Together in Music
Expression, Performance and Communication in Ensembles

12th - 14th April 2018,
National Centre for Early Music,
Walmgate, York, YO1 9TL

An international conference on ensemble performance, bringing together music performers, academics, and teachers.

Registration and programme information:
http://wrocahensemble.sites.sheffield.ac.uk/tim

Email: tim-2018@york.ac.uk
Twitter: @togetherinmusic
Facebook: www.facebook.com/ensemblenetwork/
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Welcome

A warm welcome to you all to York and the ‘Together in Music’ conference. The conference is organised in the context of the WRoCAH funded network ‘Expressive nonverbal communication in ensemble performance’, which was established in 2015 and brings together a team of six academics and three PhD students from Leeds, Sheffield and York. The conference was initiated to celebrate and share the success of the network, and has been realised in great part through the effort of the three PhD students, Sara D’Amario, Nicola Pennill and Ryan Kirkbride, to whom we wish to express our sincerest gratitude! The conference was inspired by the collective work of the three PhD projects on timing and synchronisation in vocal performances, rehearsal strategies and patterns of communication in self-directed ensembles, and technology assisted collaboration and communication in music generated through live coding. A range of issues and subtopics arise from these projects, which require interdisciplinary approaches to be addressed. As the Network has matured, we have become much more aware of the wide-reaching importance and interest in the topic of ensemble music performance across academia, performance and society as a whole. It is to this end that the idea for this conference was born. We want to bring together the communities who explore the intricacies of ensemble performance from different perspectives so that we can learn from each other and hopefully improve the impact of all our work, ensuring it is meaningful beyond the immediate purpose it serves and those who conduct it. We are very grateful to the White Rose College of the Arts and Humanities and Sempre for their sponsorship of the conference, enabling such a high quality, interesting and international programme to be presented. We hope you enjoy your stay in historic York and that the conference offers you new perspectives to explore in your work and new collaborations with which to enrich your own experience of ensemble music as a researcher, performer, teacher or experiencer.

Helena Daffern (Conference Chair)  Renee Timmers (Network Lead)
Meet the Team

Research Network: Expressive Nonverbal Communication in Ensemble Performance

The network is a collaboration between staff and students from the three universities of Leeds, Sheffield and York, supported by the AHRC White Rose College of the Arts and Humanities. It comprises of three projects exploring different facets of nonverbal communication in ensemble performance:

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Performances

Friday evening’s dinner will feature live performances from The Assembled and The Yorkshire Programming Ensemble. You can find more in-depth information about the ensembles on page 53 of this document.

Sponsors

We would like to thank both SEMPRE and WRoCAH for their generous support, without which this conference would not be possible.
Important information

Instructions for presenters

Papers are 20 minutes long (15 mins plus 5 minutes for questions). In the break before your session, please introduce yourself to the chair, upload your slides from a memory stick to the conference computer, and test any audio or video. This is very important so that we can avoid delays and technical issues during the sessions.

Those presenting posters will be able to put up their poster from 9am on Thursday. As well as space for printed posters, you will also be allocated a two-minute slot during the 'quickfire' round immediately prior to the poster session on Friday morning.

Internet access

The National Centre for Early Music has free guest wi-fi via the access point 'NCEM-guest'

Social activity

We have a room booked in the downstairs of the Walmgate Pub from 5:15pm onwards on Thursday evening. Everyone is welcome to join at any point. You can eat upstairs in the Bistro or buy bar snacks downstairs. More information is available here: [https://www.walmgateale.co.uk](https://www.walmgateale.co.uk).

There will also be an informal dinner with performances from 7pm on Friday night at the NCEM.

Conference location

The National Centre for Early Music is to the East of the City of York centre and is within easy walking distance of York Minster. On leaving the City Centre follow the signs to the Castle Area and then to the Merchant Adventurers' Hall. Carry on past the Hall, over the Foss Bridge into Walmgate. The Church is situated on the left-hand side just past the Yorkshire Evening Press offices.

Alternatively, the journey is a 10 minute taxi ride.

Contact information

Helena Daffern: 07929752673
**Schedule**

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<td>9.45-10.45</td>
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<td>Andrea Schiavio</td>
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<td>‘Crystal clear’ OR ‘As clear as mud’: Verbal imagery as successful communication between singers and choir directors.</td>
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<td>Cecilia Oinas</td>
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<td>‘Perfect ensemble’: Historical paradoxes in the rhetoric and practice of quartet playing</td>
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<td>Art and collaborative composition: How designing musical notation in therapeutic arts workshops facilitates creative interaction towards social wellbeing.</td>
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<td>Playful production: Collaborative devising in a music ensemble context</td>
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<td>Ensemble interaction and group dynamics in indeterminate music: A case study of Christian Wolff’s exercises</td>
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Teaching through ensemble performance

J Murphy McCaleb, York St John University

Strategies for teaching ensemble performance in higher education tend to draw on staff members as conductors or mentors. This approach to teaching can easily remain unexamined, either through habit or presumed beneficence, and thus music programmes and lecturers miss opportunities to explore potentially more efficient and effective ways of working. This research investigates a third path to lecturers’ involvement in university ensembles – one where the lecturer rehearses and performs with their students.

In previous artistic research I have conducted on ensemble interaction, I analyse how different types of leadership arise and are exerted within small ensembles (McCaleb, 2014). The flexibility of this leadership amongst group members may vary depending on the repertoire, balance of expertise around the ensemble, and other circumstantial factors. Professional chamber ensembles exhibit qualities similar to the business model of alternating leadership, where members assume ‘ad hoc leadership positions […] by temporarily and freely [alternating] back to be observers, followers, and so forth’ (Andert et al., 2011: 54); adopting this framework for teaching ensemble musicians in higher education encourages students to engage more critically in the development of the ensemble. Playing a larger leadership role (even temporarily) in ensembles allows students to ‘learn musical independence as they might learn civic participation, by making musical decisions that matter’ (Shieh and Allsup, 2016: 33).
A conceptual framework for interactive music learning

Andrea Schiavio, University of Graz

Background

While the ‘master-apprentice’ approach is currently the most common method for instrumental learning in music schools and conservatoires (Association of European Conservatoires, 2010) there are reasons to question whether it really is the most effective one: (i) the context of one-to-one instrumental lesson is still largely unexplored and only a few studies have specifically focused on its dynamics, or proposed alternatives (Perkins, 2013); (ii) many music students seem to rely too much on their teachers, ending up being almost unprepared to develop their own expressive style (Burwell, 2006); (iii) a growing variety of research in joint musical performance (e.g., Gratier, 2008), informal musical learning (e.g., Green, 2008), and multicultural musical practices (e.g., Volk, 1997), expanded the directions and perspectives of the broader area of musical education, highlighting more interactive (i.e., groups) and improvisational pedagogies. This issue is a major focus of discussion within conservatories, with what some see as a move towards more socialised teaching and a broadened concept of the conservatory graduate being seen by others as a cost-cutting measure. This talk aims to frame this debate within a broader theoretical perspective, where psychological and educational considerations will be discussed through the lenses of recent development in cognitive sciences.

Main contribution

Studying interactivity and learning by focusing on individual mental or physiological processes may be not enough to appreciate the complexity of the agents’ sensorimotor coupling (De Jaegher & Froese, 2009; Froese et al, 2014). Such strategy, in other words, would not allow us to capture the rich web of interpersonal dynamics in play during coordinated behavior - including collaborative musical learning (Laroche & Kaddouch, 2014). Traditionally, however, studies investigating learning and joint musical performance are framed within two compelling views: theory-theory (TT) and simulation-theory (ST) (see Ratcliffe, 2006). TT assumes that one can understand others through a naïve ‘theory’ developed on their experience (Leiberg & Anders, 2006). ST opposes TT when it posits that we do not require ‘theories’ to understand the others. Instead, we can ‘simulate’ their mental states (emotions, intentions, etc.) within our own cognitive system (Gallese & Goldman, 1998). While TT and ST offer important insights, they both arguably take a rather an individualistic stance - ‘theories’ or ‘simulations’ develop and occur within the individual. In light of this limitation, a number of scholars proposed a more interactive approach known as interaction theory (IT) (Gallagher, 2001; 2008; 2012; Michael et al., 2013). Having described IT’s central tenets, its explanatory power in joint music learning contexts will be compared with the one of ST and TT.

Conclusion

IT might inspire new understandings of what joint musical performance and learning entail, allowing us to improve methodological settings and rethink theoretical issues for future research and theory in the field. Relevant examples will be provided in concrete pedagogical contexts, where interaction and improvisational practices are adopted.
‘Crystal clear’ OR ‘As clear as mud’: Verbal imagery as successful communication between singers and choir directors.

Mary Black, University of Leeds

Background

This presentation is based on doctoral research into the contexts and efficacy of verbal imagery in choral rehearsals. It sought to establish the types of imagery used and whether and how they were understood by singers. It examined how imagery functions as a communication strategy between directors and singers and how this influences vocal responses to the images directors employ.

The research was completed over five years and adopted a multi-method approach, using videoed observations, questionnaires and interviews. Twenty-one directors and over 330 choir members across 15 choirs contributed to the research. Sung responses to imagery were examined in their rehearsal context and the data was analysed using with Interpretative Phenomenological Analysis.

Main Contribution

The research identified five types and nine functions of imagery, focussing on the vocal responses, and established the role imagery can play in choral directing pedagogy. Vocal responses were categorised in terms of their effects so that imagery’s efficacy in communicating specific requirements could be judged. Conceptual understanding of imagery was investigated, particularly in relation to the vocal responses which were created by singers and how these were interpreted by singers and directors.

Central ideas to be explored in the presentation are:

• Categorising imagery
• Understanding imagery
• Problems in employing imagery
• Vocal responses to imagery
• Implications for directors

Conclusions

Imagery is employed as a tool for communication between directors and singers. It affects both understanding and vocal response; without the first the correct response cannot be evoked, but without the response the cognition is purposeless. Imagery is used to interpret and express music and can be so strongly allied with a particular vocal response that recollection of the image includes recall of the associated response.

Imagery was most frequently deployed not to influence aspects of interpretation or expression but to affect tonal quality. This has significance for choral directors in terms of the language, instructions and images they employ to communicate with their singers and how these affect the vocal responses.
Paper session 2: Reflection on practice

Professional piano accompaniment practice in Western art duo ensembles: A conceptual framework

Evgenia Roussou, University of Hull

Background

Over the last hundred or so years, the accompanist has been scrutinised both as a pianist, and more generally as a music practitioner (e.g. Gee 1883; Lyle 1923; Adami 1952; Hoblit 1963; Parsons 1972; Fong 1997; Tomes 2004; Service 2012). There is evidence of piano accompaniment being promoted as a musical ‘science’ and an ‘art’ (e.g. Moore 1943; Adler 1965; Cranmer 1970; Price 2005; Katz 2009), as well as explored as a ‘subject’ for educational purposes (e.g. Lippmann 1979, Rose 1981, Mann-Polk 1984). Given recent demands for piano accompanists, researchers have investigated the use of digital accompaniment tools as an alternative to human players (e.g. Sundberg et al. 1989; Sheldon et al. 1999; Raphael 2001; Widmer 2005; Dannenberg & Raphael 2006; Jordanous & Smaill 2009). Up until now (Roussou, forthcoming), there has neither been a systematic investigation into the contemporary views of musicians on the skills and roles of professional piano accompanists, nor an attempt to conceptualise professional piano accompaniment practice.

Main Contribution

The purpose of this paper is to report the findings of two empirical case studies that aimed to explore via qualitative enquiry the expectations of professional musicians about piano accompanists, as well as their skills and roles in rehearsal and performance. The objective was to construct a framework about professional accompaniment practice for educational, pedagogical and research purposes. Two research questions were addressed: in the Western art solo-accompaniment duo context (1) what expectations do professional musicians have of piano accompanists, and (2) what skills and roles are exhibited by professional piano accompanists?

Study 1 (Interviews) comprised in-depth, semi-structured interviews with 20 professional musicians (10 instrumental/vocal soloists and 10 pianists specialising in accompaniment) and Study 2 (Observational Case Study) entailed video recalls of rehearsals and performances with 3 soloists and 3 piano accompanists. The studies focussed on examining key aspects of piano accompaniment, specifically achieving ensemble, balance, communication, following/leading, and dealing with unexpected incidents during performance, as well as broader concerns, including the skills and roles required for successful rehearsals and performances in different instrument/voice–piano combinations.

