."

At some stages, the noise design, created to emphasize or complement a particular scene got some kind of caricature image. We can observe this in some animated films of the forties and fifties, as well as in plays and radio shows of that time[31].

For a wonder, it was the comedic and gaming parts of the media industry that served as the main drivers for the recognition and subsequent implementation of noise design in the production process.

The managers of movie studios, animation workshops, and especially radio stations realized how a correctly selected sound range could be effective in terms of the completeness of the message, which contains not only musical, but also noise design.

It got to the point that after a certain sound, the viewer or listener began to laugh, even if something not quite funny was happening on the screen. Therefore, the managers started to realize that some sounds could be associated with certain emotions for the viewer or listener. That is, sounds in the context of the media began to acquire the qualities of associative signs.

Further, in our research, we will return to this principle of associativity in conjunction with semiotics, but so far, we only observe how the industry comes to understand certain points through experiments.

Well, systematically, the global media industry, which followed the path of progress, has firmly integrated noise design as a significant element of the final product.

As a result, commercial demand arose and specialists in this field began to appear, workshops were created in which initially artisanal systems were created that produced various noise effects, and the theme of sound design began to take on all the signs of an independently developing industry [32].

An example of such sound workshops can be called studios, in which specialists began to make floors with different textures to make different noises. Such a floor is very similar to a chessboard, but the squares of this floor made of various types of coatings as: asphalt; concrete; parquet; rough tree; rubber, etc [33].

Such a floor was designed to reproduce various step sounds. For each type of step, a specific type of coverage was used. Different types of shoes were also used up to the material from which the soles were made. Such workshops and subsequently entire studios became part of the production process. And people began invest in noise design as in any production process which makes profit. After some time, from ordinary handicraft workshops located in the basement, they began to turn into full-fledged sound studios with pavilions with a lot of equipment and props, and even into whole laboratories for sound design.

Now the industry of sound and noise design is a lot of money, professional associations, world exhibitions, Grammys, Oscars, etc., and in those days it all started and was supported only by small groups of enthusiasts of sound production. Afterwards, another type of noise design appeared - the so-called sound design [34].

This is a combination of two or more sounds, often of artificial origin, which constitute a unique sound, designed to indicate a certain event or object on the screen or scene and designed to emphasize what is happening, depending on the author's intention or vice versa to give a different interpretation to the happening event.

The first experiments with sound design began at the same time when the first noise design studios appeared. Specialists began to combine several sounds into one. At first, just for experiment and then with specific goals and objectives people started to get something unique and different from others.

As an example, we can consider the movies of the horror genre in which a unique sound of a growling monster was created by overlaying and combining with each other the sounds of the growling of a large predator and some low rumbling sound of mechanisms [35]. The idea was the same, to involve the viewer or listener in the association. The sound of a growl precisely determined that it was a large and dangerous beast or predator, and the low-frequency rumble of the mechanism mixed with this sound determined the unnatural nature of this predator. Thus, the image got out to be more frightening and causing associations of deep fear of the inexplicable [36].

With the development of computer technologies sound design has at its disposal virtually unlimited possibilities. Paid and free bases and banks of all kinds of sounds appeared, both artificially synthesized and natural, which are recorded and digitized. Now, we cannot imagine the sound industry without modern digital and computer technologies and sound specialists are now limited only by their imagination [37].

Sometimes the sound design depends on the final equipment on which the soundtrack of the film will be played. For example, according to the author's idea, there is a huge robot or some fantastic machine in the frame, the movement of which is accompanied by sounds must be at a very low frequency - 20-40 Hz. Not all sound equipment can accurately and with the right volume reproduce sounds at these frequencies.

That's why, in the absence of appropriate equipment, the viewer is risking to lose part of the artistic image conceived by the authors.

But, just like the production technologies of a media product continue to evolve, the technology of product reproduction is also moving forward in its development.

Long ago, systems of modern cinemas have been equipped with the most innovative equipment and systems that you could only dream of 15 years ago are now becoming a common attribute of household equipment. For example, 5.1 sound systems and the so-called home theaters are now becoming very accessible to the average user [38]. And with the advent of high-speed Internet, it became possible to broadcast sound in remarkable quality to almost anywhere in the world [39].

