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Devices in the Classroom:

Practices with Smartphones and Tablets in Education

The scientific publication the Journal of Sound, Silence, Image and Technology (JoSSIT) grew out of the research group of the same name (SSIT), which is linked to the TecnoCampus centre as part of Pompeu Fabra University (UPF). The journal seeks to bring together academic debate and scientific research on the relation of sound as a broad concept with an audiovisual context.

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Devices in the Classroom: Practices with Smartphones and Tablets in Education

Introduction

The use of mobile devices saturates our everyday lives. From the appearance of the mobile phone to current smartphones (not forgetting other types of devices such as tablets), their influence on our daily lives has increased exponentially. In the educational field, the use of mobile devices is extensive and can be observed in different areas and contexts. However, in the audiovisual field, their acceptance as a valid tool for creation or for processes inherent to the audiovisual field is still not fully appreciated. While studying, other models of cameras or professional software are valued, for example, ignoring the options that current smartphones offer in the professional and, more importantly, educational field. Starting from the idea that the industry has already integrated these devices into its processes, it is important to question whether perhaps we are late to a reality in which mobile devices are basic tools during any phase of work related to audiovisual content and/or creation. This leads us, likewise, to the need to question whether the integration of these tools in the educational field is occurring and, if so, to verify strategies, practices, and possible uses for their integration into educational curricula. This element becomes essential when current students use their smartphones for a wide range of tasks and actions, including using and generating audiovisual products (from watching/listening to a video to creating content on platforms like Instagram or TikTok). If mobile devices are used in creative processes in the private sphere, it is important that they are also integrated into the educational sphere. Building on these ideas, the current issue addresses this matter from different perspectives. Firstly, Rafael Linares and Eva Patricia Fernández explain a transmedia experience in which podcasts become a fundamental element within the distribution process of a film. Specifically, podcasts are treated as a tool that can be developed in and for the classroom, considering mobile devices as a means of transmission and interaction that allow the generation of new educational content. Next, Fernando David Maldonado provides an article focused on the soundscape of environments in acoustic education from a social perspective, going beyond teachings related to music as an artistic expression. In this context, the introduction of mobile devices is presented as a fundamental element of interest for the creation of educational activities in the classroom that focus on this theme, offering students the possibility to better understand their environment and sound landscape through specific applications for mobile devices. Thirdly, the volume editor and Mariona Grané present the results of research project aimed at understanding

whether students' perception regarding the use of mobile devices for audiovisual creation is modified through educational action in the classrooms. Specifically, the study focuses on audiovisual students, and the action is training in the creation of content using mobile phones that should lead to reflection by the students regarding the validity of phones for producing such content. Furthermore, this issue of the Journal of Sound, Silence, Image and Technology also introduces two new sections: a miscellaneous section and a section of bibliography reviews related to the world of sound. In this context, the miscellaneous section contains a study focused on the musical compositions in the video game Final Fantasy VII Remake and the importance of the ludomusical boomerang, by Alberto Porta-Pérez. Finally, in the section dedicated to reviews, Marta García Quiñones outlines the main points covered in Marina Hervás' recent book, *La escucha del ojo. Un recorrido por el sonido y el cine* (2022) [The Listening Eye: A Journey Through Sound and Cinema]. This volume thus shows different ways of approaching the importance of introducing mobile devices in classrooms using different strategies, offering possibilities in both audiovisual and generic spaces through practices related to experience and research.

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Generation of educational podcasts as a transmedia expansion of a film.

The case of *Al otro lado*.

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RESUMEN

El consumo de podcasts se encuentra cada vez más extendido gracias tanto a la variedad y calidad de sus contenidos como a los aspectos tecnológicos de la distribución y acceso. De tal manera, este contenido auditivo se incorpora en las estrategias transmedia como manera de expandir la narrativa, pudiendo dirigirse así nichos específicos. En 2021, y tras el estreno de la película *Cuidando al sol*, el equipo productor identifica una serie de valores intrínsecos que trabajados en formato podcast permiten ofrecer unos recursos formativos para emplearse en el aula. Se crea de tal manera la estrategia transmedia de *Al otro lado*: un contraste cultural entre cuatro niñas de España y Bolivia. El resultado permitirá comprender el alcance tanto de la expansión transmediática a través de los podcasts como del uso de herramientas y dinámicas de *design thinking*.

ABSTRACT

The consumption of podcasts is increasingly widespread thanks to both the variety and quality of its content and the technological aspects of distribution and access. In this way, this auditory content is incorporated into transmedia strategies as a way to expand the narrative, thus being able to target specific niches. In 2021, and after the premiere of the film *Cuidando al sol*, the production team identifies a series of intrinsic values that, worked on in podcast format, allow them to offer training resources to be used in the classroom. The transmedia strategy of *Al otro lado* is created in such a way: a cultural contrast between four girls from Spain and Bolivia. The result will allow us to understand the scope of both the transmedia expansion through podcasts as well as the use of design thinking tools and dynamics.

Introduction

The use of educational resources in the academic field has evolved with the advancement of technology and the emergence of new communication tools. One of the most prominent and effective resources in the digital age is the podcast. This medium of communication, which combines audio and online distribution, has gained popularity in recent years and has become a powerful educational tool. "Podcasting offers a unique way to present educational information through attractive and immersive oral storytelling that can be listened to anytime and anywhere, allowing flexible and personalized learning" (Jones & Farquhar, 2018).

The existing literature on the use of podcasts in education focuses on their potential as an educational resource and how they can be used to improve teaching and learning. Overall, podcasts can be an effective way to supplement traditional teaching and help students develop skills such as listening and listening comprehension. Additionally, they can be a useful way to reach students who have different learning styles or who may have difficulties attending classes in person. A meta-analysis carried out by Chen and Hsieh (2018) examined the effectiveness of podcasting in higher education and found that using podcasts as a complementary resource significantly improved the performance of students and fostered their commitment and motivation. Furthermore, research has highlighted the distinctive characteristics of podcasting that make it effective as an educational resource. For example, research by Duke and Harper (2019) indicates that podcasting offers an immersive and personalized learning experience, as the students can access the materials anytime, anywhere, allowing them to adapt their learning at their own pace and convenience. Other authors highlight how "educational podcasts provide young people with a self-directed learning opportunity, where they can explore topics of interest and acquire new knowledge and skills in an entertaining way" (Cebrián-Herreros et al., 2019).

Additionally, podcasting provides students with the opportunity to listen to experts in a specific field and encourages the development of skills since "the format of audio stimulates the imagination and concentration of young people, promoting the development of active listening and listening comprehension skills" (Pedrero, 2018). According to a study by Means and Toyama (2017), this can be especially beneficial, as students have direct access to specialized knowledge and updated perspectives that can complement and enrich their learning.

At the same time, some studies have examined students' motivation and interest in podcasts, finding that they can be an effective way to engage students in learning and improve their understanding of the topics. How podcasts can be used in combination with other technologies, such as gamification or learning games, to enhance the learning experience of students has also been explored. "Podcasts offer young people a window into different forms of cultural expression, such as music, literature, and cinema, allowing them to explore and deepen their understanding of these topics in an interactive way" (Pedrero, 2018).

Existing literature suggests that podcasts can be a valuable resource for non-formal edu-

cation and that there is potential for their use in learning and teaching. In Spain, podcasts have experienced significant growth in popularity and use in recent years. According to the General Media Study (EGM) of 2020, 38% of the Spanish population had listened to a podcast in the last year, which represents a notable increase compared to previous years. According to IAB data (2023), "in 2023, it will be positioned as the third most listened to digital audio format, passing from fourth to third place (behind digital music and live online radio). Podcasts are already heard by more than half of listeners (54%)."

The 2021 Annual Podcasting Report, carried out by the consulting firm Dosdoce, reveals that the number of podcast listeners in Spain has increased steadily. In 2020, it was estimated that there were around 7.4 million people listening to podcasts regularly in the country. According to the iVoox report (2022), "in 2022, they have doubled their listening time compared to last year." All this data indicates the proliferation and continuous growth of the podcast format in Spain.

In addition to the increase in audience, various studies support the effectiveness of the podcast as an educational resource in Spain. A study carried out by the University of Valencia (Raposo-Rivas, 2019) examined the perception of Spanish university students concerning the use of podcasts as educational tools and found that the majority considered that podcasts improved their learning, as they allowed them to review the content in their own time and at their own pace.

The research by Fernández-Díaz and García-Vera (2021) also highlights that podcasting is a valuable resource for education in Spain, as it provides students access to specialized and updated content in various areas of study.

The use of podcasts among young people in Spain has become increasingly relevant due to their adaptability, variety of content, and associated benefits. The podcasts offer young people an opportunity for self-directed learning, access to cultural content and current affairs, entertainment, and social connection. Their popularity lies in their ability to deliver customizable content, easy access, and a flexible listening experience. As a result, podcasts have become a valuable tool in the media and educational landscape for young people in Spain. Under this theoretical framework, the benefits of using podcasts in teaching and their relationship to transmedia expansion will be explored.

Objectives

In this context, the present study aims to examine the use of podcasts as educational resources, understood in this specific case as the transmedia expansion of a cinematographic product.

Likewise, podcasts can also serve as examples of transmedia expansion of diverse audiovisual content, expanding the learning experience beyond the traditional limits. "Podcasts can develop parallel stories or provide character backgrounds, thus enriching the overall narrative of a production transmedia" (Jenkins, 2013).

Methodology

The generation of transmedia podcasts requires methodological approaches that allow for the creation of interactive and engaging content for the audience. In this regard, the iterative model of service design is presented as an effective methodology based on a focused approach to the user (also called service design) and on constant iteration to develop solutions adapted to the needs and expectations of the public (Stickdorn et al., 2018). In this theoretical framework, the methodological application of this model will be explored in the generation of a transmedia podcast, highlighting its relevance and benefits. It should be noted that the authors of this article are the producers of the artistic creation, a fact that allows them to get up close and personal with the different tools, sources of information, and studies made during the creation of the podcast Al otro lado.

A deep understanding of the needs of the audience is a fundamental step in the transmedia podcast generation process. Linares (2020) points out that it is crucial to understand the needs and wants of the target audience to design relevant and attractive content. To achieve this, the iterative service design model offers tools, research, and analysis techniques that allow us to obtain a deep insight into expectations and user motivations (Stickdorn et al., 2018).

In scientific research, the empathy map stands out as a widely used tool to holistically understand and analyze the user's needs, motivations, desires, and behaviors. According to Civelek and Kahraman (2019), the empathy map is a visual tool that allows for the capture and synthesizing of key information about users, providing a deeper and more detailed view of their needs and expectations. The empathy map is made up of different elements, such as the user profile, user thoughts and feelings, user needs and desires, as well as user environment and context (Civelek & Kahraman, 2019). This visual tool allows researchers to obtain relevant information to address specific research objectives (Dartnell, 2018). Through its structure, the empathy map facilitates the identification of patterns and trends, contributing to a more complete understanding of users (Fassio, 2016).

Before using the empathy map, it is essential to establish the research objectives and the key questions to be answered (Dartnell, 2018). This allows the empathy mapping process to focus on specific areas and obtain relevant information to address established objectives (Patel & Patel, 2016). Data collection for the empathy map can involve different methods, such as interviews, observation, participant analysis, and document analysis (Civelek & Kahraman, 2019).

Once the data has been collected, the information is analyzed and synthesized using the empathy map as a guide (Fassio, 2016). This stage involves identifying patterns, trends, and key points of interest and representing them visually on the empathy map (Patel & Patel, 2016). The interpretation of the results of the empathy map involves understanding and analyzing the findings obtained, identifying insights and opportunities for improvement (Civelek & Kahraman, 2019). These results can help researchers better understand user needs,

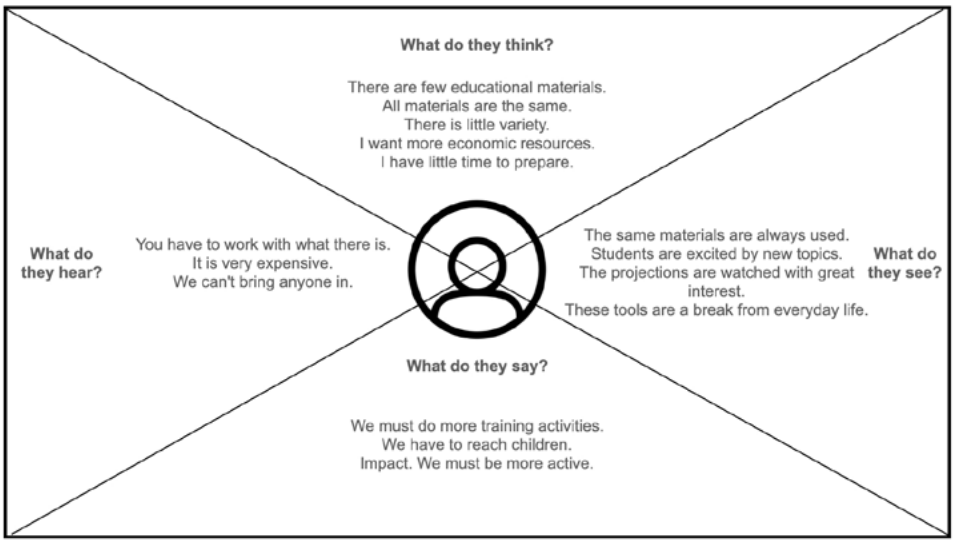
optimize products or services, and design user-centered solutions (Dartnell, 2018).
Once an understanding of the audience's needs is obtained, the design of iterative content begins. This approach allows for experimentation, iteration, and improvement of the continuous content of transmedia podcasts (Linares, 2020). Løvlie et al. (2017) highlight that the iterative model of service design facilitates the iterative creation of content, which involves carrying out repeated design cycles where the solutions are checked and refined. This allows content to be adapted as a greater understanding of the preferences and needs of the audience is gained.
In addition, the iterative model of service design encourages the co-creation and active participation of the audience in the generation of transmedia podcasts (Linares, 2020). Stickdorn et al. (2018) point out that, through participatory design techniques, users can contribute with ideas, comments, and feedback, strengthening the connection between creators and the audience. This user participation contributes to generating greater satisfaction and commitment on the part of the audience.
In summary, the methodological application of the iterative model of service design in the generation of transmedia podcasts allows for the creation of interactive, relevant, and attractive content for the audience. By understanding user needs, designing iteratively, and encouraging co-creation, podcast creators can generate immersive transmedia experiences that involve and delight the audience.

Al otro lado, the educational podcast of the transmedia experience of the film *Cuidando al Sol*

Cuidando al sol (Taking Care of the Sun) (Razzini, 2021) is a Spanish-Bolivian co-production that tells the story of Lucía, a ten-year-old girl who lives on Lake Titicaca in Bolivia. When her father leaves home to work in the capital, the girl faces a new set of emotions and conflicts that occur while waiting for her father's return. The film can be framed within the coming-of-age genres of independent and indigenous cinema. Although the film is produced by Spanish Radio Television and the Ibermedia program, among other sources of financing, it can also be included in the category of low-budget films, leading to great difficulties for its commercial and theatrical release. Despite the aforementioned difficulties, the film opened in twelve commercial theaters in Spain on November 12, 2021. That weekend, the competition was high: in addition to the films already available, there were another fifteen movie releases (Comscore, 2021). This fact is indicative of a saturated cinematic circuit with an enormous number of premieres accumulated by the pandemic. In addition, box office takings were still far from pre-pandemic levels, as well as the fact that the target audience for this type of film was still reluctant to return to movie theaters, still with restrictive measures typical of the pandemic.
This difficult context, and especially the limited budget that could be allocated to promotion, forced the film's production team in Spain to consider different strategies and alter-

natives for reaching the target audience. To do this, they based their experience on previous transmedia projects in which considerable success was achieved in outreach to the public; these were the Primavera Rosa series (De la Torre, 2012–2018) and Wigs (Serrano Cueto, 2012).

