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ESCOLA DAS ARTES

PORTO

FOLEY AS STORYTELLING: INTERNSHIP AT STUDIO SOUND TROOP

Internship Report presented to the Portuguese Catholic University to obtain the Master's degree
in Sound and Image

Lucía Beaumont

Porto, July 2024



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- Especialization in -
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Work carried out under the guidance of

José Vasco Cavalho

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Acknowledgments

My sincere thanks to Miguel, Diego, Kevi, Xes and Carvalho, for welcoming me and for showing me their foley artistry.

I also extend my gratitude to Professor Vasco Carvalho, for his guidance in the making of this research.

Finally, I would like to mention my parents, Mariana and Martín, for helping me achieve my objectives and for their unconditional support over the past two years.

Abstract

Foley as storytelling: Internship at foley studio Sound Troop

This report reflects on the experiences and skills acquired during the curricular internship focused on foley art at the studio Sound Troop in Santiago de Compostela, Spain. Over the course of the six months internship, I applied the knowledge learned during the Sound and Image Master's Program and refined my abilities in foley editing, recording, mixing and performance, which are reviewed in detail in this report. The document includes an analysis of the studio foley stage, explaining how Sound Troop controls the acoustics of the room to achieve the desired sound, and concluding that this recording technique prioritizes the naturalistic and aesthetical elements of the craft. Additionally, the report offers reflections on the artistic and storytelling aspects of foley, addressing the concerns about the intersection of artificial intelligence with the human made foley. As an artist, the objective with this dissertation is to show the possibilities and concerns surrounding foley today, and how it can be integrated into artistic practice.

Keywords: Foley Art, Sound Design, Sound Recording, Room Acoustics, Film post-production.

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Glossary

Acoustics - In this dissertation, it refers to the acoustical characteristics of the foley stage but also to the physical dimension of listening (Stahl, 2011).

Acousmatic listening - *“A mode of listening that focuses on the sonic traits of the recording instead of focusing on “what is” recorded”* (Pinheiro, 2022).

Audio Clips – Contiguous sound excerpt taken from a track.

Artificial intelligence (AI) - The application of algorithms, enabling machines to perform tasks that traditionally human minds do, leading to the delegation of human tasks to machines as technology advances (Liawrungrueang, 2024., Lewis & Sarkadi, 2023).

Audio film - A novel format of sonic art that explores the possibilities of telling a story solely through sound, using sound processing and spatialization (Lopez & Pauletto, 2010).

Automated Dialogue Replacement (ADR) - The process of re-recording dialogue in a studio during the sound post production, synchronized to picture (Ament, 2022).

Condenser microphone - More commonly used type of microphone to record sound effects. They can offer a truer reproduction of the original sound as it is more sensitive (Viers, 2008).

Cardioid - Microphone pattern. It's a heart shaped pattern that gathers sound primarily from the front of the microphone, with some rejection of the sides and all of the rear (Viers, 2008).

Crossfade – Audio editing transition between two clips, decrease of audio in the first clip and increase of audio in the next one.

Datasets - Collection of data.

Equalization (EQ) - Plug in, it allows to increase or decrease the gain of a specific frequency with little or no effect on the surrounding frequencies (Viers, 2008).

Fade-in - Audio transition. The sound starts with silence and increases gradually to full volume.

Fade-out - Audio transition. The sound starts with full volume and gradually decreases to silence.

Foley stage - Area where the foley recording and performance is done (Ament, 2022).

Gain - Microphone gain refers to amplifying the audio signal picked up by the microphone, measured in decibels (dB).

Mixing - Process where a multitrack material is balanced, treated and combined into a multichannel or mono channel format (Izhaki, 2018).

Mono - A single channel audio, when you hear the same thing in both ears and both speakers reproduce the same sound.

Musique concrète - Music that is made from acousmatic sound. Concept created by Pierre Schaeffer, bringing attention to the daily sounds and their musicality, advocating for the potential patterns, gestures, and envelopes in every recorded sound (Pinheiro, 2022).

Performance - In the context of foley art, performance is when the artist recreates the sounds made by the bodies in the video. The foley artist considers the feel of the object or surface to perform the action of the characters (Donaldson, 2014).

Picture in Picture (PIP) - Video editing technique that lets you overlay two videos or images in the same video frame (Microsoft support).

Phase issues – Phase is how the waves interacting align or misalign. When sound waves are combined and they are of equal amplitude and frequency with different states of pressure, the waves can cancel each other out, resulting in a weak or thin sound. If multiple microphones record the same source it is possible it can produce sounds that are out of phase when combined together, and generate phase issues (Viers, 2008).

Plug-in – It is a software component inside a DAW that can be used for audio signal processing, analysis and sound synthesis.

Props (or prop) – Objects that can produce sound to mimic another object or suggest other sounds.

Pro Tools - The digital audio workstation used during the internship.

Radio drama - A novel format of sonic storytelling that employs narration and sound effects to tell the story (Lopez & Pauletto, 2010).

Reverberation - Sound waves that occur in enclosed spaces. In a room, the sound waves will keep travelling until they lose energy. When these waves encounter a surface, they bounce off and head in another direction (Viers, 2008). It is the result of many sound reflections during time.

Sound Effect – Any sound, other than music or speech, artificially reproduced to create an effect (Unabridged Dictionary, 2006 as cited in Viers, 2008).

Soundscape - According to Murray Schafer, a soundscape is composed of keynotes, sound signals and a sound mark. They shape the sonic features of a given location, unfolding in time as the space unravels (Pinheiro, 2022).

Sound Field - Area where the sound is being propagated.

Sound Reflections - When sound moves in a room, it bounces off all its elements (floor, wall, objects) and projects from them with less intensity, reverberating until it dies out (Everest, 2022). Sound reflections are the same sound bouncing back with less energy.

Stereo - Consists of a multi-channel system that replicates a spatial dimension. Each ear receives slightly different information.

Stems - The groups of dubbed sound material for music, dialogue, and sound effects. (Ament, 2022).

CHAPTER 1 INTRODUCTION

1.1 Context and motivation

After a bachelor's in fine arts, my interests and my artwork intuitively turned into sound art projects. I received a sound theoretical and methodological formation yet had difficulties to implement my art projects as the program did not include sound design. Therefore, I looked after a Master Program in Sound and Image to complement my competencies and equip me with the tools and techniques required to enrich my art practice.

During the first year of the Master Program, I developed an interest in foley art, both as a practical application and as a subject of research. I saw the relation it could have with my sound art practice: foley is a part of the soundscape of a story. Additionally, I saw the possibility of researching and questioning the existence and permanency of foley art with the surface of Artificial Intelligence (AI). I believed my competences and background in art could make me understand this practice from another perspective and add another layer of creativity when implementing sound design projects.

For this reason, opting for an internship for the second year of the Sound and Image Master was the best path for me, to improve my foley techniques while doing research in the field. With this interest in further exploring foley art, I applied to the studio Sound Troop in Spain. What drew my attention to Sound Troop was that they used a different technique for foley, recording with room acoustics. This was an opportunity to learn new aspects about foley recording but keeping a focus on the storytelling and artistic aspects of the process. Furthermore, it was an opportunity to learn how to set up a foley stage, the workflow in a sound studio and observe professional foley artists and foley mixers work as a team. Finally, doing the internship in Spain gave me the opportunity to explore a different although not so distant culture.

