

VISUAL SCORES AS LISTENING-MEDIATED NOTATION: A PRACTICE-BASED CASE STUDY

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ABSTRACT

This paper presents a practice-based analysis of a time-based visual score, accompanied by extensive performance notes specifying symbol execution. The digitally animated notation employs relational, temporal, and gestural cues organized along a moving horizontal timeline, regulating entrances, transitions, and pauses without prescribing fixed pitches or durations. Performers translate visual information into sound through attentive listening and ensemble negotiation. Drawing on rehearsal observations and performance analysis, the study examines how this approach fosters interpretive flexibility, coordination, and collective awareness. The findings highlight complementary perspectives to audio-centric notation, while also outlining pedagogical implications for rehearsal processes, ensemble training, and the development of listening-based performance practices.

1. INTRODUCTION

The present work consists of a time-based visual system in which symbols and graphical elements are accompanied by an extensive set of performance notes specifying their execution [7]. Rather than encoding fixed pitches or conventional rhythmic notation, the score employs relational, temporal, and gestural cues that unfold along a moving horizontal timeline, indicated by a continuous marker that regulates entrances, transitions, and moments of silence. Performers interpret these cues in real time, translating visual information into sound while continuously negotiating their actions through attentive listening and embodied interaction [9]. In this sense, the work does not function as a prescriptive representation of sonic results but as a mediating frame-

work that coordinates temporal awareness, collective listening, and interpretive responsibility within the ensemble.

This approach relates to existing practices in graphic and animated notation, particularly scrolling and time-based visual scores that structure performance through moving visual cues rather than fixed symbolic encoding. Previous work has explored similar relationships between visual representation, temporal coordination, and performer interpretation in experimental and digital notation systems [10]–[15]. Within the context of TENOR research, particular attention has been given to animated notation, performer interaction, and embodied interpretation, emphasizing the role of perception and real-time negotiation in shaping musical outcomes. These perspectives situate the present work within a broader discourse on non-traditional and technology-mediated notation practices.

This paper examines how a time-based visual score mediates collective listening and interpretation in performance, and how this perspective contributes to ongoing discussions on visual and audio-centric approaches to contemporary notation.

2. PERFORMANCE NOTES

The notation examined here is accompanied by twenty-seven pages of performance notes that define the execution of each visual symbol, the relationship between graphical elements and sound production, and the temporal logic of the piece [7]. Rather than prescribing fixed sonic outcomes, these notes establish a shared interpretive framework that ensures consistency of execution while allowing performers to respond to situational listening and ensemble interaction. The moving horizontal timeline provides a shared temporal reference, while the visual symbols and written instructions frame interpretive decision-making without prescribing fixed sonic results; in this sense, the notation

functions less as a representational system and more as a protocol for real-time musical action [7], [9].

As shown in Figures 1–3, the notation employs distinct visual elements to differentiate modes of sound production and performer action.

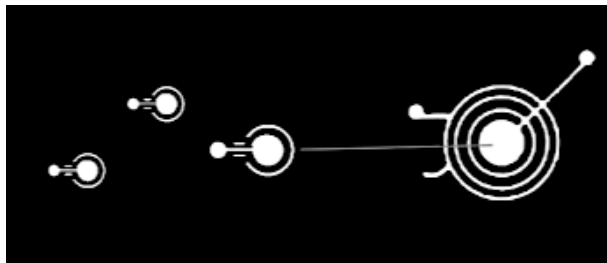


Figure 1. Symbol indicating high-frequency electronic textures (e.g., bleeps, sonar-like signals, and metallic timbres) with sustained background tones. The gesture is performed with a gradual crescendo, guiding a soft entry and increasing intensity over time.

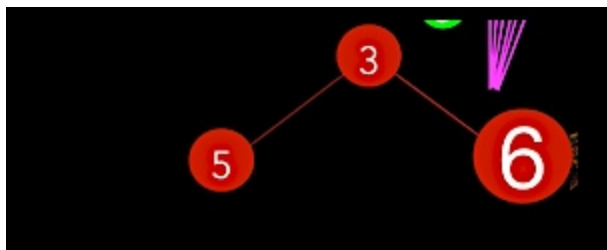


Figure 2. Symbol representing flexible rhythmic groupings (e.g., quintuplets, triplets, sextuplets) coordinated with the moving timeline. Connecting lines enable extension and repetition, allowing performers to generate short melodic patterns within chosen subdivisions.