The first step of the commercial strategy for the release of the film consisted of defining the key audience that are the target for the project. The film, both for its genre and due to its style, is very focused on the arthouse circuit for film d'auteur and especially Latin American film lovers. The ideal focus is the film audience at high-end film d'auteur festivals. But the high competition in this group of films and the film not being present in any of the A-category festivals meant searching for another type of audience. In this case, some features of the film seemed to be key. Despite the slow pace of the film and the fact that it is not among those films normally chosen by children or pre-adolescents, several cultural and educational values were identified in the film that could be valuable and attractive to educators and teachers. On the one hand, the age of the female protagonist, who must face dilemmas specific to her age and situation (menarche, father's absence, assuming the responsibilities of being the older sister, etc.), and on the other hand, the social and geographical context of the film (indigenous protagonists, Lake Titicaca in Bolivia, etc.). These aspects made us think about the opportunity that could be offered to a public dedicated to education and the fact that there is a shortage of didactic content. Under this premise, an empathy map was prepared for this group of education professionals who were interested in looking for content to use with their students. This map was based on observations of the experiences of these professionals, who were open to educational innovations and new non-formal education materials. To carry out this empathy and understanding exercise, we proceeded to idealize a so-called user-persona that corresponded with a professional educational person. Next, we contextualized the situation of this person under the umbrella of "a day in their professional life," proceeding to identify their motivations, frustrations, and desires. All this was in relation to the previously mentioned need to obtain and use educational materials. From this point, an exercise was performed based on empathizing with the ideal person in four areas: what they see in their job, what they think about the resources available, what they hear people say around them in their work, and, finally, what they say concerning the three previous areas. Traditionally, the empathy map is represented by placing a human figure in the center of a rectangle, who will therefore be the user-person, and on its four sides the four previously mentioned areas of empathy, symbolically coinciding with the physical areas of the person: thinking coinciding with the head, what they see coinciding with their eyes, what they hear coinciding with their ears, and what they say coinciding with their mouth. Finally, sentences were written succinctly and correspondingly.



Graph 1: Empathy Map. Own elaboration

Once the audience to whom the film is aimed had been identified, it was decided to opt for the production of a podcast that allowed the film to not only be publicized but which was also an educational tool that could be used in training centers. "Podcasts can serve as an extension of audiovisual content, providing additional information and more in-depth perspectives on topics covered in other formats" (Turner, 2019).

For the development of the podcast, we had the collaboration of the Podcast and Mente Estudio team, led by Molo Cebrián, presenter and producer of the most popular psychology podcast heard in Spanish, Entiende tu mente (Understand Your Mind), and the financing and participation of the Research Group NarTrans2 from the University of Granada. The podcast creation process was done from a multidisciplinary perspective, in which specialists in podcast production, educators, researchers in the transmedia field, and the producers of the movie participated.

This creation process was carried out following the methodology of the iterative service design process, where work or creation models are proposed and solutions are defined. As Hernández (2021) indicates, to generate podcast content, you must employ user-centered design techniques to ensure an engaging and significant experience for students .

The first proposals for the creation of content arose around the continuation of the proposed narrative of the film, which implied having seen the movie, on the one hand, making the podcast experience dependent on viewing the film. On the other hand, it required having the actors of the film reenact their characters, which was an inconvenience from a production point of view since the female protagonists of the film live in locations that are difficult to access in Bolivia, making production difficult. Subsequently, a further option was proposed within the classic podcast genres: a narrative voice that, with a planned script, tells a story that expands on the narrative of the film and can cover different educational

topics. This option was discarded since it is understood that the approach is used for an adult target, and what was sought was a podcast aimed at an audience made up of children and which was participatory.

With this idea, we were committed to making a podcast completely for children with protagonists who are girls, real people, not acted characters. There is a great shortage of children's podcasts, "which denotes that there is currently no market defined as profitable for this target" (Pedrero et al., 2023), and which offered an opportunity to generate a unique and different experience, which is what was sought as a tool that could be used as teaching equipment.

As Roberts (2022) indicates, "the use of podcasts can also promote collaborative learning and the exchange of knowledge between students," which is why the creation of a collaborative podcast featuring the conversation of four girls of the same ages as the characters in the movies was chosen. These girls were two Spanish and two Bolivian females, selected in a casting, who spoke about the differences and similarities between Spain and Bolivia from the viewpoint of some girls aged between eight and ten years old. "Through podcasts, students can express their ideas and perspectives in creative ways, which contributes to deeper and more meaningful learning" (Hernández, 2022).

The final result of this creative process was a podcast called *Al otro lado*, avoiding the title of the film and looking for a reference to the dialogue between different people residing in countries on different continents. The recording was made in a studio in Madrid and in another in La Paz using videoconferencing, so that it was possible to see each other's faces, thus promoting dynamism and complicity. The program was hosted by a presenter who introduced the contents, but the burden of the conversations fell on the four girls.

The *Al Otro Lado* podcast is structured in four chapters of approximately five minutes, consisting of the conversation between the aforementioned girls, who discuss various topics that affect them in their daily lives and in their environment. The result of these conversations is grouped thematically as follows:

- Chapter 1. Their knowledge
  The main girls, both in the podcast and in the film, are between eight and ten years old, an age that does not allow them to understand the multicultural or geographical scope of two countries as different as Bolivia and Spain. In addition to this, the Bolivian girls are indigenous and residents of La Paz, while the Spanish girls are residents of the cosmopolitan city of Madrid. This aspect of geographical contrast enriches the narrative and allows for moments of great curiosity on the part of the girls. This theme is therefore presented as an alternative way of using educational content in the classroom, in this sense, offering resources that can help with knowledge and the geographical location of various countries from different continents.
- Chapter 2. Their hobbies
  This second chapter proposes a reflection on the concepts of idiosyncrasy and globali-

zation. Although the four girls have had different life and cultural experiences, they are able to find common ground that guides conversations about cinema, series, books, and music. They also discover new words that mean the same thing, such as cell phone and mobile phone, earrings, as well as typical Bolivian clothing: the ponchos. On this occasion, a teaching resource is offered to reflect on the language, customs, and global reach of culture.

- Chapter 3. The environment
  This chapter offers a space for knowledge about and contrast of the environment in which they live. The girls talk about the usual size of houses in residential areas: larger in Spain and smaller in Bolivia. They also discuss the differences in their diet; for example, Bolivian girls usually drink mate for breakfast, coffee, or tea, compared to the usual milk of young Spanish girls.
- Chapter 4. The family
  This podcast took place during the COVID-19 pandemic, so in this chapter, the scope of this health emergency in both countries can be understood from a child's point of view, focusing on the effects and consequences on the family. In this way, this resource allows for debate in the classroom by allowing the contrast of a global fact, as the pandemic was.

Together with the podcast *Al otro lado*, and as a reinforcement of the educational experience, an educational teaching guide to the film has been developed to be used by working teachers with primary and secondary school children, carried out by a an educational instructor specializing in the creation of this type of content. The guide proposes pedagogical objectives for the primary and secondary curriculum, as well as activities intended to be done in class with related content from both the film and the podcast.

The podcast premiered on November 1, 2021, on RTVE Play Podcast, RTVE's platform, where they distribute their original podcasts with weekly releases. From the design of the project, we opted for a completely open and free distribution with the objective of reaching the largest possible number of users, especially when using a platform for large distribution and social commitment such as public radio and television.

Conclusions

The use of transmedia strategies as a tool for product promotion and the expansion of narrative universes to reach broader audiences are appropriate actions that require a demanding creation process from a user point of view. Therefore, tools such as the empathy map are shown as a resource to understand the intended audience, an efficient action that allows the creator to emerge from their isolation and guarantee an attractive and meaningful experience for users through design.

The use of the podcast as a transmedia expansion allows content to be enhanced and enriched based on the content created on this occasion as a result of a film. The educational and collaborative approach make it a rich and accessible piece, where clear and accessible

language is used for audiences comprised of children, generating additional content that complements the general narrative and which creates a greater emotional connection with the audience. In this case, as it is a podcast starring real girls, we can talk about a co-creation process that allows for the generation of a community committed to the film and which has an immersive and enriching experience. Furthermore, creating a podcast made for and focused on an audience of children is considered a success, given the lack of this type of content in the panorama of current podcasts.

Audio podcasts offer numerous opportunities in the field of teaching, providing flexibility and accessibility and encouraging the active participation of students. Additionally, as examples of transmedia expansion, podcasts can complement and enrich existing audiovisual content, expanding the learning experience beyond traditional limits. As technology continues to advance, it is essential that educators take advantage of the potential of podcasts and other forms of digital media to optimize education.

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Acoustic Education and New Technologies: Sound Education in Classrooms and a Proposal for an Activity with Mobile Devices

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RESUMEN

Muchas veces, el estudio del objeto sonoro en las aulas se acaba simplificando a la enseñanza en la música como concepto artístico. Sin embargo, hay un gran campo que, poco a poco, se está explorando: el estudio sonoro como método de conocimiento del entorno. El siguiente trabajo aborda esta cuestión poniendo sobre la mesa diversos autores y educadores que han tratado el campo de la educación acústica, configurando así una base conceptual que nos permita entender cuáles son los beneficios entender el *sonido* -desde el punto de vista social-, y en qué punto nos encontramos. De la misma manera, no podríamos hablar del estudio sonoro sin mencionar la mediación tecnológica y, en este caso, nos centraremos en el uso de dispositivos móviles. Una diferencia a la educación acústica convencional es que no trataremos al dispositivo tecnológico únicamente como un emisor de sonidos, sino como herramienta clave en las aulas para elaborar actividades que pongan en relieve la importancia del paisaje sonoro.

La segunda parte de este artículo, y recogiendo las ideas introducidas previamente, se mostrará una propuesta de actividad mediante la aplicación Echoes disponible para dispositivos móviles. El objetivo de esta sección es demostrar que el uso de herramientas tecnológicas, como un teléfono móvil, puede ser positivo para el alumno, ayudándole a entender mejor su entorno.

ABSTRACT

Often, the study of sound objects within the classroom context tends to be oversimplified by focusing solely on teaching music as an artistic concept. However, a burgeoning area of exploration lies within understanding sound as a means to comprehend our environment. This paper delves into this realm by presenting insights from various authors and educators who have engaged with the field of acoustic education. Consequently, it establishes a conceptual framework that elucidates the societal benefits of sound comprehension and our current positioning within this domain.

Moreover, any discourse on the study of sound necessitates an acknowledgment of technological transmission. Specifically, this discussion centres on the utilization of mobile devices. Unlike traditional acoustic education, our approach here doesn't view technological devices merely as sound emitters; rather, they are pivotal tools in the classroom for designing activities that accentuate the significance of the soundscape.

The latter segment of this article builds upon the aforementioned concepts and presents a proposal for an activity utilizing the *Echoes application*, which is accessible on mobile devices. The objective of this section is to illustrate that incorporating technological tools, such as mobile phones, can offer positive avenues for students, aiding them in gaining a deeper understanding of their surroundings.

Introduction

Our relationship with the sound environment entails a connection not only with the place in question but also with our own identity and what we expect from it. This fact becomes immensely important when considering that, akin to any element of identity, our comprehension of the territory shapes our conception of the self. Therefore, isn't it desirable to have a deeper understanding of our sound environment for a profound interpretation of it? If understanding our sonic landscape leads to the enhancement of our individual and collective experiences with it and its components, shouldn't this be a task developed from an early age?

These issues, raised by Murray Schafer in the 1970s, are still in the process of development and implementation, a trend that has gained significant momentum in recent years primarily due to the various methods provided by current technology. This is where the significance of this work lies, as it internalizes these issues and utilizes the support of ICT tools.

This article is structured in two parts. The first part encapsulates three key elements within sound studies in education, following the ideas put forth by authors such as Schafer (1964, 1969), Llorca (2017), Porta (1998), and Alcázar (2014). In this manner, we will discuss acoustic education and the role of the teacher. Subsequently, shifting to the student's perspective, we highlight the relevance of listening and the transformative aspect of being reflective about our environment. The third element adds a discussion on the aesthetics of listening and the social implications that can be attained. As can be argued, this first part delves into, from a theoretical standpoint, sound education, sociology, anthropology, and ecology with the aim of demonstrating that sensory studies are intrinsically linked to our most tangible reality and, therefore, are susceptible to conscious modification.

The second part applies the aforementioned elements in a proposal for dynamic exercises to be implemented in classrooms using the *Echoes* application. This tool enables the fixation of sounds at one or more points on a digital map so that when a student – equipped with the installed application – passes through these areas, the sounds are played via geolocation. *Echoes* allows us to explore space, modify the sound environment of a place, or develop playful educational activities, such as the joint proposal with Professor Joan Vidal's "Realitats Sonores Augmentades," which will be subsequently elaborated in more detail.

Acoustic Education

In a very definitive manner, Schafer indicates:

> For the new music educator (...) it will be more important to have knowledge about the thresholds of pain [in terms of human auditory perception] than to concern oneself with whether the devil still lives in the tritone. It will be more in their field of interest to become a member of the International Society for the Suppression of Noise than of their Local Registered Music Teachers' Association. (1969: 4)

These words signify a statement of intent regarding the importance of incorporating sound studies into music education. Similarly, it reflects the profile of this new educator towards the pedagogical aim of establishing a correct relationship with the environment, as reflected in Schafer's reference to the fight against noise.

Firstly, it is essential to reflect on why we should study our acoustic territory and its causality focused on students. Llorca's project on the re-signification of the sound landscape in the coffee region of Colombia highlights the importance of spatial and sonic recognition of the territory. In the research, participants were invited to listen to their surroundings, and as was noted, "[the participants] discovered that the territory is not silent; it has a soundtrack that accompanies their daily lives and is the distinctive seal of their cultural heritage" (2017, p. 260).

As we can observe, the action preceding reflection is the teacher's invitation to their students to become listeners, to engage in an exercise of listening, through which those elements that go unnoticed take on a more significant role in our environment. This practice has already been analysed by Schafer with his theory of figure and ground. Here, the author extrapolates this concept from the visual arts, where depending on the intention and where the viewer focuses within a painting, an element transforms into either background or figure – depending on whether it stands out, respectively, to the viewer's eyes (1969). This is fundamental for constructing the sound landscape around us and, in educational terms, is the cornerstone for developing and educating students, as without this capacity to make the sounds around us into figures rather than background, we could not later reflect on them or comprehend more about our territory.

Authors like Porta reflect on the act of listening to a sound space, indicating that certain factors influence listening, such as socio-cultural factors and the subject's own traits. This socio-cultural factor not only refers to the contemporaneity of the subject's existence but also their historical memory and personal experiences. All these elements determine "the predominantly cognitive sphere from which perception and expectation towards what is heard will arise" (1998, p. 6). Therefore, we find that a space has numerous interpretations, and the listener – ultimately a social being – acquires various tools to provide context and meaning to the sonic manifestations of their environment. Considering this, it is important to highlight the significance that sounds in our territory should have in musical education because this not only means that the student can turn a sound from background to figure but also that this exercise helps them acquire more auditory abilities and tools that later invite them to reflect on why we hear what we hear. Pondering the soundscape ultimately means contemplating each individual's listening method.

In the same vein, Alcázar discusses the necessary change in the study of sound, questioning a rather static model and replacing it with experience, reflective practice, action linked to reality; a specific path capable of promoting significant and contextualized learning (2014, p. 223). This article aims to delve precisely into the added value that acoustic study

carries within classrooms, inviting reflection stemming from the reason to talk about sounds and breaking away from formalistic methods, those whose goal is to achieve a singular vision and therefore based on the study of decontextualized objects – whether artistic or not.

All of this is represented in classrooms when we observe how a student reflects on their conception, in this case, auditory, and moves away from seeking objective truths or universal narratives, but rather seeks, even unconsciously, to understand and attribute significance to the elements surrounding them. When in a classroom, after the teacher invites students to listen to their environment, conclusions are drawn such as one student finding too much noise while another does not, and a third pointing out that the important aspect is the sound of the birds that were audible at that moment; this is when we can observe the development of critical sound emission and reception capacity. This process is a fundamental exercise within musical education because, while we are now discussing the sounds around us, the development of these auditory competencies also means that students can form critical opinions about the music they hear or produce. Thus, for instance, the more inclination there is towards active listening, the more information can be obtained in the sounds of a musical piece, whether in its formal aspect (melody, rhythm, pitch, forms, etc.) or in its relationship with society and cultural identification.

Anaesthetized, Active, and Acousmatic Listening

The relationship between humans and the sonic landscape is a bidirectional matter in which both elements modify and construct a joint identity discourse. It is not surprising, therefore, to deduce that listening methods and subsequent conclusions are shaped by our collectivity. Schafer (1967) provides several examples in which individuals from a specific neighbourhood are more inclined to ignore various sounds in their environment, such as traffic congestion, compared to someone residing in a residential area. Similarly, Alcázar discusses an 'auditory discrimination' that operates under similar terms (2010).