Thanks to all that we brought above, noise and sound design have reached a completely different level and have become an integral part of conveying the completeness of the artistic image in iconic communication systems.

THEATER AND SOUND

"You need to know traditions, before breaking them!" (Sh. Abbasov, opening speech to students of the Theater Institute, Tashkent, 2011). The basis of modern visual media art is theater. Almost everything we know about cinema and television began from the theater and it is in the theater that we will seek the beginning of the foundations of the semiotics of sound and it's binding with the realization of an artistic idea.

Now let's talk about the theater. All performances on the scene always had a sound, except "very authoring ones". And when we say "sound" we do not mean a certain sound track or some kind of techno genic sound, but namely sound in all its manifestations.

The sound in the theater begins with dialogues on the stage, replicas of actors, texts and speeches, and ends with the noise design of the performance, musical accompaniment and even the sound of applause from the audience, which is an integral part of the action. Let's imagine a theatrical performance without applauds and in deathly silence - isn't it really strange?

And now let's take a look at what theatrical sound is. The second chapter of this dissertation will present studies and calculations for each thesis, but before continuing into the studies, I would like to use a simple language and bring a few points to their common denominator.

Theatrical sound begins with dialogues of actors. Without them not a single play is built, except the moments of author's vision or reading. The text of the play is transformed into speech and without sound this process is simply illogical and does not make sense. In this case, we can see the transformation mechanism according to the algorithm:

THOUGHT - IDEA - TEXT - SPEECH - SOUND - VIEWER

It turns out that the language transforms and develops in other forms that help in the implementation of artistic ideas at all levels, including verbal and empathic. In this case, the semiotics of sound serves as an additional mechanism for transmitting not only design and ideas, but also for transmitting emotions and moods from the author to the viewer.

Let's try to expand the idea a little further. Watching what is happening on the stage, we do not just listen to the actors' remarks and pass pieces of text through ourselves - we catch intonations, tonal modality, starting with its simplest differences in male and female voices, and ending with international messages that largely determine the level of speech and the actor's skills of dramatization. It is a complex art to convey a set of information and signs to the viewer and the correct presentation of the author's idea to the viewer depend on many factors and one of them is the semiotics of sound.

Like any type of art, the theater, constantly developed and followed the progress. Compared to the cinema, we can say that the theater is more classical type of art and at some points even conservative, but nevertheless, the theater goes its own way, and this way implies development. Despite the classics and

apparent conservatism of the theater, sound, unlike the cinema, was always present in the theater and was an integral part of it.

Sound was the second language of the theater, starting from the very beginnings and ending with modern high tech theater platforms. And this second language has always pursued one goal - to convey to the viewer and maximize the realization of the artistic idea, the author's intention, ideas of the director, specific moments and individual characteristics of the actors.

Theatrical sound, in addition to the speech of the actors, consists of two other important areas - the musical and noise design of the performance and each of these areas can be deduced independently, with its own high priority [40].

Musical design - is the music of the theater, this is a separate area in which all the signs of an independent musical genre are exist. This area has its own specific features and if you have just musical education and talent it won't be enough in order to write music for theatrical productions.

We also need: knowledge of the theater - its specifics and history; ability to understand the intention of the author; artistic idea of director; know the language and nature of sound and clearly understand the ultimate goal [41].

RESULT AND DISCUSSION

The choosing of a suitable theater composer is the most important decision for any theater director, because the style in which the composer works largely determines the musical idea of the performance.

Theater composers work in two main styles:

The composer initially follows the intentions of the director and implicitly fulfills all the requirements and tasks.

1. The composer uses his vision on what is happening on the stage, and the musical decision of the performance goes independently.

Both of these styles work well and have a right to exist. The choice of style of work depends on the director, on his team and on whether the chosen style fits the concept of the performance.

In some cases, an independent composer can completely change the creative approach and his musical decision introduces completely unexpected moments into the play, sometimes unexpected, but that did not cease to be brilliant.

In situation when the entire performance is completely subordinated with the will of the director, and when the composer clearly follows the directions and tasks of the director, the performance turns out to be exactly as the director intended it, even in small details.

Sometimes the composer acts as the musical director, which means that he becomes the second director of the performance and the process of making key decisions comes from him and the director.

