SOUND DRAMATURGY AND SYNTHESIS: THE HARMONIC FUNCTION OF THE SOUND SCORE WITH VISUAL ELEMENTS IN MODERN EUROPEAN AND HOLLYWOOD CINEMA

Manas Bekpolatovich Abdreymov
Associate Professor, Department of Technogenic Art,
Nukus branch of the Uzbekistan State institute of arts and culture
manasabdreymov@gmail.com
https://orcid.org/0009-0008-3372-6162

Summary. The evolution of modern cinema has transformed sound from a secondary supportive element into an independent narrative force. This paper explores the harmonic function of the "sound score" and its intricate synthesis with visual elements in contemporary European and Hollywood cinematography. By analyzing the dichotomy between the hyper-realistic, psychologically driven soundscapes of European art-house cinema and the dynamically synthesized, immersive spatial audio environments of Hollywood blockbusters, this study identifies how sound dramaturgy dictates visual perception. The research methodology relies on a comparative audiovisual analysis of contemporary films, focusing on the psychoacoustic impact of multichannel formats (5.1, Dolby Atmos) and modern synthesis techniques. Results indicate that while Hollywood employs aggressive synthesis and low-frequency oscillations to physically engage the viewer , European cinema utilizes silence, diegetic ambiguity, and raw acoustic textures to build psychological tension. The discussion further addresses the paradigm shift brought by generative AI and digital audio workstations in redefining the role of the sound director as a co-author of cinematic dramaturgy.

Keywords: Sound Dramaturgy, Audio Score, Sound Synthesis, Hollywood Cinema, European Cinema, Spatial Audio, Psychoacoustics, Cinematic Foley.

1. Introduction

In contemporary filmmaking, the traditional boundaries between sound editing, musical composition, and Foley have dissolved, giving rise to the concept of comprehensive sound dramaturgy. The "sound score" (or audio score) is no longer a mere accompaniment to the visual narrative; it is an active participant that shapes the spatial, emotional, and psychological dimensions of the film [6]. The primary objective of this research is to investigate how sound synthesis and dramaturgy function harmonically with visual elements, comparing the distinct methodological approaches of modern European cinema and Hollywood. Hollywood productions increasingly rely on complex synthesized soundscapes, heavy sub-bass frequencies, and highly engineered spatial audio (such as Dolby Atmos) to create a larger-than-life immersive experience [3]. Conversely, European cinema frequently employs a minimalist approach, where natural acoustics, deliberate silences, and nuanced Foley are utilized to reflect the internal psychological states of the characters [7]. Understanding this harmonic function requires an interdisciplinary approach, bridging acoustic physics, psychoacoustics, and narrative theory. As audiovisual technology advances—particularly with the integration of generative sound design and digital synthesis—the sound director's role evolves from a technical operator to a central dramaturg. This paper aims to dissect these regional methodologies and their convergence in modern cinematic storytelling.

2. Literature Review and Theoretical Framework

The theoretical foundation of sound dramaturgy is heavily rooted in the psychoacoustic relationship between auditory stimuli and visual perception. Michel Chion's foundational concept of "audio-vision" postulates that sound and image do not exist in isolation; rather, they form a unified percept where sound actively modifies the interpretation of the visual frame [1]. In recent years, literature on sound design has shifted focus toward the technological synthesis of sound. Modern Hollywood cinema often utilizes "hybrid scores"—where orchestral music and synthesized sound effects are seamlessly blended until they are indistinguishable, a technique profoundly analyzed by Sonnenschein [6]. This blurring of lines creates a unified audio score that drives the cinematic pacing independently of the visual cut [3]. European cinematic theory, however, emphasizes the "acousmêtre" (the invisible voice or sound source) and the dramatic weight of ambient room tone [7]. The harmonic function here is achieved not through overwhelming synthesis, but through the precise psychological placement of sound within the stereo or surround field. Furthermore, the advent of digital object-based audio systems, as noted by Kerins, has fundamentally altered how audiences perceive cinematic space, making the soundscape a physical environment rather than a flat auditory accompaniment [2].