The data from both studies were analysed using Interpretative Phenomenological Analysis (Smith et al. 2009). 17 superordinate themes emerged which were then separated into 4 overarching categories: a) interaction, b) communication, c) support, and d) expectations and assumptions. These themes, in conjunction with relevant pre-existing literature, were used to construct a novel conceptual framework of professional piano accompaniment practice. The framework features skills and roles concerning interaction, communication and support, representing the ‘tools’ of piano accompaniment practice, all of which are influenced by sets of conditions, expectations and assumptions. The latter are applied uniquely according to a piano accompanist’s priorities, principles and reflections in practice.

Conclusion
This research provides fresh insight into the phenomenon of piano accompaniment and invites both practitioners and researchers to conceptualise the specific and general skills involved in ensemble playing, such as exemplified in the solo-accompaniment medium. Future studies may test components of this framework in order to further examine its power and its limitations.

Ensemble performance shaping formal boundaries
Cecilia Oinas, The Sibelius Academy of the University of Arts Helsinki

This spoken presentation aims to demonstrate how performers’ unique shaping decisions may offer alternative yet equally justified ways to interpret musical structure when compared with a more normative formal and structural analysis. More precisely, I will discuss how a professional piano trio ensemble (the author as a pianist) as well as three recent recordings shape a particular formal boundary in Robert Schumann’s G-minor piano trio Op. 110 (I mvt) (example 1). After presenting video material from our trio rehearsals where we discuss the passage, I will compare how the same measures are carried out in three recent recordings by Trio Jean Paul (2010), Voces Intimae (2011) and The Benvenue Fortepiano Trio (2010).

The main motivation for this study comes from the more recent development in analysis and performance studies where performers are rather seen as “informants, consultants, or co-researchers”, not subsidiary to analysis (Cook 2013, 49, see also Lester 1995, 214). For instance, Alain Dodson has compared grouping strategies in various performances with Schenkerian readings of the same musical passage, supporting the idea that analysis and performance ‘might in fact be a two-way street, even in the case of approaches which, like Schenkerian analysis, focus mainly on musical relationships we do not normally think of as being subject to the performer’s influence’ (Dodson 2008, 118).

In the Schumann example, the boundary between measures 34 and 35 can be considered quite unusual when examined with music analytical viewpoints. For instance, while mm. 25-34 end with an inverted dominant seventh chord (V43) of B flat major, the subsequent unit begins with another dominant seventh chord (V65 of B flat major) in measure 35. Thus we have two successive dominant chords that seem to have the same harmonic function, yet the first marks an end point and the next starts a new phrase (in this case, the secondary-theme zone of a sonata-form movement). Yet for performers who rather approach the boundary from the point of expressive shaping, there are many other issues that are to be considered. Perhaps the most important question is about continuity: whether to aspire to maintain motion or whether to clearly articulate the boundary. As it turns out, the way in which performers arrive at this boundary greatly differs among various ensembles especially from the point of subphrase shaping, and in this sense they are also enriching the analytical consideration of this peculiar example.

To conclude, the study strongly advocates a position where performers’ viewpoints, tacit knowledge and insights can become part of the analytical discussion. At the same time, it aims to create fruitful dialogue between analytical thinking and issues of performance, without trying to suppress one over other.
The “Everything Else” Ensemble: On collective musicking of the amateur kind

Rujing Huang, Harvard University

In this paper, I reflect on the artistic, ethical and institutional challenges that filled my two years of directing the Dudley World Music Ensemble (WME) at Harvard University, one of the four official graduate student ensembles under the Graduate School of Arts and Sciences (GSAS). In light of Performing Ethnomusicology (ed. Solís 2004), the first edited volume that deals exclusively with academic world music performing ensembles, my paper extends this lively discussion by considering a University-based ensemble that lives outside the music department, that is directed by a Ph.D. student as part of his/her fellowship, and that does not devote itself exclusively to any of the canonical “great traditions.” I argue that Dudley World Music Ensemble thus falls in between what Solís characterizes as an “realization ensemble” and an “experience ensemble,” presenting a unique set of challenges and opportunities for rethinking the tension between mimesis and creativity in amateur music making, the intercultural collective in music (Shelemay 2011), and the problematics of representation at a time of heightened racial and ethnic sensitivity. Among others, my paper engages with existing scholarship on musicality, virtuosity and (self-) exoticism in music.

More specifically, this paper examines the Dudley World Music Ensemble in its larger institutional home, the Dudley House of Harvard University, and investigates the dilemma that arises when the ensemble attempts to fulfill its multiple roles: from a group that represents the university’s respect for diversity to a group that serves as a social outlet for full-time Ph.D. students and, finally, to a group that functions as a meaningful, educational link between an elite institution and the local communities. In addition to discussing the institutional history and evolution of the ensemble, I will also address the diverse ways in which WME members confront the semesterly challenge of mounting a substantial, public concert.

The performer’s experience in a contemporary music ensemble – a longitudinal field study

Christoph Seibert, Max Planck Institute for Empirical Aesthetics

Background

The ability of ensemble musicians to coordinate is remarkable, especially with regard to the performance of highly complex pieces of contemporary music. How is ensemble coordination achieved and what are the underlying experiential processes? Prominent models follow a cognitivist perspective and construe joint music performance as based on shared performance goals and mental representations (e.g. Keller, 2008). In contrast, more recently, research on joint music performance has also adopted a situated (or 4E) perspective emphasizing the importance of pre-reflective, dynamic, and enacted processes (e.g. Schiavio & Hoffding, 2015). If these two approaches are competing and incommensurable or if they rather represent the extremities of a continuum, or different layers of the very same underlying process is an open question.

In order to investigate how various ‘situated’ approaches may be discriminated and appropriately applied to music, I have proposed a systematic framework for the exploration und differentiation of situated aspects of musical practice and musical experience (Seibert, forthcoming). This framework is also applicable as a research tool for the investigation of situated (i.e. bodily and environmental) aspects in complex musical practices.
Main Contribution

Using this framework and with a focus on experiential processes, I have conducted a field study which is aimed for elucidating the relation of situated and cognitive aspects in joint music performance, considering the temporal development of factors like performance fluency, ensemble cohesion, and musical identity over the course of one year. I continuously investigated a newly composed contemporary music ensemble, comprising eight musicians (mean age = 30, SD = 3.075, 3 females) from 10/2016 until 9/2017. Throughout the year, three identically programmed concerts were performed by the ensemble. Rehearsals and concerts were observed via ethnographical methods, audio and video were recorded. The musicians filled out a questionnaire addressing the individual experience during performance after every rehearsal and concert performance. Afterwards, focused and phenomenological interviews were conducted, concentrating on the individual musical experience during the respective performance.

Data analysis is still in progress. Qualitative content analysis will be complemented by phenomenological analysis in order to get access to pre-reflective levels of musical experience. This analysis is contextualized with ethnographic data and supplemented by individual descriptive time series of quantitative data from the questionnaires.

Preliminary results reveal different styles of musical practice comprising both cognitivist and situated perspectives. With regard to the presence of the co-players, a highly selective behaviour including even blending out particular co-players has been observed. The atmosphere and communication within the ensemble, individual preparation, or the attitude to the joint performance contributing to mutual trust seem to play a crucial role for experiential and coordinative processes in joint musical practice.

Conclusions

The preliminary results and insights provided by this study seem to elude a clear attribution to the contrary models of ensemble performance currently discussed. Rather, they seem to suggest the necessity of more differentiated accounts. In this regard, the framework I have provided may help to further disentangle the complex experiential processes in joint musical performance.
Keynote presentation (via livestream)

The psychology and neuroscience of musical ensemble performance

Peter Keller, MARCs Institute, University of Western Sydney

Musical ensemble performance showcases the ability of groups of individuals to pursue shared goals by coordinating their actions with high levels of precision and flexibility. My presentation will address the psychological processes and brain mechanisms that enable such interpersonal coordination. I will give a brief overview of a theoretical framework and empirical approach for investigating factors that determine an individual's ability to coordinate with others in musical contexts. The empirical strategy entails examining the building blocks of ensemble skills using a range of tasks in order to balance the trade-off between ecological validity and experimental control. Key results will be presented from studies employing basic laboratory paradigms and naturalistic musical tasks, as well as computational modelling, neuroimaging, and brain stimulation techniques.

Bio: Peter Keller holds degrees in Music and Psychology from the University of New South Wales in Australia. He is currently Professor of Cognitive Science and leader of the ‘Music Cognition and Action’ research program in the MARCS Institute for Brain, Behaviour and Development at Western Sydney University. Previously, he was at Haskins Laboratories (USA) and the Max Planck Institute for Human Cognitive and Brain Sciences (Germany). Peter has served as Editor of ‘Empirical Musicology Review’ and is currently an Associate Editor at ‘Royal Society Open Science’ and ‘Music Perception’. His research examines the behavioural and brain bases of human interaction in musical contexts.
Seminar

“Perfect ensemble”: Historical paradoxes in the rhetoric and practice of quartet playing

Chris Terepin, King’s College London

Comparison of contemporary empirical analyses of ensemble performance with historical performance research often reveals a cavernous conceptual gulf. While the former tends to devote substantial attention to issues of co-ordination, usually via meta-analyses that necessarily make some generalisations about expressive conventions or ‘interpretation’, research into historical string playing usually foregrounds more specific approaches to structure and rhetoric, while theorizing about agogic and tonal nuance through single instruments. It is, however, rather rare for research into historical performance to examine ensemble in detail, beyond an admission that the musicians of early- and pre-recording eras appear to have placed less value on precise synchronization.

Detailed analysis of certain early recordings of string quartets, though, points to a historical treatment of ensemble that is as varied as it is deliberate. The evidence of recordings by the Bohemian, Klingler, Flonzaley and Capet Quartets – each extremely famous in their day – reveals an extremely close link between early twentieth century expressiveness and the deployment of a wide spectrum of ensemble options. Far from representing ‘mere sloppiness’ – an unfortunate by-product of extensive agogic inflection – I propose that a sophisticated continuum of collective timing, strikingly reminiscent of piano playing of the same era, constituted a vital strand of these musicians’ expressive toolkit. In the context of Laurence Dreyfus’ suggestion that we look ‘Beyond Interpretation’ (2007) as the habitual synonym for musical performance, this radical evidence offers new paths for a genre whose multiplicity of historical metaphors and performance styles has tended, in recent years, to be subsumed under unshakeable ideologies of text, canon and tradition. This seminar will introduce and analyse a selection of the recorded evidence, taking these varied sources as the impetus for a critical examination of relationships between history, genre and performance convention.
Metaphorical usage in the rehearsal communication of two professional string quartets

Su Yin Mak (The Chinese University of Hong Kong), Hiroko Nishida (Kyushu University), and Daisuke Yokomori (Kyushu University)

While there have been earlier studies on the role of metaphor in music analysis and cognition, the extant research has focused exclusively on writings about music. This paper reports on the preliminary outcome of an on-going research collaboration between three researchers and two professional string quartets, the Hong Kong-based Romer String Quartet and the Japan-based Quartet Excelsior. Our research integrates ethnographic-documentary and critical-analytical approaches in unprecedented ways. Its methodology is grounded in both theoretical perspectives drawn from music theory, ethnomusicology and linguistics, and empirical interview and audiovisual rehearsal data for both ensembles.

We approach metaphorical usage in the discourse of string quartet rehearsal from four inter-related perspectives. First, using George Lakoff and Mark Johnson’s theoretical framework of conceptual metaphor (1980) as a starting point, we view metaphorical language as indicative of metaphorical conceptualization, a process by which a target domain (here music) is understood in terms of the entities, properties and relations of a source domain drawn from everyday human perceptions and actions. Thus, analysis of the metaphors used by professional practicing musicians can be a means to access how they understand abstract musical concepts in terms of concrete, embodied experiences. Second, we examine agential ascriptions implied by the players’ metaphorical usage, and argue that the act of performance not only realises potentially agential elements within the musical work, but also create levels of agency beyond the score. Third, we study the metaphors as rhetorical devices and aim to discover how they serve specific discursive needs. Finally, we consider the interactions between verbal and non-verbal modes of communication in rehearsal, and hypothesize that speech and gesture serve as complementary modes of expressing conceptual metaphors about musical events and processes.

