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RECORDING MUSIC ON SET – SPECIFICS AND CHALLENGES

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Abstract: *The paper focuses on the specifics of recording music on movie set. It will address the various challenges for the sound engineers when recording music on set - on one side, the limited choice of microphones and techniques. On another the limitations introduced by costumes and decor and the solutions related to those. It also addresses the choices related to structuring the music performances on set with respect to video editing of the scene in post-production and at the same time enabling using the music recorded on set for multi-channel mixing.*

Keywords: *Movie, Sound recording, Microphones, Film sound, Music recordin.*

INTRODUCTION

Music has been an integral part of the cinematic experience since the dawn of cinema. Even silent films had live musical accompaniment. Functionally, most filmmakers define music as a major emotional part of a film. In his book Audio Vision[3], Michel Chion defines two ways in which music provokes an emotional response in the viewer - direct, when the music is in sync with the rhythm of the episode vs. when the music opposes the rhythm of the montage sequence. Tsvetelina Tsvetkova distinguishes six functions that music performs in the film - emotional, informational, descriptive, leading, temporal and rhetorical[4]. However, to fully perform these functions, the music must be properly recorded, even if for dramatic reasons a musical fragment needs to sound distorted, remodulated, deformed, it is, in most cases, during the sound post-production the sound designer who "deforms" the finished, technically precise sound recording.

EXPOSITION

The films use original music - written by a composer specifically for the film and/or ready-made music recorded on another occasion. Often the work of composing film music begins after the rough editing - when the image is finished, although in some cases the music was composed and recorded before the editing began - Sergei Eisenstein edited his first sound film "Alexander Nevsky" to the finished music of Sergei Prokofiev. Music can also be composed and recorded before the start of the filming process - for example Sergio Leone shot footage from his film "Once Upon a Time in the West" to the already recorded music of Ennio Morricone.

The sound recording of original music for a film is carried out in recording studios, the best possible equipment is used, as well as special microphone techniques[5] for optimal sound and

[3] Chion, M., - "Audio-vision: Sound on screen", (C. Gorbman, Trans.). Columbia University Press, New York. (Original work published in 1990), page 8-9.

[4] Tsvetkova.Ts.- "The role of music in cinema" 58th Science Conference of Ruse University, 2019 (Цветкова, Цв., - „Ролята на музиката в киното“, доклад, 58-ма научна конференция на Русенски Университет, 2019.

[5] Stefanov, P., - "Recording Symphonic Orchestra", 58th Science Conference of Ruse University, 2019 (Стефанов, П., - „Звукозапис на симфоничен оркестър“, доклад, 58-ма научна конференция на Русенски Университет, 2019 .

subsequent multi-channel mix. Different types of ensembles require different microphone settings, in accordance with the natural acoustic features of the instruments[6] [7].

The use of ready-made music is also a common practice in the film industry, but although not specifically recorded for the movie, the music is mostly high-quality, professional studio recording.

When, according to the script, it is necessary to see playing / singing characters in a frame (so-called narrative / diegetic music[8] - or music whose sound source is seen in a shot and can be heard by both film characters and viewers), there are two approaches to achieve that: one of the possible solutions is to not record any music on the set - one can use pre-prepared playback during shooting and simulate the musicians playing / singing. However, in cases where it is necessary to record music synchronously with the shooting of the image (the alternative approach), the sound mixer on set faces several problems.

To begin with, the acoustic parameters of the rooms in which a film is shot are usually drastically reduced compared to those in a recording studio. Whether the locations are in pre-prepared pavilions or selected existing architectural sites, their selection is based on whether they are suitable for the scenes to be shot, for the era of the film, whether they are convenient logistically, etc. The sound mixer of feature productions often is part of the team that chooses the locations, he/she could consider how suitable the place is for recording given the natural noise of the environment and what is the reverberation time. Of course, there are locations that are chosen despite the presence of unwanted acoustic parameters for quite objective reasons: this is the only place suitable for shooting in the era; the only place the production can afford to rent; logistically it is the most convenient to move the team, etc. And while in feature film it is still possible for an acoustically inappropriate environment to be an argument for a change of location, in a documentary - where real-life characters are filmed - it is practically impossible. The sound recording process in a documentary - even if a preliminary script is available, is often unpredictable since it captures excerpts from real life.