The term 'anaesthetized listening', derived from Espinosa (2006), precisely refers to this process that shapes our listening based on our individual habits and collective experiences. Consequently, our auditory perception becomes accustomed to ignoring a significant part of sound sources, paying attention only to the contrast that arises when we hear a specific and particular element (such as bells or an ambulance siren). Therefore, it is not surprising that our sensory information captured by the hearing of our space is biased, limited, and even incomplete. Considering this, one might ask whether general education (or specifically musical education) is giving this fact the importance it deserves.

It is against this trend that we are discussing the correct implementation of a 'sound pedagogy', a term that – as we are observing – not only encompasses the physical characteristics of sound but also its sources, configuration, and our method of listening. In fact, education in this sensory aspect has already been addressed by authors like Schaeffer or

Alcázar, where the latter would argue that there are three manifestations present in this phenomenon:

> The sensorimotor aspect (which is the attention to sound), the symbolic aspect by which sound acquires meaning, referring to something beyond its own materiality, and the structural, constructive aspect – every sonic construct entails a certain temporal order, a relationship between them. These three behaviours or universal manifestations present in the human-sound relationship coincide with Piaget's description of three forms of children's play: the sensorimotor play, symbolic play, and rule-based play. (Alcázar, 2014, p. 227)

It can thus be observed that active listening implies developing a series of competencies inseparable from musical education and which can therefore be seamlessly integrated into classrooms.

Ecological (and Aesthetic) Acoustics

The primary trigger for the current model of (anaesthetized) listening is the layering of acoustic masking, causing many sounds in our environment to get lost within this amalgamation. The human ear gradually becomes accustomed to attentively reacting only to contrasts and, therefore, maintains a hierarchy where sound sources serve no more than a foundational role. Additionally, another issue within this listening approach is that these layers are becoming increasingly numerous. As a result, greater decibel levels are required to create contrast, leading us to inhabit increasingly sonically intrusive environments where it becomes challenging to even recognize the sources. Schafer would refer to this type of soundscape as lo-fi (low fidelity) (1998). Consequently, in current cities, there is an effect of perceiving auditory presence rather than distance (Schafer, 1967).

Therefore, the music teacher's objective is to transform the act of listening into a habitual practice for the student. This notion aligns with Benítez's opinion (2015) when expressing that studying the soundscape generates the possibility of constructing paths for preservation, re-appropriation, and awareness of the environment. In the same vein, Morón indicates that these types of studies "address numerous geographical, historical, environmental, social, etc., issues organically" (2013, p. 238).

With this information, we can delineate two important lines justifying why embracing education in sound ecology is necessary. The first of these is that our perception of the concept of "noise" – typically understood as an undesired sonic signal that disturbs – changes, as we can unravel its constituent elements. This shift in our sonic perception can be defined as a change in our aesthetic experience. However, it is appropriate to note that when speaking of aesthetics, a reconsideration of the term should occur as it refers to a comprehensive and naturalistic experience rather than a transcendental one (Regelski, 2009, p. 27). This experience is formed from the conviction defended by Dewey in which any human practice aim-

ing to achieve an objective relies on reflective thinking before, during, and after the action. Thus, we find that the aesthetic experience is "a qualitative and affective sensation of unity that 'permeates an experience', something opposed to what 'is in works of art'."
Consequently, making students aware and allowing them to experience this aesthetic change leads them to what Alcázar points out as "practical wisdom" (or phronesis), which is the ability to think about how and why we should act to change things (2013). As a result, we might encounter students who are much more aware of their environment and who reflect on how to improve it.
The second point reflects on the effect of studying the soundscape from the perspective of more tangible consequences, i.e. the conscious modification of our environment based on our learning. Schafer likened the proper study of sound at early ages to the consequences of preventive medicine. Therefore, as the author explains, it is more beneficial to educate children properly about sound and their environment so that they understand they are part of it and can therefore improve it, rather than constructing sound-reducing elements in a house with the aim of isolating ourselves from sound (2001).

TIC Resources and Teaching Staff: (Re)production in Classrooms

It is worth noting that according to data obtained from a survey of music teachers in Catalan schools, the use of ICT (Information and Communication Technology) remains relatively unexplored and is not the most widely utilized tool in classrooms (Moncada & Casals, 2020). The same study indicates that younger teachers with greater technological training are more inclined to use these tools. We are therefore facing a shift in teaching practices driven not only by generational turnover but also by what authors like Canales (2007) point out: that ICT helps achieve objectives effectively and should be efficient in providing advantages over traditional resources. Additionally, the positive attitude of teachers towards technological resources encourages their integration into their teaching practices (Ramírez, 2012). This increasing trend aligns with the reality of students' use of electronic devices for their studies. This is supported by the work of López and Silvia (2016), indicating that 75% of university students use electronic devices for academic purposes, and Alejandre (2017) emphasizing the growing prevalence of mobile device usage in classrooms.
In our specific case of sound studies, a brief note should be made regarding the use of electronic tools: as mentioned earlier, sound studies are often confined to the study of music. Moreover, it is not just that sound studies remain largely invisible; rather, the study of music is predominantly approached from the perspective of receiving works or songs. This limits the potential of using a mobile device in the subject to a mere portable music player, thus missing out on the actual potential of these devices for educational purposes.
In this regard, teachers can explore and introduce activities in the classroom where students transition from being spectators to producers, representing a significant advancement considering the earlier sections of this article. Rodríguez highlights this aspect by

stating that "the creation of soundscapes compels students to analyse the origin of sounds, the space where they occur, and their characteristics" (2017, p. 158). Consequently, students acquire new critical skills associated with their environment through listening. Additionally, Alcázar points out that implementing the study of soundscapes develops a series of skills, primarily in two axes traditionally associated with music education: perception and expression (2010). As can be seen, we are bringing together two highly potent and immensely beneficial trends for teaching: sound studies through mobile devices.

Echoes: Geolocated Sound as an Educational Tool

Echoes is one of those applications that, while not specifically geared towards the educational realm, can be highly interesting for crafting teaching activities due to its functionality and accessibility. This tool's premise is to locate points on a digital map (akin to Google Maps) and link sounds to these points. This initial step is necessary to carry out the playback function, which in this application automatically plays sounds when someone passes by these points.

Founded in 2014 by Dr Josh Kopeček, an expert in music composition, this application has evolved to offer increasingly sophisticated features for sound, including spatial sound or 3D aural immersion. Emphasizing mostly free and ad-free usage, a cornerstone of this application, is crucial for conducting activities with students, ensuring easy access and preventing unwanted disruptions. As educators, it is vital to explore the potential utility of geolocated sound and its educational applications. Referring back to the theoretical foundation outlined previously, it signifies a fundamental shift in fostering active listening skills among students.

As indicated, our ear functions on contrasts, and it is here, through the ability to modify and/or create contrasts, that we note its significance. If one of the exercises proposed by Schafer for auditory development was to walk through our environment paying special attention to the sounds it contains, with applications like *Echoes*, we can modify the sound sources of these walks, allowing students to reflect on the differences. One common exercise involves imagining how an urban noisy environment would be without so many vehicles. Now, we can empirically conduct this exercise by creating several points within our walk where nature sounds abound and vehicular sounds are eliminated to create contrast. Following this activity, reflection can be encouraged on which environment is more understandable, the quantity of sounds, the difficulty in distinguishing sources, and even methods to improve our environment (an exercise closely related to the concept of acoustic ecology).

Another comparative exercise could involve "sounds from the past." Here, instead of locating more naturalistic sound sources, we would place sound constructions based on a historical context of the territory. For instance, using the material obtained in the work carried out for the town of Amposta where the sound environment of the market square in the early 20th century was simulated (Maldonado, 2020), placing these sound creations at various

points in the square to conduct educational tours where one can sensually experience this temporal change through sound. In this activity, in addition to the act of listening and comparison, we combine educational areas because understanding these sound constructions correctly would require historical and social contextualization. Thus, with these dynamic activities, we can integrate sound education, environmental knowledge, and history.
These two examples of activities showcase a fraction of the potential of this tool in a classroom. However, in these instances, the students would solely act as recipients of sounds, and as argued earlier, it is crucial for students to also take on the role of "sound producers." Therefore, the following section explains the activity "Realitats Sonores Augmentades" proposed by Professor Joan Vidal.

Echoes: "Augmented Sonic Realities" in Early Childhood and Primary Education

As previously indicated, this activity aims to establish a much more dynamic dialogue through the creation of sonic spaces. Therefore, the goal is to bring students closer to sensory experimentation through its creative and receptive aspects. To achieve this, it is essential to have a proper understanding of the *Echoes* environment and the steps to follow. Additionally, this activity is designed for students to interact with each other. Ideally, if one creates a sonic journey, another should be able to reproduce and experience that exercise.
First and foremost, it's crucial to understand that the *Echoes* platform is divided into creators and users. Both profiles are free, but creators have the ability to craft these sonic journeys, while users can only play them back on their mobile devices. Another distinction is that creators need to use a computer to build the activity. No specific program installation is required, but the option to create is not available on mobile phones or tablets.

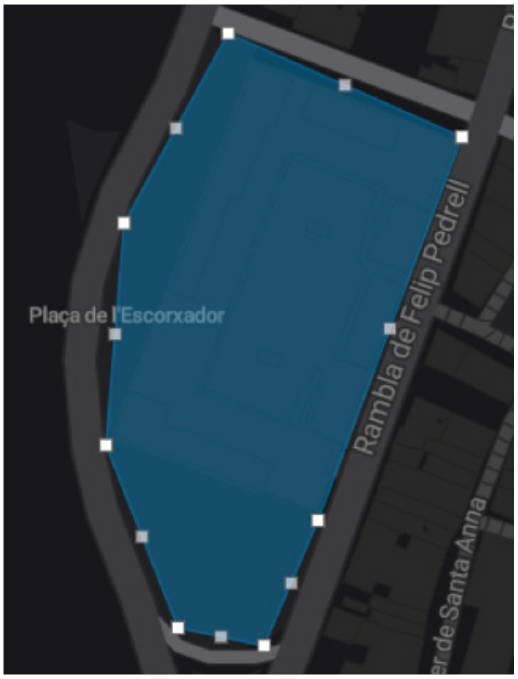

Figure 1: Detail of the *Echoes* creation map screen. Source: own creation.

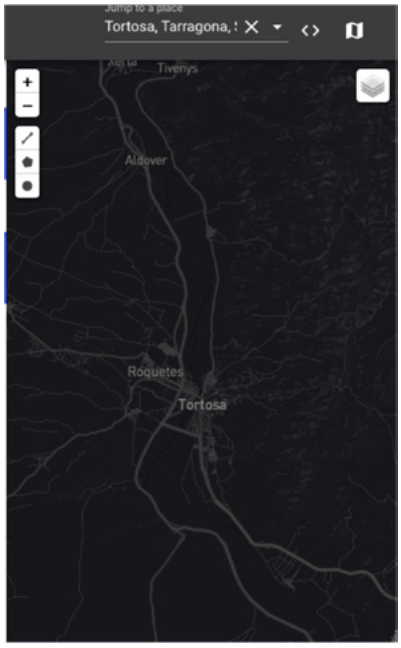

Figure 2: Shape created using the line tool. Source: own creation.

The activity proposed by Joan Vidal is akin to the classic memory game where students will have to "find songs" in their surroundings. For this purpose, one student will create these sound capsules spread across the map, while another will have to identify the point where the same song is repeated. This activity, which could be classified under gamification, aims, on one hand, to delve into understanding the environment and encourage active listening. On the other hand, it involves incorporating a common element in students' lives, such as the use of mobile devices.

As explained earlier, the first step is the creation and implementation of these sound capsules on the map. This task should be carried out by the student using the *Echoes* website after user registration. This section involves selecting the specific area on our map where we want each sound to play, aided by the three symbols seen in the top left corner of Figure 1 (the line, the polygon, and the circle). These tools allow us to draw an area on the map with the chosen shape – in the case of the polygon or the circle. In contrast, the line allows us to draw a freeform outline that will be completed when the points are joined (as seen in Figure 2). This area will be the one that, when the player enters the marked limits, will automatically play the selected song.

It is advisable to instruct the student creating the route to use large and not closely spaced areas since geolocation can have difficulties when playing the sounds. Likewise, the process should be supervised to ensure that the selected spaces are accessible. Once all the points are created, the platform allows the creation of a QR code, which can be shared with the rest of the class to scan. The application will load the content of the map, enabling the activity to be carried out. Although the proposed activity was the 'memory game', students can be encouraged to create other types of dynamics ranging from including ambient sounds, as seen earlier, to narrating stories or tales.

An example in this direction is the activity conducted in the 2019–2020 academic year by the Year 8 students at Les Margues Institute (in Calldenetes) for the Classical Culture subject, where they created a 'mythological tour' through points around the institute that played classical myths narrated by the students themselves.

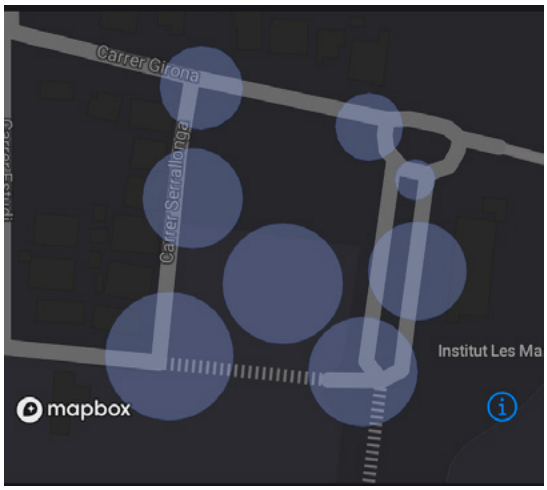

Figure 3: Map of the mythological walk created by students from INS Les Margues. Source: own creation.

Final Discussion

The theoretical framework presented here constitutes a compilation of reflections drawn from various authors, aiming to construct an original discourse regarding sound studies and their application in our daily lives. Despite being a topic addressed for over fifty years, it still lacks the necessary dissemination for widespread understanding and the development of new theories. By directly applying sound studies to the educational realm, this article aims to build a theoretical path that evolves with emerging research, intending to assist new educators who, in turn, will impart this knowledge to their students. This knowledge transmission chain not only underscores the necessity of academic reflection on sonic perception but also highlights the importance of maintaining a multidisciplinary connection within the humanities field.

The theories and trends of thought presented herein reflect a clear need to focus on teaching knowledge that encourages student reflection, as evidenced in this work through the progression towards acoustic ecology via active listening. In fact, students being capable of questioning their environment and developing an awareness of sound emissions is an issue Schafer has already raised in his early works on soundscapes.

Similarly, the other topic addressed – the use of mobile devices in classrooms for educational purposes – signifies another developing trend requiring reflection from both an academic perspective and by educators. In this article, we have taken *Echoes* as a reference application to facilitate knowledge transmission with students. Firstly, it demonstrates that the easy accessibility of such tools equips educators with an additional element for propos-

ing activities that are more engaging for their students by utilizing an object prevalent in their daily lives. Secondly, the change in format allows for greater creativity in activity design, given that the resources provided by current technology offer a wide range of possibilities in education. Having the capability of geolocation, sound space creation, and technological accessibility for an activity that might appear as straightforward as "the matching game" is undoubtedly a benefit which we should leverage.

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Use of mobile devices for audiovisual creation in the university classroom

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RESUMEN

Ante la mejora de los dispositivos móviles y su uso masivo en la industria audiovisual, la poca presencia de estos en las estudios relacionados con el sector es la base de una investigación que contempla comprender la percepción y el uso que hacen los estudiantes de los dispositivos móviles para la creación de contenido audiovisual. A partir de una acción formativa donde estos dispositivos son los medios protagonistas, y de una encuesta previa y posterior a esta acción, se presenta un análisis sobre el cambio en el uso y la percepción producido, indicando la necesidad de introducir estas herramientas en el aula para el beneficio que los mismos estudiantes perciben. Los resultados permiten reflexionar sobre la necesidad de repensar los planes docentes en los grados de comunicación, específicamente ante las competencias técnicas relativas a la creación audiovisual con dispositivos móviles. Los resultados relacionados con la necesidad de formación recibida por los estudiantes y su aceptación de las herramientas en un sentido profesional marca la discusión futura sobre su implementación en educación superior en medios audiovisuales.