1.2 The Studio

Sound Troop is a studio in Santiago de Compostela, Spain. They specialize in “foley on location”, offering sound reality through natural acoustics for national and international series and films. They also offer services for mixing and ADR recording. Sound Troop was founded by Diego Staub and Miguel Barbosa in 2014. (De Ávila & Tomé, 2023). Since 2019 they have the studio in Santiago and nowadays, they are a well established and renowned company in Spain for film sound post production, being one of the more active sound studios in Galicia. The team is made up of five people: Miguel Barbosa, as a Foley artist, Diego Staub, as a Re-recording mixer, Kevi Aragunde as a foley editor, Kevin Carvalho as a foley Mixer and Xes Diéguez as a Foley artist. During my

internship, they were working simultaneously on five projects per month, a mix of TV series and films for national and international clients. Most projects are for foley recording and editing. The few get to Sound Troop for ADR recording and re-recording mixing. They operate with two work shifts, a morning shift, and an evening shift, which adds flexibility and efficiency for the employees. The studio has three main floors: the ground floor contains the foley stage, which includes one soundproof area and one reflective area, the first floor houses the mixing room, and the top floor is dedicated to editing.

Some of their productions got into the Cannes Festival, for example this year, “Miséricorde” by Alain Guiraudie; and they have been nominated and won the Mestre Mateo award in Galicia. They are known for making sound for Julieta by Pedro Almodóvar and La Chimera by Alice Rohrwacher; and they have been recently recognized in Spain for the series Rapa (created by Pepe Coira and Fran Araújo) and Nos Vemos En Otra Vida (created by Jorge and Alberto Sánchez-Cabezudo).

Sound Troop leadership believes in foley as something that must be human and natural, they want their work to have sound reality recording with natural acoustics of the stage. To achieve this, they have a meticulous process in both sound recording and mixing.

1.3 Objectives

The objective of this internship was to refine my skills in foley performance and editing, aiming to understand the performative and creative aspects of this technique to obtain a persuading sound and enrich the narrative in my projects. Additionally, I sought to increase my knowledge of the technical aspects of the process and explore the possibilities within the world of foley.

Besides my objective of improving my execution and editing skills, this research focuses on the recording technique that they use at the studio. The objective was to fully understand the technique and learn about the storytelling aspect of foley by the end of the internship. Also, observe how Sound Troop made their choices depending on the feeling of the scene or the character that they are stringing along with. The objective of this research is to understand foley as an artistic practice, analyze the technique needed to achieve the natural and human aspects of foley and reflect on the current implications for foley vis-à-vis the emergence of new technologies, notably AI. With this experience, I gained more confidence in my skills as a foley artist and sound designer, and I achieved the objective of integrating the new knowledge about foley and recording into my artistic practice.

Additionally, I learned about the workflow in a professional setting. In this sense, Sound Troop was a great choice, as it provided me with an understanding of the job's pace. Moreover, it offered me the flexibility and time needed for my learning and creative process.

1.4 Methodology

The research developed in this document has a constructivist perspective. It's based on practical work and guidance from specialized sound engineers and foley artists. With this experience, I was able to refine my abilities and learn the techniques they use for recording, editing, and mixing. The dissertation has a qualitative design as is subjective to my experience and mostly based on descriptive data analyzed at the light of the foley art theory. The methods to collect the information during the internship were: self-data (personal data) (Leavy, 2022, p.124) during the whole process I took daily notes to register the work done and make reflections about my personal experience on performed activities during the internship. This research was also made with interviews to my colleagues, observing their work and operating the equipment. The practical work was supervised, and I was given feedback throughout the duration of the internship. I learned by assisting my colleagues and watching them work and operate.

This study was a combination of theoretical and practical work, as I believe they enrich each other and is useful to reflect on the practical work. The practice-based learning is key to develop professional skills, as the labor market is very competitive and demands hands-on experience (Billet & others, 2014). This type of learning shapes the professional competencies to later be able to manage situations in the work environment (Tigelaar & van der Vleuten, 2014). Besides, this allows the application of the subjects learned in the masters during the first year and to improve any skill in a real work environment, participating in the projects and observing and analyzing the information (Leavy, 2022, p. 18). Sound Troop was a very good choice for this experience as they provide with enough room and flexibility to learn each of the roles needed at the studio while, at the same time, challenging me to keep up with their standard for the work.

All the work was created with the DAW Pro Tools and the recording was done with the Avid S3 control surface.

1.5 Structure

This report has five chapters. Firstly, the introduction mentions the context, motivations, and objectives for the internship, as well as presenting the company. The second chapter is the state of the art, divided in three groups of references and concepts: I) concepts about foley performance and the storytelling aspects of this form of art; II) the references about the recording technique with room acoustics and the foley stage set up; and III) the notions about new technologies revolving foley and sound design. The third chapter contains the internship structure, with the chronogram

and the projects worked on during the six months duration of my stay, detailing the activities and workflow. The fourth chapter is a review of the internship's process, detailing the techniques used for each step and explaining the set-up of the foley stage, including the equipment used to enable the room acoustics' work. Finally, the last chapter presents the conclusions, as well as final reflections of the internship and overall experience.

CHAPTER 2 STATE OF THE ART

This chapter describes the state of the art structured in three parts in line with the goals of this report: foley performance and storytelling, the recording techniques with room acoustics, and new technologies around foley synthesis.

3.1 Foley art

This section summarizes the discussion around foley as a form of art from an artistic point of view, to understand the creativity, the narrative, and the emotional significance that foley brings to artistic expressions.

The performative aspect of foley is one of the most evident aspects in this form of art, as the foley artist embodies the character they are portraying. As Gary Hecker says: foley “*is a performance*” (Hecker 2010 p. 343 as cited in Pauletto, 2017). Foley is the performative aspect of post production sound and has an important role in the soundscape to make the scenes more real (Ament, 2022). Hence, the mimicking is not only to sync the movements but also to embody the emotion that the character is expressing. The foley artist performs with expression and that translates and shapes the whole performance of the character. For example, the footsteps of a villain infuriated after losing a fight cannot sound identical to the footsteps of a small child playing football after school. The energy, the pace and the timbre need to be different. In other words, the foley is narrating the emotions of the character and contributing to the veracity of the scene. It has a human element, and it creates meaning and generates emotions through interactions (Pauletto, 2017).

This has direct relation with another aspect of foley, the narrative and the story telling. It can be used to tell parts of the story, even without dialogue. For example, with the sound performed, it is possible to express the nervousness of a character: with the movement of the body, the touches, and the grabbing of objects. Or, alternatively, the belligerence of a scene: intense breathing, rough touches, hard footsteps, and fast movements of the cloth. Further, depending on the film ‘s genre, the style will be different. For comedy it can be exaggerated and cartoonish. For a drama, it can be stylized, realistic and heightened. The genre of the film affects the choices and execution of foley, and it can even have an impressionist style: a scene can have a general sense of the prop but without the possibility to discern one character's sonic action from another. In other words, it is about recreating a sensation or a soundscape of the action (Ament, 2022).

Understanding foley as the creation of a soundscape helps to appreciate the artistry behind it during the recording and editing phases of a film. This is important because foley is a work of layering a soundscape: building it with textures and rhythms to create an atmosphere that matches with the

visual scene. This recreation of a soundscape is sensorial and emotional; depending on what emotion the scene evokes, the approach should be different (Pineiro, 2022).

The fact of telling a story solely with sound, without a human voice, gives the ability to understand the power of sound as a form of narration by itself. In the paper *“The sound machine: A study in storytelling through sound design”* Lopez & Pauletto (2017) explore this concept, executing a listening test of an audio film created without speech. The objective was to verify the extent of the public’s ability to understand the plot, while recognizing different characters and locations. They conclude that the public were able to summarize parts of the story, mainly the realistic ones (real objects and human actions). The unrealistic ones (fantasy images like the crying of a flower, for example) were not identified. It seems that speech is still necessary to communicate certain elements of storytelling but sound by itself can tell a big part of it (Pauletto, 2010).

As Pauletto also mentions in *“The voice delivers the threats, foley delivers the punch”* sound design becomes first and foremost a form of emotion design. Foley expresses the emotional state through the sounds produced by bodies and objects in the story and can be more immediate and truthful than music. Engages the brain at a different level, at a sensorial and tactile level. (Spence & Zampini, 2006, as cited in Pauletto, 2017).

