REFRAMING THE LISTENING EXPERIENCE THROUGH THE PROJECTED SCORE

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ABSTRACT

Over the past ten years, performance scores have been radically foregrounded in a variety of performance practices. Whether such notations assume a prescriptive function, visually projected for musicians to interpret, or a descriptive one, unfolding as a documentation of a live coding performance, how might such a foregrounding reframe the listening process for an audience? Does a notational schema help promote a deeper, structural level understanding of a musical work? This paper will consider these various questions, exploring how principles of graphic design and the transparency of notation contribute to the listening experience. It will suggest that works featuring projected scores find aesthetic value in the juxtaposition of notation's traditionally mnemonic function and the unique temporal modalities that projected scores establish.

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1. INTRODUCTION

From the perspective of the listener, the radical experiments with notational schemas in the 1950s and 1960s by composers such as Wolff, Brown, Stockhausen, Haubenstock-Ramati, Cardew, and Cage, typically remained in the background, only ever manifest in an aural space. In sharpa contrast, in a growing body of contemporary performance practices, the score has been radically foregrounded, displayed for an audience and offering not only an enriched aesthetic experience, but an opportunity for listeners to develop a deeper understanding of the processes and structures underlying a musical work or performance.

Like their traditional print-media counterparts, projected scores showcase a diverse range of approaches to the use of notation. They often feature information which is dynamically updated or transformed during a live performance, and many also integrate non-linear processes within these generative processes as in Nicolas Collins's *Roomtone Variations* (2013), for ensemble, or Jason Freeman's *Shadows* (2015) for piano and computer [1].

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Projected scores need not adopt common practice notation,[1] nor do they necessarily need to be generated by computer. Jobina Tinnemans' *panoramic scores* [2], for example, feature hand drawn graphic notation presented on printed media spanning an entire performance space. In her *Imagiro Landmannalaugar* (2017) for small ensemble, for example, the score spans over twenty-metres in length, requiring performers to physically navigate through the performance space as they read the score, see Figure 1.

Figure 1. Still image from a performance of Jobina Tinnemans' *Imagiro Landmannalaugar* (2017). Image included by kind permission of Jobina Tinnemans.

Projected scores also need not be prescriptive in nature. Live coding performances, for example, often routinely display programming script edited by performers in real-time which outline the processes, albeit in highly coded form, that shape a musical structure. But even live coding performances need not feature programming script [3].

Irrespective of the type of notational schema projected or the motivation for projecting it,[2] the overt display of the score reframes the listening experience in distinctly unique ways. Does such a foregrounding necessarily promote a deeper structural understanding of a musical work or underlying performance processes? Might not the inherent decoding process inhibit such an understanding? How might the visual design or temporal modality of a dynamic score support this understanding? To better address these questions, a useful starting point is to consider how the visual design constraints of scores created on screens and intended for projection affect the ways in which composers articulate musical forms.

[1] Common practice notation is arguably used far less often than other forms of notation in this practice.

[2] While these may indeed include a desire to provide listeners with a deeper understanding of underlying musical processes, they may also be driven by a response to pragmatic challenges involved in presenting screen scores to small ensembles or simply an appeal to visual aesthetics.

2. DESIGN PRINCIPLES AND CONSTRAINTS

Projected scores are uniquely bound by several principles of visual design which frame the way in which performers and listeners engage with the work and musical processes they denote [4]. For those scores which are prescriptive in nature, these principles in turn facilitate certain modes of musical expression while inhibiting others.

Despite the obvious advantages of common practice notation, not least of which is its widespread familiarity, its informational density makes it not particularly well suited for visual projection, one of the reasons perhaps why graphic notation is often used in this practice. This problem is further exacerbated when multiple parts are embedded within a page. As a result, when common practice notation is projected for performers to interpret, it tends to operate within unique constraints – rhythmic complexity is avoided, pitch selections are often confined to smaller registral tessituras, and traditional expressive indications whether denoted by symbols or text are minimized.

While page turns are somewhat of an anachronism in projected scores, the constrained spatial area of a display has seen composers adopt a range of animation techniques in order to present performers with new musical information [5]. Cat Hope's screen scores, for example, often employ scrolling techniques to display new information to an ensemble, directly correlating the display methodology to the drone-based forms that underscore much of her work.[3]

New musical information can also be embedded within a single display through the animation of notational descriptors. In Bergrún Snæbjörnsdóttir's *Esoteric Mass* (2014) for sixteen wind instruments, for example, notes are denoted by circles of light which orbit along concentric rings projected onto the floor of the performance space around which the performers stand, see Figure 2.