ABSTRACT

In view of the improvement in mobile devices and their massive use in the audiovisual industry, their scarce presence in related studies is sufficient reason to undertake research to understand student perception and use of mobile devices for creating media content. An analysis regarding the change in the use and perception of mobile devices is presented, by way of a training action involving mobile devices as the main media and a survey before and after the action. This shows the need to introduce these tools in the classroom for the benefit that the students themselves perceive. The results allows us to reflect on the need to rethink teaching plans in communication degrees, specifically in terms of technical skills related to audiovisual creation with mobile devices. The results related to the need for training received by students and their acceptance of the tools in a professional context indicate a discussion is necessary concerning their implementation in higher education in audiovisual and media studies.

Introduction

The film industry is not oblivious to the constant evolution that has taken place in some basic elements of our daily lives: mobile devices (Goggin, 2010). Tablets and smartphones have become a meta-medium (Márquez, 2017) encompassing existing media and the generation of content that adapts to its specific environment.

Specifically, in the audiovisual field, mobile devices are now tools which are available for creation, production, dissemination, and communication across all media, from cinematography to content for social media (Schleser, 2021). The emergence and integration of these devices within the audiovisual sector respond to two fundamental issues: the ability to capture content (production) and the ability to use various tools on a single device through available apps (pre-production, post-production, and distribution). In this regard, the hybridization of these technologies within the audiovisual sector has brought about profound changes in how the industry organizes new production and its mode of operation (Suárez-Rodríguez, 2016).

Similarly, the constant changes in this technology necessitate continuous reflection and analysis (Scolari et al., 2012) in order to demonstrate the relationship between technological changes and their applications in the specific practices of the audiovisual sector. One of the most significant elements in this regard is the technological improvement of the cameras integrated into these devices (Delbracio et al., 2021). It is no coincidence that many advertising campaigns emphasize this aspect as a differential element of a specific model or brand of smartphone or tablet. Consequently, in the realm of audiovisual creation, the most striking aspect tends to be the production of content using a mobile device for its capture.

In this manner, focusing on the cinematic and audiovisual sector, the use of mobile devices has transitioned from having experimental and/or artistic purposes – during the early 21st century (Berry, 2016; Keep, 2014; Berry & Schleser, 2014; Berry, 2017) – to becoming a tool which is fully integrated into all the different processes of production due to the proliferation of applications for various procedures related to production phases (Aguado & Martínez, 2008; Miller, 2014; Castillo-Pomeda, 2016; Schleser, 2021). This indicates that audiovisual creation extends far beyond mere camera capture and that different departments and tasks require distinct tools (Aguado et al., 2015).

Consequently, the presence of apps and mobile devices for content capture within the industry (Isikman, 2018) demands the questioning of their integration into higher education related to audiovisual creation and even journalism, where so-called Mobile Journalism (MOJO) is increasingly relevant (Salzmann et al., 2020). In the context of university education in audiovisual content, it is essential to note that the need to review the competencies of students in degrees related to audiovisual creation has been highlighted for over a decade (Ferrés & Piscitelli, 2012). However, various studies (Mateus et al., 2017; Martínez-Rodrigo et al., 2019; Suárez & Grané, 2019) indicate the contrary; the educational require-

ments demanded by the audiovisual industry are not being met.

Additionally, concerns have been raised about whether teaching staff have up-to-date training (Lena-Acebo et al., 2022; European Schoolnet & Digital Europe, 2014, p. 13), and there is a need to dedicate significant hours to train both teachers and students in these new technological tools in order to address this issue (Benítez & Stepanian, 2012, p. 131). Furthermore, insufficient development of professional competencies in university studies has been noted (Universia-Accenture, 2007, p. 113), along with a mismatch between the vision of industry professionals and the existing curriculum regarding the most important competencies (García et al., 2012, p. 414).

All these aspects prompt a reflection on the need to introduce, among other things, competencies related to audiovisual creation using mobile devices. This specific aspect, focused on the context at hand, remains a widespread demand emphasizing the advantages that the use of these devices can bring to higher education. For instance, the ability to manage activities for large teams, portability for accessing information and organizational elements, and the ability to work in groups – characteristics inherent in the audiovisual sector (Sung et al., 2016; Salcines-Talledo et al., 2022). Additionally, it is crucial to actively use mobile devices in the classroom as elements in the learning process, within a model that emphasizes research and practical work (Suárez et al., 2018). This aligns with placing the devices themselves at the centre of discourse regarding audiovisual creation with mobile devices (Mascarell, 2020).

This context leads us to carry out a project that, through a training action using mobile devices, allows students to acquire competencies in this area and enables an analysis of whether their inclusion in current audiovisual studies is necessary.

Methodology

The present article presents results obtained from an educational innovation project in higher education aimed to verify the use and perception of mobile devices as tools for audiovisual creation among students. In addition to this primary element of analysis, the intention was to ascertain whether there was a change in both use and perception of students following a training action through the use of surveys completed before and after said training action.

The results aim to address the following specific objectives:

1. Analyse students' use of mobile devices for audiovisual creation in personal and academic settings.
2. Analyse students' perceptions regarding the use of mobile devices for audiovisual creation in the professional field.
3. Determine if it is necessary to include competencies related to the use of mobile devices for audiovisual creation in audiovisual studies.

These objectives correspond to the following research questions:

4. [R1.1] What use do students make of mobile devices for audiovisual content creation in personal settings?
5. [R1.2] What use do students make of mobile devices for audiovisual content creation in academic settings?
6. [R2] What perception do students have regarding the use of mobile devices for professional audiovisual creation and its potential in their future careers?
7. [R3] Is it necessary to include mobile devices in the curriculum of audiovisual studies?
8. [R4] Is there a change in the use and perception of students after using mobile devices for audiovisual creation at university?

To address these questions, a quasi-experimental methodology with a quantitative nature (complemented by a methodological approach) was employed, focusing on program evaluation techniques (Alvira-Martín, 2002). For this purpose, a survey instrument was developed to assess students' use, knowledge and perception regarding the use of devices and mobile applications for audiovisual creation. This questionnaire was implemented in both pre-test and post-test formats. The pre-test was conducted at the beginning of the teaching period in a subject focused on camera procedures, followed by a training action that targeted the studied variables of audiovisual creation using industry-specific apps for production (Filmic Pro) and pre-production (Shot Designer). At the end of the teaching period, a post-test was administered to students to compare their responses before and after the training. The only difference between the two questionnaires was the addition of a question in the post-test requesting participants to evaluate the training action.
The study sample made up of students from a second-year Audiovisual Media studies subject. Specifically, the initial data collection phase involved 76 students and the final phase had 71 participants. All participants took part voluntarily and anonymously.
Regarding questions based on the variable under study, the dimensions represented in Table 1 were utilized.

Dimensions	*Questions Description*
Sociodemographic and Contextual Data	Year of Birth, Gender, Operating System of Personal Mobile Devices, Subject Group (morning or afternoon).
Use of Mobile Devices for Audiovisual Creation	Creation in personal, academic, and professional settings; frequency of use for audiovisual content creation; production phases in which devices are used; specific apps used.
Perception Regarding Mobile Devices for Audiovisual Creation	Types of content students consider suitable for mobile devices; contexts where devices are considered valid (personal, academic, professional); future prospects of mobile devices in the professional world.
Educational Training in Mobile Devices for Audiovisual Creation	Training received during their higher education; opinion on the importance of integrating such training.

Table 1. Analysis Dimensions

The questionnaire underwent a process to ensure its validity, objectivity, and reliability (Hernández et al., 2010), through expert judgment (Torrado, 2014) involving researchers selected for their experience and knowledge in creating questionnaires, as well as expertise in the context of audiovisual creation and mobile devices.
Regarding the statistical analysis of the data, it was conducted using SPSS software. Starting with an initial descriptive analysis, a comparison between the results obtained in the pre-test and post-test responses was performed to observe the changes resulting from the training. Additionally, a Student's t-test (with a significance threshold of $p < .05$) was executed to assess whether the changes observed between the pre-test and post-test responses could be considered statistically significant.

Analysis and Results

The following paragraphs present the results obtained regarding the objectives set through the three main variables: usage, perception, and training concerning mobile devices for audiovisual creation.

Use of Mobile Devices for Audiovisual Creation

The questions related to audiovisual creation begin with a dichotomous inquiry focused on determining whether students use mobile devices to create audiovisual content in two different settings: personal and academic. They are also asked about the professional field, but these responses are not taken into consideration for the presentation of results due to the research's focus on their university stage.
The percentage of creation in the personal sphere shows similar values in both the pre-test and post-test, being 96.1% (n=73) in the pre-test and 95.8% (n=69) in the post-test.
However, in the academic setting, the percentage of students indicating the use of mobile devices for audiovisual creation in the pre-test is 43.4% (n=33). Through the training action, a change in trend has been observed in this aspect, increasing the percentage of students creating academic content with mobile devices to 61.1% (n=44). This is reiterated by checking the significance value through a t-test ($p < .031$).
The subsequent question focused on the frequency with which students use mobile devices for audiovisual creation in both personal and academic settings. In this case, the question uses a Likert scale allowing responses ranging from "Never" to "Always", including options like "Very rarely", "Sometimes", and "Frequently". In the pre-test, high percentages were obtained for creation in the personal sphere, such as "Sometimes" (27.6%, n=21), "Frequently" (27.6%, n=21), and "Always" (38.2%, n=29). In other words, 65.8% (n=50) of students claim to frequently use mobile devices for creation in the personal sphere when combining "Always" and "Frequently".
The data collected in the post-test did not vary significantly, with "Sometimes" being chosen by 18.1% (n=13), "Frequently" by 37.5% (n=27), and "Always" by 34.7% (n=25). Thus,

72% (n=52) affirm using mobile devices for creation in the personal sphere "Frequently" and "Always", compared to 65.8% in the pre-test.

In the academic sphere, the pre-test indicates that the most prominent options are "Never" (32.9%, n=25), "Very rarely" (32.9%, n=25), and "Sometimes" (25%, n=19). Thus, students indicate they do not usually use mobile devices for creation in the academic sphere in a generalized manner, with a total of 65.8% (n=50) indicating "Never" and "Very rarely".

In this case, after the training action, the post-test results show a significant change ($p < .005$), with "Sometimes" exponentially increasing to 45.8% (n=33). Despite a reduced percentage, "Never" and "Very rarely" remain as the options with the highest percentages (see Figure 1).

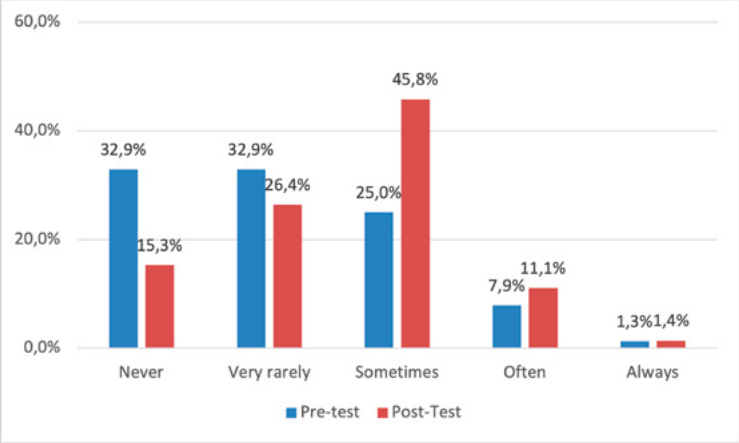

Figure 1. Use of mobile devices to create audiovisual content: academic setting. Source: own creation.

The following questions focus on frequency, specifically within different stages or processes involved in audiovisual creation: scriptwriting, pre-production, production, post-production and photography (encompassing both capture and editing). Once again, the questions allow responses on a Likert scale ranging from "Never" to "Always," including options such as "Very rarely," "Sometimes," and "Often." As the training focused on pre-production and recording with mobile devices, the subsequent results concentrate on these phases.

In the area of pre-production, in the pre-test, 32.9% (n=25) of the students indicated they "Never" use mobile devices, 15.8% (n=12) "Very rarely," 28.9% (n=22) "Sometimes," and 18.4% (n=14) "Often." The results from the post-test do not demonstrate a notably significant change, except for the "Never" option, which decreases to 26.4% (n=19). This indicates that despite the training, there haven't been noticeable shifts in students' usage patterns in this area.

Regarding the production phase, a similar change occurred between the pre-test and post-test. The "Never" option decreased, and the "Sometimes" option increased in the post-

test. Specifically, in the post-test, the "Never" option decreased to 22.2% (n=16), and "Sometimes" increased to 31.9% (n=23) (see Figure 2).

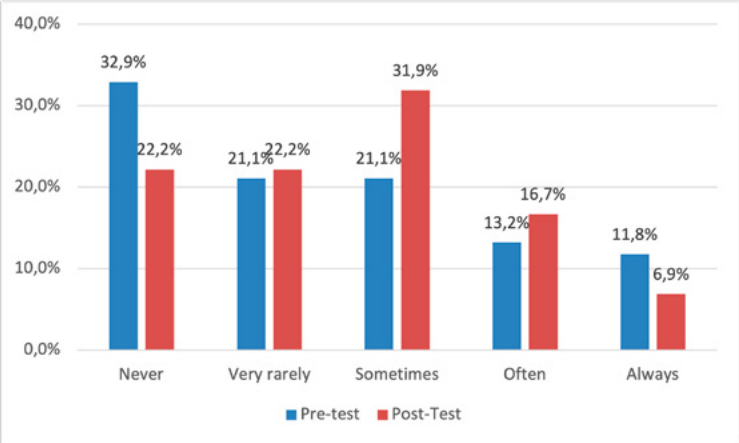

Figure 2. Use of mobile devices to create audiovisual content: frequency in production processes. Source: own creation.

De nuevo, los resultados muestran que, en el caso de uso, los porcentajes aumentan, pero no se producen cambios significativos entre los usos anteriores y posteriores a la acción formativa.

The results once again show that, in terms of usage, the percentages increase, but no significant changes are observed between the usage before and after the training action.

For perception regarding the use of mobile devices for audiovisual creation and the possibility of using them in their professional future, there were two questions. In both cases, these are binary questions that allow the student to indicate a third option if they have no opinion on the matter ("I don't know").

The first question explores the suitability of the tools offered by mobile devices based on the type of content to be generated: content for social media, Internet advertising, TV advertising, documentaries, feature films, short films, and music videos.

In the pre-test, categories where a higher percentage of students consider that mobile devices can be used include: Music videos (57.9%, n=44), Short films (51.3%, n=39), Documentaries (40.8%, n=31), Internet Advertising (80.3%, n=61), and Social Media Content (98.7%, n=75). However, the responses are divided, except for Internet Advertising and Social Media Content. Concerning Feature Films, the negative option is predominant: only 17.1% (n=13) consider mobile devices as valid tools for production of films compared to 64.5% (n=49) who do not. For TV advertising, 48.7% (n=37) do not consider mobile devices valid compared to 32.9% (n=25) who do.

In the post-test, significant changes occur. Firstly, only Feature Films continue to have a higher percentage of negative responses: 51.4% (n=37) still indicate that mobile devices are

not valid tools compared to 36.1% (n=26). Secondly, the acceptance of mobile devices for creation in different types of products grows in all areas and exceeds 50% acceptance: for creating music videos and short films, it reaches 75% (n=54); documentaries are at 55.6% (n=40), and TV advertising at 51.4% (n=37). Internet Advertising (88.9%, n=64) and Social Media Content (95.8%, n=69) also maintain a clearly affirmative trend (see Figure 3).

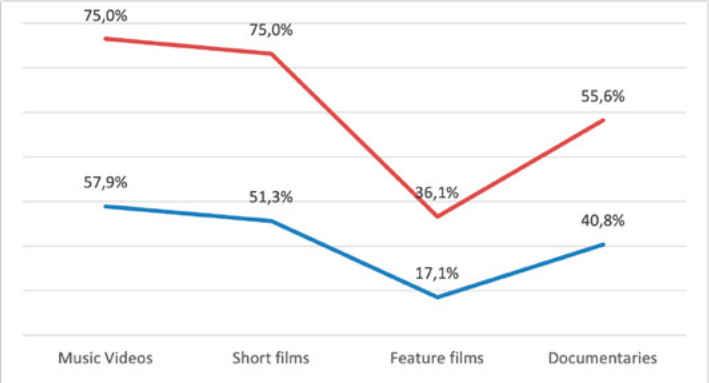

Figure 3. Perception of Mobile Devices as Being Valid for Creating Audiovisual Content. Source: own creation.