Considering this, foley sounds need to be persuasive and not necessarily linked with a sort of source fidelity. Many times, using a prop that is not the actual object in the image fits the best to represent the sound (Doyle, 2013, as cited in Pauletto, 2017). This works because in terms of perception, there are two spaces interacting simultaneously in terms of perception: first, the implicit space, which is the movement produced in our mind by the sound, and second, the movement of the visible objects on the screen. As Chion (1994) explains, this is called “synchresis”, where the audience renders and recognizes sounds to be truthful, effective and fitting. It is the synchronic encounter of a sonic and visual instance (Chion, 1994). They render or express the sensations associated with the situation (Pauletto, 2017).

This is why foley intention becomes extremely important. As Ward (2015) mentions, foley sounds may concretize or dematerialize a visual image and modify meaning (Ward, 2015, as cited in Pauletto, 2017). In this sense, foley becomes a subtle art. It doesn’t need to draw attention to itself, foley must be almost imperceptible, like a sensation (Ament, 2022, p.88). As Doyle (2013) mentions, foley art may be difficult to notice when done effectively but essential for the film to sound real (Johnson, 2011 as cited in Doyle, 2013).

There are two factors to consider during performance that need to be balanced: the need for synchronization and the emotional resonance. Foley is about the emotional and textural feeling of a sound and its relationship to the scene. Foley artists handle props according to the dramatic significance of the scene (Wright, 2014). This might result in the sequence not being fully

performed in synchronization with the image, but the feeling is the correct one. This is preferable to a performance perfectly synchronized but without emotion.

Another comparison can be made in relation with the persuasive and intent aspect of foley. Although musique concrète and foley art are different techniques, both share the concept of acousmatic, that is the experience of perceiving the sound dissociated from its source (Pinheiro, 2022). The foley artist chooses the prop according to the sought sound. It is a creation process similar to one of musique concrète.

About perceiving a sound, acousmatic listening is at the core of foley practice. *“Acousmatic foley combines the acousmatic focus on sound, while informed by the fictional crafting of foley”* (Pinheiro, 2022 p. 144). The sound prop plays a specific role in the narrative, that can evolve into a sound actor and be part of the theme of the film. Basically, to rephrase, a prop used by the artist can have such a distinguished sound in the scene that it can become part of the theme and have an important role in the narrative. In this conceptualization, it can be considered a sonorous object. An example Sara Pinheiro (2022) gives for this, is the chance missed in *Inception* (Nolan, 2010).

“The main character, Cobb (Leonardo DiCaprio), carries a totem with him. It is a spinning top that he relies on, to find out in what (reality) dimension he is living in. If he is dreaming, the spinning top spins ceaselessly. If he is awake, it should fall at some point. In the final scene, Cobb finally makes it home and tests the totem one last time. And only then, it is possible to slightly hear this potential sound-actor. Precisely because one should wonder if it will fall or not, the sound is accentuated. This totem is, in its potential, a sound- prop. Additionally, its sound could have played a role in the narrative, a character of its own and then, eventually, it could have become a sound-motif. But the sound of prop was never really established, the sound itself never acquired particular meaning, and certainly was not part of the musical theme. Had this motif been implemented, there would be no need for so much “music driving” in the film. This totem could have been to the soundtrack what a sonorous-object is to musique concrète. As a sound-prop, it could have developed itself as a signal, taking the causal listening mode towards reduced listening within that fictional experience.” (Pinheiro, 2022, p.114).

When foley takes an active part in the sonic narrative, it takes the shape of an acousmatic composition in a cinematic context. In fact, acousmatic music can be considered a form of “cinema for the ears” (Dhomont & Bayle, as cited in Kane, 2014, p. 51), an audio film or radio drama.

3.2 Foley stage and acoustics

Foley art depends not only on the relation of the object with the narrative but also with the space in which it develops. To introduce this next section, it is important to mention “les bruiteurs” (France). Their technique is mostly considered an art form that prioritizes the environment. For the

recording space to be more believable and work with the acoustics of the room, the foley stages are composed of different rooms simulating the areas of a home, separated by curtains. This aesthetic sense is more naturalistic (Ament, 2022).

This natural touch goes even further, to capture the real world sound some foley artists prefer to record their footsteps outside. As an example, Mark Mangini stated that, to find this naturalistic approach, he recorded foley in the exterior. For this he scouted locations and made the foley artist work in set. He insists this gave a more authentic look and sound. (Ament, 2022, p.100).

There can be two distinctive ways of recording foley. Firstly, the foley recorded without adding perspective and recording the sound flat, in a direct way. This technique, the most common one, consists of recording in a soundproof studio with a microphone directed to the sound source. The objective is to obtain the “cleanest” possible sound to only add perspective later on.

Secondly, another way to record foley is to search for that perspective during the recording itself. This is an interesting approach to foley as sound is the reinterpretation of actions in a specific room, of a specific acoustical space. Vanessa Ament (2022) makes a compilation of foley artists’ work using this technique. One of the mixers that work with room acoustics is David Jobe, using two or three microphones on stage. One mic is used to record the prop or footstep, and another might be used for reflection (by aiming it at the ceiling or putting it in an adjacent room) (Ament, 2022). Additionally, this makes the sessions more efficient because there is less time used later in the mixing room adding effects.

Another example of the use of multiple microphones to record foley, is George Lara. He uses 4 microphones to “paint” perspective. *“George Lara, Foley mixer for Marko Costanzo at C-5 in New Jersey, likes to use four microphones to paint perspective, utilizing two Sennheiser 416 mics and at least one Schoeps. “We have a big room,” Lara relates, and as Costanzo adds, he and Lara focus on “matching what we hear in production.” While Costanzo and Lara prefer to mix Foley in a live room, part of the Foley stage is designed to sound more like an exterior, which is less live”.* (Ament, 2022, p.114).

Undoubtedly, this strategy comes with advantages and disadvantages: if the room has too much life, it’s more difficult to record the quiet sounds and delicate cues, and it can be even difficult to match the reverberation of the scene. On the contrary, recording with perspective, keeps the sensibility on the scene. Evidently, this working technique depends on the foley stage and that is why the design of the studio is important to accomplish the artist’s goals.

Whatever the technique chosen, the role of the stage is critical. Foley has aesthetic necessities but also practical ones. In the case of the foley recording on location, it is possible to create different acoustical conditions in a foley studio to be able to record both interior and exterior sequences

inside the studio Therefore, following Wenmaekers and Hak (2009) study, there are certain requirements to build a proper stage for foley recording (Wenmaekers & Hak, 2009).

The first requirement is the reverberation, that is the quantity of sound waves or reflections that move through the stage. Therefore, the studio should be prepared to allow a change in the amount of reverberation it offers. In practical terms, that means it must be an almost dead room, only slightly reverberant. As mentioned before, if the room has too much life, it can become complicated to record soft sounds, control all the frequencies and have freedom moving the microphones across the stage. If alternatively, the room is fully isolated, it would not offer any reverberation to work with.

Secondly, in any studio, all the reflections should be controllable, principally the early reflections. Therefore, even if the goal is to get the natural reverberation, a lot of isolation for the construction needs to be considered. Even more with sound absorbing spot for the section of the studio reserved to record exterior sounds. It's advised to have this room separated by a soundproof blackout curtain to have a fully isolated space for exterior sounds.

Third, the sound field needs to be as diffuse as possible; the sound must be propagated in a diffuse way, otherwise there are going to be reflections. Indeed, reflections are always going to exist, yet the objective is to avoid odd frequencies. In a slightly reverberant room, this diffusion will be obtained by having some foam panels in the corners, on the ceiling and carpets on the floor. A mix of isolating and reflective materials.