Animated event descriptors can also be combined with traditional notation in a hybrid form. In Ryan Ross Smith's *Study No. 10* (2013) and Ingibjörg Fríðriksdóttir's *Right is Wrong* (2013), both for solo piano, only one grand stave is displayed, addressing the information density weakness of common practice notation, with discrete pitches scrolled across the display from right-to-left.

Irrespective of the type of animation adopted, the speed of dynamic change is constrained by the inability of the eye to accurately track rapid visual transitions, especially when that information is distributed over a large spatial area [6]. Visual information is rarely animated at a speed greater than that which it can be accurately tracked by the performers unless the failure of accurate tracking happens to be of aesthetic importance, as in the case of a work such as Lindsay Vickery's *Escadaria do Diablo* (2017) where the performer faces the challenge of reading a score in which notation randomly disappears.

[3] The types of animation techniques employed in a screen score often underscore a work's formal structure. Consider, for example, how performers might approach a performance of Hope's *Longing* should a "pages" methodology for displaying new information be used or how the event-driven textures of Ryan Ross Smith's various percussion works are related to temporal synchronicities and collisions between on-screen graphic primitives.

Figure 2. Still image taken by Henrik Beck/nyMusikk from a performance at nyMusikk's Only Connect festival of Bergrún Snæbjörnsdóttir's *Esoteric Mass* (2014). Image included by kind permission of Bergrún Snæbjörnsdóttir and Henrik Beck/nyMusikk.

Color assumes a more constructive role in scores generated by computer and projected in performance.[4] It can be used to help distinguish different parts within a work for ensemble, as seen in Cat Hope's *Longing*, or mark different dynamic levels of individual notes as in Ingibjörg Fríðriksdóttir's *Right is Wrong* for solo piano, or facilitate editing of live coding script. Alongside purely functional roles, color sometimes has an undeniable aesthetic importance in scores designed for projection. In Marina Rosenfeld's *WHITE LINES* (2003-ongoing), for example, a pair of parallel white lines are superimposed on a series of short color video projections. The lines vary in width and opacity with performers mapping those variations to musical parameters. While color certainly has a functional role in helping distinguish the white lines from the background image, it also has a fundamental aesthetic value in drawing attention to concepts of stasis and becoming.[5]

The musical processes denoted by the projected score are clearly conditioned by these and various other principles of visual design and organisation. And while the ability of the projected score to contribute to a deep structural understanding of a work may be open to conjecture [7, 8, 9], the foregrounded score nevertheless invites the listener to enter into a decoding process to support a better understanding of the musical and performance processes underlying the work itself.[6]

3. DECODING

> *...to listen is to adopt an attitude of decoding what is obscure, blurred, or mute, in order to make available to consciousness the "underside" of meaning...* [11]

In his influential 1986 essay "Listening" Roland Barthes identified three ways in which sound can provide mean-

[4] This is not to suggest that color has not been used in paper-based scores, refer for example to the use of color in the 14th century *Ars Subtilior* as a means of clarifying complex mensural division.

[5] Personal communication with the composer.

[6] In effect, a reversed type of *synchretic* listening where the image provides insight into an aural space, see [10].

ing – firstly through acting as an *indice* and thus providing a means of orientation, secondly through acting as a *sign* and functioning in a semiotic mode, and thirdly through functioning as a *shimmering of signifiers* that draws attention to what is unsaid. Barthes associates the third mode of listening with that of the experience of listening to the work of experimental composers such as John Cage where awareness is brought to the verticality of sound rather than its *syntagmatic extension*. While in many respects Barthes modes are woefully general,[7] they do provide a useful framework for helping to understand the experience of listening to musical works the scores of which are visible to the audience.

Through foregrounding the score, listeners are invited to engage in a deciphering process to help understand the musical processes to which they are attending. In Rosenfeld's *WHITE LINES*, this deciphering is even encouraged when the notation is exhibited in non-concert settings.[8] All this despite Barthes assertion that we do not listen to music in a deciphering sense.