The t-test indicates significant changes in the following fields: Short Films ($p < .006$), Feature Films ($p < .017$), and Television Advertising ($p < .011$). Meanwhile, the Documentary category falls near the threshold ($p < .057$).

In the subsequent question, students were asked about the validity of devices in various previously addressed areas (personal, academic), and also in the professional realm. Again, this was a dichotomous question allowing a third option to indicate uncertainty ("I don't know"). In this case, beyond the personal sphere (where the percentage is unanimous and there is no significant difference in the validity of both in the pre-test, 96.1%, n=73, and post-test, 97.2%, n=70), attention should be drawn to the change observed in both the academic and professional domains after the training.

In the academic domain, in the pre-test, 46.1% (n=35) considered mobile devices as valid tools for creating content, while 36.8% (n=28) disagreed. In the professional context, 36.8% (n=28) considered them valid, and 43.4% (n=33) did not.

In the post-test, in the academic realm, the percentage considering mobile devices as valid tools for creating audiovisual content stands at 77.8% (n=56) compared to 12.5% (n=9) who disagreed, while in the professional realm, positive responses amount to 55.6% (n=40) versus 22.4% (n=15) who disagreed.

In this case, the significant difference using the t-test indicates significance in the academic domain ($p < .001$), whereas in the professional sphere, although there is an increased confidence in their use, the difference cannot be indicated.

Training in the use of mobile devices and apps for audiovisual creation at the university

The questions centred on training are divided into two objectives: training received during their university studies on one hand, and their opinion regarding the importance of introducing these competencies on the other. In both cases, they are questions with Likert scale responses ranging from "None" to "A lot," with intermediate values such as "Little," "Normal," and "Quite a bit."

In the question related to the training received during their university studies, the participating students responded in the pre-test with 51.3% (n=39) indicating that they have received "None" of the training. 28.9% (n=22) indicated they have received "Little," 11.8% (n=9) responded with "Normal," and 7.9% (n=6) selected "Quite a bit." No student indicated "A lot." Hence, more than 50% indicate that they have not received any training, and when combined with those indicating they received little, the amount reaches 80%.

In the post-test, the results varied significantly since it was conducted after the training intervention. Values indicated under "None" decreased to 2.8% (n=2), while responses indicating "Little" remained at a similar percentage of 23.6% (n=17). For "Normal," the percentage increased to 29.2% (n=21), and for "Quite a bit," it rose to 31.9% (n=23). Finally, 12.5% (n=9) indicated "A lot" regarding the training received after the intervention. A significance was confirmed via the t-test ($p < .000$).

Regarding the importance students place on acquiring competencies and knowledge related to the use of mobile devices for audiovisual creation, it's evident even in the pre-test that they consider it highly important. The option "Quite a bit" was the most selected with 39.5% (n=30), followed by "A lot" with 36.8% (n=28). In the post-test, the numbers remained consistent, with the option "A lot" moving to the first position at 40.3% (n=29), followed by "Quite a bit" at 33.3% (n=24). Therefore, it's evident that the training intervention wasn't necessary to generate this perception.

Discussion

The obtained results show that the proposed objectives have been addressed with various outcomes to discuss.

Firstly, concerning the first objective regarding the students' use of mobile devices for audiovisual creation, both the pre-test and post-test reveal that a significant percentage use them extensively in personal contexts. This was expected, so the lack of a significant difference between the two questionnaires is not considered problematic. Conversely, in the academic sphere, there was the intention of inducing change through the intermediate training intervention, and a significant shift was observed. More students now use mobile devices for audiovisual creation in academic settings following the training intervention. Understanding the possibilities of these devices directly translates into a transformation in their academic usage.

Similarly, the frequency of mobile device usage for audiovisual creation in personal contexts shows no significant alterations between the two tests, as anticipated. While there is a significant change in academic usage due to the training intervention, revealing that many more students have used mobile devices in this sphere. Hence, it's evident that students commonly use mobile devices on a personal level but do not consider them suitable for academic use until they receive specific training that highlights the potential of this medium in higher education.

Regarding the use in specific production phases (pre-production and production), despite the increased percentages, the observed change lacks statistical significance. In both cases, there's an increase in options indicating more common usage, although not as pronounced as anticipated.

Moving to the second objective concerning perceptions about the validity of mobile devices in the professional audiovisual field, regarding the adequacy of tools provided by mobile devices for generating specific content (feature films, short films, etc.), the pre-test shows that students harbour doubts about their potential. Two proposed categories yield negative results, with a significant portion of participants questioning their validity. This data reveals that only categories such as Internet Advertising and Content for Social Media have clear and widely accepted validity. In contrast, the post-test demonstrates notable changes. Internet Advertising and Content for Social Media maintain their acceptance, with Video Clips and Short Films now joining these categories. Furthermore, Documentaries also receive positive evaluations regarding the use of mobile devices for their creation. Indeed, only Feature Films maintain a negative evaluation. However, even this category demonstrates a shift in the trend towards statistical significance. Clearly, the training intervention has generated a change in the participants' perceptions regarding the validity of mobile devices for audiovisual creation.

Likewise, this shift in perception also occurs concerning students' perception in the academic sphere. The transition from the pre-test to the post-test shows a significant difference, indicating that students acknowledge the validity of these tools in their educational environment. However, this change is not as pronounced in the professional sphere, where although the percentage of students indicating their validity increases, the change lacks statistical significance.

Regarding the third objective concerning the use of mobile devices related to academic training, the results indicate that the study's training intervention is, for many, the first and only exposure to this subject.

Concerning the importance students attribute to this type of training in their studies, there is no significant change in their perception. In the pre-test, they already express a clear attitude regarding the need to use these devices in their university education for audiovisual creation. Hence, both the pre-test and post-test clearly demonstrate their recognition of this necessity, which contradicts directly with the training that has been reported as received.

Returning to the research questions, data related to usage (both personal and academic, R1.1 and R1.2) have been discussed, highlighting that academic use is the most significantly impacted space following the training intervention, as expected due to the research design. Concerning perception (R2), it is evident that students hold a positive view of mobile devices for content creation, even though there are areas where they still do not see their categorical validity, specifically in those related to the use of top-notch technology (Feature Films and Television Advertising). Regarding the need to include mobile devices in the curriculum of audiovisual studies (R3), the response is clear and categorical. Remarkably, students maintain this view both before and after the training intervention. Finally, the change in students' usage and perception (R4) is clear and relevant in specific categories, such as academic usage, the perceived validity in the same academic sphere, or in different types of content that can be generated.

Conclusions

The results allow us to determine the achievement of the proposed objectives.

There is an evolution in the perception of the possibilities of devices, directly leading to a usage that extends beyond the personal sphere. Training brings about changes in knowledge, perception, and usage. This should allow us to positively assess the training intervention since the potential of these means for young audiovisual creators is manifold. It is crucial to highlight that students are aware, even before the training, of the need to understand and use mobile devices for audiovisual creation.

Firstly, it can be asserted that including competencies related to the use of mobile devices for audiovisual creation in higher studies of audiovisual media is necessary. The audiovisual industry has implemented them for over a decade (Goldstein, 2013), making them a fundamental tool in this professional sector. Hence, it is time for these competencies to have a more prominent presence in the skills acquired during studies focused on this field. Beyond these technical competencies, the ability to work with quality tools and resources at an affordable cost for young people transcends the necessity of technical skills development and advances the transversal development of competencies linked to critical thinking, which is crucial in the present moment.

The possibilities of using mobile devices for audiovisual creation not only impact speed and cost reduction but also hold significant potential for media democratization. They enable anyone to capture, edit, and distribute stories and news. Some authors, like Mulrennan (2018), confidently consider mobile devices today as heutagogical tools (related to adult self-directed learning), where self-management for learning in the audiovisual creation process using these tools could provide a clear insight into a rapidly changing future due to the pace of innovations and the continuously transformable situation.

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Miscellany

Ludomusical Boomerang.

Musical and narrative reconversions in *Final Fantasy VII Remake*

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RESUMEN

Esta investigación analiza las composiciones musicales de *Final Fantasy VII Remake* (Square-Enix, 2020) y cómo el búmeran ludomusical ha contribuido en el diseño narrativo y sonoro del videojuego. Para ello, se ha aplicado un análisis comparativo entre este título y su original lanzado en 1997, así como con los diferentes productos transmediáticos que han contribuido a la evolución sonora durante más de veinte años, a destacar: la precuela videolúdica, *Crisis Core: Final Fantasy VII* (Square-Enix, 2007); el largometraje, *Final Fantasy VII: Advent Children Complete* (Tetsuya Nomura, 2009); o los conciertos con gira internacional, *Distant Worlds: Music From Final Fantasy* (AWR Music Productions, 2007-). La construcción de la estrategia *media-mix,* propia de Japón, ha permitido que entendamos Final Fantasy VII como un amplio universo transmedia cuyas narrativas —y bandas sonoras— se han desplegado y reelaborado en diferentes medios hasta integrarse nuevamente a la capa ludonarrativa del *remake.* En esta investigación se han analizado dos de las composiciones más distinguidas de la entrega, "J-E-N-O-V-A - Quickening" y "One-Winged Angel - Rebirth", con el objetivo de demostrar cómo el búmeran ludomusical contribuye a la inmersión del relato y al enriquecimiento de la experiencia de juego, siempre dependiendo del grado de alfabetización lúdica y musical mediática del jugador.

ABSTRACT

This investigation analyzes the musical compositions of *Final Fantasy VII Remake* (Square-Enix, 2020) and how the ludomusical boomerang has contributed to the video games' narrative and sound design. To this end, a comparative analysis has been applied between this title and its original released in 1997, as well as with the different transmedia products that have contributed to the sound evolution for more than twenty years, highlighting: the video game prequel, Crisis Core: Final Fantasy VII (Square-Enix, 2007); the film, *Final Fantasy VII: Advent Children Complete* (Tetsuya Nomura, 2009); or the international live concerts, Distant Worlds: Music From Final Fantasy (AWR Music Productions, 2007-). The media-mix strategy, very common in Japan, has allowed us to understand *Final Fantasy VII* as a broad transmedia universe whose narratives —and soundtracks— have been deployed and reworked in different media until once again integrated into the ludonarrative layer of the remake. In this research, two of the most distinguished compositions have been analyzed, "J-E-N-O-V-A - Quickening" and "One-Winged Angel - Rebirth", with the aim of demonstrating how the ludomusical boomerang contributes to the immersion of the story and the enrichment of the gaming experience, always depending on the player's ludoliteracy and musical media literacy.

Introduction

Final Fantasy VII Remake (Square Enix, 2020) returns to the video game format after two decades of reconversion as part of Japan's distinctive media mix. This strategy arises in response to the success of a product and consists of deploying spin-off titles across multiple media and platforms (Loriguillo-López, 2021). This particular phenomenon is often designed for a fixed period (Steinberg, 2012) and has become a common strategy for celebrating the anniversaries of cultural productions, be they manga, *anime* or *gêmu*. Thus, since its release on PlayStation in 1997, the seventh instalment of the *Final Fantasy* franchise (Square-Enix, 1987 onwards) has explored different media and discourses to shape what we can recognize as its particular transmedia universe (Jenkins, 2010). That is, the diverse products around *Final Fantasy VII* have expanded their narrative world as a puzzle that can be complemented by enriching the consumer experience and becoming a challenge for the overall analysis of the texts (Guerrero-Pico & Scolari, 2016). In addition, video game music, or *geemu ongaku*, also participates in this conglomeration as it may permeate other cultural industries, such as the recording industry (Oliva, 2021). In this way, it is possible to reproduce the *Final Fantasy VII* soundtrack in physical or digital formats, but it can also be listened to – and played – in rhythmic or music video games, as in Theatrhythm Final Bar Line (indieszero, 2023), where the primary motivation is to pay homage to the different compositions of a franchise. Since the celebration of its tenth anniversary, Square-Enix has published numerous products around Final Fantasy VII, notably the animated feature film *Final Fantasy VII: Advent Children* (Tetsuya Nomura, 2005) or the prequel Crisis Core: *Final Fantasy VII* (Square-Enix, 2007), all of them taken, among others, as essential titles for this research (Table 1). Our main objectives are (1) to demonstrate how transmedia influence contributes to the construction of the narrative and sound design of *Final Fantasy VII Remake* and (2) to defend the role of sound evolution in the construction of the player's pleasurable experience through a challenge of musical recognition, facilitated by the transformation processes across different media – video games, feature films, anime, and concerts.

Title	Authorship	Composer(s)	Media
Final Fantasy VII (1997)	Squaresoft Yoshinori Kitase	Nobuo Uematsu	Video Game
Final Fantasy VII: Advent Children (2005)	Square-Enix Tetsuya Nomura	Kenichiro Fukui, Nobuo Uematsu	Full-length animated film
Distant Worlds: Music from Final Fantasy (2007)	VVAA	Nobuo Uematsu	Concert
Final Fantasy VII: Crisis Core (2007)	Square-Enix Hajime Tabata	Takeharu Ishimoto	Video Game
Final Fantasy VII Advent Children Complete (2009)	Square-Enix, Tetsuya Nomura	Kenichiro Fukui, Nobuo Uematsu	Full-length animated film (Extended edition)
Distant Worlds 2: Music from Final Fantasy (2010)	VVAA	Nobuo Uematsu	Concert
Final Fantasy VII Remake (2020)	Square-Enix Tetsuya Nomura Naoki Hamaguchi Motomu Toriyama	Masashi Hamauzu Mitsuto Suzuki Nobuo Uematsu	Video Game

Table 1. Transmedia products related to *Final Fantasy VII* chosen for this research.

Methodology

For this study, we use a multidisciplinary methodology inherent to game studies based on the video game analysis models by Fernández-Vara (2015) and Navarro-Remesal (2016), complemented with several studies on ludomusicology, a sub-discipline that deals with video game music. We rely on Van-Elferen's (2016) ALI model, which considers the player's emotions (Affect), media Literacy, and musical Interaction. In addition, we take into consideration the semiotic fields that are present in video game music communication with the player (Hart, 2021): one focused on creation and composition which is incorporated during the game's development – which we can understand as the emission of the discourse – and one focused on the actions and player's performance during the game – which can be considered as the message's reception and interpretation.

We have used different techniques through two phases to study the musical compositions *J-E-N-O-V-A – Quickening and One-Winged Angel – Rebirth* from *Final Fantasy VII Remake* (*FF7R* onwards). These were chosen because of their connection to the main antagonists and for their popularity among players. During the first phase, we used the analytical gameplay technique to experience games by focusing mainly on the role of music within the player's performance (Murray, 1997), understood as an aesthetic pleasure and a valuable experience. We then listened to the two tracks in order to draw a visual scheme of their musical and narrative structure, that is, attending to both the ludic phases of the boss battle and the musical narrative (Cartas, 2011). It is not easy to represent video game music on paper from an analytical point of view (Summers, 2016), and methods designed to date are relatively scarce due to the interactive, flexible and player-dependent components (Medina-Gray, 2019). Therefore, the diagrams elaborated in this paper aim to guide the reading and facilitate the interpretation of the analysis, although we consider

it essential for the reader to listen to the analysed tracks. Given the nature of this research and our competencies in Communication Sciences, our interest lies mainly in the discursive analysis of the musical elements by modules or pieces (Summers, 2016) to locate the dramatic 'arc' (Grimshaw, Tan & Lipscomb, 2013) and detect the psychological effects that impact the player (Brosky, 2001). In the second phase, we transferred our structure to audiovisual montage software that allowed us to tag the different fragments according to the musical rhetoric (Cartas, 2011). This has allowed us to compare the original structure of the 1997 songs with their later versions, which were composed for other video games, for the animated film, or the *Distant Worlds* concerts. Furthermore, the diagrams have helped us to consider soundtracks as a puzzle that the player can recognize and reinterpret, and whose pieces can contain a narrative charge capable of enriching the experience of playing.