3. Methodology

This study employs a qualitative, comparative audiovisual analysis grounded in the IMRAD structure. The methodology involves the deconstruction of the sound score in selected modern films from both European and Hollywood markets (2015–2025). The analysis is conducted through three primary parameters:

Frequency and Dynamic Range Synthesis**:** Examining the use of synthesized sub-frequencies (LFE channel) and dynamic compression in relation to visual action, utilizing spectral analysis concepts [5].

Spatial Audio Mapping**:** Analyzing the utilization of multichannel surround layouts (5.1, 7.1, and object-based Dolby Atmos) to expand the visual frame beyond the physical screen [2].

Diegetic vs. Non-Diegetic Convergence**:** Observing moments where sound effects transition into musical synthesis, altering the dramatic context of the visual scene [6]. The technical evaluation considers the application of modern sound directing principles, including equalization, digital synthesis, and the acoustic philosophy of microphone placement strategies as they translate into post-production space [4].

4. Results

The Hollywood Paradigm: Synthesis and Spatial Dominance The analysis of recent Hollywood blockbusters reveals a heavy reliance on synthetic sound dramaturgy. Hollywood sound directors utilize highly compressed, synthesized audio to create hyper-reality [3].

Harmonic Function with Visuals: In action sequences, the visual pacing is frequently anchored by synthetic bass "braams" or low-frequency hits that do not exist in the natural world. These synthesized sounds harmonize with rapid visual editing, providing a rhythmic structure that the visuals alone lack.

Spatial Immersion: Hollywood extensively leverages object-based audio (Dolby Atmos) to place synthesized elements in the ceiling and rear channels, effectively enveloping the viewer [2]. The sound score dictates the physical scale of the visual environment, making CGI landscapes feel massive and tangible through acoustic reflection modeling. The European Paradigm: Psychological Realism and Silence In contrast, modern European cinema approaches sound dramaturgy through the lens of psychological realism and acoustic purity [4].

The Dramaturgy of Silence: Silence is utilized not as an absence of sound, but as an active, synthetic element. By removing ambient noise or manipulating room tone, European sound directors create a vacuum that heightens visual tension [7]. The harmonic function here is contrast: an intensely quiet audio score forces the viewer to hyper-focus on minute visual details (e.g., facial expressions, micro-movements).

Hyper-Foley and Ambiguity: Foley is often recorded with extreme proximity (close-miking) and elevated in the mix to an unnatural degree. The sound of breathing, footsteps, or clothing rustle is synthesized with ambient delays to reflect a character's internal anxiety. The sound score blurs the line between diegetic reality and non-diegetic emotional states [1].

4.3. The Convergence of Visuals and Audio Score

Despite their differences, both traditions demonstrate that the modern audio score is fundamentally harmonic with the visual track. The visual element provides the spatial context, while the sound synthesis provides the emotional and physical weight [6]. Without the synthesized low-end, Hollywood's explosions appear visually weightless; without the manipulated, hyper-real Foley, European cinema's dramatic pauses feel empty rather than tense.

4. Discussion

The findings underscore a significant shift in global cinematic production: sound is no longer post-production; it is parallel production. The harmonic function of the sound score relies on the sound director's ability to manipulate psychoacoustics [5]. Furthermore, the integration of advanced digital tools is standardizing certain practices across both regions. The use of spectral editing (such as iZotope RX) allows for the flawless isolation of dialogue, providing a pristine canvas for synthetic soundscapes. Looking forward, the emergence of generative AI in audio creation offers unprecedented tools for sound dramaturgy. AI-generated acoustic spaces and synthetic textures will allow sound directors to build audio scores that dynamically adapt to the emotional arc of the visual narrative, further bridging the gap between European minimalism and Hollywood maximalism [5]. The sound director must now possess the skills of a traditional composer, an acoustic physicist, and an IT specialist. The orchestration of frequencies, just like the orchestration of musical instruments, requires a profound understanding of how human hearing influences human emotion [6].

5. Conclusion

The dramaturgy of sound in modern cinema is a highly synthesized, meticulously crafted art form that operates in absolute harmony with visual elements. Hollywood achieves this harmony through grand spatial design and synthetic frequency manipulation, forcing a physical reaction from the audience. European cinema achieves it through psychological acoustic realism and the dramatic weaponization of silence. As

technology continues to evolve, the "sound score" will only grow in its capacity to dictate cinematic narrative, solidifying the sound director's role as a primary storyteller in the audiovisual arts.