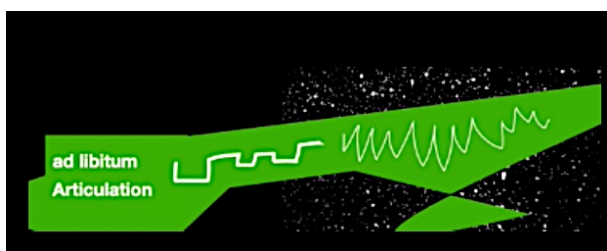


Figure 3. Symbol for ad libitum articulation within the moving timeline, guided by attentive listening and ensemble blending. The inner line indicates legato continuity with flexible pitch selection, while increased visual density reflects greater intensity and expressive character.

For example, certain symbols indicate modes of sound production rather than fixed pitches: a curved line may signal gradual timbral transformation, while dense clustered shapes suggest textural activity or increased sonic intensity. Color coding differentiates functional roles, such as sustained tones, percussive gestures, or

transitional events, allowing performers to negotiate their actions in real time [11], [12].

These elements do not prescribe exact sonic results but establish a shared interpretive vocabulary for coordinated interpretation.

Such a structure encourages a creative approach to performance grounded in musical decision-making that connects auditory experience with visual perception. It establishes relationships between pitch, articulation, dynamics, and duration while fostering both coherence and perceptual tension [1], [2]. This framework combines precisely defined visual elements with open-ended interpretive zones, forming what can be described as a framed notational system: a structure that provides direction while inviting exploration.

3. SCORE EXAMPLES

Excerpt from the digital-animated visual score showing the time-based structure of the piece. A continuous horizontal marker progresses from left to right, regulating entrances, transitions, and pauses. Graphical symbols are interpreted according to the accompanying performance notes and do not encode fixed pitches or durations. The excerpt illustrates how temporal coordination and performer interaction are guided visually while sonic outcomes remain listening-dependent [7].

4. CASE STUDY

4.1 Performance Context

The system was realized in a professional chamber music performance context involving wind players and live electronics. The program combined twentieth-century classical works [3]–[6] with contemporary graphic scores [1], [2], situating the present work [7] alongside both traditional and experimental notation practices. The ensemble consisted of five musicians: flute, oboe, clarinet, bassoon, and French horn, supplemented by live electronics using a modular synthesizer. This configuration enabled a direct comparison between conventional and experimental approaches within a professional ensemble setting.

4.2 Preparation Process

The ensemble met for three preparatory sessions of approximately four hours each prior to the concert. These sessions were shared between classical repertoire and graphic notation, allowing one to two rehearsals of each graphic score.