As we said above, both styles are viable and it all depends on the choice in which style to work. Lately, another style of working with the musical design and various theatrical productions has appeared - a style in which turnkey musical solutions can be used.

In the era of globalization and the global system of exchanging data and information, we got almost unlimited access to everything that was once recorded, composed, written or created.

The advent of digital effect libraries has almost wiped out laboratories and production studios. This applies equally to huge libraries of turnkey music, various inter-noises and almost any audio information. All this can be bought, downloaded and used for the needs of cinema, theater and television.

Moreover, audio materials have appeared in the form of constructor, with which you can assemble any necessary musical solution without the help of expensive studios, a large team of specialists and time costs.

Solutions like these become an excellent help for low-budget projects and performances, and also help to save a significant amount of time, effort and nerves for the director and composer, who becomes a production manager in this formulation of the question.

Let's back to the past ...

At a particular point in time, the movie was still dumb because of the technical capabilities or rather the impossibilities for integrating sound into the film [42]. But the producers and directors of cinema of that time were the most progressive technophiles, and in fact, they had no big choice but they invent and implement all the newest and often controversial ideas of what the techno-world of those times could offer. Without hesitation, they turned to the theater, which already existed and had decent success.

The theater was a rather conservative type of art, but nevertheless it has been using sound and used its capabilities almost from the moment it was founded. That's why the theatrical experience in musical and noise design could give the film industry exactly what was needed - a sound consisting of music, voice and noise [43].

Noise and musical design became integral attributes of theater, cinema and television and began to develop technically [44]. To replace tappers and sometimes even orchestras, various modern technical inventions began to come and continue to develop as independent elements of equipment used in this industry [45] and automation of routine processes and bringing them to common standards has also begun [46].

Little by little, with the development of the recording industry, everything came to the conclusion that once a recording of music or inter-noise created in the studio could be used a huge number of times in different parts of the world, without involving an entire orchestra or team of noise designers.

As always, the technical progress led to the disappearance of a number of professions, which not made everyone happy, but as always, it did not matter in comparison with modern trends, which were moving forward at great speed.

As an example we can use the whole historical line, which begins with the simplest barrel-grinders with their interchangeable melody drums; passes through the rudimentary punched cards with recorded tunes for automatic pianos and noise machines, which are technically modified barrel-grinders, and ends with the use of the most advanced digital DTS systems for reproducing sound in films, theater and television [47].

Having a similar technique and recorded phonograms, directors, producers and sound designers could easily follow the sound line of any show without attracting unnecessary costs and without organizational difficulties associated with the involvement of a large number of specialists. This automation system helped to save and use the released funds including budgets, funds and labor hours and it became possible to switch them to urgent tasks related to technical support and focusing directly on production and post-production.

To some extent, it was the automation of processes that gave an impetus to the entire industry and led to technological progress in creativity and it went even faster than before.

Digital tape devices for playback Digital devices on disk drives Integrated online digital systems. A barrel (street) organ is a mechanical device for reproducing a musical composition; it

was invented by the Italian inventor Barbarie. It is a small organ without a keyboard - a box, inside of which sounding tubes, furs and a wooden or metal roller with spiked fists are placed in several rows. If we turn the knob, the organ-grinder can play 6-8 melodies recorded on the roller.

Usually a barrel organ is called a mechanical organ of vagrant musicians, when the handle is rotated this portable instrument can perform 6-8 melodies.



Mechanical piano (pianola) - a kind of piano, an automatic string-keyboard musical instrument. Pianola as an attachment device can turn a piano or grand piano into a mechanical piano;

There is a shaft driven by a handle in the pianola, and on the surface of the shaft along the entire length there are protrusions located in a certain sequence according to the notes of the musical composition. The protrusions of the shaft sequentially drive the mallets corresponding to the keys of the pianola, and that process extracts musical sounds.



Noise machines are wood-metal devices that wonderfully imitate the sounds of the surf and the wind, a passing car and train, the clatter of hooves and the clang of swords, the chatter of a grasshopper and the croaking of a frog, the clang of tracks and tearing shells.



Magnetic tape devices for playing phonograms

In 1927, a German engineer Fritz Pfelemer, after a series of experiments with various materials, sprayed iron oxide powder onto a thin paper using glue.