Besides these requirements, there are some general rules to follow: the foley stage must work electronically, the wiring needs to be thought out before the construction to avoid any electric hums during the recording or at least, to have awareness of the points where the hum is coming from. Finally, in terms of design, the foley stage needs a foley pit with different surfaces for the performance of footsteps. Ideally, having all different sorts of surfaces as characters can move from one environment to another (Ament, 2022). Making a stage for foley can be a challenging task as it consists of the mediation of two factors: the reproduction of a studio that resembles a home room filled of different surfaces and materials, and simultaneously, the control of its acoustic properties.

Finally, it is interesting to come back to the idea of foley as a soundscape (Stahl, 2011) and referring and focusing to the acoustic aspect of it. As Murray Schafer assumes: *“a soundscape of a specific state of nature of the acoustic and auditory interrelatedness of objects, materials, communities, and natural phenomena resonating. In that sense, if we understand foley as a part of a soundscape, the making of the movements, places and sequences need to be as acoustically coherent as possible.”* (Schafer, 1973, p.196, as cited in Stahl, 2011). By this interpretation foley is wiring two acoustic spaces. The one represented visually and the sonic one with the objective of both being merged or matched, so the scene is persuasive and credible.

3.3 Foley and new technologies

What makes foley sound truthful? Is it human character? Gary Hecker said: *“People have tried to do it on machines, but foley is mimicking actions. Some of it you can do, but it doesn’t have that human touch and that human rhythm behind it. There is something organic about having a human do it.”* (Hecker 2007 p.209, as cited in Wright, 2014). Which makes us consider if there is a human element that cannot be copied.

The question if it’s possible to distinguish between a foley sound and a synthetic foley sound is interesting: if people can identify whether the sound is human made or not (De Gotzen & others, 2013). These authors, from the Department of Architecture, Design and Media Technology from the Aalborg University in Copenhagen made an evaluation of everyday walking sounds, asking non expert’s participants to identify if the action performed was a foley sound, a real sound (recorded in location) or a synthetic sound. In this evaluation, when shown audio video tests, the subjects could fully differentiate between real/foley sound and synthetic sounds and even express their preference for real and foley sound. When exposed only to the sound, the participants struggled recognizing actions or materials, and they could not differentiate between real and foley sound. What is noticeable is that the synthetic sound was always getting recognized as synthetic.

This test gives us some idea about humans being able to differentiate the two. What is the actual difference that we are noticing? Or even, what is the characteristic that AI needs to replicate to be convincing, if the objective is to be persuasive?

To reflect about this topic and decipher these questions, it’s useful to do a small selection on the ways that foley synthesis already exists, showing a panorama of what is happening, what is working and what is not. And more importantly, understand the criteria that they have when making these systems.

In the quest about this matter, it is key to understand foley as effects to enhance acoustic properties of a multimedia project. The objective of the machine is to simulate ambiences and objects in a specific room on the screen. Better said, the focus is an object in an acoustical environment and not the human action. The machine objective is to identify and reproduce the object sound.

There are two main ways of doing foley synthesis, one of them consists of programs based on video to sound datasets. This perspective copies the workflow of foley artists. They are conditioned to a visual feature; the model detects the visual objects that are relevant to audio. It copies the analysis

that the foley artist does in the moment of identifying the props. Looking at the different existing research, it's noticeable that they can reproduce realistic foley sounds (things that exist in real life) but when it comes to objects from human imagination (fairies, dragons, magic, etc.) with an absence of concrete references, the program finds it more difficult to replicate them. The algorithms might be able to be creative, in the sense of creating something new based on an amount of data, but still follows the intention and requests of a human being (Wang & others, 2024). In other words, AI might be able to form ideas, but it is always conditioned to the intention of the artist. If we understand imagination as a process that *“lacks the intrinsic ends of belief and intention”* (Gaut 2003 p.280), then AI might not exactly be replicating the same process of human imagination. In the current state of AI, there is still no inherent creativity because there is no imagination.

An example of a visual based system (video-to-sound) is Diff-Foley¹. It generates audio with synchronization to the video, based on massive audio-visual content available on the internet. However, their outputs face the common problem of never getting fully clear audio samples. This direct way of taking video as the actual sound is limited. Besides, this way of taking video as input (like foley artist work) is more complex. An automatic video to sound generation program is a combination of multiple machine learning problems. There needs to be video understanding (Luo & others, 2024).

An alternative is text-to-sound, where the text may be a description for a scene or a sound (Choi & Kang, 2022). An example for this system is Fall-E² (text to sound), Gaudio's foley synthesis, consisting of sound obtained by text prompts. This technique improves the quality of the samples, but it is only a sound generating model, and doesn't have audio synchronization to video.

As the main objective of foley synthesis is the synchronization with video, the most used model is the video-to-sound one.

The technical parts of foley are already successfully copied by AI, and the synchronization aspect will be soon accessible for designers as well. The obstacles come with the realism and accuracy of the sounds. In the paper, *“Sound Designer-generative AI Interactions: Towards designing creative support tools for professional sound designers”* (Kamath & others, 2024), the researchers noted that the designers had an interest in these AI sound generators for sci-fi films. As AI simulates real human sounds but at the same time it's a synthesis machine, it creates unreal sounds, tangible but not real. For instance, it layers elements of something inexistent with something real. Some designers find these tools useful in this type of situations, looking not for accuracy but immersion: to make the sci-fi world truthful.

¹ Diff-Foley: <https://diff-foley.github.io/>

² Fall-E: <https://www.gaudiolab.com/technology/fall-e>.

In this sense, designers are not looking for a replacement for real life sounds (if they can go record by themselves, they will probably prefer to do so). On the contrary, they find interest in these types of plug-ins as a tool to create sci-fi alien-like sounds; that is, a not-so-real world.

Another important angle is understanding AI as a tool. The current focus is flawed. *“Most research in generative AI focuses on building omnipotent intelligent agents that can do it all - agents that can create art or compose music directly instead of being an enabler for creativity. While tools with greater AI agency would work well for novice users, for sound design experts, there are more opportunities for AI as an enabler rather than being a creator in itself.”* (Kamath & others, 2024 p. 9-10).

The ideal would be that designers keep being in full control of the creative process while the AI tools assist. At this point, audio synthesis still shows limits when imagining subjective scenarios. The machine can copy human made things that already exist and create with the amount of data that it has available.

AI should be designed as a tool and not as a replacement for human beings. In this case of foley art specifically, there will certainly exist very accurate systems that replace designers at a technical level. Therefore, the artistic aspect of the practice is extremely important as human creativity and imagination are still needed.

CHAPTER 3 INTERNSHIP STRUCTURE

The assignments during the internship consisted in recording, performing, and editing foley for series and films. The proposal was to assist in the making of the projects that the company did during the six months and be responsible for a few tasks during the sound post production. The internship started the 6 of November 2023, with a 24-week duration, finishing the 6 of May 2024. The internship was presential, which implied moving to Santiago de Compostela. The company had two shifts during the day (morning shift and evening shift) which gave me freedom to choose depending on the responsibilities and availability in the studio.

2.1 Chronogram

Following, the chronogram for the six months of internship in Sound Troop and the report writing:

	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.
Markers									
Editing foley									
Performing foley									
Recording foley									
Report writing									
Delivery + prep defense									

Figure 1 – Chronogram of the six months of internship and report writing.

The first few months of the internship consisted mainly of making location markers and foley editing following their techniques and trying to achieve the expectations that they had for the works. Afterwards, in January, I ventured into foley performing with props and learned the techniques to be a foley mixer. By the end of the internship, I was able to perform every role when

needed. After the internship concluded, the months were invested in researching and writing the report.