In developing a new critical paradigm for how performers create (rather than merely reveal) musical structure by way of metaphorical mediation, we also propose a redefinition of the meaning of structure in performance and prompt the assessment and refinement of current analytical and pedagogical methods in music theory. We hope our interdisciplinary methodology will be of interest to scholars, performers, and teachers alike.
Development of rehearsal interactions in a newly-formed vocal quintet

Nicola Pennill (The University of Sheffield) and Sara D’Amario (University of York)

A common approach for music ensembles is to use a series of collaborative rehearsals to prepare for a later performance, during which socio-psychological as well as musical development takes place. As part of this development, patterns of social interaction patterns emerge. Observational studies of teams and groups of a range of contexts, including emergency teams and sports performance suggest that variation and selective retention of such patterns contribute to the dynamics of work group behaviour, and to the effectiveness of group learning and development. Interaction patterns in high-performing teams are shorter, less complex and with fewer participants in a range of settings. The highly performance-focused setting of a music ensemble rehearsal makes high demands on the social interactions as well as the musical skills of its members. This study aims to explore the development of interaction patterns in a newly-formed music ensemble, and to relate the emergence of these patterns to the development of temporal synchronisation as a key performance measure.

Research questions:

How do interaction patterns contribute to group development in a newly-formed group of singers? How do these patterns change over time? What is the relationship between interaction patterns and temporal synchronisation? Does the nature of the musical material have an effect?

Method

This lab-based study tracked a newly-formed group of five singers as they rehearsed two short, contrasting pieces created for the study, which varied in their rhythmic and melodic structure, with no expressive markings given. Ensemble members were free to use the short rehearsal sessions in any way they chose; their brief was to create an expressive interpretation. Video recordings were made in five sessions over a three-month period. These recordings were transcribed and the content coded and analysed for patterns in verbal behaviours, and rehearsal tasks and methods. In addition, three pre- and post-rehearsal recordings were made of each piece in all rehearsals, which were randomized for rehearsal order. Audio and laryngograph recordings were used to compare temporal synchronisation over time, and between the two musical stimuli.

Main contribution

Observation data reveals shifting group dynamics and roles over time, who is most vocal and what type of behaviour are apparent. Pattern detection analysis suggests recurrent patterns of verbal interaction in the rehearsals, providing additional insights that are not evident from the direct observation, for example in the emergence of leadership roles. The patterns also reveal important sub-cycles involving all members which drive discussion and action in this group. There was also evidence of changes in patterns over time. The data also suggests that patterns of behaviour and patterns of activities overlap, creating larger patterns for rehearsal development. The relationship of patterns to changes in temporal synchronisation and to the type of musical material is currently being explored.
Background

One way of exploring the social and cognitive processes underlying collaborative rehearsal is to study “rehearsal talk”. This can be an invaluable tool for learning about the development of familiarity between members of chamber music ensembles and duos who have not worked together before. It is also useful for learning about how musicians develop familiarity with the music they are preparing for performance, particularly if it is new to them; they will each have their own initial conceptualisations of the work, but by the time they perform it in public they will have to have negotiated a shared understanding and be able to convey it unanimously and with conviction.

Previous studies of rehearsal talk have been undertaken with well-established duos and of single rehearsals carried out by new duos; the present study involved the analysis of talk in six daily rehearsals by two people who did not know each other well, and had not worked together previously, preparing to perform a work new to both of them, from memory, before a small audience. The study aimed to identify the characteristics of the developing social relationship between the musicians and the features of the music to which they referred in their talk during rehearsals.

Main contribution

The participant-researchers in the study were both experienced musicians: a soprano and viola player. They were preparing to perform two songs dating from 1925-1926: poems by Rudyard Kipling translated (loosely) into Russian and set to music by Boris Tchaikovsky. The musicians undertook daily individual practice sessions and joint rehearsals for six days before performing them to a small audience. The first song (“Amazon”) was played from memory by the viola player while the soprano used the score; the second song (“Homer”) was sung from memory by the soprano while the viola player used the score. All practice sessions and rehearsals were audio-recorded and transcribed. A content analysis of the transcriptions of the rehearsals was made using two discrete coding schemes for each spoken utterance, with reference to the musical material sung and played. Styles of interaction, and therefore the developing characteristics of the social-emotional relationship between the musicians over time, were identified using Interactive Process Analysis (Bales, 1999): these were largely positive, involving suggestions, agreement, solidarity and orientation-giving.

Rehearsal strategies and musical dimensions, the latter reflecting the features of the music to which the musicians attended during rehearsal and of which some ultimately became performance cues, were identified using an adaptation and extension of Chaffin, Imreh and Crawford’s (2002) coding framework: preferred strategies included repetition of sections, while the most frequently-mentioned dimensions were interpretive (tempo and dynamics) and basic (ensemble and entries). Differences between the participants are attributable to role and experience.

Conclusion

The findings support those of an earlier study of student and professional singers and pianists by the first author, confirming the positive nature of socio-emotional interaction but suggesting reasons for differences between both task-related and strategic aspects of the rehearsal process.
Understanding communication and interaction in ensemble playing

Elaine King, University of Hull

Background

Research about playing together in small Western art music ensembles has involved the study of communication and interaction in rehearsal and performance, exploring the ways in which co-performers encode, transmit and decode various types of information about musical materials in the process of creating and maintaining a performance. Existing studies about group rehearsal processes highlight the importance of non-verbal communication (King & Ginsborg, 2011), communicative gestures (Dahl et al., 2010), modes of communication (Seddon & Biasutti, 2009) and visual communication (Kokotsaki, 2007). Within and beyond this tradition, researchers have investigated ways in which musicians interact when playing together, such as via the predictive and reactive cognitive–motor behaviour used for timekeeping (Shaffer 1984) and in the dividing of attention to monitor parts (Keller, 2008). Theories of interaction in jazz improvisations (Monson, 1996; Sawyer 2003) and Gamelan practice (Brinner, 1984) identify group creativity as essentially communicative, often with a conversational basis. More recently, McCaleb (2014) suggests that ensemble musicians ‘inter-react’ by using embodied knowledge to account for intended and unintended events in a performance.

The terms ‘communication’ and ‘interaction’ have thus been used widely within research on ensemble performance both to analyse and to describe the actions and behaviours of musicians involved in group music-making. These words appear to belong to the same paradigm of meaning, yet, arguably, they have different denotations and connotations. A shift in how these words are used and thought about in the context of ensemble playing is necessary.

Main contribution

This paper will discuss the importance of dialogue between musicians rehearsing and performing in small music ensembles in the Western art tradition (King & Gritten, in press). It will describe an expanded conceptual model that recognises an epistemic difference between rehearsal, characterised by ‘communication’ (defined as a one-way process of dialogue, illustrated by turn-taking), and performance, characterised by ‘interaction’ (defined as a two-way process of dialogue, illustrated by reciprocity). It will relate ‘rehearsal communication’ and ‘performance interaction’ by recalling likely similarities and differences between the activities that take place in Western ensemble rehearsals and performances, thereby articulating their boundaries and suggesting that one presides over the other according to the situation.

Conclusion

The proposed model will be used to explain how transformations from ensemble rehearsal to performance may be understood. Characteristic patterns of interaction will be highlighted and the mechanisms by which they are produced considered carefully in accordance with existing literature. Finally, the role of embodied physical knowledge, as essentially gestural and corporeal, and the sensation of dialogical identity in ensemble performance will be discussed in the light of the points raised.
Technologies for investigating large ensemble performance

Cayenna Ponchione-Bailey and Eric Clarke, University of Oxford

Background

To date, research into the dynamics of co-performer interaction has been primarily focused on pairs or small groups of performers. For practical reasons, researchers investigating ensemble coordination have favoured instruments that provide clearly detectable onsets and offsets, such as pianos, percussion, or plucked strings; and laboratory settings which facilitate the collection of motion capture data (e.g. Keller, Knoblish and Repp 2006; Goebel and Palmer 2009, Loehr and Palmer 2011). Similarly, studies that have collected qualitative data from performers have focused on small ensembles such as string quartets, or small jazz groups, which enable in-depth one-to-one or group interviews, as well as the analysis of verbal or gestural communication between a small number of musicians (e.g. Davidson and Good 2002; Ginsborg, Chaffin and Nicholson 2006; Seddon and Biasutti 2009; McCaleb 2014).

Research into larger ensembles, and in particular orchestras, has been more limited. In addition to the difficulties of gaining access to orchestras (particularly professional ones) for the purposes of research, there are substantial practical barriers to data collection. It is challenging to collect qualitative/experiential data from all of the musicians in an orchestra about the same musical episode because orchestral rehearsal time is perceived to be precious and/or expensive, making it difficult to ask musicians to respond during the rehearsal process (by writing, for example); and it is logistically implausible to interview every musician as they walk off the stage or to require that each person fill out a response sheet immediately after a rehearsal or performance experience. Collecting quantitative coordination data from orchestral performances is significantly challenged by the slow onsets of string instruments and their tendency to blend together, making it technologically impossible to identify individual players in an orchestral recording so as to analyse their reciprocal temporal relationships.

Main contribution

This paper describes two new research methods that utilise digital technology to obtain qualitative and quantitative data from orchestras in real-world and experimental settings. The first is a web-based form of video-stimulated recall developed in collaboration with the Computer Science Department at Cornell University. The online platform allows musicians to view video footage from a recent rehearsal or performance and leave time-stamped comments about their experiences during specific musical episodes. This method limits the impact on orchestral rehearsal time, focuses participants’ attention on the same segment(s) of rehearsal or performance, provides confidential reporting, facilitates triangulation of perspectives, and enables the capturing of reflections and experiences as soon as possible after events.

The second method uses a large array of contact microphones to collect individual performance data from multiple string players in an orchestra simultaneously in addition to a recording of the ensemble as a whole. These data can then be analysed using Sonic Visualiser to investigate aspects of temporal and expressive coordination.

Conclusion

Bringing together both of these types of data collection, we are able to compare performers’ individual experiences of specific musical events with quantitative performance data. This paper will demonstrate these new data collection methods and present some of the data and findings from current research into direction and control in orchestral performance.
Aesthetic preferences and perceptual discrimination of microrhythmic variations in music: A comparative study across three cultures

Kelly Jakubowski (Durham University), Rainer Polak (Max Planck Institute for Empirical Aesthetics) and Nori Jacoby (Columbia University)

Background

Live musical performances reliably contain rhythmic variations from one performance to the next, which deviate from the notated score or theoretical rhythmic structure of the music in terms of both horizontal (i.e. subdivision structure of the musical beat and meter) and vertical (i.e. asynchronies between co-performers) relationships of musical events. The degree to which such microrhythmic variations are perceptually salient has been examined primarily for Western musical styles, while investigations of the degree to which such variations affect aesthetic appraisal of performances have produced somewhat conflicting findings. The present work aims to shed new light on this topic by comparing behavioural responses of participants from three countries to three diverse style of music, in particular to test the effects of cultural familiarity and expertise on perceptual and aesthetic judgements of microrhythmic variations.

Main contribution

Our experiment comprises a cross-cultural comparison of participants in three countries (UK, Mali, and Uruguay) in their behavioural responses to music from each of the represented cultures (jazz music representative of the UK, jembe drumming music of Mali, and candombe drumming music of Uruguay). We also compare responses from performing musicians to non-musicians in each culture. The stimuli used in the behavioural tasks are short excerpts of music that are reconstructed from actual (prototypical) performances from each of the three musical styles, in which two types of manipulations have been introduced: 1) changes in the metric subdivision structure of the music and 2) changes in the microtiming deviations from the metric subdivision structure in each ensemble part (which introduce different degrees of asynchronies between co-performers).

Participants in the experiment are asked to complete three primary tasks: 1) preference (liking) ratings for the original and manipulated musical stimuli, 2) a same/different discrimination task that tests their ability to detect the timing deviations introduced by each of the two manipulations, and 3) a task in which they are asked to find and tap along to the beat of the original (un-manipulated) versions of the stimuli. All participants are exposed to the stimuli from all three cultures in all three tasks, thus allowing a full comparison of culturally familiar and culturally unfamiliar music in all groups. Data collection is currently ongoing and will be completed by winter 2018. Results will be discussed in relation to the similarities and differences in perceptual judgements and aesthetic preferences between the three cultural groups, with a particular focus on effects of cultural familiarity of the stimuli and expertise (performing musicians vs. non-musicians).

Conclusion

This work contributes several theoretical and methodological developments in terms of the investigation of aesthetic and perceptual responses to rhythmic aspects of music by introducing the same manipulations to music from three cultures and comparing responses from participants who
Interpersonal entrainment and coordination in music ensembles

Martin Clayton, Durham University

Background

The coordination and synchronisation of musical ensembles involves a number of processes, both conscious and automatic. In many cases it depends on accurate sensorimotor synchronisation using primarily auditory information and error correction effected by each individual on the basis of perceived asynchronies. Yet this is not the whole story. Ensemble coordination usually involves the appropriate alignment of metrical cycles and phrase hierarchies, transitions and changes in tempo have to be managed, and so on. On these topics research has focused more on the role of the body, including sound-accompanying gestures as well as body sway. A third strand of research focuses on the effects of musical coordination, including increased prosocial behaviour and group bonding. To date, however, we do not have a broad model that combines different temporal levels and modalities of coordination, thus it is difficult to explore what aspects of ensemble coordination might be responsible for these effects.