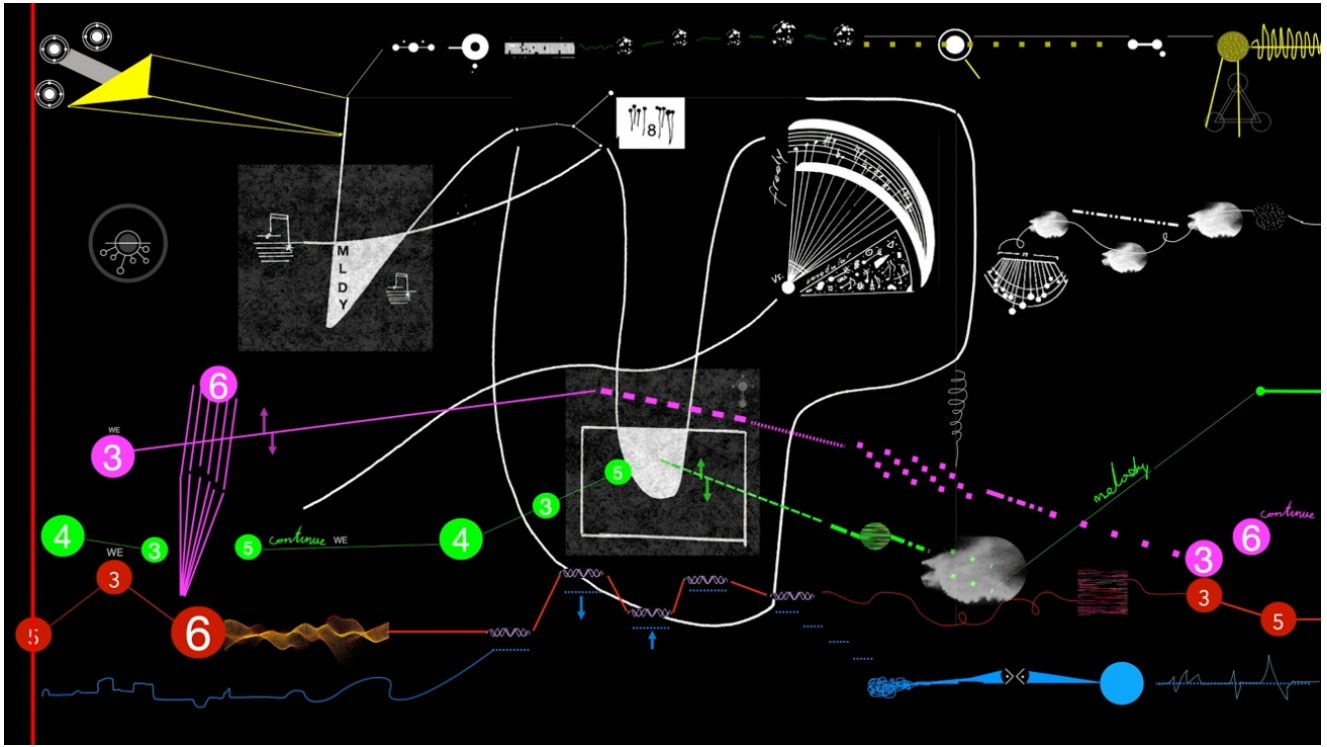


Figure 4. Excerpt from the digital animated visual score *Eternal Forces of Savigny's Prime*, showing the moving timeline, symbolic layers, and visual density used for temporal coordination.

The present score was accompanied by twenty-seven pages of detailed performance notes, covering 105 abstract symbols, temporal logic, and instrument-specific instructions [7]. The composer conducted one rehearsal to provide temporal guidance and dynamic emphasis, supporting ensemble cohesion without imposing fixed sonic outcomes.

4.3 Listening and Interaction

During rehearsals, performers displayed varied strategies in engaging with the score. Some relied heavily on the performance notes, carefully interpreting symbols and timings; others interacted more intuitively with the visual elements, using them as cues for improvisational decisions. As shown in Figure 5, performers followed the moving timeline as a shared temporal reference, illustrating the balance between structural guidance and interpretive freedom [7], [9]. This highlighted the role of performer experience, personality, and familiarity with graphic notation in shaping interpretive outcomes.

For instance, performers frequently relied on auditory cues from one another to adjust timing and dynamics when visual information alone was insufficient. In several passages, entrances were coordinated not through strict adherence to the timeline but by responding to emerging textures within the ensemble. This contrasts with conventional notation, where synchronization is typically derived from fixed rhythmic structures, as here

coordination emerges through continuous listening and real-time adjustment between performers [11].

As shown in Figures 6–8, the visual score functions not only as a temporal guide, but also as a spatial and perceptual framework, shaping performer orientation, ensemble interaction, and collective listening during performance.

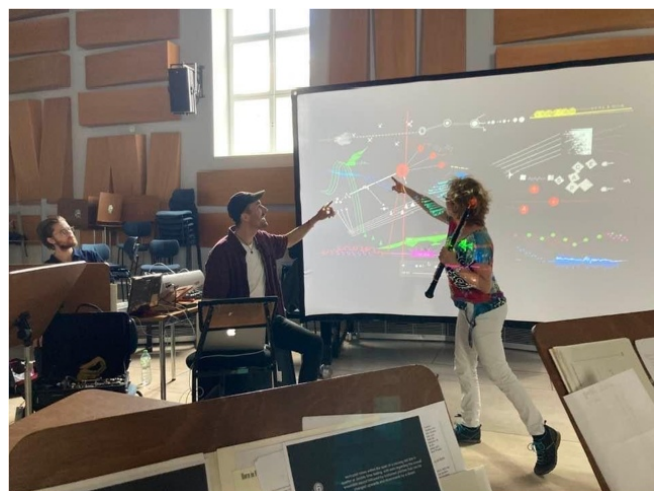


Figure 5. First rehearsal at Haus des Rundfunks, with the composer providing temporal and dynamic guidance. Performers reference both the visual score and accompanying performance notes.



Figure 6. Performance configuration at Kühlhaus Berlin, showing the ensemble, projected score, and audience arrangement. The visual score functions as a shared temporal and spatial reference for the performers.