Ludomusical Boomerang

During the first minutes of gameplay, a player familiar with the original *Final Fantasy VII* may be displeased to find alterations to the *FF7R* soundtrack. In the opening cinematic cutscene, the track *Midgar, City of Mako* (Nobuo Uematsu, 2020) plays, in which we can recognize two sections: an initial one attached to the leitmotif – or recurring musical theme – of Sephiroth, the character who acts as the main villain, and a second one that seems to follow on from the original track *Opening – Bombing Mission* (Nobuo Uematsu, 1997). In this second section, however, the same leitmotif intervenes once again, crossing the diegetic boundaries (Van-Elferen, 2011) and interfering in the behaviour of a second character, Aerith, who is at that moment in a deserted alley. The protagonist seems to hear the music associated with Sephiroth and seeks to confirm with her eyes what she hears but cannot see, and finally flees in fear. These first bars announce to the player a notable difference regarding the original video game, not only in terms of graphics or sound, but also in terms of narrative.

Minutes later, after finishing the first mission in the reactor, which also functions as a letter of introduction to the game and its protagonist Cloud, the song The Promised Land – Cycle of Souls (Nobuo Uematsu, 2020) plays, which is a direct legacy of *The Promised Land* (Nobuo Uematsu, 2005) composed for the film *Final Fantasy VII: Advent Children* (*Advent Children* onwards). Its involvement only complexifies *FF7R*, considering that the film tells a story that takes place two years after the events in the original *Final Fantasy VII* and which would therefore call into question the timeline established so far.

Therefore, the first hours of gameplay help us expose the double boomerang (Martín-Núñez & Navarro-Remesal, 2021) that would explain the ludonarrative complexity in the video game. When the authors refer to a double boomerang they speak of (1) a return of features that already formed the nature of the videogame and that come back to the ludonarrative layer and (2) the integration of features reframed by post-classical cinema in the

same video game narrative layer. This phenomenon would explain, to a certain extent, the new proposals of "narrative, emotional and ethical challenges to the players" (Martín-Núñez & Navarro-Remesal, 2021, p. 24) that germinate specific reconfiguration mechanics that invite them "to order the disordered pieces [...] to unveil their functioning mechanisms and the deceptive logic of characters and narrators, and to search for a closure to endow the unfolded narrative world with meaning" (Martín-Núñez & Navarro-Remesal, 2021, p. 24). Based on Martín-Núñez and Navarro-Remesal's concept, we propose the term ludo-musical boomerang to define the sonic evolution that occurs in a video game whose soundtrack has gone through different transmedia products until it is once again integrated into the ludic and narrative layer of the video game. This sound evolution would be closely affected by the technological evolution itself and its possibilities, as well as by the musical features that have been re-elaborated by other audiovisual forms. At the same time, this boomerang can display mechanics of reconfiguration, which we refer to as a narrative-musical puzzle and which inherits the media-mix's complex nature. These mechanics can complicate the tracking of each of the original products, mainly from the perspective of the Western audience (Hernández-Pérez, 2017). In other words, a sound design affected by this phenomenon can pose a challenge to the player and even a musical recognition challenge where ludomusical literacy – comprising ludic literacy and musical media literacy (Fernández-Cortés, 2020) – is constantly being tested. If players end up memorizing music, it is because the video game is based on redundant repetition (Summer, 2016), a behaviour more similar to the television musical model than that of film (Summer, 2019). In short, the redundant nature of music in the video game medium connected with the musical boomerang offers the user a game of musical recognition that relies on the player's affect and can enrich their experience during gameplay.

Narrative agents and hyper-diegesis

From a narratological point of view, *FF7R* is an interesting case study due to the intrusion of two narrative agents that can influence the story's development and the music accompanying it. Although we do not intend to delve into concepts of the field of narratology in this article, we believe it is convenient to present the following two intra-diegetic agents (Cuadrado-Alvarado & Planells, 2020) to understand their participation in the soundtrack. These concepts are considered intra-diegetic because they belong to the ludo-fictional world itself – this world is understood as a fictional one with a proactive and transformative capacity for the player, which contains characters, objects, etc. and is bound by the games' rules (Planells, 2015). A first narrative agent has already been mentioned: Sephiroth. In the original game, he is presented with a certain power over the ludo-fiction by participating in events when he lacks corporeality. In *FF7R*, moreover, this antagonist has a self-awareness of his (in)existence that transcends space and time: he knows future events and acts consequently to prevent his ultimate death. As we noted in the previous section,

in the first Sephiroth cinematic cutscene, both the player and the character of Aerith are musically highlighted, confirming that the soundtrack works from a privileged position of hyper-diegesis that allows it to act both inside and outside the fiction (Van-Elferen, 2011). In the original game, there is no intrusion of music, and Aerith never looks towards the end of the alley nor alters her behaviour.

Our second narrative agent is the Whispers, a group of characters who first appear in *FF7R*. The Echoes have their theme song, *Whispers' Theme,* which, we anticipate, is used in the music of the final battle. The Whispers are meant to intervene in the game when the depicted events threaten to diverge significantly from those in the original video game. If any character, including Sephiroth, acts differently from the original game, the Whispers appear and redirect the characters and, consequently, the player. Therefore, they operate under the condition of judges who enforce the game's rules and delimit the margins of directed freedom: possibility, obligation, prohibition and penalty (Navarro Remesal, 2016). The participation of the Whispers complicates the narrative starring an amnesiac hero who does not overcome trauma and does not accept his guilt or a significant loss, characteristics commonly found in mind-game films (Sorolla-Romero, 2018). At the same time, the non-linearity of some of the game plots foretells to the player and the protagonists the inexorability of the catastrophe and the tragedy (Sorolla-Romero, 2018). The defeat of the Whispers thus involves transforming the inexorable into the probable, the known into the unknown. Having presented the existence of these two narrative agents and how they participate in the narrative design and sound design, we can solve the narrative-musical puzzle proposed by *FF7R*.

J-E-N-O-V-A - Quickening: a meaningful prologue

During the incursion into the Shinra offices, the song *Cultivating Madness* warns the player of an impending encounter with Jenova by drawing on musical motifs from a recognizable fragment of the theme *JENOVA*. We consider the eponymous song from 1997 as an interesting battle theme because of its multiple modulations – or key changes – that allow the familiarizing of a brief theme (Figure 1) which, in turn, avoids the feeling of auditory fatigue "that makes proper attention impossible" (Dobrucki, Kin & Kruk, 2017, p. 168).

MUSICAL STRUCTURE BY PHASES "JENOVA" Nobuo Uematsu, 1997				
A	B		C	
[A]	[b1]	[b2]	[c1]	[c2]
Code	Description			
A	00:00:00 – 00:16:18 *Exordium*			
b1	00:16:18 – 00:38:06 *Medium.* Part 1			
b2	00:38:06 – 00:59:10 *Medium.* Part 2			
c1	00:59:10 – 01:10:13 *Finis*			
c2	01:10:13 – 01:15:21 *Finis* and connexion with [b1]			

Figure 1. Musical structure in phases in *JENOVA* by Nobuo Uematsu. (*Final Fantasy VII*, 1997). Compiled by the author.

Jenova's identity is instead called into question when listening to the opening theme for the remake, *J-E-N-O-V-A Quickening*, which consists of two short and seemingly unrelated pieces of music: *Those Chosen by the Planet* – from the original *Final Fantasy VII* – and *Beyond the Wasteland* – composed for the film *Advent Children*. The first piece is linked to the identity of Sephiroth, which reinforces the previous cinematic cutscene. The second, however, points to the animated film, specifically the introduction of Kadaj and his siblings, embodiments of Sephiroth's will and linked by a genetic relationship with Jenova. This situation forces us to question the temporal break, as we again note that the events of *Advent Children* take place two years after *Final Fantasy VII*. In addition, the song *Beyond the Wasteland* maintains the motif – albeit in a different key – of *Those Chosen by the Planet,* reinforcing the idea of the bond between Sephiroth and Jenova, the antagonists.

J-E-N-O-V-A - Quickening: arc and fullness

The track for the battle against Jenova in the remake can be divided into three musical stages linked to the boss phases – or six if we count the prologue, interlude and closing cinematic cutscenes (Figure 2). The original composition by Nobuo Uematsu can be recognized when the player begins the fight, in both the first and second stages, albeit with notable differences. While the original theme uses synthesisers with techno-electronic influences, the adaptation opts for an orchestrated version with a slower tempo and choral voices – as already experimented with in Distant Worlds: Music From Final Fantasy. That is, although the score resembles the original, the musical genre moves away from electronic music to explore a style closer to the music of action RPGs or the hack-and-slash[1] game scores by composer Tadayoshi Makino, who participated in video game franchises such as Monster Hunter (Capcom, 2004 onwards) or Dragon's Dogma (Capcom, 2012). Regardless of the

1 *Hack and slash* is a genre originating from tabletop role-playing games and is distinguished from other genres by real-time melee combat.

musical genre, the player has the tools to recognize the song and its function in the ludo-fictional world due to the reuse of the classical RPG musical scheme that "has become an element firmly linked to the identity of JRPGs" (Fernández-Cortés, 2020, p. 191) and its sub-genres. Whether it is a direct influence of the arrangements made for concert halls or an inheritance of a musical style linked to another video game genre, we consider the composition to be affected by the ludomusical boomerang.

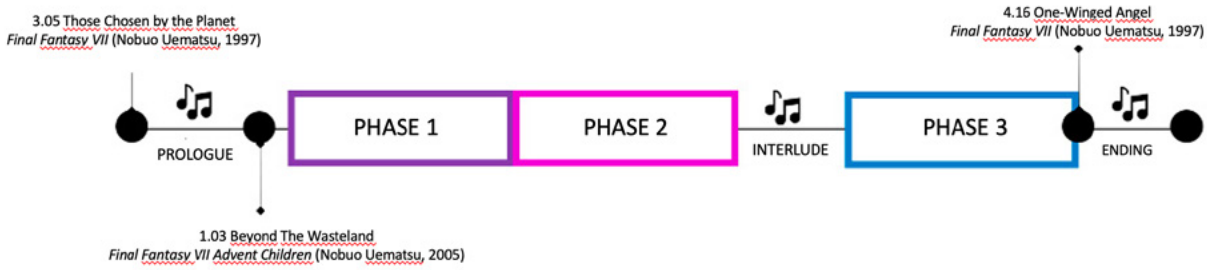

Figure 2. Visual structure of the song *J-E-N-O-V-A – Quickening* by Tadayoshi Makino and Nobuo Uematsu. (*Final Fantasy VII Remake,* 2020). Compiled by the author.

Beyond the difficulty set by the game design – which may depend on the user's skills with both the mechanics and the use of the peripheral – the player can interpret the difficulty of the battle against Jenova through "their expectations and previous experience, framed in a specific socio-cultural context that transforms and nuances the experience" (Terrasa-Torres, 2022. p. 36). That is, if the player has already faced this antagonist in the original video game, they can transfer the previous experience to their experience in the remake. The composer, aware of this possibility, participates in the expectations for *FF7R* "because the game creates a specific sound palette that aims to direct the player's emotions through ambient sound and music" (Terrasa-Torres, 2022, p. 82). Thus, the resource used for this composition is the change of music genre between the first two phases and the third (see Figure 2), the latter being identifiable as the original 1997 *Jenova* song.

The *tempo* in the third phase increases, which is also a relevant effect, especially when considering how perception of `time' overlaps with the perception of `velocity' (Brosky, 2001, p. 223). At the same time, the choir loses prominence, and the musical instruments are altered to approximate the electronic style of the original composition. This high point forms the 'arc' in the musical track, understood as "a construction of tension as the player makes progress towards a goal, eventually reaching a climax" (Grimshaw, Tan & Lipscomb, 2013, p. 297).

Furthermore, the last phase almost entirely recaptures the musical structure of the original *Final Fantasy VII* [A+B+C] (Figure 3). This similarity accentuates the musical pleasure that psychoanalysis posits 'as stemming from both our pre-birth experience as well as our earliest, pre-linguistic existence' (Kathryn Kalinak, 2010, p. 29). If there is a link in the past to the original title, the player will seek – and find – in *J-E-N-O-V-A – Quickening* that "return to the original state of plenitude" (Kalinak, 2010, p. 29), possibly located in their childhood

or adolescence. In addition, recognizing, predicting or anticipating a segment or part of a song is a pleasurable and rewarding experience for our brain (Zatorre & Salimpoor, 2013, p. 10435) and stimulates the player.

MUSICAL STRUCTURE BY PHASES

"JENOVA"

Nobuo Uematsu, 1997

A	B		C		…
[A]	[b1]	[b2]	[c1]	[c2]	[b1]

"J-E-N-O-V-A - Quickening"

Nobuo Uematsu and Tadayoshi Makino, 2020

PROLOGUE [X] + PHASE 1

PRO		A	B		D		A	…
[x1]	[x2]	[A*]	[b1]	[b2]	[d1]	[d1]	[A]	[b1]

[x1] = "Those Chosen by the Planet"
[x2] = "Beyond the Wasteland"
[A*] = shortened version
[d1] = like [b2] with new choir
[d2] = new section with choir

PHASE 2 + INTERLUDE [Y]

E		C	B		C		F	…	INT
[e1]	[e1]	[c1]	[b1]	[b2]	[c1]	[c2]	[F]	[e1]	[Y]

[e1] = interlude connecting phases 1 and 2
[e2] = new choir section
[c1r] = repeat
[F] = new section connecting with [e1]
[Y] = interlude connecting phases 2 and 3

PHASE 3 + ENDING [Z]

A	B		C			A	G	…	END
[A]	[b1]	[b2]	[A]	[c1r]	[c2]	[A]	[G]	[A]	[Z]

[G] = "One-Winged Angel"
[Z] = new section as battle ending

Figure 3. Musical structure in phases in the original JENOVA compared with J-E-N-O-V-A – *Quickening* by Nobuo Uematsu and Tadayoshi Makino (*Final Fantasy VII Remake*, 2020). Compiled by the author.

In conclusion, the musical block labelled with the letter G in the third phase is also worth mentioning. The composers and designers introduce Sephiroth's participation in this song and intervene in the affect of the player by recovering the structure of the original. As if the confirmation of the character's influence during the prologue were not enough, the antagonist intervenes in the soundtrack through a fragment of *One-Winged Angel* (Nobuo Uematsu, 1997) that skips the chorus and is identified by string instruments (minute 5:35 of *J-E-N-O-V-A – Quickening*). Sephiroth's involvement in this last phase goes beyond the composers' desire to make Jenova's real identity evident and can instead be analysed as a statement of intent by this intra-diegetic and omniscient narrative agent: a challenge for both Cloud and the player.

Summing up, the song *J-E-N-O-V-A – Quickening* shows how the narrative-musical puzzle inherited from the musical boomerang is constructed. It starts from the prologue, blocks 'x1' and 'x2' (see Figure 3), and goes to the last phase of the battle, block G. In only a few minutes, the composition introduces us to different characters: Kadaj and his brothers – hinting at the possibility of a gap in the original chronology – as well as the involvement of Sephiroth (which requires the user to have at least a minimal media literacy as proposed in the ALI model). At the same time, the sonic transformation from the first phases to the last (interaction of the music with the player's agency) promotes the recovery of a previous experience and a consequent stimulus (affect) that can alter gameplay.

One-Winged Angel Rebirth: revenge is in the rhythm

One-Winged Angel is the canonized theme with which players, whether of the *Final Fantasy* franchise or the RPG genre in general, can recognise Sephiroth beyond his physical characteristics – long, silver hair, or his weapon – an extremely long katana. It is one of Nobuo Uematsu's first compositions for the series to feature choral vocals. The Latin lyrics refer to *Carmina Burana* (Carl Orff, 1936) and distinguish it from the rest of the saga's compositions. The structure is like other boss battle themes but has many different parts, making it difficult to label the song under one genre. The first part of the introduction of *One-Winged Angel* (Figure 4) has two characteristic contrasting rhythmic patterns: the first is marked by timpani, while the second is more melodic and is differentiated by the predominance of strings and woodwind instruments. This introductory passage is closely linked to the video game *Final Fantasy VII* and the character of Sephiroth and will be adapted to subsequent transmedia titles. *One-Winged Angel* can even be heard in video games outside the franchise where Sephiroth appears (*Kingdom Hearts II*[2] or Super Smash Bros. Ultimate[3]).