2.2 Description of activities

At Sound Troop each employee has a main role: Diego Staub does the mixing, editing and ADRs. Miguel Barbosa is the foley artist doing all the footsteps for all the productions. Kevi Aragunde is the foley editor, Kevin Carvalho is the foley mixer and Xes Diéguez is the foley artist focused on props.

However, everyone can assume another role if needed, and that is the outcome most of the time. Every task and project are executed, reviewed, and edited by everyone. During my stay, they worked on different projects simultaneously, which gives them the possibility to work on more productions and be efficient. This system and workflow allowed the delivery of the work edited in a week, depending on the complexity.

The first month, I got instructed about the process for each project and got familiarized with Pro Tools shortcuts and the setup. The rest of the months consisted of a mixture of exploring and learning each role, depending on what was requested. My work was usually monitored and revised by someone before delivery. They also guided me, giving me corrections and teaching me how to mix and edit correctly. My schedule mostly consisted of making markers for the projects that were going to be recorded and editing for the projects that were being recorded. Besides that, depending on what they needed help with, I would start with recording or performing. By the end of the six months, I was able to learn the technique for each role, to perform, record and edit foley at their pace and finish the day assignment in the time required.

During the past six months, Sound troop did foley for these projects:

In November, they recorded foley for the Disney + series *Nos Vemos En Otra Vida* (Spain), they also recorded foley for the Movistar series *Marbella* (Spain) and for the web series *Ceux Qui Rougissent* (France). This month, I did markers for episodes of *Nos Vemos En Otra Vida* and helped with the foley editing of some episodes of *Marbella* and *Ceux Qui Rougissent*.

In December, they started recording for the documentary *Bienveillance* (France), the film *Al Otro Barrio* (Spain) and the film *Gloria* (Italia). I did editing for *Bienveillance* and helped with markers and editing for *Al Otro Barrio*.

In January, they finished the editing for *Gloria* (Italia) and for *Al Otro Barrio* (Spain). They started with the film *Quién es Quién?* (Spain) and the film *Honey* (Denmark). I edited for *Al Otro Barrio* and did markers and helped with some backgrounds for the other films.

In February, they started recording foley for the Movistar series *Rapa* season 3 (Spain). For this specific project, the studio was also responsible for the dialogue editing, ADRs and mixing. Additionally, they started with the foley recordings for the Netflix series *Skruk* season 2 (Denmark). As films go, they started with *My Taiwanese Brothers* (Switzerland) and *Leonora in the Morning Light* (Germany). I helped with editing, markers but also started with performing and recording foley for the films.

In March they worked on the documentary *EFEA* (Spain), and continued with *Rapa* season 3. In relation to films, they recorded for the film *Brothers* (Turkey) and the film *La Llegada Del Hijo* (Argentina). I assisted with markers and editing, as well as some performing for the film *Brothers*.

During the month of April, they worked in the film *Bodegones Con Fantomas* (Spain), the film *Misericorde* (France) and the film *Enemigos* (Spain). They continued with episodes of the documentary *EFEA* (Spain), episodes of *Rapa* season 3 (Spain) and episodes from *Skruk* season 2 (Denmark). They also did foley for a short film called *La Caverne* (France); and started with the series *Querer* (Spain) and the Netflix series *Senna* (Brazil). I assisted with editing, markers, performing and recording.

The first weeks of May, they continued with episode 5 of *Rapa* (Movistar, Spain), more episodes of *Senna* (Brazil) and episodes from *Querer* (Spain). I helped with recording and editing.

CHAPTER 4 DEVELOPMENT OF THE INTERNSHIP

4.1 Foley workflow and technique

As already stated in chapter 3, the studio manages several projects at the same time. During my internship, the first task was to learn the workflow that Sound Troop has, and thereafter the techniques that they use to do foley. For every project the process consists of, in order:

- Markers for the recording of the footsteps and preparing the Pro Tools session.
- Footsteps recording.
- Props recording.
- Editing of the recordings.

Every member of the team contributes in different way to the completion of all projects but there are standard roles to accomplish:

- Foley artists, in charge of performing the footsteps and props.
- Foley mixer, responsible to record and mix the sound performed by the artist.
- Foley editor, in charge of editing the recordings.

Markers

My experience in the internship started by doing markers and cues for the series *Nos Vemos En Otra Vida* (Sanchez-Cabezudo, 2024). The cues consist of placing location markers with the names of the characters at the moments in which they appear on the scene (Figure 2). By doing so, when opening the Pro Tools session, the foley artist and foley mixer already have the marks of the characters' appearance along the timeframe and begin recording the steps all at once, character by character. This is also helpful for the recordings of the backgrounds, so they can be done all in one session, one after the other.

Most of the times, Sound Troop clients don't send the episodes or films with cues of the foley sounds that they need so this step is very important to make the recording process efficient and clear without missing anything. Additionally, this gives room for creativity. In the cases where the clients do send cues –usually happens with documentaries– it's only needed to check the audio clips and verify that all the cues are comprehensible for the mixer and artist to work. At this initial moment, it is also important to verify if there are repetitive sounds to mark up, so that it can be done all at once later in one session more efficiently.

In this phase, the exterior and interior locations of the film were also established and marked, to know by the type of marker if the recording needs some acoustics or not. Besides that, this is the stage where the Pro Tools session is prepared with all the additional tracks needed to record, with the PIP video added to the session and stems for dialogue, ambiences, and sound effects.

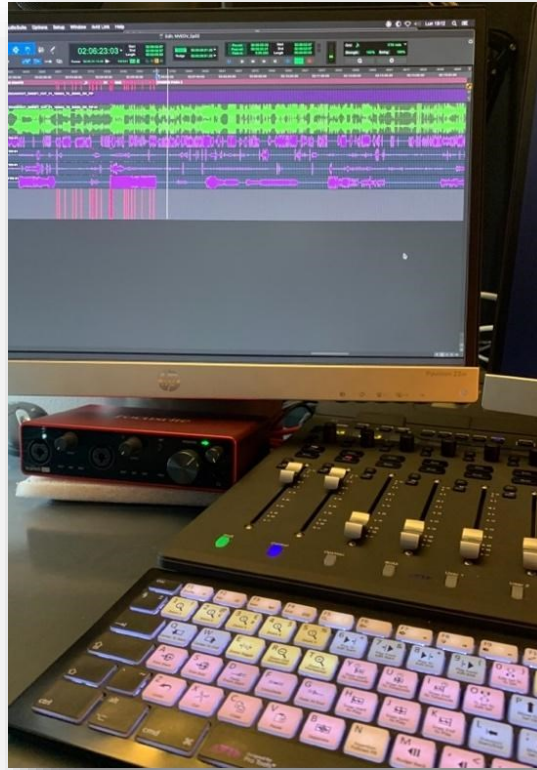


Figure 2 –Pro Tools session for markers.

Foley performance

For the series and films, the recordings were divided in two moments. The recordings of footsteps performed by Miguel, the only person that has this own shoe shelf (Figure 3) in the studio, and the recording of the props performed usually by Xes. In practical terms, a typical recording day was splitted in recording the footsteps during the morning and the props during the afternoon.

The foley stage has two sections, the section for recordings indoors and the space to record outdoors (Figure 4). The outdoors section is fully isolated and the indoors space has natural acoustics (Figure

5). The foley artist moves around with the direct mics depending on the scene that is going to be recorded.

Usually, the foley artist chooses what footsteps or props to do. In this studio, the artist doesn't use headphones to be able to focus completely in transmitting the feeling of the scene. In that way, he is fully focused on performing the scene. This helps the artist to be able to be as loud or aggressive as he needs to be, without worrying about the volume or the actual recording output (that's the mixer's job). As all of them have said to me more than one time, it is better to have a loud recording with a lot of information than a very quiet one. What I learned was that, as mentioned by Pauletto (2017), it's not only about being able to synchronize the movements but also transmit the emotion and feeling of the character and scene.