Main contribution

The main contribution of this paper will be to propose a model of ensemble coordination integrating the different timescales (from beat subdivision up to sections and whole pieces) and the modalities (primarily auditory and visual-kinaesthetic) through which this is achieved. Supported by empirical analyses of entrainment in a variety of musical ensembles, I discuss the dynamics of beat subdivision-level synchronisation, its accuracy and variability, and its dependence on the perception of event ‘onsets’ (that are not perceived in all musical sounds). At higher levels, coordination involves a shared understanding of how different sounds and patterns should fit together (for example, how different ostinato patterns combine to form coherent drum ensemble textures, or where melodic phrases should fall in relation to metrical stresses). This higher-level coordination is quasi-independent of subdivision-level synchronisation: it is possible to be tightly synchronised in the wrong high-level relationship, or too loosely entrained in the correct alignment. In many kinds of ensemble, appropriate auditory alignment of events is supplemented in performance by phenomena such as shared body sway, foot-tapping, or eye contact, which effectively communicate a shared understanding of the appropriate ensemble coordination and motivate its continuation. Changes in bodily motion, gesture or facial expression are often used — alongside auditory cues — communicate and manage transitions.

Conclusion

Understanding ensemble coordination involves understanding the different temporal levels and modalities involved. A model that takes all of this into account allows us to ask to what extent and in what ways the different mechanisms interact. It also invites us to ask which mechanisms play what role in reported phenomena of increased prosociality or groupiness. Are such phenomena facilitated simply by the experience of each individual having their sensorimotor timing entrained to one or more other individuals, or does it also — or mainly — derive from a recognition that each individual shares a representation of a planned joint action with others, and that he or she is one of a group of people committed to carrying out that shared plan effectively?
A study of the effects of music training and performance experience on perceptions of singing ensemble synchronization

Sara D’Amario (University of York), Helena Daffern (University of York) and Freya Bailes (University of Leeds)

Background: Synchronization in ensemble performances is characterized by iterative temporal fluctuation between players, due to expressive, intentional and unintentional factors. Previous studies suggest that listeners are sensitive to the degree of between-player asynchrony, when judging the lack of togetherness in string quartet performances, and that musicians show greater perceptual sensitivity to timing variability than non-experts during isochronous auditory tasks. However, whether a listener can detect the effects of varying levels of rehearsal and visual contact between singers on the synchronization between singers during ensemble performance has not been investigated yet. This study aims to analyse the perceptibility of the effects of altered visual contact and degree of rehearsal on synchronization during singing duo and quintet performances, for listeners with different levels of musical expertise.

Method: A set of fifty-eight singing recordings selected from duo and quintet ensemble performances, collected for previous investigations of interpersonal synchrony, was presented to 33 listeners, grouped as non-experts (i.e., university students with little or no music training), performers in the group (i.e., singers who performed the pieces used for the study), and other musicians (i.e., advanced music students). Participants were required to listen to each trial and judge the level of “togetherness” on a sliding scale from 0 to 100.

Results: Initial results show that listeners perceived the effect of altered visual contact between singers, irrespective of the music training and performance experience, whilst the effect of degree of rehearsal on synchronization was not perceivable. This study contributes to the investigation of synchronization between musicians, identifying the perceptibility of the effects of visual contact and degree of rehearsal on interpersonal coordination.
‘Rhythm battle’: a novel task for studying group entrainment, cohesion and resilience

Tommi Himberg (Aalto University), Julien Laroche (Akoustic Arts), Simone Dalla Bella (University of Montpellier) and Asaf Bachrach (Université Paris 8)

Background

In collective performances of dance and music, participants need to balance attending to their own performance, interactions with others, and the collective output. To maintain their synchronicity under external distractions, the group must strengthen their within-group coupling. A model of this situation is congado (Lucas, Clayton & Leante, 2011), in which marching bands have to resist entraining to other groups, as losing one’s tempo means losing something of one’s identity. In this pilot study, we tested cohesion within the in-group, and resilience to influence from an out-group in a ‘rhythmic battle’ dance improvisation score.

Three groups of 10–12 participants have taken part. In the experiment, participants were randomly divided into two teams (5–6 participants each). Being in separate rooms, the teams were asked to come up with a joint rhythm by clapping, clicking, and/or stepping. Teams were assigned different tempi (85 or 100 BPM), indicated by metronomes. Their task was to maintain their original tempo as accurately as possible. After teams had established their rhythmic patterns, the room divider was removed to give the teams auditory and visual contact to each other. Metronomes were then turned off, so that teams had to maintain their original tempi by relying on their internal group cohesion. In the final stage, teams were asked to move, as groups, past the other team to the opposite end of the room. After the rhythm battle (and other movement improvisation tasks), participants rated their feeling of closeness to every other participant (measure modified from Aron et al. 1992).

Participants’ body movements were recorded using accelerometers. The tempi of their movement were estimated using average peak-to-peak measures and enhanced autocorrelation of the absolute acceleration time-series. Pairwise tempo difference matrix was calculated in a moving window to measure the evolution of group cohesion throughout the game. This data was visualised as a dynamic network with participants as nodes and their tempo differences as edges. Mantel tests were used to evaluate team coherence in different stages of the game.

Main contributions

Main results: two different types of “victories” were observed. 1) the winning team managed to attract the other team to speed up or slow down enough to fall into synchrony with them, and 2) the losing team lost their internal cohesion, leaving just one synchronised team. Participants rated their own team members as significantly closer than members in the other team, indicating implicit social bonding.

Methodological advances: we propose a novel group entrainment task, and a set of measures to calculate group coherence within teams, and influence between the teams.

Network visualisations allow a step-by-step analysis of how these processes took place.

Conclusions

The “rhythm battle” lets us study entrainment, interaction, and social dynamics in a group setting. Dynamic network visualisation tools can be used to investigate how games are “won” and “lost”. Our results indicate that the task has social effects and thus it can be useful in investigating the mechanisms and effects of in-group and out-group dynamics.
Characterisation of periodic movements in diverse musical ensembles

Tuomas Eerola and Kelly Jakubowski, Durham University

Background

Music performance involves both sound-producing and sound-facilitating movements. Sound-facilitating, or ancillary, movements are not involved in sound production, but have been shown to play a key role in coordinating timing and expressive intentions, both to co-performers and audiences. Ancillary movements have often been studied in terms of descriptive categorisations, such as head nods, hand gestures, and body sway. Previous research has also revealed that many ancillary movements, such as head nods and body sway, tend to be periodic in nature. However, a thorough characterisation of the periodicities and amplitude of such movements, and how such properties vary across diverse musical styles, is lacking.

Main contribution

We will present a quantitative analysis of ancillary movements from musicians across a wide variety of musical cultures and styles. This analysis focuses on 130 video recordings of instrumental musicians performing in small ensembles (duos and trios). Eight different musical styles are represented within this video corpus—from performances of Western jazz standards to North Indian classical music to Malian jembe drumming—and 24 different instruments are represented. The upper body movement of all musicians in the videos was tracked using a standard computer vision technique (optical flow). From this movement data we calculated several movement descriptors, including the amplitude, periodicity, and duration of the movements. Movements were also classified into descriptive categories such as head nods and body sway. Differences in movement descriptors will be discussed in relation to constraints of the instrument (e.g. affordances for different types of movement in relation to instrument size and position) and posture (e.g. sitting/standing), as well as properties of the music itself (e.g. dynamics, tempo).

Conclusion

This research reveals commonalities across diverse musical styles in terms of the features (e.g. amplitude, periodicity) of communicative, ancillary movements that are employed within music performance. Differences in movement features can be at least partially explained by constraints of certain instruments, styles, and features of the music (e.g. dynamics). Such research has key implications for work that aims to quantify interpersonal coordination in musical ensembles.
Champs d’étoiles: Studying gestural interaction in musical performance

Kerstin Frödin, Luleå University of Technology

Background

As a performer, on recorders and historical oboes, I use my own artistic activity as research laboratory. My project, situated in a contemporary Western art music context, deals with questions related to the score and its impact on how musicians work with gestures and communication. A live music performance is a multimodal experience where several layers of communication are at work simultaneously, and where structural and emotional meaning is conveyed through embodied practice.

Main Contribution

Qualitative analysis of gesture is an emerging practice, which has proven to efficiently provide insight into artistic process (Spissky, 2017, Östersjö, 2016). My research method builds on analysis of video documentation from which gestures and communication between musicians are categorized and coded. My method also includes stimulated recall sessions, music analysis and comparisons between rehearsals and concerts.

The video documentation that will be presented here was collected from the rehearsal process and performances of Champs d’étoiles, a suite for baroque instruments by the Swedish composer Kent Olofsson, composed 2008 – 2016 for the ensemble ‘Lipparella’. The composition is multilayered, inspired by period music for the instruments but, is at the same time, clearly situated in a contemporary art music tradition. With a duration of more than 70 minutes, Champs d’étoiles has become a cornerstone in the repertoire of the ensemble, which has performed it on numerous occasions over the years.

This long process has afforded the ensemble valuable insights, both on the micro level, such as bodies, movements and communication, and the macro level, such as events, productions and projects (Fleishman 2012). As a member of the ensemble studied, I approach the material from an insider perspective: that of my own embodied experience of the interaction within the group.

Conclusion

This unusually long and close collaboration between composer and ensemble has enabled us to further develop both these micro and the macro perspectives. Further, the insider research perspective, in combination with detailed analysis of the use of gestures and non-verbal communication in the ensemble, offers deeper insights than can be obtained merely through a rehearsal process. The new knowledge acquired through the research takes the work of the ensemble to a higher level that can be described as a verbalized collective awareness of the embodied perspective. The research thus provides refined tools that can feed back into the artistic process and the musical interpretation.
Background

Delay in ensemble response to conductor gesture is a much-discussed aspect of orchestral music, though primarily anecdotal within available literature. Similar manifestations of and prescriptions around this phenomenon of sonic lag appear sporadically throughout practice-oriented instrumental conducting texts, but little research exists to rigorously describe this indirect action/sound relationship. This paper will investigate this interaction empirically in a naturalistic setting and will describe the behaviour of this sonic lag across graduated levels of musical complexity, between ensemble experience levels, and over a standardized preparatory period.

Main Contribution

Six intact ensembles (beginner, intermediate, and advanced) divided equally between wind band and orchestra were recruited for participation. Led by experienced conductors, these ensembles gave intact performances of a predetermined work at three points in their preparatory development toward a public performance. Real-time synchronization between audio and video was verified to create a meaningful zero within the overall timecode and two excerpts (~30 seconds) representing high and low levels of sonic complexity were taken from each work per performance for analysis.

Thirty-six stimuli were created and separated into audio-only and video-only conditions, creating seventy-two stimuli that were organized into analysis orders for human scoring of onset location. Maximal overlap between human scorers was maintained to allow for the generation of mean onset values within audio-only and video-only conditions, creating a time series of visual and sonic onsets representing the indirect action/sound relationship in each sampled performance segment. Differences of audio-only and video-only means will be analyzed between ensemble types (i.e. band, orchestra), across experience levels, between complexity levels, and over time. Additionally, univariate time series analysis will be used to further describe the internal relationships within and across ensemble types, development, and musical content.

Findings & Conclusion

Preliminary results indicate a high degree of regular variability within metric and phrasal architecture, which is supported directly by anecdote and indirectly by empirical work in action/sound congruence and individual response to conducting gesture. Additionally, differences do appear to exist between ensemble types, though a more complete picture is expected to emerge with final analysis. Finally, early results indicate a linear, negative relationship between lag values and preparatory time such that ensembles present less delay to conductor gesture over time, though trends between levels of complexity are still unclear.

This investigation adds to our growing understanding of the multimodal interactions within conducted ensembles and furthers musicians, conductors, and educators in their consideration of student musical development in (and out of) large instrumental ensembles. With the majority of scholastic instrumental music making occurring in ensemble settings, an expanded palette of conceptual and practical tools is thought to be both useful to conductors and educators at many levels.
Sentiment interpretation in musical conducting - a Machine Learning study

Hedvig Kjellström and Anders Friberg, KTH Royal Institute of Technology

Classical music sound production is structured by an underlying manuscript, the sheet music, that specifies into some detail what will happen in the music, e.g. in terms of rhythm, tone heights, and overall dynamics (i.e., changes in sound level). However, the sheet music specifies only up to a certain degree how the music sounds when performed by an orchestra; there is room for considerable variation in terms of timbre, texture, balance between instrument groups, tempo, local accents, and dynamics [1].