2 Boss Fight Database, "Kingdom Hearts 2: Sephiroth Boss Fight (PS3 1080p)", 9 June 2022, YouTube video, 7:51, https://youtu.be/TIYfpqS-eAE

3 Gamespot, "Super Smash Bros. Ultimate Sephiroth Reveal Trailer | Game Awards 2020", 9 June 2022, YouTube video, 3:10, https://youtu.be/bJ025Dtglbo

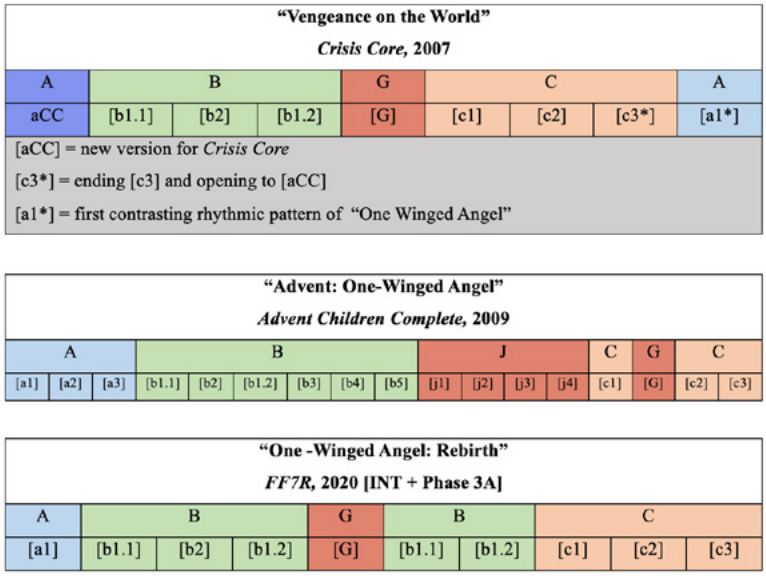

Figure 4. Musical structure in phases in One Winged Angel by Nobuo Uematsu (*Final Fantasy VII*, 1997). Compiled by the author.

Over the years, *One-Winged Angel* has had many changes that have returned to the remake. *Distant Worlds: Music from Final Fantasy* featured an early orchestrated version of the original synthesized composition. *Advent Children* fused classical music with rock music – and even added a new section between *Medium* and *Finis*, with new choirs and electric guitar solos. *Crisis Core: Final Fantasy VII* (*Crisis Core* onwards) modified the musical style and altered the Introduction (*Exordium*) and Ending (*Finis*). All arrangements have contrasting rhythmic patterns in their scores. However, this characteristic opening rhythm is transferred to another part of the song in Crisis Core and FF7R. This raises the question of why the pattern that identifies Sephiroth in these two video games is omitted.

Crisis Core is a prequel that takes place a few years before the original game's events. In this adventure, Sephiroth does not yet act as an antagonist, nor does he have the same goals as in *Final Fantasy VII*. At a specific moment in this title, Zack, the protagonist, fights a Sephiroth suffering from an existential crisis. In this battle, we can hear an arrangement of *One-Winged Angel* entitled *Vengeance on the World*. Sephiroth's evolution – from hero to villain – is also articulated in this musical theme, which begins with the breakdown of the contrasting rhythmic patterns but which is partially recovered in the last block of the song, albeit only with the timpani. We can determine that the rhythmic pattern is born from Sephiroth's desire for revenge rather than his identity.

In *FF7R's One-Winged Angel: Rebirth*, we have two introductions, one at the beginning of the fight and the other when the third boss phase begins. The first introduction starts with only the second rhythmic pattern, the melodic one, continuing where Crisis Core left off and, at the same time, making it clear that the Sephiroth presented to the heroes is not complete. One would have to summarize the original *Final Fantasy VII* story to understand these con-

trasting patterns. According to the events of *Crisis Core*, Sephiroth is defeated by a young Cloud, and his involvement in the original game is primarily spiritual. His resurrection – or awakening – does not occur until later. *FF7R* only covers a small fragment of the entire timeline presented in the original game: from the eco-terrorist attack on Shinra's reactor to the escape from Midgar. In this brief part, Sephiroth is far from resurrected – at least in corporeal terms – so his involvement in the story is exclusively made through other characters that he uses as vehicles to prevent Cloud and his companions from winning. Still, Sephiroth is the main opponent in the final battle in *FF7R*; an encounter that is not yet supposed to happen according to the original game's timeline. Considering the nature of a final battle that should not occur, it begins to make sense that the *One-Winged Angel* arrangement for *FF7R* omits the contrasting rhythmic patterns at the beginning of the encounter.

One-Winged Angel Rebirth: a meaningful chaos

One-Winged Angel – Rebirth stars in the denouement of the video game and is presented as a chaotic composition compared to its original. The player may recognize fragments and motifs from the original track *One-Winged Angel,* but the song may feel like a jumbled and meaningless puzzle. However, we argue that the chaos is narratively meaningful. *One-Winged Angel – Rebirth* can be divided into three main phases preceded by a prologue or interlude, just like J-E-N-O-V-A – Quickening. Nevertheless, the third phase can be subdivided into two further blocks: upon fulfilling a specific condition on the remaining boss life, the music advances to a short final stage as a prelude to the final blow. For this analysis, it is easier to give indications if we apply the following subdivision (Figure 5).

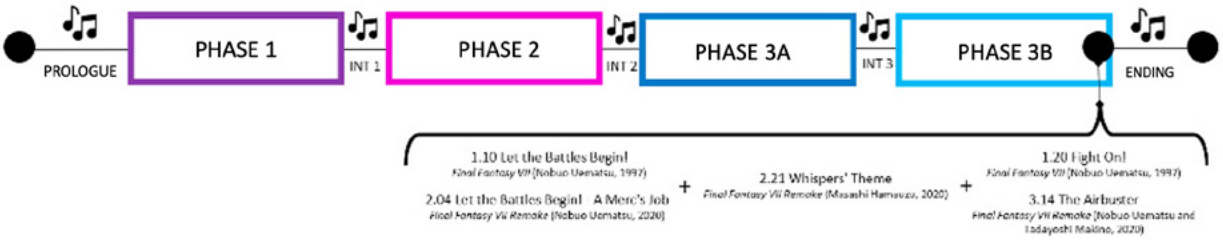

Figure 5. Visual structure of the song *One-Winged Angel – Rebirth* by Masashi Hamauzu, Yasunori Nishiki and Nobuo Uematsu. (*Final Fantasy VII Remake,* 2020). Compiled by the author.

In the previous section, we mentioned the omission of the contrasting rhythmic patterns in the composition for the remake. The alteration or absence of these patterns is intimately linked to the character and his revenge, giving a sense of the very nature of the combat or the boss. In the first phase, the music makes us question the identity of the Sephiroth shown to us. Furthermore, we can also suspect the musical intervention of the Whispers through choral voices reminiscent of *Whispers' Theme* that fill the void of a broken contrasting rhythmic pattern.

The first two musical phases are similar and it is difficult to recognize the original patterns: the music bewilders the listeners; it makes them feel they are in the middle of a chaotic track. The familiar and expected order of the composition does not emerge until the battle reaches its third phase. As we can see in Figure 6, the original structure [A+B+C] is most faithfully represented in phase 3A. In fact, it is at this stage that the characteristic rhythmic patterns of *One-Winged Angel* are clearly audible (minute 4:05 of *One-Winged Angel – Rebirth*), at the moment when Sephiroth spreads his black wing, which gives its name to the song.

MUSICAL STRUCTURE BY PHASES

"ONE WINGED ANGEL: REBIRTH"

Masashi Hamauzu, Yasunori Nishiki and Nobuo Uematsu, 2020

PHASE 1

A	D		B	A	D	C		B	C	...
[a1*]	[d1]	[d1]	[b1.1*]	[a3]	[d3]	[c1]	[c1r]	[b1.1*]	[c2]	[d1]

[a1*] = second contrasting rhythmic pattern
[d1] = Exordium pt. 1 with "Whispers Theme" influence + [a1*]
[d2] = Exordium pt. 2
[b1.1*] = Choir in a shortened version
[d3] = Exordium pt. 3
[c1r] = repeat

INT + PHASE 2

INT 1		A	D	B	E	C		B	F
[a3*]	[X]	[a2]	[d4]	[b2*]	[E]	[c1]	[c1r]	[b1.1]	F

[a3*] = shortened version for Interlude 1
[X] = Interlude 1 + [a1*]
[d4] = short section for connecting [a2] with [b2*]
[b2*] = Choir in a shortened version
[E] = short section for connecting with [c1]
[F] = short section for ending and connecting with Interlude 2

INT 2 + PHASE 3A

INT 2		A	B			G	B		C		
[b3*]	[Y]	[a1]	[b1.1]	[b2]	[b1.2]	[G]	[b1.1]	[b1.2]	[c1]	[c2]	[c3]

[b3*] = short section as interlude
[Y] = Interlude 2
[G] = instrumental version of [b1.1]

INT 3 + Phase 3B

INT 3	C		H	B		I			...
[Z]	[c1]	[c2]	[H]	[b1.1]	[b1.1r]	[i1]	[i2]	[i3]	[c1]

[Z] = interlude 3 as ending
[H] = short section for connecting with [b1.1]
[b1.1r] = repeat
[i1] = "Let the Battles Begin"
[i2] = "Whispers' Theme"
[i3] = "Fight On!"

ENDING

C	B		C		
[c3*]	[b4]	[b5]	[c1]	[c2]	[c3]

[c3*] = instrumental version of [c3]

Figure 6. Musical structure in phases in *One-Winged Angel – Rebirth* (2020). Compiled by the author.

As with the fight against Jenova, the player recognizes Sephiroth's theme in the third stage and may feel that the battle is more difficult as they can recall their past experience. This ascending challenge is ironic because the difficulty grows as the stages of the battle progress and the other allies join Cloud. What begins as a one-on-one duel ends as a group battle, which is evident in the soundtrack, as we will discuss in a later section.
As we have seen, the musical chaos in *One-Winged Angel – Rebirth* tends to confuse a player who does not recognize the song in its entirety and thus does not accept the identity of the Sephiroth he faces. This changes the moment the antagonist unfurls his wing at the start of the third phase, and the contrasting rhythmic patterns return, bringing about an increase in difficulty and, in addition, calling into question what could hitherto be considered a battle against a false Sephiroth.

One-Winged Angel Rebirth: events from the past, present and future

The third part of the final battle recovers a very similar structure to the original track. However, this last part hides several narrative clues due to the ludomusical boomerang. In this section, we will concentrate on block G of phase 3A (see Figure 6), which focuses on the secondary character Zack – the deceased protagonist of *Crisis Core* who bequeaths his dreams to Cloud. This musical fragment can be described as an instrumental version of block b1.1 of phase 3A. This variation, which may go unnoticed on the first listening, contains narrative information capable of foretelling and confirming events to the player. This is because music in interactive drama, as Powell argues, "may be indicative of events past, present, or future with respect to the narrative itself, not gameplay; a cue may provide information for the current playthrough or subsequent playthroughs" (Powell, 2020, p. 29).
The absence of voices in a fragment traditionally dominated by a choir is a resource that comes from *Crisis Core* and is later recovered for the film Advent Children in its extended version in 2009, which we identify with the letter G in Figure 7.

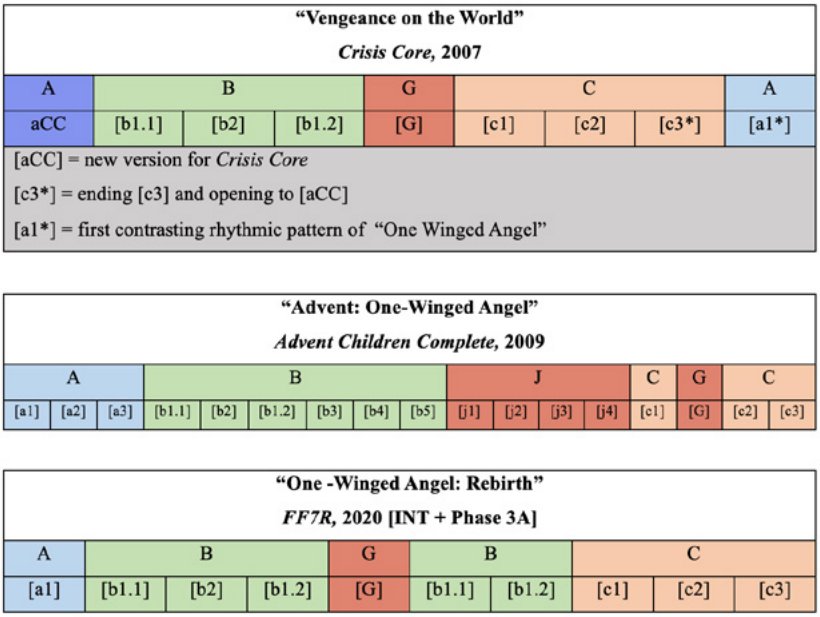

Figure 7. Comparison of the musical structure of the different versions of *One-Winged Angel*. From top to bottom *Vengeance on the World* by Kazuhiko Toyama (*Crisis Core: Final Fantasy VII*, 2007), *Advent: One-Winged Angel* - ACC Long Version by Nobuo Uematsu, Kazuhiko Toyama and Shiro Hamaguchi (*Final Fantasy VII: Advent Children Complete*, 2009) and *One-Winged Angel – Rebirth* by Masashi Hamauzu, Yasunori Nishiki and Nobuo Uematsu. (*Final Fantasy VII Remake*, 2020). Compiled by the author.

First, we associate this instrumental fragment with the battle that took place in *Crisis Core* between Zack and Sephiroth. Next, we instantly associate it with the sequence when Sephiroth impales Cloud with his katana. The next time we hear this musical excerpt from *Crisis Core* is in *Advent Children Complete*. The animated film begins with the instrumental fragment when Sephiroth impales Cloud again and concludes when Cloud hears the voice of a deceased Zack. The player definitively associates the instrumental part with a sequence starring Zack, Sephiroth, and Cloud (Figure 8).

Figure 8. Comparison of Crisis Core: *Final Fantasy VII* (2007) and *Final Fantasy VII: Advent Children Complete* (2009) sequences, featuring Zack as principal axis.

When in *FF7R* we hear the instrumental fragment again, the player can interpret it as a sample of a past event about Zack's legacy and, additionally, a future event. Before the final battle in the remake, the player witnesses the sequence from *Crisis Core*, when Zack is defeated. Following the original chronology, this time jump does not make sense, so it alerts the player that they are looking to sort out a puzzle. In *FF7R*, Cloud defeats the Whispers – and a suspicious evocation of Sephiroth – and he manages to break past and future events, thus creating a new timeline where Zack never dies.

Ultimately, in this third battle phase, the music warns of Zack's importance in the new remake story. However, as we have argued throughout this investigation, only a musically literate gamer with prior knowledge of every Final Fantasy VII franchise transmedia product has the tools to decipher the soundtrack's hidden message.

One-Winged Angel Rebirth: the closure of the narrative musical puzzle

As mentioned at the beginning of this article, the ludomusical boomerang allows a video game such as *FF7R* to constantly present the player with a musical recognition challenge in its soundtrack. This narrative-musical puzzle allows the player to recognize other musical cues or leitmotifs and thus make associated predictions coupled with a feeling of reward (Zatorre & Salimpoor, 2013: 10435). These leitmotifs should be easy to identify and remember, as Summers argues for *Final Fantasy VII* and Nobuo Uematsu's compositions (2016, p. 170). If the narrative-musical puzzle works, it is because of the very adaptive nature of the leitmotif: it comprises a musical physiognomy and a musical association, evolves

to create new musical-dramatic contexts and works in a broader musical structure (Bribitzer-Stull, 2010, p. 10). This narrative-musical puzzle is not limited to providing pleasure or being gratifying for the listener, but goes beyond that and, as we have seen in previous examples, can be endowed with narrative information.