The next significant problem with the sound recording of music during the shooting is that the sound recording equipment in the field is the typical one for film production - namely a directional microphone-shotgun mic (there can be two of those), radio microphones and MS and/or XY. However, even if it has a larger set of microphones, the sound mixer is not able to apply the recording techniques discussed in the Symphony Orchestra Sound Recording report[4], as the technical equipment should not be visible in the shot. In the long/wide shots it is practically impossible to make a useful, direct sound recording even with the directional microphone/boom. The movement of the camera is often a problem for placing stationary microphones even in the more closed shots. In these cases, a great deal of ingenuity must be applied as to where and how to hide radios and other microphones if possible.

The costumes of the actors / singers / instrumentalists are the next obstacle to the recording of music in feature films since the radio microphones need to be hidden under the clothes, and in some cases the face is covered with heavy silicone makeup or even a full helmet or mask[9], which further complicates the process.

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[6] Stefanov, P., - "General Acoustic Features of Wood Wind Instruments", 60th Science Conference of Ruse University, 2020 (Стефанов, П., - „Общи акустични особености на дървени духови инструменти", доклад, 60-та научна конференция на Русенски Университет, 2020) .

[7] Stefanov, P., - "General Acoustic Features of String Instruments", 56th Science Conference of Ruse University, 2017 (Стефанов, П., - „Общи акустични особености на струнни инструменти", доклад, 56-та научна конференция на Русенски Университет, 2017).

[8] Wakefield, Elizabeth M.; Tan, Siu-Lan; and Spackman, Matthew P.. The Effects of Diegetic and Nondiegetic Music on Viewers' Interpretations of a Film Scene. Music Perception: An Interdisciplinary Journal, 34, 5: 605-623, 2017. Retrieved from Loyola eCommons, Psychology: Faculty Publications and Other Works, http://dx.doi.org/10.1525/mp.2017.34.5.605.

[9] Trencheva, E. – "From Metropolis to The Matrix", 2009, Panorama, Sofia (оригинално заглавие Тренчева, Е. - "От Метрополис до Матрицата", 2009, Панорама, София).

Outdoor music recording is also specific - acoustic problems such as unwanted reverberation are rare, but other challenges are often present. First, the atmospheric conditions - in too cold/hot and/or too humid weather the string and wooden wind instruments quickly deteriorate, which requires to provide time for tuning; it is necessary to tune those periodically; if it is raining or wet snow is falling, the instruments must be protected from excessive moisture; at negative temperatures the vocal ensembles cannot sing for a long time.

Outdoor shooting, of course, also accompanied by problems with the relatively noisy environment. Even with the most precisely chosen quiet location, the soundtrack includes unwanted noises: distant traffic / birds / wind / sounds from human activity, sounds from the action that takes place in the frame and in complex technical shots - sounds created by the film crew itself. Some of these noises, even if they are desired as being suitable for the dramaturgy of the film, are unusable because they are mixed with the music, and it is necessary to be present as separate sound elements to be able to perform precise multi-channel mixing[10].

The task is further complicated by the point of view of the subsequent editing of the image[11]. The tempo at which the music will be played/sung must be accurate, and there must be no drastic differences in the playing of the different takes. A serious problem would arise if in each take the piece of music is played at a different tempo - the difference will be heard when moving from take to take (when editing the image), and the holistic perception will be lost. In this case, the option to use only one sound take in two or more takes is eliminated - due to the different tempos, the sound from the specific take will not be in sync with the next. Other essential factors to make it possible to video edit in post-production include the movement/mise-en-scène of the musicians in the frame, the exact place where the playing starts and the sequence of the different music pieces at different shots.

A good example that illustrates these problems was the shooting of the movie “Zalog” (director Svetoslav Ovcharov) that was shot in January/February 2021. I was the sound mixer on set in that production.

After a long discussion with the director, a decision was made to record all of the following directly on the set: a vocal ensemble of five people and a soloist, string duo - violin and cello, quartet - clarinet, violin, double bass, tarabuka/snare drum; military orchestra - two flugelhorns, Waldhorn, trombone, tuba, snare drum, big drum, cymbal.

The repertoire that had to be played was just as diverse - an authentic folk melody for the vocal ensemble; Polka, 19th century - string duo; three traditional gypsy dances, a Horo dance (traditional Bulgarian dance), a popular 19th century European dance performed by a quartet; “Gallopade” and "Shumi Maritsa" in a version from the time of King Ferdinand performed by the military orchestra; signals for solo snare drum and flugelhorn, etc.