In larger ensembles, such as symphony orchestras, the conductor has the major responsibility for the interpretation. The conductor has prior to the interaction with the orchestra formulated a clear goal function, a vision on how the musical score should be interpreted. During the rehearsals, the conductor then communicates the interpretation to the orchestra, partly through verbal explanations, but to a very high degree through body language. This effect of the conductor’s non-verbal signals on the music performance has been verified scientifically [2].

We here investigate in a controlled setting how different aspects of the interpretation are communicated non-verbally. Our findings are intended to be used to guide the design of computer models of conductor-orchestra communication. We propose to use a Machine Learning approach where a simplified generative model of the entire music production process is modeled and learned from recorded data.

This model can be exploited for two applications, firstly, conductor-sensitive music synthesizers, which can be used as an orchestra simulator for conducting students [3], secondly, tools for analyzing conductor-orchestra communication, where latent states in the conducting process are inferred from recordings of conducting motion and orchestral sound. These latent states can be used as a pedagogical tool for conductors and conducting students [3], potentially enabling the possibility to provide feedback about conducting aspects not visible to the human (teacher) eye.

The feasibility of such a model was evaluated as follows:

We collected a dataset consisting of 20 recordings of the same musical piece played by a professional string quartet following a conductor. It was conducted with 4 different musical intentions in mind. The upper body and baton motion of the conductor was recorded using a motion capture system (mocap), and the sound of each instrument was recorded using microphones attached to each instrument.

We then implemented a Machine Learning method which automatically classifies the musical intention class from the mocap or the audio signal. The results showed firstly that intention was indeed communicated to the musicians almost perfectly, which is in accordance with [2]. Secondly, we found that the motion of the baton communicates energetic intention to a high degree, secondly, that the conductor’s torso, head and other arm conveys calm intention to a high degree, and that positive vs negative sentiments are communicated to a high degree through other channels, such as facial expression and muscle tension conveyed through articulated hand and finger motion.

References:


Keynote presentation

Group behaviours as music

James Saunders, Open Scores Lab, Bath Spa University

In daily life large groups of people regularly co-ordinate their actions, whether they are voting, jostling to leave a building, or selecting a restaurant, and as individuals we read each other’s movements, facial expressions and utterances in order to negotiate our encounters with the people we meet. These behaviours govern our relationships with others and our engagement with the world around us. Equally as musicians we form complex interpersonal relationships both with each other when playing together, and with an audience. Such relationships are often by-products of the necessities and conventions of musical performance, but they also offer opportunities to control musical material and the interaction between players and audiences.

The social behaviour of groups can be used as a means to articulate musical structures and processes, embodying decision-making in live performance and exploring the way choices and actions by individual performers affect the behaviour of the whole group, and the resultant music. Recent work using recorded instructions (Nickel 2016), performance practice training (Sdraulig 2013) and cueing networks (Saunders 2017) suggest approaches to group behaviours that rely on different frameworks to construct relations between performers, including decision-making and heuristics (Gigerenzer et al 2002; Saunders 2015), intergroup conflict (Forsyth 2013), consensus, and community forming (Brown 2001). It explores methods for harnessing specific motivations of players, bringing art and life closer together by ‘mapping the two onto each other by using people as a medium’ (Bishop 2012: 127), facilitating ‘the process of engaging with the world and oneself through play’ (Sicart 2014: 84).

Bio: James Saunders is a composer who makes open form compositions that explore group behaviours and decision making. His music has been played at numerous international festivals, including Bludenz Tage fur Zeitgenossiche Musik, Darmstadt, Donaueschingen, Gothenburg Arts Sounds, //hcmf, Music We’d Like to Hear, Ostrava New Music Days, Roaring Hooves, Tectonics, Ultima, and Witten. In 2003 and 2007 he held residencies at the Experimental Studio fur Akustiche Kunst in Freiburg. James has worked with Apartment House, Arditti Quartet, asamisimasa, BBC Scottish Symphony Orchestra, Rhodri Davies, EXAUDI, Nicolas Hodges, Ictus, London Sinfonietta, Ensemble Modern, Neue Vocalsolisten, plus minus ensemble, ensemble recherche, and SWR Sinfonieorchester. As a performer he plays in the duo Parkinson Saunders with composer Tim Parkinson.

James studied at the University of Huddersfield and latterly with Anthony Gilbert at the Royal Northern College of Music. He runs the Open Scores Lab and the ensemble Material at Bath Spa University, where he is Professor of Music. James was a participant in the London Sinfonietta’s Blue Touch Paper scheme (2006-9). He held an AHRC Research Leave Award in 2005-6, and a Fellowship in 2010-11. His edited book The Ashgate Research Companion to Experimental Music was published in 2009, and Word Events: Perspectives on Verbal Notation (with John Lely) was published by Continuum in 2012. He is currently working on new pieces for Nadar (Transit Festival), and Arditti Quartet/Ensemble Modern (Wien Modern).
Workshop 1

Encountering the singing body: Vocal physicality and interactive expression

Daniel Galbreath (Royal Birmingham Conservatoire, Birmingham City University) and Gavin Thatcher (Royal Holloway, University of London)

Background:

This workshop addresses the experience of unified vocal and physical expression by exploring the intersection between the improvisational elements of choral aleatorism and ensemble movement practice. Aleatorism in choral writing has historically been employed to balance textural complexity and realistic vocal writing (Bodman 1994); or to afford a uniquely embodied and liberatory performance experience (Oliveros 2004). The shift from an instrumentalised performer to one with creative, embodied agency is likewise found in movement practice, a trend observed in mid-twentieth century European theatre and dance, ranging from Jacques Lecoq’s (1921–1999) mime tradition and Jerzy Grotowski’s (1933–1999) training methods to Pina Bausch’s (1940–2009) disruption of virtuosic dance performance. The primacy of the performer – whether in terms of entrainment or agency – predicates these artistic rationales and practices to a greater extent than their antecedents.

Yet the musical-theatrical overlap suggested by this commonality is largely unexplored. Our work therefore asks how, via philosophical and practical avenues, performers might unify physical and vocal expression to access new, vital ways of relating to each other. Two threads of action research occurred between 2015 and 2017: the first, with a range of amateur and professional singers, investigated the embodied experience of choral aleatorism; the second formed part of an artistic research and development period for two new pieces of interdisciplinary theatre: Grey Matter and The Prisoner’s Cinema, supported by Birmingham Repertory Theatre and MAC (Birmingham).

Main Contribution:

This workshop will explore how we have (sometimes literally) destabilised musical and theatrical practices, blending them to uncover the fundamental unity between vocal and physical expression. The workshop will focus on a warm-up sequence devised to encourage performers to use their voices as a facet of embodied, relational expression. Discussion of research will be infolded into the enactment of practice, following a recent essay in Theatre Dance and Performance Training (Thatcher and Galbreath 2017) in which this sequence and the thought behind it interact to seek ‘artistically productive potential and aesthetic merit as a form of practice’ (Gritten 2015).

Participants will encounter their embodied voices through a progressive series of preparations that direct their attention to their body, breath, and voice, and the inherent interrelatedness of the three. As the sequence continues, activities encourage a shift of awareness towards the self-in-space and the self-with-others, beyond individual-centred pursuit of aesthetic or virtuosic vocal production. Exercises will be discussed according to the researcher’s respective practices in choral music, vocal training, and theatre education, and the dramaturgical and musicological concepts behind them. Participants will be invited to reflect on their experience, and offer critiques of process, methodology, and ideas.

Conclusion:

Findings from action research suggest not only that the voice and body form parts of a global affective and relational experience, but also that this approach to training, which we intend to develop further, can afford performers access to that experience.
The impact of group identity on the social dynamics and sustainability of chamber music ensembles

Alana Blackburn, University of New England

Group identity is viewed as a way to distinguish one group from another. In a competitive, ever-changing environment, group identity is considered increasingly important for a musical ensemble in terms of developing a niche, gaining audience attention, and creating a successful performing team. In comparison to other fields, forming a group identity as an element of organisational behaviour or social dynamics is an area not often discussed in the literature surrounding musical ensembles. This research contributes to this area by examining musicians’ personal experiences of forming and/or performing in multiple ensembles, and provides a more diverse investigation of group identity; in particular, ‘unconventional’ or ‘non-traditional’ classical chamber music ensembles where there can be a mixture of instrumentation, are often fluid in their musician make-up, or, repertoire, style and genre are not necessarily easily defined.

Thirty professional chamber musicians from ‘unconventional’ or ‘non-traditional’ ensembles were individually interviewed about their personal experiences working in this environment. This paper will present the analysis of these interviews, demonstrating that group identity emerges in two main ways: members sharing similar characteristics, goals and objectives often based on repertoire choice and programming; and the sound or musical aesthetic developed through an interpretation of repertoire, instrumental combination, and the collective skills and knowledge of the musicians. These factors exhibit an important role in not only setting each group apart (niche-finding), but also communicating and uniting the commitment and priorities of its members, and the expectations of the whole group. The participants provided accounts of forming ensembles through different processes, and described the way in which initial goals, objectives and group vision were created. It was expressed that the importance of developing an identity as a group was to not only set an ensemble apart from another, but also to develop a shared purpose as a means for motivating group members. This paper discusses the need for a constant vision and aesthetic concept throughout the lifetime of the ensemble in order for it to be sustainable, yet having to evolve and adapt to changing environmental factors and external influences. The unconventional nature of the ensembles discussed by the participants also suggests that they may be less approachable by a broad audience compared to other ensemble genres, such as a string quartet, woodwind quintet, or piano trio, and therefore needed a different approach to forming an identity.

The experiences of the participants showed that the ensembles they are part of include musicians with diverse backgrounds, and often expect that the group draw on these different musical perspectives. Working within these mixed ensembles allows the musicians to learn from each other and assimilate specialist knowledge from various training and experiences adding to this sense of identity. The results of this research provide a greater understanding of group processes and social dynamics musicians (especially early career) may not have considered or explored. It highlights the importance of group identity as a requirement for a successful ensemble, and in turn contributes further knowledge of group processes in other fields.
Ministry of sound: consonance, dissonance, and the making of music in an English parish church.

Kathryn King, University of Oxford

Background

Behind the closed doors of England’s 16,000 Anglican parish churches, more than a million people congregate every week to attend religious services. In the act of worship, almost all will make music, together. In surpliced choirs, worship bands, DJ collectives, or simply as ‘the congregation’, church-goers sing psalms and harmonise hymns; play pipe organs, drum kits and electric guitars; and rap, rock, and ring bells - together.

The resulting soundscape is one of burgeoning plurality, with ensembles small and large, historic and progressive, amateur and professional, formal, informal, fixed and fluid. What are the social dynamics of these ensembles? How do their members, and their ‘audiences’ perceive their music, their relationships, and one another? How does the act of being together in music, in church, shape social relationships, individual and collective identities, and the wider environment? And how, if at all, are these dynamics influenced by, and manifest in, the music itself?

Main contribution

Building on the emergent body of ‘Christian congregational music’ literature, this paper reports the findings of an empirical study which investigated these questions in one large Church of England parish church. In method, it draws on an in-depth participant-observation ethnography, interviews, qualitative and quantitative surveys, and archival investigation. In analysis, it engages with current thinking in ethnomusicology, music sociology, psychology, anthropology and socio-cultural studies. It further enters into dialogue with the data and narratives of church authorities and histories, and wider musicological writings.

The research reveals the case-study church, behind an appearance of unity, tradition and stability, to be a diverse collection of individuals engaged, through music, in an active social, poietic and political process of simultaneously separate and collective cultural production. It uncovers private passions within public restraint; personal conflicts within community unity; individualised experiences within co-operative practices; and hidden connections with distant times, places, and people - simultaneously shared but singularly felt in the act of musicking.

Key themes include power and agency, personal friendships and sexual relationships, gender, class, morality, aesthetics, doctrine and cultural engagement - all within the context of musical experience.

Conclusion

The paper evidences the profound effect church music-making can have on the individuals and ensembles who participate in it, and on the church as a corporate body. It illustrates how making music with others can establish a set of relationships between themusical sounds and the ‘musicking’ people, that act as metaphor for ‘ideal relationships’ as those people imagine them to be. And it demonstrates how making music together can also perform and construct real, extra-musical relationships – with all their flaws, conflicts, and dissonances, which then ‘get into’ the music.