Figure 3 - Outdoor setup of the foley stage. Figure 4 - Shoe shelf in the foley stage.

To get a professional outcome, the artist is in constant communication with the mixer, to check that everything sounds like they want to. The foley artist follows a PIP, a small video in a corner of the image being broadcasted in advance, so the artist can see what's coming and be ready to perform in sync.

Due to their experience, the process of working and performing in this way is very systematic as they have the props at reach and the empirical knowledge of how props' sound. Therefore, they

can work in a very agile and efficient way. In the cases where the sequence requires new, complex or specific materials, the process starts by experimenting with different objects and with different layers of textures and tones until the soundscape makes sense, as Pinheiro (2022) also describes.

The recording of props is divided in two types: the “hands” and all the other specific props. The “hands” comprises all hand movements, like touches and applause. The other props are all visual objects in the sequence, like a glass, a bag, or a table. In particular, with the car related sounds, it is often marked up to then record them all in one session typically lasting one day.

I had the opportunity to help as a foley artist for a scene in the film with *Miséricorde* (Guiraudie, 2024). The scene in question is a funeral, and the burial of a body. The characters were in a graveyard with a lot of wind. The action consisted of different characters approaching the coffin and throwing dirt and petals. That day, the studio didn’t have anything like a coffin or flower petals. The first thing to do was pinpointing the objects and props needed and find materials that could work around the stage and prop drawers (Figure 6). The mixer helped me analyze the scene and choose the things that we needed to record. We begin with the wind, using some cloth and hair movement to mimic the wind’s sound. Afterwards, we started recording the throwing of petals and soil on top of the coffin. The solution was to put some wood boards on top of each other and then throw small-sized stones and soil on top. For the petals, I used a bag of plastic feathers, which helped as a layer. Also, the mixer had the idea of working with paper. By cutting off small bits of tissue paper and throwing them on top of the wood boards, all those layers together made the sound convincing. As Pauletto (2010) stated, the prop used was not the actual object in the scene, far from it, but it was fully convincing and credible.

For sounds related to “hands”, the objective is to have the touches or impacts previously defined and then the textures or manipulations depending on the material in connection with that sound. That would mean doing the gestures that the character does but also if they grab something, also reinforce the touching of the material.

At the end of all the recordings, the foley artist does the “presences”, that consist of following the character moves stressing the sound related to their clothes. This gives more body and texture to the whole scene’s sound but also helps to do a full revision of the film, and check if something needs improvement or is missing before editing the session.

During the experimentation with the props, Sound Troop developed some techniques on how to make the foley sound convincing. There is not one single way of performing the foley sounds, but here are some examples of the how to make them, and some solutions for some specific sounds that I have learned during the internship:

- For purses and bags, the trick is to put other objects or even other bags inside the bigger bag, to generate more texture and friction. In other words, to make the leather sound more

intense, one small leather bag inside another can make the difference. In the case of big suitcases, the goal is to find the typical squeaky sound of the suitcase's handle. An example of this is in the recording of the film *Leonora in the Morning Light* (Klein, 2024), where the character was moving in a house with a lot of big suitcases and purses. The sounds were found by using the leather of the suitcase but the handle of another one. For the purses, one leather purse was filled with diverse objects until the friction was enough to make the desired sound. Usually, the prop ends up being a mixture of many props.

- For dropping boxes or bottles, the technique is to make the placing on the table or floor in two moments: first, one side of the box and then the other, in that manner the sound has more complexity with an irregular rhythm. Using a sequence of the film *Leonora in the Morning Light* (Klein, 2024), as an example, in the scene, the character puts a small wood case on top of a table. The technique is to rest one side of the wood box first and quickly after the other.
- For smoking a cigarette, as it is not recommended to smoke inside the studio, the way Sound Troop makes this effect is by making touches to the filter end of the cigarette and replicate the tapping to drop the ashes. Besides that, the inhaling is performed by doing some pressure and squeeze on the tobacco and rolling paper to generate the texture of tobacco and paper burning. The trick is to be able to perform the touches and textures one after the other. For the film *La Llegada del Hijo* (Atán, 2024), this sequence of sounds was performed many times. The goal was to be able to do the sequence of movements in synchronization with the image. At the beginning, it is easier to rehearse the sounds separately and perform the tapping sounds in a different take as the tobacco burning sounds to focus on the execution and then try to do a succession of actions together.
- For cloth movements, always with the goal of recreating the fabric textures, it is better to wear a few layers of shirts, a bit oversized. In that way it is easier to play with the movements and friction. This is used mostly for “presences” at the end of the recordings, following the main character movements, to give some texture to the whole foley mix.
- For sitting down in a bed, sofa or chair, the technique is to drop a ball of cloth into a sofa or chair. The intensity of the drop depends on the feeling of the scene. For *Rapa, season 3* (Coira, 2024), the foley artist and mixer were working on a scene where the main character was sitting down on a mattress. The action on the visuals was fast as the tired woman was sitting on the bed after a long day at work while reflecting on the dramatic events of the day. The action is fast, but the tone of the scene is slow and dramatic. In this situation, it was convenient to make a softer sound, focusing more on the texture of the mattress getting hit than on the impact and intensity of the action.

- For clapping as there are many people clapping at once, the trick here is to follow one character and focus on the rhythm of it: starting in a slow fashion, increasing the speed, and then going slower and softer again until it stops. For most of the projects where applause was needed, it was done in a group of three people clapping at different rhythms and repeating the recording a few times to have layers.
- For water sounds, a plastic pool filled with water is used, producing the steps with a cloth in hand or with a hose. Sound Troop used a water pump to take the water out at the end of the session. For *Leonora in the Morning Light* (Klein, 2024), a few sequences consisted of two characters swimming in a river. The technique consisted of plunging a cloth in the plastic pool and revolving the water following the movements of the characters. The cloth gives heaviness and body to the sound.
- Finally, for sounds related to a character in the action of writing or drawing, the best way is to try to synchronize the duration of the different movements, trying to replicate the length, intensity, or softness of the stroke. This is one of the most difficult sounds to replicate as every person has different writing styles.



Figure 5 - Indoor setup of the foley stage. Figure 6 - Prop drawers of the foley stage.

The mixer and recording with perspective

As mentioned before, the mixer works with four microphones for indoor recordings. He is responsible for recording and mixing the sound live. As shown in figure 7, he uses a submix to a mono track, meaning that they mix down the sound of the four microphones to a mono channel. A sub mix combines a group of signals to be processed together (Messitte, 2022) and by doing so, the mixer has always in hand the decision to blend-in a sensation of a natural room in the recordings.



Figure 7 – Foley recording with four microphones in a mono track.

This choice is mostly artistic, as it allows the mixer to be creative with the blend of the four microphones and therefore, emphasize on the performance of the foley artist. On the technical aspect, this alternative accelerates the editing process and ensures a cohesive sound. In general, this technique eases the process as fewer tracks are managed. Mixing into mono is also an easier way to check for phase issues. However, the studio team does not have out-of-phase audio whatsoever, mainly because the sound of the microphones used for perspective are enough distance from the sound source and they are a very slight add on to the sound and it's combined into the mix with subtlety.

The mixer role is more intricate because of the need to be aware and respond to several factors at a time: record the sound, check the gain, equalize the sound if needed and level the volumes of the four microphones.

In Sound Troop studio, the main element in the mix is the perspective effect with the third and four microphone. The figure 8 shows the faders in a mid-size room acoustic position. Depending on where the character goes or does, the mixer would lift the third or fourth fader to get more acoustic or, on the contrary, to fully lower them if they go outside and only work with the direct microphones for exterior scenes. The objective for him is to figure out where and at what distance the boom pole mic was in the filming location, to be able to replicate that room and distance. This also means that depending on how the character is moving, if they are approaching or going away, he would move the faders up or down following the amount of proximity: if the character is closer there is less perspective that far away. There is a control of the reverberation and of the volumes. The mixer also needs to be attentive to the gain on the microphones at the beginning of the session and change it depending on the prop that is going to be recorded.