The recording of so many ensembles and repertoire required quite solid preparation that began months before the start of the filming. An important task during the pre-production period was the meeting and discussion with the costume designer of the production of possible problems with the fabrics of the clothes during the recording. The sound recording was a significant factor in designing the costumes (as far as possible). The shooting of the movie took place in the coldest period of the winter months. The planned costumes (required to be historically accurate) had to be very warm, thus placing microphones under the clothes would cripple not only the sound recording of the vocal performances, but also the dialogue. Following our discussions, the production designer modified some of the costumes - made special holes in the heavy overcoats and uniforms of the actors, so that the head of the radio microphones was practically on the garment without

[10] Tsvetkova.Ts.- "Multi- channel surround sound design in contemporary cinema" 2020, doctoral dissertation, NATFA, Sofia (оригинално заглавие: Цветкова, Ц "Дизайн на многоканалната звукова среда в съвременното кино" , 2020, дисертация , НАТФИЗ, София).

[11] Altaparmakova, N., - ‘Montage and non-montage principles in constructing the film essence’, 2016, doctoral dissertation, NATFA, Sofia (оригинално заглавие: Алтъпармакова, Н., - ‘Монтажни и не монтажни принципи при изграждането на филмовата действителност’, 2016, дисертация, НАТФИЗ, София).

being visible. For some costumes special hidden pockets were made to hold the radio-microphone transmitters - for example, the main actress's transmitter was hidden in the tournure of her dress.

The choice of recording equipment was also essential. We had six identical radio microphones, two directional microphones, an XY and an MS microphones. I was involved in the scouting of all locations. Fortunately, the noisiest (next to a train station) dropped out after discussing the significant sound problems it will create.

The shooting was taken in three or four main interiors - a pavilion and buildings from the era in the center of Sofia, Bulgaria, and several exterior locations. Controlling the acoustic parameters of the premises was not possible - the sound recording had to consider the specifics of the architecture. Together with the director and the cameraman we estimated the tempo for playing/singing each of the musical works and conducted numerous rehearsals and pre-recordings of each ensemble/instrument/vocal ensemble, which helped greatly with preventing many of the problems during the filming period.

The actual shooting of the film began in January, and on some days the temperatures of the locations in the exterior dropped to -12 degrees Celsius, and it was at that time that the vocal ensemble, quartet, and military orchestra had to be recorded.

When recording the vocal ensemble, all performers were equipped with radio microphones, a stationary MS microphone pointing to the performers (when the shots allowed it), and the soloist was recorded with a boom microphone. Extremely cold weather required many breaks between doubles (we had planned those in advance) to keep the performers warm. To make sure that the "a cappella" singing will be at the same tempo and will start from the same tone, those were explicitly set with the performers before the start of each take.

When recording the Military Orchestra, in addition to the cold weather, a serious problem was the proximity of the location with a busy road, as well as the river that passes directly under the bridge on which the orchestra was performing. Depending on the takes, a combination of the two directional microphones, MS and XY, was used. It was necessary to change the microphone setting for each different shot so that the equipment could not be seen. The tempo was (again) explicitly set before each double, as the timing for playing in the shot was precisely determined and rehearsed in advance, so that a subsequent video editing of the material was possible.

The most significant challenge for the recording of music in this project was the recording of the quartet. Apart from the fact that it was very cold and snowing (the clarinet was constantly freezing!), the musicians had to move while playing, which in general completely ruled out the possibility of using boom microphones: they worked, but the sound from them was distant and could only be used as control sound. In addition, chickens, ducks, dogs were present at the location, and the musicians had to walk in parallel with a cart pulled by horses, and at some point, in the episode one of the actors fires a revolver.

It was necessary to decide how to hide the radio microphones and in particular their transmitters, and at the same time to be able to record relatively high quality music, along with not seeing cables, microphones and transmitters in the frame, but also the musicians to be able to move, despite the equipment hidden in their clothes or instruments.

The clarinet microphone was glued to the edge of the tube, passing the cable through a hole in the performer's clothes; and we managed to hide the transmitter on the belt of his pants.