Finally, it raises questions and offers thoughts about how musicology, sociology, and psychology can work together to gain new insights into musical meaning, emotion, and experience in the complex, rich, and rewarding context of collective music making.
Come together: An ethnography of the Seattle Men’s Chorus family

Wendy Moy, Connecticut College

This ethnography of the Seattle Men’s Chorus adds to the growing body of literature examining the culture of community choruses. The purpose of this ethnography was to examine the culture of a highly successful community men’s chorus with particular attention to the musical and social interactions of its members both in rehearsals and in gatherings outside of rehearsals. The shared attitudes, values, goals, and practices of the Seattle Men’s Chorus, the largest community chorus in North America and the largest gay men’s chorus in the world were explored. This research utilized ethnographic techniques in gathering information that encompasses participation in this chorus, including an account of aims, processes, rehearsal outcomes, concerts, and events. Weekly and production-week rehearsals, retreats, concerts, outreach events, post-rehearsal gatherings, general meetings, and other community events were carefully documented over a two-and-a-half-year period. The data were coded, categorized, and analyzed for themes and relationships. The overarching themes that emerged was the community chorus as a “chosen family” that provides friendship, support, and a sense of self-worth to its members and the artistic director as a visionary leader who takes care of this “family.” The Seattle Men’s Chorus exhibited a complex network of relationships that may serve as a model for community choruses. The implications of this research as well as future directions for this research are addressed.

Ensemble singing for well-being and social inclusion: A music-based social action research about street children in Southeast Asia

Juliana Moonette Manrique and Angelina Gutiérrez, Saint Scholastica’s College School of Music and School of Arts & Sciences

Background

The advocacy for street youth remains a crucial task as the population of homeless individuals continue to increase globally. Among the 100 million homeless people all over the world, UK has the largest figure of rough sleepers in the global north. During the autumn of 2016, 4,134 individuals were sleeping rough in England, which was a 16% increase from the previous years (Guardian, 2017). Meanwhile, in Southeast Asian Philippines, an estimated 1.2 million children sleep rough (UN Human Rights Commission, 2017). Displaced by poverty, armed conflicts, and environmental calamities, these street kids suffer health problems and violence in their daily struggle to survive.

Main Contribution

In dealing with the issues of social inclusion and development, diverse international government ministries and agencies view music and arts as strategic channels through which the social needs of marginalized populations can be addressed. From our multidisciplinary background in music performance & education, musicology and peace education, this paper investigated the outcomes of ensemble singing on the wellbeing and development of street children in the Philippines. Drawing on evidence from the global north (Welch et al, 2014; Clift & Morrison, 2011, Davidson et al, 2005) that suggested engaging in music activity may impact individual health and social inclusion, this case study from the global south answered the following research problems:

1) What are the perceived effects of ensemble performance in the wellbeing and development of street children?
2) What are the challenges in using music-based social action research as a methodological intervention towards the social inclusion of disadvantaged groups?

3) What are the implications of the audience response to ensemble performance in promoting global community and social development?

Using the method of qualitative research, data sources were gathered through:

a) semi-structured interviews and field observations of the performing choristers-street children, sheltered by an international foundation and their facilitators;

b) meta-analysis of related literature; and

c) triangulation of data sets and epistemological reflections to discover fresh hermeneutics regarding the interrelations of ensemble performance as a music-based social action research methodology.

Conclusion

Results of the study identified the potentials and gaps in employing music making and arts as a transformative driver among participants, audience, and communities. While these findings pose further inquiry, this study hopes to add a Southeast Asian voice to the conference theme of ‘together in music expression’ through applications of musical interaction for wellbeing and development.

Selected Bibliography


Workshop 2

The Confident Choir: Teamwork, team leaders and team building

Michael Bonshor, The University of Sheffield

Michael Bonshor’s ‘Confident Choir’ workshop is based on his recently published book of the same title. Michael has had over 35 years of experience as a singing teacher, and over 20 years as a choral conductor and musical director. He has also carried out quantitative and qualitative research into music performance anxiety amongst adult amateur singers, and an in-depth exploration of the factors (both positive and negative) that affect their confidence during rehearsal and performance. Michael has combined his professional experience and his research findings to extrapolate a set of pedagogical approaches and practical strategies for helping singers (and their conductors) to manage performance anxiety and to increase their confidence levels. During this workshop, there will very brief explanations of some of Michaels’ research findings, and demonstrations of some of the practical exercises and activities that he has developed to help with confidence building for singers. These include gentle relaxation, breathing exercises and postural work; musical team building exercises to encourage cohesion, co-operation and collaboration; and, of course, some singing. The workshop will be very interactive, with lots of opportunities for practical participation. This often descends into ‘structured silliness’ before the end of the session, but the whole workshop is designed to be fun, constructive and confidence-building for all participants. For further information about Michael’s work, please contact him at pocketmaestro@hotmail.com
Live coding is the practice of writing and re-writing computer code in order to generate improvised audio or visuals. The composer/performer defines rules for algorithmic music while exposing their screen to a live audience, giving insight into the creative decisions being made in real time. Unlike traditional programming, or “dead coding”, the coder interacts with the program while it is running and changes made to it instantly updating the sounding material. Performances often draw comparisons to live jazz improvisation as much of the musical material emerges spontaneously during live performance, but where jazz is often practiced in a group context, live coding is very often not. Collaboration in live coding is not completely non-existent, however, but it is not the standard method of performance. There are several approaches to performing together in live coding; some performers synchronise computer clocks in order to generate their music in time with one another but work on completely separate materials whilst other collaborative performances are facilitated by software that shares each users’ code across the group in some way.

The TOPLAP (the Temporary Organisation for the Promotion of Laptop and Algorithmic Performance) manifesto states “give us access to the performer’s mind, to the whole human instrument. Obscurantism is dangerous; show us your screens”. This forms the basis for most, if not all, live coding performances. The projected screen is always on display and represents the mind of the performer during live performance, but what insight does the audience get of the interactive processes that occur between multiple performers in a collaborative piece? In many forms of traditional occidental music we see musicians gesture toward one another in order to communicate musical information, such as timing. In live coding performances, however, the heads and bodies of the musicians are much more constrained by the computer keyboard than other musicians are by their own instruments, which restricts their ability to communicate in a gestural sense during performance. The representations of the performers’ minds are often divided into separate screens projected next to one another with no apparent exchange in material, which raises the question how can the technology used in live coding performance improve the channels of communication?

This paper will introduce Troop; a collaborative text editor for live coding that allows multiple users to edit the same body of code simultaneously. Troop was designed to facilitate collaborative live coding by creating a shared cognitive workspace that interweaves the thought processes of each performer while they build (and re-build) a joint piece of improvised musical work. Each keystroke is added in real time and allows both users and audiences to experience the creative interactions between performers as they happen. The Troop software connects live coders over a network and allows practice and performance to occur in a shared cyberspace that not only strengthens the level of collaboration in live coding but also opens up its processes to the audience.
Art and collaborative composition: How designing musical notation in therapeutic arts workshops facilitates creative interaction towards social wellbeing.

James Williams, University of Derby

Background:

The proposed presentation rests on a case study conducted by the author in June 2017 at Vic University, Catalonia, entitled ‘Collective Music-Making as Social Interaction’ (CMSI). The case study is a music-based therapeutic workshop, featuring as part of the University’s Art as a Tool for Social Transformation programme of practical research studies. The workshop was documented through ethnographic approaches (videos, recordings, photographs etc.). Additional ethnomusicological research methods and analyses underpin the core data, including informal interviews with participants on the creative process, and reflective commentaries. The workshop involved 20 participants (students and academics from arts backgrounds, including music, art, dance and drama). In a collective round, each participant was first asked to ‘express’ through exploring a range of instruments, and then asked to ‘create/design’ symbols through arts materials. These two steps were conjoined where participants were invited to come together into ensembles of five, and asked to collaborate and negotiate with each other over 30 minutes to create a short composition using the ‘instrumental expressions’ and ‘notational creations’ previously explored. Each group then performed their composition in their respective ensembles.

Main Contribution:

The paper explores the themes of socio-cultural creativity and collaboration at the intersection(s) between people, music, and notation in therapeutic arts workshops. It uncovers the therapeutic process of the ‘design’ of musical notation in collaborative workshops, and how such a process can be of social benefit to the participants.

Conclusion:

From the case study explored, firstly, it is revealed how a creative, collaborative process can demonstrate a group’s capacity to learn new ways of socially interacting and communicating. Secondly, the paper shows how the collective product (both score and ensemble performance) is representative of such social interaction. It is suggested that designing musical notation in collective workshops can facilitate healthy engagement between individuals, proposing extensions of the model for use with health care users in the wellbeing sector.
Playful production: Collaborative devising in a music ensemble context

Catherine Laws and Liz Haddon, University of York

Background

In contemporary professional and amateur theatre, the practice of developing performances through processes of collaborative devising is relatively common. The methods and processes involved are many and varied, but the fundamental aim of developing artistic ideas and materials primarily together, in a shared ‘empty space’ (to echo Peter Brook’s phrase), rather than using rehearsal to hone an interpretation of an extant text, is shared across the field. Devised theatre treats rehearsal as a site of creative practice both in relation to performance and in its own right: as such, Vitez argues that a good production ‘involves a process that digs deep in the imaginary field; ideas born in the rehearsal room are not abandoned or allowed to perish and the production retains the unexpected discoveries and the spontaneity of the actors’ inventiveness’. All participants are, therefore, creatively significant.

Directly comparable work in music is rare. While the realisation of a fully notated score forms the basis of only a small proportion of even western music-making, let alone that around the world, the processes followed by most music ensembles are considerably different to those in forms of collaborative devising. Improvisation plays an important role in such work, but its function is often more substantially developmental than in other improvisational musics. Likewise, the open forms and varied approaches to notation found in much Experimental music share with devising practices a reconfiguration of the creative role of the performer in relation to both composer and score, but the forms of negotiation, definition and refinement of ideas and approaches are usually somewhat different in character.

Contribution

Processes of collaborative art making have recently been the focus of considerable study. However, devising practices remain underrepresented in research, and in music the focus of research into collaboration is often the one-to-one composer-performer relationship. Some relevant examples exist of musical ensembles (including some pop bands) using similar processes, but literature on this is scant. Additionally, related – but not identical – approaches are more commonly adopted in educationally-based and community-oriented music projects than professional/semi-professional contexts. Often, the assumption is that devising processes are useful for engagement purposes but not for contexts in which musical sophistication or ‘excellence’ are expected.

This presentation will briefly consider this context, subsequently focusing on the work of the York-based ensemble ‘The Assembled’, examining the underlying reasons for and challenges of working with collaborative devising processes in a musical ensemble. The research uses data collected from semi-structured interviews with participants to understand the nature of the group’s working processes, the creation of shared goals, the function of rehearsals/workshopping (which may or may not involve specific performance goals), and the pedagogy of facilitation involved.
Mirroring, modelling and emotional contagion: the impact of non-verbal communication upon choral confidence

Michael Bonshor, The University of Sheffield

Background

The individual benefits of group singing activities, in terms of physical and mental health, emotional wellbeing, and social cohesion, are well documented. Musical participation also makes a positive contribution to social capital and community development. However, there are factors which may limit an individual’s willingness or capacity to participate in group singing activities. During a study of Music Performance Anxiety amongst adult singers, I found that, whilst severe cases of MPA were not common amongst amateur participants, confidence-related concerns were widespread. For some amateur singers, such concerns limited the extent or level of choral participation, which suggested that confidence issues were likely to reduce the individual and social benefits derived from group singing. The practical applications demonstrated in this workshop are derived from the findings of a qualitative research project which explored the sources of individual and collective choral confidence, examined positive and negative influences on singers’ confidence levels, and extrapolated confidence-building strategies for choral singers.

Main contribution

Three focus groups, involving 18 singers in total, and 16 individual interviews provided over 40 hours of recorded verbal data. These were processed using interpretative phenomenological analysis. The superordinate themes included non-verbal communication and physiological factors, with particular reference to breathing, posture and facial expression. The findings highlighted the impact of modelling and mirroring these aspects of body language, which have individual and collective physiological, psychological, and social effects. The postural and facial feedback which is shared between the singers, and between the choir and the conductor, can contribute to the achievement of group flow, which can reduce self-consciousness and increase self-confidence during optimal performance.