Figure 8 - Faders in the mixing table for foley recording.

The mixer is also in charge of equalizing the sound. While the foley artist is testing and experimenting with the material, the mixer is tweaking or cutting some frequencies depending on the sound they want to get or the emphasis they are looking for. Usually for very soft and gentle

sounds, he needs to push on some frequencies. For example, to recreate the sound of paper, he cuts the lower frequencies, and to make it even brighter, he raises the higher ones.

One of the experiences I had as a mixer was during the recording of props for one of the episodes of *Rapa, season 3* (Coira, 2024). The foley artist showed me the prop he wanted to perform, and then I selected the track, named it, and started listening to the artist recreating the sound; checking the equalization, volumes and the perspective needed. For the perspective and amount of volume of the mics, it was advised to start by checking the dialogue track, to see the amount of room in the dialogue. After this, I communicated my readiness and started recording. Every so often, we listened to the recording together and decided whether we needed another take or another layer of sound. In specific cases, for example, recording “hands”, the foley artist prefers to do all the sequences together. That means for the mixer to fast forward to each hand movement and punch in (start recording).

After participating in every step of the foley process, my assessment is that the mixer role is the trickiest one to understand, particularly because he needs to be attentive to a lot of technical aspects and respond fast and efficiently to them. Besides, he has the responsibility to give the correct amount of perspective to the sequence, if there is too much room, the recording will not be useful at all, requiring starting the recording process again.

In this step, when the artist is getting ready for the next recording, finding the prop or having a rest, the mixer will typically start editing the clips, inserting fade-ins, fade-outs and start syncing. In the case of a sequence with a lot of layers, he starts editing volumes and selecting the best take to make it clear and simple for the editor.

Altogether, the sound obtained is more natural as they are capturing the closest to the actual room and acoustics in the moment of the performance. The immediacy makes the recording more natural and more nuanced.

Foley editing

After all the recordings, it comes the time for the editing step. Firstly, the most important thing is to check the synchronicity with the image (Figure 9). Sound Troop is very perfectionist in syncing every single step with the image, as well as all the props and movements.

Besides this, the volume of each footstep and prop is checked to verify they fit properly with the scene or require fixing. As most of the recordings are equalized and the volumes and reverberation are leveled live during the recording, in the editing step is the moment to check everything and fix details. At this stage, the focus is mostly in syncing the recordings with the image. The role that I

did the most was editing and during the six months of my internship, I was able to get comfortable and perform editing in an efficient way.

This part of the process can be as creative as the previous one. The editing step has as many technical aspects as in the whole process, but the job of the editor is to maintain the intention and emotion that the sequence must transmit. This can be done understanding the intention of the foley artist' job done previously but also checking all the available layers and deciding in which way the sound can work out the better, sometimes using some of the recordings and not others. Those decisions end up being fully subjective but with the intention of following the storyline and emotions of the interaction it portrays. A specific moment comes to mind, in the series *Marbella* (Marini & others, 2024), there was a sequence of police running inside a house. When the scene has steps of more than 20 people at the same time, the objective is to generate movement with volumes to create the atmosphere and not focus on trying to match each step with a foot. As I mentioned above, sometimes the desired effect is an “impressionist” one, a general sense of the prop but not able to discern one character action to another (Ament, 2022), like creating a sensation.

About the specific technique to synchronize the sound, every editor has his own tricks. Personally, for footsteps, my process of editing was to fast-forward the scenes frame by frame until I saw the placement of the feet on the floor and made a marker. The same for every step in the sequence. Thereafter, I cut and place the segments of audio, micro adjusting it while following the markers. Then I do crossfade to connect all the small clips. For sequences where the legs and feet are not visible, the technique was to follow the movement of the shoulders. Before starting with this, it is important to check the stems or reference of the sequence to check if the steps can be heard from the original film sound. If that's the case, the steps are synchronized with that reference and not necessarily to the image.

Additionally, I got used to editing in a specific order. Firstly, the editing of the footsteps, syncing and checking their volumes. Afterwards, I made the “hands” and finally the props, always focusing on syncing and volumes. At the end, I listened to everything altogether including the stems to have a reference of the volume of the foley with the ambiances and dialogue in order to correct volumes. The device Clarity M was used during the whole process. The tool helps monitoring the volume levels and the peaks.

In editing, priorities vary depending on the type of production. For a fictional film or series, most of the attention goes to synchronization to make the foley as persuasive as possible. For instance, the foley editing of the drama series *Querer* (Ruiz de Azúa, 2024), involved the recording of all its elements, synchronization of props and footsteps, with volume levels adjusted based on the stems. For a fictional narrative, the more detailed, the better, as the goal is to achieve realism of the spaces and interactions by recreating all the sounds seen on the visuals.

In contrast, for a documentary series such as *Synanon Fix* (Kennedy, 2024), the objective is not to recreate every single sound and synchronize all the sequences. Instead, the focus is on generating sensations. Complete and flawless foley in a documentary can transmit a fictional feeling. For this genre, it is recommended on the contrary to primarily focus on balancing volumes and generating different intensities and atmospheres for the sequences. The foley should be suggestive, highlighting only specific parts of the overall sound, the one that is essential to the story rather than attempting to recreate all of them.

As pointed out, there are two stages on the editing part of the process. The synchronization with the video and the editing of layers and volumes of the sequences. This second section can be considered the creative part of the process. Coming back to the research made by Kamath & others (2024), the stage of the process that is going to be first replaced by AI is the synchronization with video, the most technical part of all. However, the main role of the foley editor is the creative aspect of the process, giving value to the aesthetic and subjective decisions made during the editing which at the end, it is what makes the foley alive and not something flat or neutral.



Figure 9– Editing and synchronization of footsteps.

4.2 Foley stage acoustics

As mentioned previously, Sound Troop has a specific way of recording foley with natural acoustics, using four microphones to generate the perspective and obtain a more natural sound. The first two microphones point to the sound source and the other two are for the perspective: one in the ceiling of the room and the other far away in the hallway. This technique for recording allows them to create a sound that does not need many effects added in the editing step and makes the process less expensive and efficient.

The two direct microphones are the Neumann³ U87 and the Sennheiser⁴ MKH40 (Figure 10). These are two condenser cardioid microphones pointing at the sound source (Annex A). The Neumann U87 is the main microphone and the Sennheiser MKH40 is used to enhance some frequencies when needed and obtain different colorations on the sound. These two mono signals are then mixed creatively with the perspective microphones.



Figure 10 - Direct microphones: Newman U87 and Sennheiser MKH40.

³ Neumann U87: <https://www.neumann.com/en-us/products/microphones/u-87-ai/>

⁴ Sennheiser MKH40: <https://www.sennheiser.com/en-de/catalog/archive/mkh-40/mkh-40-p48-002645>

The two perspective microphones are the Shoeps⁵ MK22 in the ceiling of the room (figure 11) and the Shoeps⁶ MK41 in the hallway (figure 12). Both are super cardioid and less directional (Annex B). The objective is to capture two distances to generate different sizes of the room depending on the amount of perspective the sound needs for the scene.

This way of recording gave me a new understanding of foley art. Before arriving at this studio, the process of adding effects would be a preoccupation for the editing part of the process. For this technique with room acoustics, it all comes together making the process intuitive and cohesive and establishing foley sounds as a part of the environment.