References

1. Chion, M. (1994). Audio-Vision: Sound on Screen. (C. Gorbman, Trans.). Columbia University Press.
2. Kerins, M. (2010). Beyond Dolby (Stereo): Cinema in the Digital Sound Age. Indiana University Press.
3. Whittington, W. (2007). Sound Design and Science Fiction. University of Texas Press.
4. Flückiger, B. (2001). Sound Design: Die virtuelle Klangwelt des Films. Schüren Verlag.
5. Farnell, A. (2010). Designing Sound. MIT Press.
6. Sonnenschein, D. (2001). Sound Design: The Expressive Power of Music, Voice, and Sound Effects in Cinema. Michael Wiese Productions.
7. Beck, J., & Grajeda, T. (Eds.). (2008). Lowering the Boom: Critical Studies in Film Sound. University of Illinois Press.

Rezyume. Zamonaviy kino evolyutsiyasi tovushni ikkinchi darajali tayanch elementdan mustaqil hikoya qiluvchi kuchga aylantirdi. Ushbu maqola zamonaviy Yevropa va Gollivud kinematografiyasida "tovush partiturasi"ning garmonik vazifasini va uning vizual elementlar bilan murakkab sintezini o‘rganadi. Ushbu tadqiqot Yevropa art-xaus kinosining giperrealistik, psixologik yo‘naltirilgan tovush manzaralari va Gollivud blokbasterlarining dinamik sintezlangan, immersiv fazoviy audio muhitlari o‘rtasidagi ziddiyatni tahlil qilib, tovush dramaturgiyasi vizual idrokni qanday boshqarishini aniqlaydi. Tadqiqot metodologiyasi zamonaviy filmlarning qiyosiy audiovizual tahliliga tayanadi, bunda ko‘p kanalli formatlar (5.1, Dolby Atmos) va zamonaviy sintez usullarining psixoakustik ta’siriga e’tibor qaratiladi. Natijalar shuni ko‘rsatadiki, Gollivud tomoshabinni jismonan jalb qilish uchun tajovuzkor sintez va past chastotali tebranishlardan foydalanadi. Yevropa kinosi psixologik taranglikni yaratish uchun sukunat, diegetik noaniqlik va xom akustik to‘qimalardan foydalanadi. Muhokama, shuningdek, ovoz rejissyorining kinodramaturgiya hammuallifi sifatidagi rolini qayta belgilashda generativ sun’iy intellekt va raqamli audio ish stansiyalari olib kelgan paradigma o‘zgarishini ham ko‘rib chiqadi .

Резюме. Эволюция современного кино превратила звук из второстепенного опорного элемента в самостоятельную рассказывающую силу. Данная статья исследует гармоническую функцию "звуковой партитуры" в современном европейском и голливудском кинематографе и ее сложный синтез с визуальными элементами. Данное исследование анализирует противоречие между гиперреалистичными, психологически ориентированными звуковыми сценами европейского арт-хауса и динамически синтезированными, иммерсивными пространственными аудиосредами голливудских блокбастеров, выявляя, как звуковая драматургия управляет визуальным восприятием. Методология исследования основана на сравнительном аудиовизуальном анализе современных фильмов, при этом внимание уделяется психоакустическому влиянию многоканальных форматов (5.1, Dolby Atmos) и современных методов синтеза. Результаты показывают, что Голливуд использует агрессивный синтез и низкочастотные колебания для физического привлечения зрителей. Европейское кино использует тишину, диэгетическую неопределенность и сырые акустические ткани для создания психологического напряжения. Обсуждение также рассматривает изменение парадигмы, вызванное генеративным искусственным интеллектом и цифровыми аудиорабочими станциями в переопределении роли звукорежиссера как соавтора кинодраматургии.

Kalit so‘zlar: Tovush dramaturgiyasi, Ovozli partitura, Tovush sintezi, Gollivud kinosi, Yevropa kinosi, Fazoviy audio, Psixoakustika, Kinematografik foley.

Ключевые слова: Звуковая драматургия, Музыка, Звуковой синтез, Голливудское кино, Европейское кино, Пространственный звук, Психоакустика, Кинофоли.