In *One-Winged Angel – Rebirth*, specifically in phase 3B (see Figure 6), identified as the moment before the final blow, the player can recognize up to three pieces unrelated to Sephiroth's theme in short half-minute fragments that merge with the style of the main composition. In order of appearance, we first hear the song *Let the Battles Begin!*, which is identified as the common battle theme from *Final Fantasy VII*. Throughout the remake, it appears on several occasions and in multiple arrangements. This first track comes right after a noticeable tempo increase during the repeat of the *Exordium* part b1.1. This recovered score brings with it the affection tied to the many previous battles experienced by the player with the group of heroes throughout their game. If *One-Winged Angel* belongs to Sephiroth and his desire for revenge, *Let the Battles Begin!* represents the bond between the main characters, which is why its participation in this narrative-musical puzzle has as its primary objective to confront both figures and highlight the existential paradox of a villain motivated by the presence of the hero: there is no good without evil; life without death, nor hero without villain (Montañana-Velilla, 2018, p. 100).

Whispers's Theme is the song that follows this particular puzzle and was composed for the remake. Its interruption is longer and seeks to remind the player that they are fighting against the will of the Whispers, the guardians of destiny. This narrative agent is hostile because the heroes have decided to break the known timeline. The Whispers are temporarily embodied in the will of Sephiroth – the undisputed obstacle of a protagonist tormented by failure – to escape the dichotomy of space and time of the original 1997 video game events. Finally, and as a denouement of this musical parenthesis, the player can recognize the beginning of the track *Fight On!* – or *The Airbuster* in the remake – which acts as a bridge for the sound loop of phase 3B (see Figure 6). This piece evokes boss fights where dramatic moments and pyrrhic victories are formulated and attempts to write meaningful scenes for the story that the player constructs (Terrasa-Torres, 2022, p. 72). Summers stresses that "direct repetition and the re-use of cues are emphasized because leitmotif identification is generally easier with a reprise than with a variation" (2016, p. 170), and it is due to this variation that the latter is more challenging to identify. Besides being the shortest of the three, we hear this last leitmotif in a different tempo.

This musical parenthesis, where the narrative-musical puzzle becomes evident, is repeated in a loop until the player eventually defeats the enemy. This facilitates – even if it does not ensure – recognition by a player focused on striking the final blow and achieving absolute victory.

Conclusions

The ludomusical boomerang participates in the transmedia universe of *Final Fantasy VII* and allows the player to enjoy a diverse and complex sound experience in *FF7R*. The player can recognize elements from specific leitmotifs to narrative fragments taken from the original video game, as well as from the movie, anime and other video games. This recognition will depend on their engagement with the franchise. Therefore, FF7R's extensive soundtrack and sound design contribute to players' engagement, as they can be immersed in a music recognition challenge.

We have confirmed that the narrative-musical puzzle is consciously designed by *FF7R's* group of composers and that it considers the influences of the different narrative agents directly involved in the development of the plot: Sephiroth and the Whispers. A player with an accentuated musical literacy can identify characters, anticipate narrative events and even recapture the experience of divergent stories from the fictional universe. It also allows the listener to perceive Sephiroth's sense of revenge and his transformation from hero to villain or, as we have seen, the existential paradox of good and evil.

Through this research, we have demonstrated that the soundtrack to *FF7R* is integrated into different layers of the video game medium and reinforces the narrative through a complex sound design. This is possible mainly with the awareness of a ludomusical boomerang of all the *Final Fantasy VII* franchise that has been expanding from 1997 to the present day and which rewards the player with a satisfying sound experience.

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Book Review

La escucha del ojo. Un recorrido por el sonido y el cine by Marina Hervás

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In the introduction to *La escucha del ojo. Un recorrido por el sonido y el cine,* Marina Hervás – lecturer in Music History at the University of Granada, philosopher, violinist, and tireless promoter of reflection on music and sound in a great variety of formats – declares her book to be neither a history of film music and sound, nor a systematic study of their functions, nor a proposal for new theoretical models, nor a handbook (p. 9). What is it then? Even though it doesn't deal with economics, and only partially with politics, Jacques Attali's *Noise: The Political Economy of Music* is mentioned as its main reference (p. 12), so we may understand it as an openly interdisciplinary essay. Assuming that we are as voraciously curious as she is, the author tries to establish a dialogue with us, supplementing her thoughts on and case studies of film history with pages devoted not only to the history of music, but also to the history of art, and to philosophy, literature and the social sciences. While the text includes a large number of bibliographical references, some by prominent theorists of film sound and music such as Rick Altman, Michel Chion and Claudia Gorbman, it also makes room for humour and occasionally indulges in a (very welcome) light-hearted tone. What are then Hervás's aims in writing this essay? She offers at least two different explanations of her purposes. On the one hand, she declares that she wants to explore particular uses of sound in film to discover what exactly we are listening to when we listen to it (p. 9). As a matter of fact, she fulfils this first task exceedingly well, discussing numerous examples of the uses of film sound and music with the passion of a cinephile and a broad knowledge of music. In the book she also advocates an idea of cinema as an audiovisual medium that emerged as such from its beginning, even before the invention of so-called "sound film". Drawing from this notion of cinema as "always having sound", she invites us to review the hierarchy of the senses to challenge the primacy of the visual (pp. 10–11). Hervás identifies this primacy of the visual precisely with what makes film history possible, drawing a parallel (somewhat forced, perhaps) with Georges Didi-Huberman's argument about art history: that it always presupposes a philosophy of history and a choice of aesthetic models. According to Hervás, if film history is based on the visual, rethinking sound in film would rearticulate the very notion of cinema and disclose the contradictory social silencing of sound (p. 10). Taking a further step, the author makes a declaration to write in a "counter-historical" mode (p. 10), though throughout the book she shows historical awareness and contextualizes the examples she provides of the uses of sound and music in cinema. Actually, "counter-historical" should be interpreted here as a rejection of the chronological order and the idea of narrative progress. In line with Walter Benjamin's philosophy of history, Hervás points out that the past is constantly returning, taking on a different form each time (p. 11), so that there isn't only one way to conjure it up. Thus, she makes the case for paying attention to the "subterranean dialogues" and "ghostly apparitions" that take place in film between cinema's own creations and those usually attributed to other arts (p. 13). On the other hand, Hervás enunciates a second purpose of this book: that of considering cinema as a cultural apparatus that allows us to think in a different way about sound,

and also about music (p. 12). In this way she opens a meditation on the essential continuity between silence, noise and music, which are materially combined in the soundtrack but also (she argues, with other authors) before "sound cinema".

After the introduction, the book is divided into two parts of similar length: the first one, titled *Párpado* (Eyelid), makes the case for the consubstantiality of cinema and sound since before the invention of "sound cinema", while the second one, titled *Tímpano* (Eardrum), discusses different functions of sound in cinema, offering detailed commentaries on films and other cultural references. Even if the two parts are not clearly delimited chronologically, the first part covers mainly films from the first decades of cinema, whereas the second part deals mainly with films from more recent decades. As happens in other books on cinema, the arguments deployed here combine reflections with commentaries on films and scenes, making for a peculiar reading experience, since the ability to follow the reasoning depends on the readers' familiarity with the films that are commented upon, and in the case of this book also with their sounds (noises, silences, dialogue and music). In many cases, in reading these pages we may feel invited to revisit certain films and scenes to refresh our memory and appreciate the nuances that we did not notice during our first viewing, or to watch and hear them for the first time. Also, the author's determination to offer accessible descriptions, free of musical technicalities, and more focused on perception than on production, makes the difficulties inherent in talking about sound even more evident.

As for the topics covered in *La escucha del ojo,* the first part opens with a critique of the primacy of the visual that expands on the argument set out in the introduction, without challenging the narrative already established by authors such as Martin Jay and Don Ihde (pp. 17–18). Hervás introduces here an excursus on the "feast of the senses" that some religious rituals entailed, especially in the baroque period (p. 19). While this excursus may seem distracting or even misleading, it actually adds complexity to the book's main thesis, i.e. the continuity between so-called "silent cinema" and "sound cinema", since it is that continuity that prompts the author to consider the perceptual continuity of silence, music and noise in older cultural forms, thus opening up the performative dimension. Hervás then argues that at least since Lessing's *Laocoön* the separation of the senses in aesthetics led to a desire for convergence, which could be perceived in many artistic expressions from the end of the 19th century (p. 21), and which would explain the birth of cinema at the time, as a desire for the convergence of time and space. Perhaps it would have been interesting to link this line of reasoning to other scholarly works on the history of the senses and hearing, in particular Jonathan Sterne's seminal book *The Audible Past* and the concept of "Ensoniment" (from "Enlightenment", meaning "auditory Enlightenment"), which refers to the historical process of isolation of the ear and listening from a scientific perspective, and to the separation of music from other forms of organized sound, as Hervás will explain later on (p. 211). This is followed by a reflection on the voice as a creative force within the Judeo-Christian tradition, which leads to some considerations on the difference between know-

ing and seeing, and on the perceptual "mistake" that makes the illusion of cinema possible. At this point Hervás introduces a distinction, which will resonate later on in the book: that between the cinematographic lineage inaugurated by the Lumière brothers, who strive to show what appears to be true, that is the "real" ("seeing in order to believe"), and that founded by Georges Méliès, who wants to go beyond the real however that may be defined ("believing in order to see") (p. 28). Yet, this distinction seems to apply mainly to images. The section titled *El punzón* (The Punch) is devoted to the excess of images and their problems in representing the real, which sometimes may be more effectively suggested by sound, according to Hervás. Then we get to the main and longest section of the first part, programmatically entitled *Lo mudo no implica lo sordo* (Muteness Does Not Imply Deafness), where the author makes the case for the rejection of Michel Chion's term "deaf cinema" for films from the early decades without synchronized sound (p. 40). Nevertheless, she generally agrees with the French theorist's argument that sound was present in cinema from its inception, as even "silent film" audiences could mentally hear the dialogue written on screen and imagine the sounds of the objects and people they saw there (p. 39). According to Hervás, Al Jolson's 1927 film *The Jazz Singer* introduced "sounding speech" (p. 38), but not sound, as cinema was never silent. There never was, Hervás claims, a technologically immature "prehistory of cinema", without synchronized sound, and then a "true cinema", which was authentically audiovisual (p. 39). This statement leads to another very interesting digression on the presence of train sounds in cinema and music, which takes the Lumière's film *L'arrivée d'un train à La Ciotat* (*The Arrival of a Train at La Ciotat Station,* 1895–1896) as an example of each listener's auditory fantasy (p. 48). At this stage Hervás reproduces the list of reasons that according to American film theorist Claudia Gorbman justified the adoption of music in cinema from its origins, even before the so-called "sound era" (p. 48). The first of the functions she discusses in detail is the silencing of the machine (the noise of the film projector), which for Hervás constitutes an example of background music (or muzak) and justifies another excursus, this time on the historical and contemporary uses of background music (pp. 50–52). She considers cinema as a pre-muzak experience, where "cinema" means the conjunction of images with the sounds and music that accompanied them, insofar as they covered the sounds of the room, enveloping the spectator in fiction (pp. 52–53). Then Hervás turns to Rick Altman, an American film historian and theorist who advocates the inclusion in the auditory dimension of cinema – especially that of the first decades – of all the sounds associated with the screenings, not only those that could be heard in theatres, but also those produced to announce film projections in the streets, called "ballyhoo" in the United States (p. 55). This view of cinema as live performance triggers a reflection on the theatres where it was screened, and the silencing process of the audiences discussed by Altman – a process that Hervás could have compared with the silencing of musical audiences studied by historians such as James Johnson. She then turns to the role of music in scaring away ghosts and making audiences comfortable

in the dark. It is in this section where we find one of only a few allusions to the evolution of theatrical sound systems (p. 65), so important to the cinematic experience, and a topic that probably deserved more attention.

The following section, *No Music, No Fun,* offers abundant information – even if not a detailed account, which would have been out of the question – of the many ways in which music accompanied cinema in the early decades of filmmaking, when it was still considered a variety show. Later on, cue sheets suggesting existing pieces of music that could be played to accompany certain film scenes began to circulate (pp. 78–86). Hervás stresses their importance not only as a practical solution to the problem of musical accompaniment, but also as an antecedent to film music clichés. (No less interesting than cue sheets were compilations of original music fragments, designed to accompany screenings and arranged by theme or mood, such as *Allgemeines Handbuch der Film-Musik* by Hans Erdmann, Ludwig Brav and Giuseppe Becce, published in 1927, which Hervás does not mention). After a section on different uses of the voice in "sound" cinema and its relation to the body, the first part concludes with a few pages devoted to the fascinating subject of time in film, ranging from the rhythmic cinema experiments of the artistic avant-garde to the different ways in which film music plays with the history of music by evoking, altering or resignifying it.

As I mentioned earlier, the second part contains mainly comments on scenes and films, arranged according to the function and/or themes that sound develops in them. Even if Hervás makes the case for an exploration of the performative dimension of cinema, in her comments she focuses mainly on the film narrative, not mentioning the circumstances or the context in which each viewing took place, and only in a few cases anticipating the audience's reaction. Instead, she basically tries to understand why and how music was used in each case. Although her comments do not follow a predefined arrangement, they prove Hervás's extraordinary understanding of musical structures and their narrative functions, as well as her vast cinematic culture, which extends from titles of the early times of cinema, through Hollywood classics, the *nouvelle vague* and Italian neorealism, to mainstream titles of more recent decades, Spanish cinema, and even films from other cultural contexts. For instance, on two consecutive pages (pp. 123–124) we find a description of the opening of Francis Ford Coppola's The Conversation (1974), followed by a reference to the end of Orson Welles' *Touch of Evil* (1958), and a commentary on Walter Ruttmann's German sound film *Wochenende* (1930). The first section, on "what must not be heard", begins with some considerations on the difference between hearing and listening, followed by some thoughts about microphony. Another subsection gathers examples of how sound has helped to represent trauma and horror, while the final subsection looks into the relationship of music and sound to sex in film. The central section, on "the everyday and the normal", introduces the classic distinction between diegetic music, which comes from a recognizable source in a film, and non-diegetic music (p. 134). Within this section, the subsection on "the world of objects" contains a lovely example of the second purpose of this book, as described

above: to draw on the cinematic experience in order to think about music and sound. Hervás links the sound effect of a window closing in Rouben Mamoulian's film *Love Me Tonight* (1932) to the ordering of auditory experience in public, private, and more recently personal spaces, thanks to the development of headphones and audio compression (p. 138). This discussion of how cinema can create or evoke different spaces through sound leads to some examples of public address systems in films, and of the capacity of music and sound to represent and characterize different landscapes.

This is followed by several sections on what the author calls "excesses", ranging from the sonic identification of characters who are outside the "normal", to the delimitation of spaces within a film, or the sonic elaboration of love and death. Altman's discussion of the different uses of the less connoted classical musical repertoire and the more explicit popular repertoire is also presented in this section (pp. 157–158), which also includes a reference to the growing presence of recognizable songs in soundtracks, especially since the 1980s, though its effects are not explored in depth. The final section, on "the impossible and the monstrous", contains some of the most suggestive comments on sound in film, tackling genres that have been very open to sound experimentation, such as science fiction, and topics such as dreams, the monstrous or the exotic. The consideration of different ways of representing the exotic through sound leads Hervás to affirm that music is not a universal language (p. 205), which ties in neatly with her final call to review our cultural baggage in approaching film and music, since there is no such thing as neutral listening (p. 205).

In the contemporary context, in which the fragmentation of film distribution and viewing and the changing materiality of images have already turned cinema into a different cultural artefact, perhaps even a past one, what contribution does this book make to film studies? In my opinion, in *La escucha del ojo* Hervás reminds us that, beyond its current condition, the cinematic experience can make the emergence of new versions of the past possible; for example, it can allow for new approaches to sound and music (such as the ones proposed here) and can also inspire new creations. On the other hand, the author's insistence on considering film as having sound before the "sound era" adds complexity to this revisiting of the past, as it forces us to consider the perceptual continuity of silence, music and noise in older cultural forms and emphasizes the continuity between cultural objects and expressions, blurring (perhaps inevitably) their differences. In this regard, while it is true that sound was present from the very beginning in cinema theatres and their contexts, I wonder whether we can legitimately compare the perception of the sounds of cinema theatres, such as the noise of the film projector or the audience chatting, to listening to the sounds and music of the soundtrack accompanying images. In this vein, it is difficult to ignore that powerful quote from Robert Bresson's *Notes on the Cinematographer*, which is also mentioned in this book (p. 119): "... soundtrack invented silence", where silence is not that of the cinema theatre, but that of the soundtrack.

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