Conclusion

These findings suggest a holistic interpretation of the functioning of choral ensembles as social and musical entities, which has implications for choral leadership. This workshop/presentation includes a consideration of group dynamics and situated learning within choirs, reflections upon the role of the conductor in adult amateur choral groups, and practical recommendations for optimizing choral confidence and maximizing the benefits derived from participation. The emphasis in this session will be upon the deterministic effects of body language and non-verbal communication upon confidence levels in singing ensembles. Some of the practical applications of the research findings will be demonstrated in the interactive section of the workshop, which will encourage full participation in group singing activities.
Ensemble interaction and group dynamics in indeterminate music: A case study of Christian Wolff’s Exercises

Emily Payne (University of Leeds) and Philip Thomas (University of Huddersfield)

Ensemble performance and the wide range of phenomena with which it is entangled have been studied and understood across a variety of disciplines. Yet, with some more recent exceptions (see, e.g., Bayley, 2010, 2011; Clarke, Doffman & Lim, 2013; Clarke, Doffman & Timmers, 2016), research into scored-based ensemble performance has focused largely on musics of the common practice period, which rely on a linear relationship between score and sound, and in which more tangible relationships between performers are assumed. This assumption is challenged by indeterminate ensemble musics, through their use of notations that elicit contingency in performance, and in their concern to interrogate the ideologies and hierarchies that traditionally pervade group music-making.

The exploration of social organisation through the use of indeterminate notation has been a recurring concern of the music of experimental composer Christian Wolff since the 1950s. In 1973 he embarked upon a series of pieces titled Exercises for (mostly) unspecified instrumentation and numbers of players. Since then he has returned to the title to extend the number of works to, at present, 33; they are amongst his most frequently-performed works. The notation Wolff employs in these pieces is skeletal, with little by way of instructions and indications for performance. Consequently, players negotiate a way of working with the score and with each other, making decisions prior to, and during, the moment of performance. Orchestration, tempo, dynamics, sequence, coordination and much else are all ‘up for grabs’, and can differ radically from performance to performance. All the Exercises afford negotiation on a number of levels: individually and collectively negotiating with the notation, through the music, and with the ensemble members. As such, there is considerable potential for navigating approaches to ensemble interaction, and for exploration and investigation of performance possibilities. Exactly how these possibilities are exercised in practice is the focus of this paper.

The paper draws on documentation of a recent recording session featuring the ensemble Apartment House, in which a selection of the Exercises was rehearsed and recorded. Analysis from the sessions draws on both personal involvement and reflection (Philip Thomas is pianist with the ensemble), and ethnographic observation (Emily Payne observed the sessions). Both Thomas and Payne make use of video documentation from the sessions to isolate and analyse individual and collective behaviours; and to explore how decisions are prioritised, arrived at, and implemented. Finally, an interview with Wolff about the Exercises, conducted specially for this project, acts as a further contextual frame. The paper offers a view of ensemble interaction and group dynamics that is grounded in both the momentary interactions between musicians, and the cultural knowledge and conduct (Doffman, 2011) that are animated by Wolff’s notation.

References


Beyond synchronization: How and why do ensemble performers communicate?

Laura Bishop (Austrian Research Institute for Artificial Intelligence) and Werner Goebl (University of Music and Performing Arts Vienna)

Communication between ensemble musicians in the form of a shared audio signal is critical for achieving and maintaining a coordinated performance. Supplementary forms of communication, such as breathing, glances, and head nods, have a less certain effect on performance success. In the research on ensemble performance, the question of how communication facilitates prediction and synchronization processes has been a primary focus. Outside the laboratory, however, ensemble musicians’ aims are more complex. In many musical styles, musicians aim to coordinate temporally without necessarily synchronizing - indeed, notes meant to occur on the same beat may be deliberately asynchronous. We have been conducting experiments to investigate the forms of communication that happen during naturalistic duo performance tasks and the effects that communication has on the performance. In a pair of recent experiments, we examined the distribution of performers' glances towards each other as they rehearsed and performed an unfamiliar duet from the score (Experiment 1) or performed a series of improvisations (Experiment 2). Participants in Experiment 1 comprised pairs of (classically-trained) pianists and clarinettists, while participants in Experiment 2 comprised pairs of jazz musicians on a variety of instruments (e.g., piano, double bass, clarinet). Motion capture and mobile eye tracking were used to map performers' upper body movements and eye gaze. Analyses of eye gaze patterns showed that in Experiment 1, performers looked towards each other at piece onset and during passages of high temporal ambiguity, perhaps because they required confirmation of each other's intended timing. On the other hand, the frequency of partner-directed glances was higher at the end of the rehearsal session than at the beginning. Since the performers were most familiar with the piece and each other's playing style at the end of the session, their glances may have signified their engagement in the task and attention to the shared interpretation rather than a search for clarification of how to play. Experiment 2 is still ongoing, but we expect eye gaze to reflect the turn-taking structure of the improvisation task, following some of the same patterns as found in verbal conversation. Our main expected conclusion is that communication strategies depend on the performance conditions, serve to facilitate different aspects of coordination, and occur with different degrees of intent. For example, a novel piece with ambiguously notated timing might encourage deliberate visual signalling between performers as they decide upon a shared interpretation, while performance of a well-rehearsed piece might involve more subtle (and perhaps less deliberate) signals that indicate engagement and attention rather than intended timing. With continued research, we aim to clarify the effects that the opportunity to communicate can have on performance success. In some cases, these effects may relate to performers' emotional arousal, capacity for creativity, or feelings of interest and engagement rather than synchronization success.
Roundtable discussion

Ensemble performance: Research trends and implications

Chaired by Renee Timmers, The University of Sheffield

This conference provides a testimony for the growth in research interest in ensemble performance. This relates to the growing acknowledgment of music making as a collective activity, which has initiated a change in focus from the individual performer and performance, to collective and interactive performance situations. With this change in focus comes a demand to enhance techniques to measure ensemble performance and musical interaction, to capture and theorise collective creative processes, and to examine relationships between the social and the musical, as well as between the emergent and the planned. Within the WRoCAH funded network on Ensemble Performance, we have made a start to address some of these demands. In particular, we developed tools to measure synchronisation in vocal duos and small vocal ensembles, we applied THEME software to capture patterned interaction between ensemble members across rehearsals, examined relationships between such social and verbal interaction and musical synchronisation, and we developed a platform for collaborative music creation within the context of live coding concerts. Presentations within the conference also emphasise the need for interdisciplinary cross-fertilisation with heavy reliance on technical tools and empirical data collection methods whilst advancing theoretical frameworks and the ecological validity of research contexts. During the conference, we will assemble notes and main findings reported by presenters, which we will combine with our own findings and observations in order to present main themes for discussion at the roundtable. This means that the exact themes for discussion are not yet fixed. They are however likely to include technical advancements supporting ensemble performance research, theoretical challenges and advances, and implications from and for music education and ensemble practices.

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Renee Timmers is Reader in Psychology of Music at the Department of Music of The University of Sheffield. She is a strong proponent of interdisciplinary research, fostering links between music theory and practice, psychology and computer science, and aiming to include perspectives and approaches from the humanities and sciences. In this context, she has initiated the research centre ‘Music, Mind, Machine in Sheffield’ and the cross-university network on ‘Expressive nonverbal communication in ensemble performance’. Recent publications include the co-edited volumes ‘The Routledge Companion to Music Cognition’, and ‘Expressiveness in music performance: Empirical approaches across styles and cultures’. She is Vice-President of the European Society of the Cognitive Sciences of Music, in which contexts she co-organises the upcoming International Conference on Music Perception and Cognition which trials a new semi-virtual conference format with virtually connected hubs in four continents.
Musical interaction in ensemble performance: coherence and expression as the main aspects of ensemble performing

Ugne Antanaviciute, Lithuanian Academy of Theatre and Music

Ensemble performance practice is generally based on two categories – ensemble coherence and expression but they are usually studied separately. Ensemble coherence is a vertical aspect of synchronisation covering psychophysical, psychosocial, and sociocultural factors. The complexity of synchronisation is predetermined by the differences in human performer skills: the motorics, the flair, the distribution of attention, memory, social psychological factors. Numerous research on ensemble performance has been carried out, including: ensemble coordination, synchronisation, musical imagination, the control of motorics in performance (Keller, 2010-2015), the relationship between neuronal processes and rhythmic body movements (Beek, 2000), the movement coordination and cognition processes (Clarke; Davidson, 1998), the coordination of tempo and time and performer’s individual perception (Gabrielson, 1999; Summers, 2000), the problem of cooperation (Katz, 2009), communicative gestures and the ways of dealing with instruments (King, 2013), as well as the aspect of leadership and social processes in the ensemble (Gaggioli et al., 2016; McCaleb, 2011).

In order to reveal the identity of the ensemble performance, i.e. the individual, expressive artistic identity, the ensemble coherence will not suffice. The expressiveness of performance is creativity (Cook, 2014): through expressive sound, expressive gestures of the performer, the expressive narrative and emotions one can express music in a way that cannot be written down in the composer’s score. Therefore, expression turns into a fundamental category of performance, and the differences of interpretations, the style of performance, and its evaluation and perception depend on expression. There are two identified expressions of a composition performance: musical and emotional (Schubert; Fabian, 2014). Musical expression is related to the musical parameters recorded in the structure (score) and, based on the individual perception, conveyed by the ensemble. The emotional category of expression is to be associated with the performer's emotional response, caused by the musical composition (Davies, 2009; Levinson, 2011). The two expressive layers of performance are both autonomous and simultaneously interdependent: different in the perception process, they become complementary and simultaneously reveal the expression of the composition.

The presentation will focus on the issue of coherence and expression in ensemble performance, with special attention paid to an ensemble of heterogeneous instruments when, due to the different nature of instruments, the aspects in question are even more difficult to achieve. Based on the interdisciplinary scientific research, an authorial taxonomy of the performing style expression will be presented. Beside the studies of other authors, the author of the presentation will refer to her personal empirical practice of a performer and intensive 10-year-long work in a mixed instrumental trio and a vocal-instrumental quartet. The long-term experience highlighted the problem of ensemble coherence and expression, and a need arose to study and to find ways to ensure and facilitate the practice of a mixed ensemble. The presentation will be illustrated by the musical extracts from author’s and her partners recorded performances and rehearsals. Despite the fact that ensemble coherence and expression are usually studied separately; the author of the presentation on ensemble performance finds their relationship, different overlappings, the impact, and the regularities that predetermine the quality of ensemble performance to be of particular importance.
Contingency of exogenic and endogenic humanistic and epistemical musical education in professional chamber music ensembles: contribution of the extension project Diffusion of Classical European Chamber Music by Universidad de Caldas in Colombia

Paula Marcela Castaño Castaño, Universidad de Caldas

Background: Diffusion of Classical European Chamber Music is an extension project that began in 2015 at the University of Caldas (Colombia) in order that professors, professionals of high level in the practical music, could make presentations of music live with repertoire of european classical music. The university teaching activity sometimes absorbs all the amount of time available that the professors of music of the universities have. Therefore, in many occasions their public artistic activity is seen as reduced. This project emerged as a possibility for the professors to show the general public their artistic face in form of high-level concerts. In the colombian public administration and in the official universities there is the administrative figure of extension project that allows professors to have time dedications to this artistic work as part of the missionary projection processes of the entity.

Main contribution: Music education in ensembles is a permanent process that is carried out in a tacit manner. In professional music ensembles, this practical education does not take place directly as a classroom process, but rather takes place through the selfsame language of music, mediated by the external behaviors of the individuals composing the ensemble. Therefore, it could be said that the process of musical montages in the ensembles is an exogenous action. However, it happens that at the same time there is also an intrinsical aspect related to the humanistic values of each one of the interpreters and what each of them has as conception of the epistemology of the musical interpretation that is carried out at the moment. Thus, musical education in professional ensembles of music emerges as a contingent process occurring in the same language of music.

