

Editorial

Electroacoustic music created in real-time is often understood as much by the means through which participants communicate as it is by its sound palette they use. This edition of *Organised Sound* focuses on *Mediation: Notation and communication in electroacoustic music performance*.

Innovation in notational systems over the last century began exploring graphics as documented by John Cage in his book *Notations* (1969), and Theresa Sauer in her subsequent *Notations 21* (2009), but have more recently, with computational and display technologies, been ‘going live’. Dynamic scores exploiting film and animation conventions incorporate motion and shape transformation as semiotic devices not available in static scores. Scores are now sometimes generated as the music is being performed, allowing the notator to participate in the listening and response loop and blurring boundaries between composition and performance. Audiences have also been invited to participate in creating notation for performers, both prior to and during performance. Performers themselves can generate notation for each other, alternating playing with scribing, or, with computational support, translate instrumental sound into notation. Notational devices can also themselves function as instrument interfaces when notation is automatically rendered into synthetic sound.

As language does between speakers, real-time notation and communication channels form, structure, facilitate and enforce relationships between musical participants. No longer are there strict boundaries between creators, conductors, interpreters and consumers. When these relationships change, so do the ways we listen and thereby construct meaning out of musical practices. The ‘identity’ of a piece is negotiated in the space between notation and the sound that results from its interpretation.

To address these changes, the call for works for this *Organised Sound* issue sought contributions in areas as diverse as dynamic scores, graphic scoring/representation, the role of ‘notations’ in improvisational environments, the role of gesture in sonic/visual communication, and colour and sonic/visual communication. It also solicited input on areas such as text communication in real-time works, the semiotics of new scoring systems, the relationship between notation and sound, aesthetics in real-time communication and embodiment in notation.

The collection of articles we selected begins with Lindsay Vickery’s ‘The Limitations of Representing Sound and Notation on Screen’, addressing one of the challenges that arise when notation is no longer static

on the page but moving on a screen – the ability of performers to see, track and respond to the notation given the constraints on the human visual perceptual system. The ‘reading’ paradigm that humans have used for centuries for both text and music, where our eyes scan along in short quick jumps (called saccades) to process the information we need ‘just in time’, is left behind as the score itself takes over the responsibility for displaying the notation sequentially. Performers watch as notation scrolls, appears and disappears, and transforms itself, often pushing up against various limits of perception that Vickery explores through perceptual research literature and musical examples.

Filipe Lopes in ‘Do Desenho e do Som: Harmonising screen scores and listening’ describes the musical issues that he has been exploring with a software system he has developed. His interest lies in the relationship between notation and improvisation. His performance system is based on a composer and an assistant generating panels of animated graphical notation that are interpreted by performers according to general suggestions from the composer. Lopes puts a strong emphasis on listening, and all aspects of the score generation and interpretation are done by humans, not computers.

In ‘Useful Scores: Multiple formats for electroacoustic performers to study, rehearse and perform’, Terri Hron makes a unique contribution to the issue in its presentation from the perspective of an instrumental performer of mixed electroacoustic music. She discusses the need for more nuanced support for the live performers in such works, and proposes the idea of multiple scores appropriate at different stages of the preparation and performance. She offers very specific suggestions for how performers can be better supported by composers who employ fixed or live electronics that would ease preparation and result in better performances. Composers, take heed!

Like several contributors to this issue, Ian Whalley is a composer who has also developed an interactive score system. In ‘GNMISS: A scoring system for Internet2 electroacoustic music’ he outlines a system that supports networked real-time notation and performance coordination, and employs what has become known as a ‘spinner’ (clock-like) notation that integrates electronic music and traditional instrumental representation. Among other things, Whalley’s work is concerned with directly notating affective states through colour, gesture and motivic manipulation. He connects the development of his dynamic and

interactive scores to specific creative problems confronting paper-based scores in networked music, and he provides two of his compositions using GNMISS as examples.

The article 'A Real-Time Score for Collaborative Just-In-Time Composition' from Lonce Wyse and Jude Yew presents the web-based 'anticipatory score' system, and discusses practical and theoretical issues inherent in the relationship between improvisation and composition that arise when performers collaboratively compose with notation during performance. Of central concern is the ability for improvisers to signal and synchronise their activity to coordinate structure through notation without any precomposed score.

Thor Magnusson's 'Scoring with Code: Composing with algorithmic notation' casts code as a type of musical notation, albeit one without an explicit representation of that most common musical notation feature, the timeline. He presents his graphical Threnoscope system for supporting improvisation and musical exploration, which has a spatial layout for visualising elements of timbre and multichannel spatialisation. The Threnoscope also serves, alongside code, as a musical control interface. When the graphical representations move around the circle, the Threnoscope bears a visual resemblance to the 'spinner' score form. However, there is no slice through the circle representing playtime, and, instead, the motion represents navigation through multichannel space. This multi-layered approach to musical representation is presented along with a thorough historical and theoretical context in this article.

In 'Generative Music for Live Performance: Experiences with real-time notation', Arne Eigenfeldt draws attention to the role that notation plays in coordinating electroacoustic music with live performers. He grounds his discussion in some of the techniques developed by Barry Truax for performers to coordinate with sound on fixed media. He moves through other strategies such as computer score following that allow more timing flexibility to performance. He then confronts the issues that arise when moving further in the direction of flexible media with generative music algorithmically created at performance time. This leads to the need to generate notation live for performers, but forces a confrontation with the limits of human abilities such as performing 'extreme sightreading'. Eigenfeldt then discusses some of his compositional and notational strategies to incorporate generative music with live performance in two of his recent works.

Concluding the theme papers, David Kim-Boyle in 'Visual Design of Real-Time Screen Scores' looks at visual design elements in developing scores in real time, and how the approach is well suited to non-linear musical processes and forms. Through careful

rendering for audiences and design attributes, he argues that non-linear processes can be represented and in turn decoded by performers. He also notes how rich fields of artistic enquiry aligned with broader interface aesthetics are afforded by these notational schemes, while accepting that the transparency of the decoding process is shown to vary across a wide spectrum.

Two off-thematic papers conclude the issue. First is Sonya Hofer's "'Atomic" Music: Navigating experimental electronica and sound art through microsound'. Hofer considers sound conceptually as having mass or as matter, particularly on an imagined 'atomic' level, and discusses the conceptual and historical emergence of the microsound idiom. She notes its use and convergence across a number of contemporary genres and disciplinary boundaries, and discusses how microsound is situated within the relationship between sound art and experimental electronica.

Finally in 'Sonification and the Mysticism of Negation' Kristina Wolfe explores the similarity of techniques and sources between contemporary sonification as a way of uncovering new patterns in information/ data through auditory sense, and mysticism – despite the different world views and frames of reference. She notes that practitioners from both fields believe that some types of information are not understandable using traditional analytic means, and can only be comprehended through experience. The paper discusses similarities between sonification and Apophatic Mysticism, or the Mysticism of Negation, and argues that sonification, as a mystical information source, suits creative contemplation rendered through electronic music.

With the increasing ubiquity of real-time graphics processing, high-speed computing and high-speed networks, real-time non-linear and interactive/participatory electroacoustic music is only beginning to explore the possibilities of new notational idioms – technically, aesthetically and conceptually. Through new notation and communication strategies, this collection explores a variety of recent innovations that are challenging traditional notational forms, musical relationships and notions of authorship. They show that even after all sound has been welcomed into the realm of music, there is still much new territory yet to be explored.

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