The violinist's microphone was hidden under the chin rest (the capsules we had planned were really tiny - otherwise it would not have been possible), the cable passed through the scarf on his left hand which was up all the time while playing, the transmitter - hidden in the clothes.

The tarabuka and a snare drum were played by the same person and, according to the mise-en-scène, he wears them both at the same time, changing them periodically. Due to these circumstances, it was impossible to attach a microphone to either instrument. We did a few rehearsals, and finally decided to place the microphone in a specifically designed gap in the performer's clothes, pointing toward the usual position of the instruments. An additional problem arose with the double bass - we hid the microphone between the bridge and the tail piece. The most significant problem was that the cable to the transmitter restricted the performer's movements when placed on a garment or shoe. It was creating a risk for the musician to stumble and fall, drop the instrument, step on a microphone/transmitter/cable, etc. I decided to glue the transmitter to the back of the instrument, and its position had to be moved depending on the shot in order for it to stay hidden.

All music performances were additionally recorded wild on spot, without the camera recording. After initial discussions with the director and the producer, knowing how complicated the task is, we scheduled time during the shooting at each location for recording the musical works without shooting. During the wild recordings we strived to use optimal (depending on the conditions) microphone settings. For example, all radio microphones were over the costumes, isolating the noise components, as close as possible. We placed optimally the stereo pairs we had and used directional microphones for solo instruments and solo voices (they are too directional, and the signal received from them is dotted), etc.

CONCLUSION

In conclusion - the recording on the movie set of musical performance is a complex task with many unknowns and is specific to each different film project. Requires preliminary preparation and joint work between several departments in the production - the attention of the director, cameraman, producer, designer: as well as specification of technical, technological, musical, instrument-specific problems, excellent knowledge of the musical pieces, adapting to meteorological conditions, etc. Many of the successful solutions during shooting are a matter of excellent preparation, but also adapting to the situation, finding the right solutions, flexibility and to some extent ingenuity on the part of the sound mixer on the set.

REFERENCES

Altaparmakova, N., - 'Montage and non montage principles in constructing the film essence', 2016, doctoral dissertation, NATFA, Sofia (***Оригинално заглавие***: Алтъпармакова, Н., - 'Монтажни и не монтажни принципи при изграждането на филмовата действителност', 2016, дисертация, НАТФИЗ, София).

Chion, M., - "Audio-vision: Sound on screen", (C. Gorbman, Trans.). Columbia University Press, New York. (Original work published in 1990).

Stefanov, P., - "Recording Symphonic Orchestra", 58th Science Conference of Ruse University, 2019 (Стефанов, П., - „Звукозапис на симфоничен оркестър", доклад, 58-ма научна конференция на Русенски Университет, 2019).

Stefanov, P., - "General Acoustic Features of Wood Wind Instruments", 59th Science Conference of Ruse University, 2020 (Стефанов, П., - „Общи акустични особености на дървени духови инструменти", доклад, 59-та научна конференция на Русенски Университет, 2020).

Stefanov, P., - "General Acoustic Features of String Instruments", 56th Science Conference of Ruse University, 2017 (Стефанов, П., - „Общи акустични особености на струнни инструменти", доклад, 56-та научна конференция на Русенски Университет, 2017).

Trencheva, E. – "From Metropolis to The Matrix", 2009, Panorama, Sofia (***Оригинално заглавие*** Тренчева, Е. - "От Метрополис до Матрицата", 2009, Панорама, София).

Tsvetkova.Ts.- "Multi- channel surround sound design in contemporary cinema" 2020, doctoral dissertation, NATFA, Sofia (***Оригинално заглавие***: Цветкова, Ц "Дизайн на многоканалната звукова среда в съвременното кино" , 2020, дисертация , НАТФИЗ, София).

Tsvetkova.Ts.- "The role of music in cinema" 58th Science Conference of Ruse University, 2019 (Цветкова, Цв., - „Ролята на музиката в киното", доклад, 58-ма научна конференция на Русенски Университет, 2019.

Wakefield, Elizabeth M.; Tan, Siu-Lan; and Spackman, Matthew P.. The Effects of Diegetic and Nondiegetic Music on Viewers' Interpretations of a Film Scene. Music Perception: An Interdisciplinary Journal, 34, 5: 605-623, 2017. Retrieved from Loyola eCommons, Psychology: Faculty Publications and Other Works, http://dx.doi.org/10.1525/mp.2017.34.5.605.