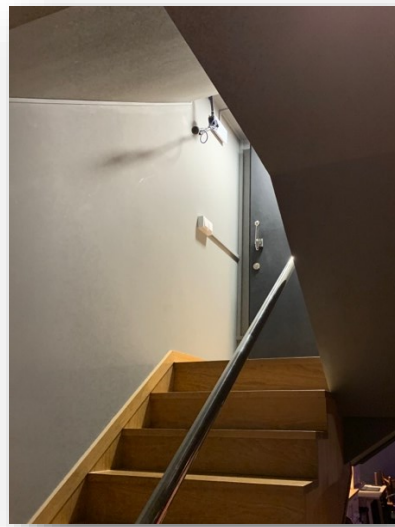


Figure 11- Perspective microphone in the room. Figure 12 - Perspective microphone in the hallway.

To be able to work with this recording technique, the studio has some characteristics. First and foremost, the room is wired in a way where there is no interference from electrical hum.

As well, their foley stage has a specific design inspired by “les bruiteurs” in France: *“the French tradition of foley relies on stages that have different “rooms” for each area of a home [...] Areas separated by curtains that have kitchens with running water and a full complement of appliances, car interiors with working steering wheels and dashboards and furniture appointments and surfaces that match any predictable interior”* (Ament 2022 p.24). This type of design includes many different doors fixed in the walls, that open and close (Annex C). As the stage is built almost

⁵ Shoeps MK22: <https://schoeps.de/en/products/colette/capsules/open-cardioid/mk-22.html>

⁶ Shoeps MK41: <https://schoeps.de/en/products/colette/capsules/supercardioids/mk-41.html>

as a house and all the appliances and materials influence the acoustics, the room is made with the reflections. These reflections are wanted but need to be controlled.

For this reason, Sound Troop uses some strategies to have their stage not fully live, only slightly reverberant. The walls are slightly off and not fully parallel so that the sound waves can be broken up (Ament 2022 p.93). Some absorbent and soundproof panels, as well as acoustic curtains, are used to isolate and not have a lot of reflection. This makes the sound troop studio almost fully soundproof and with the possibility to work more freely with the mixing on the four microphones and control the reflections.

In general, this technique gives the recordings a naturalistic touch, giving more space for the performative aspect and creativity of the foley artist and mixer during the recordings. The focus is on performing the action with intention and transmitting the emotion of the scene. This technique also emphasizes the natural reverberation of the room, searching for the sound most similar to the filming locations, while maintaining the quality of the recording. Further, this technique makes the editing stage of the process faster, focusing mostly on synchronizing the sound to the video.

However, there are some disadvantages with the technique. The mixer has a more demanding role during the recordings, as he needs to be able to mix the sound of the four microphones live, checking the volumes, the amount of reverb and the equalization of the sound when needed. Besides, the final sound is not necessarily better quality than a recording with only one microphone, it is only more natural. This means the preference to this technique is not because of quality, it's an aesthetic preference and artistic decision. As well, the stage setup is very specific and very important to create this type of sound. It is not obtainable for most designers as being able to build a foley stage like this is expensive as more equipment is needed.

CHAPTER 5 CONCLUSIONS

Overall, the internship in Sound Troop was a great experience to learn about foley art. I was able to apply skills that I already acquired during the Master Program, as using the DAW Pro Tools, sound editing, and recording techniques. Additionally, my studies at the Master in Sound and Image gave me a theoretical background in the field to then start the research for this document later on.

During the internship, I learned a new technique for recording foley: using room acoustics and multiple microphones. Although I had to learn everything from scratch, I was able to acquire that new knowledge and significantly improve my practice. It provided me a new perspective of the craft itself and the subjectivity that foley entails. In addition, observing other foley artists at work gave me a deeper understanding of the subject.

Furthermore, I was exposed to the workflow in a professional setting and learned about the possibilities in the labor market. This internship enriched my practice as an artist and opened new professional doors for me in sound design and audiovisual productions. This experience at Sound Troop made me understand the artistic possibilities and work opportunities that exist for artists and sound designers.

This experience also made me more confident in my skills as a sound designer and allowed me to integrate what I learned both at the Master Program and during the internship into my own artistic practice. This research made me realize the direct relation of foley with art and made me reflect about my practice as an artist and sound recordist. As a downside, being a studio focused on foley recording, the practice was limited to foley itself, without the option to learn the whole sound design process. I learned about mixing, yet it would have been interesting to be able to practice it more.

Besides refining my skills, I was able to research about this subject and deepen my knowledge around three issues: foley as an artistic practice, acoustics properties of foley and foley inserted in the current context of the world with new AI technologies.

In terms of foley as an art, the dissertation reviewed different perspectives I got of foley during the internship: as a performance, as a narrative, as a soundscape and as an acousmatic sound. Within this aspect, I stressed the importance of the subjectivity and creativity around foley art and sound design in general. Sound Troop gave a lot of attention to this aspect, in the way they believe foley needs to be performed. They give a remarkable emphasis in the intention of the artist and the key role that sound plays in the construction of the audiovisual narrative.

In terms of the acoustical aspects of foley, I described the aesthetic elements but also the technical ones needed to be taken in consideration when building a foley stage. Both elements open possibilities to change the reverberation, to diffuse the sound field and to control the reflections, including appropriate wiring of the space and interior design of the foley pit and stage. A limitation that I found in this section was that as foley is an experimental process, when it comes to the construction of the space, it is a “try and error” process. My research defines a few requirements, but all considered, this setup entails more deciphering and elaboration. At the same time, witnessing how a foley stage works successfully for foley with room acoustics’ recording was an excellent first step. My take away of this aspect is that foley artists search for a naturalistic aesthetic and the way of obtaining it is through natural acoustics and looking after the replication of the room where the action is taking place.

Finally, this report also reflects on the impact of artificial intelligence on foley art, inquiring on how the new systems are made, to what extent it is able to copy the foley artistry and what would be lacking. As described above, there are two main developments: video-to-sound and text-to-sound systems. The technical aspects of foley have been well developed and perfected. I could observe this at firsthand as the studio implemented AI plug-ins for other stages of sound design, as de-noise tools. At this moment, AI tools usually brought issues around sound quality and also with creativity aspects that enrich the foley outcomes. As stated, the limits of those systems are currently in connection with the artistic aspect of foley as inherently human. This perspective stresses the importance of the artistic potential of this profession. As mentioned above, as the use of AI success is inevitable the ideal would be that the designer keeps owning the creative side of the process and uses AI as a tool to improve and ease those technical aspects to assist the artists and not to replace them. The hope is that because art is inherently human, and has an artist's intention, AI will not replace the imaginative and intentional dimension of the craft.

With this experience, I see myself working in foley and sound effects in different types of projects. The internship in Sound Troop has inspired me to start acquiring my own equipment and explore ways to build a small space to record foley. Additionally, thinking of the limitations I had in the internship around mixing, I look forward to keep learning this key aspect of sound design and sound recording.

After the completion of my internship, I have participated in a few projects involving foley and sound recording. In general, conceptually, I noted that the recording and editing process could be extrapolated to my art practice. Both are techniques that search to transmit a narrative or sensation with layers, textures, rhythms, and tones. Through these experiences and my master’s studies, I have realized that my interests lie specifically in recording ambiences and making textures. These elements are fundamental to my art practice, where I explore the concept of sonic fiction and storytelling with sound. My artwork has the objective of creating atmospheres and transmitting sensations, which is the essence of foley art.

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Annex A - Direct microphones: Neumann U87 and Sennheiser MKH40.



Source: <https://soundtroop.com/en>

Annex B - Close up of the microphones setup in the room: Schoeps MK22 and in the hallway Schoeps MK41.



Source: <https://soundtroop.com/en>



Source: <https://soundtroop.com/en>

Annex C - Sound Troop Foley stage with different areas, simulating house rooms with appliances, including car exterior and interior.



Source: <https://soundtroop.com/en>