Referential functions are made somewhat easier to decode through the use of animation techniques in certain generative scores to denote the onset of particular note events. In Bergrún Snæbjörnsdóttir's *Esoteric Mass* or many of Ryan Ross Smith's works, it is not difficult for the listener to perceive that the collision of graphic primitives or the intersection of moving circles with the spatial location of performers, denote the articulation of discrete note events. Similarly in scrolling scores which employ a *playhead* paradigm, the relationship of graphic shapes to relative pitch is easily decoded through observance of the vertical point of intersection of the shape with the playhead. In each of these modes, the referential functions of the notation employed are facilitated through the manner of their temporal unfolding.

Somewhat counterintuitively, perhaps, the referential function of notation can also be suggested through an *a priori* physical relationship between the performer and the visually presented score. This relationship is at the core of Snæbjörnsdóttir's *Esoteric Mass*, where the score is physically embodied within the performance space, but it is also explored in Jobina Tinnemans' *Imagiro Landmannalaugar* (2017), see Figure 1, where the decoding process is facilitated through the manner in which the performers choreograph their movement through the performance space in order to be able to read the twenty-four metre long score.

It does not necessarily follow that simply understanding a referential code [13] or syntactic structure of a notational schema allows a listener to more easily draw associative relationships across sensory modalities. This is particularly the case when various non-linear processes are embedded within a musical form or when notational schemas begin to assume a more poetic function [14]. Indeed, as notational schemas become more complex, their various referential functions become more ambiguous and difficult to decode. In Lindsay Vickery's *nature forms I* (2014) for three instruments and electronics, see Figure 3, for example, it is unlikely that the listener will be able to ascribe any referential function to the notation as these functions themselves are not semantically disjoint, with each of the three players interpreting the notation according to different rules. Clearly, in such a work, the poetic function of the notational schema assumes as much importance as any referential one. Nelson Goodman goes even further by claiming that a variable compliance relationship such as this fails to meet the semantic requirements of a notational schema, i.e. it is not semantically disjoint, and can therefore no longer be considered to be a notation at all [15].

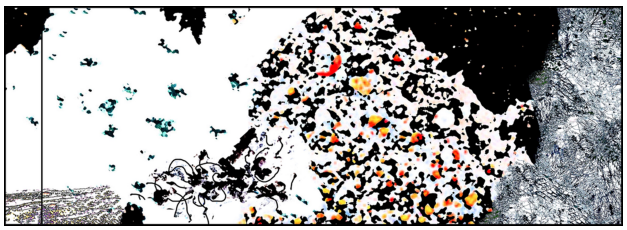

Figure 3. Excerpt from the score for Lindsay Vickery's *nature forms I* (2014). Image included by kind permission of Lindsay Vickery.

Despite the inherent difficulties inherent in the decoding process, it does not necessarily follow that the inability to unambiguously ascertain referential relationships between image and sound prevents the listener from developing a deeper understanding of a musical work just as it does not necessarily follow that someone who can fluently read common practice notation automatically has a deep understanding of traditionally notated works. Somewhat ironically perhaps, this supports Barthes original assertion that we do not listen to music by way of deciphering [11], despite the overt invitation to do so through the foregrounded score. While Barthes argues for a vertical signifying in his third mode of listening, which he contends is the manner of listening encouraged by the contemporary art music tradition of the early 1970s, he does not explore in great depth the temporality of the listening process. The author would argue that the temporal modality of scores foregrounded through projection present perhaps the most interesting insights on how composers working in this area of practice frame listener engagement with the work [4].

4. TEMPORAL MODALITY

The projected score encourages an engagement with procedural relationships as they temporally unfold in the score and are musically sounded in the performance space.[9] While this engagement is to a certain extent more easily recognised in those scores which employ various animation techniques, it is also strongly featured in those scores such as Tinnemans' *Imagiro Landmannalaugar* where sounds' becoming is underscored through the evolving physical relationship between the body of the performer and the materiality of the score. For those

[7] For a more detailed analysis of the shortcomings of Barthes modes of listening, the reader is referred to [12].

[8] Installation/Performance Notes provided courtesy of the composer.

[9] This, perhaps, as opposed to an idealized Adornian structural listening [7].

scores which do feature the animation of notational descriptors, the animation techniques employed ground the work in a particular temporal modality which fundamentally frame listener engagement.