Conclusion: In professional music ensembles there is musical education as a process, but not as a classroom method. The musical education in the professionals ensembles takes place as an endogenous process in each of the members of what emerges as a musical work from the interpretation and from the concept of the epistemology of music of each one. This comes together with the process that happens at the moment of starting up the activities of the ensemble, which are of exogenous character and that are crossed by the behaviors of each one of the members of the ensemble. In this contingency is that musical education takes place of the professional musical ensembles.
"I'll wager that": A study of risk in student chamber rehearsal

Nicky Gluch, The University of Sydney

Background: Chamber music is an integral part of the Classical Music tradition but within a university setting it becomes a subject with outcomes that need to be defined. Where in the 1930s, authors such as Stratton & Frank wrote didactic chamber music ‘manuals’, academic writing in the 21st Century has seen a shift in focus to the social dynamics of a chamber group. Mark Rudoff, of Ohio State University, wrote in 2000 how ‘One of the joys of teaching chamber music is helping young musicians focus on expression, shapes, architecture, and meaning in music. Yet this focus cannot be achieved when novice groups are embroiled in personal conflicts.’ His solution is to suggest that ensembles form a behavioural constitution which all members must abide by. He is not alone in this conclusion. The concern, however, is that by focusing on social concerns, we may be losing the discourse on the musical benefits of chamber music. These questions arise: how do students perceive these social concerns? Is there not a way to understand, rather than just observe, why they occur?

Main contribution: I performed an observational study of Chamber Music students at the Sydney Conservatorium. In a confidential questionnaire, they were asked to outline what they thought made a good and bad chamber rehearsal. Their answers were centred on the way group members interacted: a good rehearsal was when members interacted harmoniously; a bad rehearsal was when conflict got in the way. In my observations I noted that one member of the group assumed the role of leader and that this leadership was not always democratic. I also observed a tendency towards trying to achieve personal musical accuracy rather than ensemble cohesion and expression. To explain the focus placed on social concerns and accurate playing, I propose risk and utility theory (as taken from economics). I suggest that students, through the outcomes stipulated by the university, have learnt to place utility on accurate performance. Further, I do not believe they are being encouraged to place utility on generating musical ideas. As social utility is so essential in our world, it is understandable that this would dominate their focus, almost to the exclusion of musical concerns.

Conclusion: In conclusion, I suggest that students should be exposed to a literature on chamber music, before forming an ensemble. The teachings of Stratton & Frank will help them to run a more efficient rehearsal and the teachings of Rudoff will raise awareness to the fact that social concerns are natural, but can be resolved. Most significantly, I suggest that Chamber Music needs to be examined completely differently from a student’s instrumental studies. Tutors need to mark students based on their leadership manner, the suggestions they put forward, and the contribution to ensemble, rather than part preparedness and accuracy of performance. Shifting utility is the way to liberate musicality in rehearsal.
Interaction strategies in improvised jazz duos - a pilot study.

Torbjörn Gulz (KMH Royal College of Music/ KTH Royal Institute of Technology) and Anders Friberg (KTH Royal Institute of Technology)

Background

The word improvisation indicates a great freedom to create in the moment. In reality, the freedom is constrained by various frameworks and conditions. In jazz improvisation, though, the musician is given a large space for own decisions just because improvisation is so central in this genre. Often, however, jazz musicians tend to follow the rhythmic and melodic conditions, the vocabulary of jazz, and inside this language approach the often used term storytelling. A part of this language is described by jazz theory and relates to traditional chord, scale and melodic analysis. However, in this study, an attempt is made to deepen the concept of jazz theory by incorporating strategies for microtonality, sound, timing and microrhythmics that cannot be described in a traditional notation.

Main contribution

This presentation describes a pilot study that included jazz students at a high musical level at the Royal College of Music in Stockholm. The ensembles were duos and one role, A, is performed by author TG behind the piano. The second role, B, is performed by different students playing horns (saxophone, trumpet and trombone).

The main purpose was to investigate the extent of information that can be identified and captured in a communicative situation between two musicians (A and B), if the role of one musician, here A, is more predetermined, whereas the other musician's, here B's, role is to react to what A plays. In addition to modality and pitch in relation to musician A, we wanted to address the rhythmic response, aspects of musical form and not least the tone quality (sound, timbre).

The duration of the recording session was approximately 4 minutes and was treated as a whole piece of music even though it was also divided into the following sections where different conditions are created without preparation for musician B:

Music,
1. without pulse with simple modality. (dorian, lydian…)
2. without pulse with advanced modality or atonal structures. (altered, diminished, chromatic)
3. with pulse with simple modality
4. with pulse with advanced modality or atonal structures.

During recording, there was no visual contact between A and B, i.e all interaction was mediated by listening. The recording was analysed directly by means of technical software, (Logic, Soundscore, Sonic Visualizer), where the musical contributions of B was analysed relative to A’s performance, with respect to pitch, rhythm, tone quality (sound, timbre) etc. The results were then discussed in in-depth interviews as close in time as possible to the recording session in order to identify underlying strategies. The data is currently analysed and the detailed results will be presented at the conference.

Conclusion

This study provided an opportunity to examine jazz musicians’ various strategies for improvisation. A precise analysis of the recording in order to provide a concrete base for a deep interview was a crucial result of the study. After this initial study, the next step is to use the same method for professional active Swedish jazz musicians.
Upgrading collaborative music performance teaching taxonomies to synchronize with post millennials’ learning styles: A case study of piano duet learners and teachers in Manila & Northern California

Angelina Gutierrez and Juliana Moonette Manrique, Saint Scholastica’s College

Background of the study

Notwithstanding the accumulated information on music performance pedagogy, the challenges of responding to the needs of today’s new generation of instrument learners with their unique characteristics remains a significant issue to all music educators. Motivated by the rationale to address the learning styles of post millennials known as ‘gen Zers’ (National Education Association, 2015) or those born after the year 2000, this study conceptualized and field-tested their author-designed upgraded version of educational taxonomies to suit teaching piano duets for performance and competitions. The participants in the study were post millennial piano students and their teachers from both the academic and private music studio settings located in Manila, Philippines and Northern California. This investigation was supported by related studies on: a) learning taxonomies (Bloom, 1956; Longman, 2001); b) collaborative philosophies in education and psycholinguistics (Vygotsky, 1997; Bruffee, 1993); piano ensemble studies (Arganbright & Weekly, 1996; Willamon & Davidson, 2002) and analysis of post millennials traits (Homan, 2015; Pew Research, 2016).

Main Contribution

With the main purpose of synchronizing ensemble pedagogy to meet the needs of the current internet-savvy learners, this paper answered the following research questions:

1) What collaborative piano performance teaching taxonomies could be designed for post millennial learners?
2) What did the field-test data from the research participants reveal regarding upgrading ensemble teaching and learning today?
3) What are the theoretical and methodological propositions of this investigation to the current issues on ensemble performance and communication?

Using the method of qualitative ethnographic research survey, data sources were gathered through:
a) design and field-test of collaborative piano performance teaching taxonomies for post millennial learners;
b) observation notes and semi-structured interviews of the study participants; and
c) meta-analysis of related literature and triangulation of data sets.

Conclusion

Results of the study indicated the potentials and challenges of bridging the generational divide between ensemble performance teachers and post millennial learners. While music teaching and the needs of learners continue to evolve, this paper hopes to add an interdisciplinary perspective to the pedagogical, socio-cultural, and technological environmental dimensions in performing ‘together in music’.
Creating with others, across artforms, within a tradition and for audiences – methods to explore music making processes on the Modern Fairies and Loathly Ladies project

Fay Hield, The University of Sheffield

Taking the storyworld of British folk-tales about fairies and the supernatural, twelve musicians, writers and artists are working collaboratively to produce new songs, stories, poems and artwork based on traditional themes, experimenting with ways this material can be re-mediated and made relevant to contemporary audiences. The project began in February 2018 and runs for 19 months. New works will be performed in six informal public ‘Gatherings’ where audience experience will be explored, workshops and rehearsal give opportunity to observe collaboration in progress and more interventional methods help the creatives communicate the motivations and emotions behind what they are doing. ‘Public engagement’ events provide occasions to explore these creative processes and encourage a deeper relationship between audiences and the artworks they experience. The project aims to surface the experience and knowledge of creative artists in the work-in-progress stage and drills down into audience and performer experience through unconventional methods of qualitative investigation. This paper presents our proposed co-production influenced methodology inviting and encouraging debate and input from fellow conference delegates to help shape the project design in these early stages.

MaisMundo: Performance practice as action research

Victor de Souza Soares, Universität Bern

In this paper I present MaisMundo, an action research project in its early stage. Having an a-capella vocal ensemble as its artistic core, this project aims to research alternatives to traditional modes of performance in the so-called “art music”. By intertwining the languages of theatre, music, and visual arts, MaisMundo proposes performances which enable intense dialogues and exchange between its itinerant artists and visited communities; between “classical music” and local artistic traditions. The project central hypothesis lies in the assumption that bringing local and foreign musical cultures together onto the stage enables a more holistic appreciation of unfamiliar aesthetics by local audiences. Inspired also by Augusto Boal’s theatre of the oppressed, MaisMundo aims to empower musical experience by strengthening not only its communicative, but also its transformative potential. By catalyzing reflexiveness on sociocultural identity and local values, musical-aesthetical appreciation might result in the strengthening and formation of bonds of social solidarity. In other to achieve such goals, MaisMundo proposes the combination of the methodological frameworks of “practice-as-research” and collaborative ethnography by adopting the following procedural steps: a) pre-performance research and preparation, b) engagement with local artists and broader community, c) stricto sensu artistic performance, d) post-performative action and reflection. At the conclusion of my paper, I report through narrative account, as well as with media material, MaisMundo’s inaugural enterprise: a pilot project in Southeast Brazil (January 2017). In this, I will address the processes of negotiation and implementation of project goals, theory, and methods, their confirmation or withdrawal. Finally, I present forethoughts on planning and MaisMundo’s future challenges.
Brain-Computer Music Interfacing (BCMI) is a growing field with a history of experimental applications derived from the cutting-edge of BCI research adapted to music making and performance. The ‘dream’ would be a system which allows the user to, for example, imagine a musical element and hear it fully realized as music, either solo or in ensemble performance contexts. Whilst this seems like, and to a large extent still is, science fiction, the reality is that BCMI is now maturing to a stage that many of the it might bring for users are beginning to emerge. Research into BCMI involves three major challenges:

(1) The extraction of meaningful control information from signals emanating from the brain.

(2) Design of generative and performative music technology in order to respond to such information.

(3) Consideration of the ways in which such technology can be best deployed depending on the intended end-use; e.g., to improve the lives of people with special needs, address therapeutic applications, or creating novel tools for artistic purposes.

Examples of use cases include access to algorithmic composition or improvisation for individuals in cases where users might have physical or mental impairments which otherwise preclude them from taking part in performance. Other examples include music therapy cases, where BCMI is used as a communicative aid to provide a performative connection between therapist and patient in cases where traditional music making might otherwise be impossible.

BCMI offers some unique possibilities that distinguish it from traditional music performance, including the use of biofeedback for emotion-driven music selection and novel music creation processes. However, there is a tendency in BCI work to prioritise the technical implementation by focussing on increased speed or accuracy of a system, rather than the specific needs of the application. In the case of ensemble music performance, there are many application-specific goals that need to be considered in order for the BCMI system to best serve its intended use. In, for example, in a music therapy context, one advantage of a BCMI system is that it might be used by a patient with no musical ability. BCMI allows users to engage in musical performance in an ensemble context and thereby potentially increase their own ability to express emotional states and have access to the pleasure of performing music with other people. However, in order to do this, the BCMI must be capable of performing music which works well in the context of ensemble performance (e.g., according to the relative constraints of melody, harmony, rhythm, and more broadly genre) yet also allows the performer enough degrees of freedom to feel that they are truly the agent of their performance. Therefore, to specify a suitable BCMI system it is critical to include considerations of both agency of the user as composer-performer, whilst retaining conformity to production rules. These are not trivial considerations in terms of application design and subsequent evaluation. Methodologies for evaluating the success or failure of BCMI remain a significant challenge for further work.
The Assembled

The Assembled is a group of musicians based at the University of York, dedicated to working in an experimental and exploratory manner. We work collaboratively, often devising material together or working from open scores (instruction scores, graphic scores, etc). We find and develop sounds, structures and interactions that offer us a lot of freedom in performance: each realisation of a ‘piece’ can be very different from the last. Today we perform *my my mime*, developed with the group by composer James Whittle (who also performs in the piece).


The Yorkshire Programming Ensemble

The Yorkshire Programming Ensemble (TYPE) is a laptop ensemble that experiments with improvisational music making through the practice of live coding. They use computer programming languages to define rules for generating and manipulating both synthesised and recorded musical material live in front of audiences only to redefine those rules while they are being followed. Using an interactive shared text editor, each member of TYPE is able to directly work on one another’s textual material and collaborate in a highly reactive and dynamic way. Through the construction, reconstruction, and deconstruction of each other’s code, TYPE works both together and against each other in the exploration of sound and rhythm.

Performers: Lucy Cheesman, Laurie Johnson, Ryan Kirkbride
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