The paper tape was well magnetized and demagnetized; it could be cut and glued.

In 1932, the AEG Company, adopting the idea of Pfelemer, began production of a magnetic recording device called the

Magnetophone-K1. Edward Schuller from AEG Company designed Magnetophones and invented a ring head for recording and playback.



Over time and with the development of progress, systems for sound reproducing and amplifying in the cinema and theater have stepped into the digital age, and fully digital systems have taken the place of bulky machines and apparatuses.

For example, these systems in the theater could be fully automated, using computer processing, storage and reproduction of the signal, as well as digital memory presets, for example, for different scenes, scores and other changes during the script and the course of the performance.

Earlier, the sound engineer needed to completely control most of the routine processes even with paper work, as well as constantly change the parameters of the mixer / microphones / panorama, etc. But, then with the advent of digital integrated systems, most routine processes faded into the background or even disappeared. And now sound engineers were able to concentrate directly on the creative part of the profession and other tasks.



Digital systems also evolved from commonplace recorders and players, they gradually turned into the most complex electronic systems for processing, storing and reproducing information, or rather sound.



Historical excursion:

In September 1952, at the Broadway Theater in New York, the demo film "This Is Cinerama" was shown with a tremendous success, representing a new panoramic cinematic system with a horizontal viewing angle of 146 ° and 7-channel sound.

5 sound channels were assigned to pan sources on the screen in the Cinerama system, and the effect channels created the

illusion of surround sound from the side and rear speakers. However, the production of these kinds of films was too expensive, since three 35 mm film copies and a separate 35 mm magnetic soundtrack with 7 tracks were required to demonstrate the film.

The Cinemascope system (1953-1967) presented by Twentieth Century Fox contained 4 magnetic tracks applied to the film using a special technology.

For the phonogram reproducing, another sound unit with magnetic heads was installed in the film projectors, and additional loudspeakers were mounted in the cinema. Three channels were front and one was responsible for the surround sound effects.

Since 1955 and for more than 20 years, until Dolby developed its products, the Todd-AO system became the standard for multichannel sound recording for 70-mm films.

The film "Oklahoma!" was the first ever large-format film which was filmed on the Todd-AO system. The film contained a six-channel magnetic phonogram recorded on four magnetic tracks in addition to the image.

Two of them were placed on the wide edges of a 70 mm film outside the perforation, and two between the perforation and the image. Two channels were located on the outer wider tracks, and one at a time on the inner ones. Five loudspeakers were placed behind the screen, and one channel of "sound effects" transmitted ambient sound distributed along the walls of the hall.

Then the system was improved by Dolby, which proposed replacing two intermediate front channels with effective low-frequency ones (Dolby Baby Boom system), and then leaving only one of them using the freed track for an additional channel of the surround sound (Dolby Split Surround system).

Conventional stereo playback systems were replaced with 5.1 systems, and subsequently by 7.1 systems.



Moreover, 7.1 systems began to be created in conjunction with surround sound systems and sound signal delivery to each viewer in theaters.

Electronic sound systems began to become an integral component of theatrical acoustics along with the acoustics of the hall. With the help of electronic theater sound systems, it was possible to correct the imperfections in the acoustics of the room associated with the engineering mistakes during a theater construction. And if earlier the poor acoustics of theaters became a disaster and almost a verdict, now because of modern methods and electronics, these shortcomings can be eliminated without the need for redesigning or reconstruction of the room.

CONCLUSION

Just at this technological stage, when the routine part of the process was disappeared, freeing up a lot of time for creative tasks, various principles of communicating the author's ideas to

the audience came into force. These principles also included the semiotics of sound, which at that time was still in its infancy and was perceived by the majority not as a separate industry or science, but as part of an integrated communication system for message transmitting.

Based on all we said above, we can conclude that without sound (except special situations) any visual product, theater, movie or television becomes less meaningful and loses its description, as well as the transmission of the main message from the author to the audience and it becomes much poorer in creativity.

The sign mechanism, as an element of a complex communicative system for transmitting a message, will be fully used only if we use all its components, which are sound and its semiotics. I want to emphasize that without the use of semiotics of sound, the transmission of a message is possible, but will not be done to the full extent of its potential.

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