In her critique of structural listening, Rose Subotnick argues that musical style "…defines the conditions for actual structural possibilities, and that structure is perceived as a function of style more than as its foundation." [8]. This observation is particularly manifest in the temporal modality of projected scores. In Hope's *Longing* or Tinnemans' *Imagiro Landmannalaugar*, for example, the drone-based flow of musical texture is strongly supported and musically reinforced by the scrolling model adopted in the display of musical information as well as the overt use of horizontal, graphic lines in the score. Similarly, in many of Ryan Ross Smith's works for percussion, the gradual acceleration and deceleration of sonic events which results in complex rhythmic textures is strongly supported by the manner in which sonic events are represented in the score through the collision of graphic primitives. It is hard to imagine the processes employed would be as transparent for the listener if sonic events were represented through a scroll-based score. In Marina Rosenfeld's *WHITE LINES*, the becoming of musical processes is strongly reinforced by the concurrent dissolution of the white lines in the score through variations in visual opacity. In all of these works, the temporal modality of the score underpins formal musical structure.

The mnemonic function of notation is extended in the projected score such that it serves as an aide-memoire not only for the performers but for the audience,[10] providing the visual support to relate current events to past but also to better anticipate how future events might unfold. In non-linear forms, open forms, or in visual scripts where denotative relationships cannot be unambiguously determined, this anticipatory function is fundamentally unique.[11] As a live coder edits the parameters of an iterative loop, for example, a listener reasonably cognisant of programming structure can anticipate sonic outcomes. Similarly, as a scrolling score unfolds, transitions from one sonic texture to another can be anticipated even though denotative relationships between graphic typographies and sounded results are not strictly unambiguous. Cat Hope has indicated that the ability of the listener to anticipate outcomes is one of the reasons she would rather an audience not see a score [17].

Through projection of the score, the audience is made aware of a field of structural possibilities that is typically closed with the navigation, decisions, and determinations that the performer/s make embedded as criteria for aesthetic reflection. This is in marked contrast to the experience of a seminal open-form work such as Stockhausen's *Klavierstücke XI* or Haubenstock-Ramati's *Liaisons* in which the virtual pathways through the score remain closed for the listener. The projected score thus concretizes the work's *protentive* possibilities [18].

As non-linear processes become more deeply embedded in a notated script, the ability of the listener to anticipate or protend sonic outcomes becomes more difficult. Nevertheless, the foregrounding of the score presents the audience with all of the work's latent and virtual possibilities [19], not just those that are actualized. In the author's *point studies no. 2*, the listener is presented with the entire field of possibilities that performers can take through the score although only one is sonically actualized. For the listener, the work becomes a field of potentiality ontologically defined as much by its latent possibilities as by those sounded.[12] These potentialities constantly shadow the work's actualization, overtly foregrounding the process of production and entelechy.

5. CONCLUSION

The visual presentation of the real-time score, whether that score be prescriptive or descriptive, invites listeners to engage in a decoding process to develop a deeper understanding of the musical processes underpinning a musical work. While this can rarely be unambiguously undertaken, this ambiguity nevertheless results in perhaps the most ontologically significant outcome in which the latent possibilities visually presented but not necessarily actualized come to establish a world, in a Heideggerian sense, playfully disclosed through sonic realization [21, 22]. The tension between the actualization of a world through sonic becoming, sound's haecceity [23], and the historically mnemonic function of notation forms, perhaps, the locus of aesthetic interest in the practice.

Are the creative possibilities afforded by a reframed listening experience and its subsequent ontological effects, somewhat tempered by a tendency to fetishize notational schemas? Might not the opportunity for an active, structural listening experience be diluted through presentation of notational schemas [24]? On the contrary, I would suggest that a notational schema affords an enriched engagement with a musical performance. Through a rich foregrounding of the score, with its typically inherent non-linearity and protentive suggestion of possibility, the listener is invited alongside the performer/s to playfully engage with a work's structural processes and in turn develop an intimate understanding of the world it explores.

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[10] Adorno suggests that rather than developing as an aide-memoire enabling performances to be recreated, notation in fact served as a means of reifying musical practice most notably through techniques for indicating mensuration [16].

[11] The performance challenges involved in interpreting a generative notation are tangential to the focus of this paper. The reader is referred to [1] for more in-depth discussion.

[12] Agamben touches on this in his discussion of the poetics of the open-work, arguing for a negative presence [20].

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