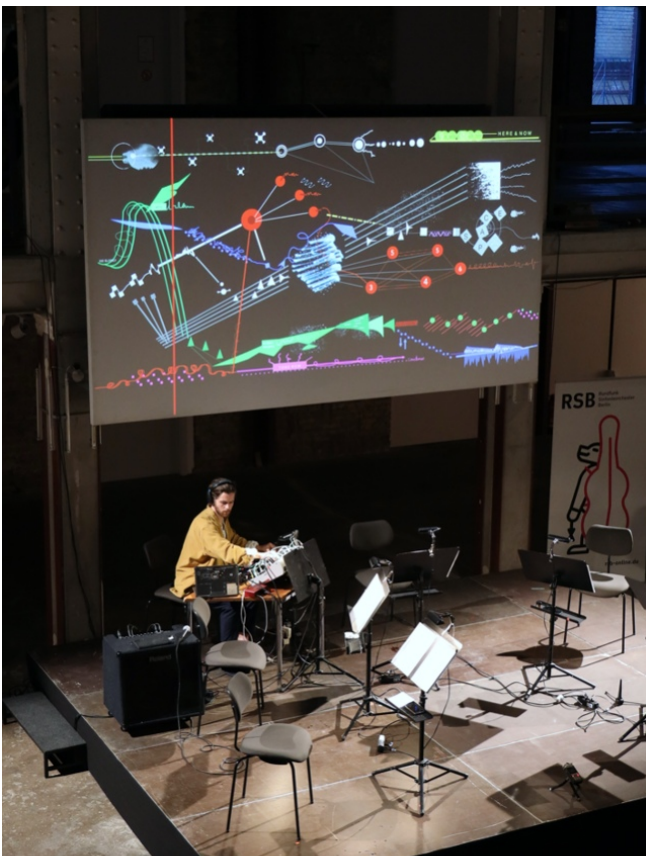


Figure 7. Electronics setup and projected score in a circular viewing configuration. This spatial arrangement introduced an additional layer of visual orientation, affecting performer interaction, perception, and ensemble listening.



Figure 8. Spatial performance configuration at Kühlhaus Berlin. Ensemble members perform while viewing the projected visual score from the second floor in a 360-degree formation, integrating performer positioning, visual orientation, and collective listening.

Despite limited rehearsal time, the ensemble maintained a high degree of temporal precision in relation to the moving timeline. Sections conducted by the composer demonstrated increased dynamic contrast and clarity, whereas unassisted run-throughs required more negotiation among performers. These observations indicate that the score operates as a listening-mediated system, fostering collective attention and coordination even in constrained preparation contexts [7], [9].

In this sense, the score functions less as a directive system and more as a framework that distributes responsibility for temporal and sonic coordination across the ensemble.

4.4 Reflections

The case study prompted a reassessment of how visual scores mediate between guidance, interpretive freedom, and performer engagement. One key insight was that the effectiveness of such notation systems depends not only on their internal logic but also on performers' familiarity with contemporary practices and their willingness to engage with detailed symbolic frameworks. While some musicians responded intuitively to the visual material, others required more explicit clarification of symbol execution, reflecting differing interpretive approaches shaped by background and experience.

Extensive performance notes proved both beneficial and challenging. On one hand, detailed documentation supported consistency, temporal alignment, and ensemble cohesion. On the other, the volume of information required significant preparation time, occasionally leading to uncertainty or uneven engagement among performers. This highlighted a central tension in the practice: balancing sufficient guidance to ensure coordinated realization while preserving space for creativity, improvisation, and listening-based decision-making.

Adaptive strategies emerged in response to these challenges. In situations of interpretive uncertainty or temporal instability, conducting or gestural cueing reinforced shared tempo, dynamic contrast, and ensemble focus without imposing fixed sonic outcomes. These interventions functioned as temporary supports, maintaining the score's listening-mediated character while addressing practical performance needs.

Comparisons between ensembles further clarified the role of professional training and rehearsal culture. Musicians accustomed to regular rehearsal schedules and diverse tempo demands demonstrated greater temporal precision and confidence in navigating the moving timeline, while

others required more negotiation and adjustment. These observations suggest that the same visual system can yield different outcomes depending on context, emphasizing the importance of adaptability within the compositional framework.

Ultimately, the practice underscores the value of designing visual scores as flexible yet coherent systems that articulate a clear symbolic language while remaining responsive to performer interpretation and situational listening. By integrating handwritten and digital elements, the notation establishes a structured but open-ended environment in which performers actively shape musical outcomes in real time [7], [9], [10].

5. CONCLUSION

This study demonstrates, through rehearsal observations and performance analysis, that visual scores accompanied by performance notes can function as effective listening-mediated notation systems [7], [9]. In relation to contemporary audio-score practices, this work emphasizes the continued relevance of visual mediation and performer agency within experimental notation [9], [10]. Rather than opposing audio-centric approaches, the score offers a complementary perspective in which visual structures guide listening, interaction, and temporal awareness.

Moreover, the score has pedagogical implications for contemporary music practice by foregrounding listening as an active, collective, and interpretive process [7], [9]. Performers negotiate visual cues through auditory attention, situational awareness, and ensemble interaction, cultivating interpretive responsibility and collaborative sensitivity. In this way, the notation functions not only as a performative framework but also as a reflective tool for examining relationships between notation, perception, and collective musical practice.

Visual scores, understood in this manner, contribute both to artistic production and to broader discussions on the interplay between visual and audio-centric approaches to contemporary music notation [9], [10].

6. REFERENCES

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