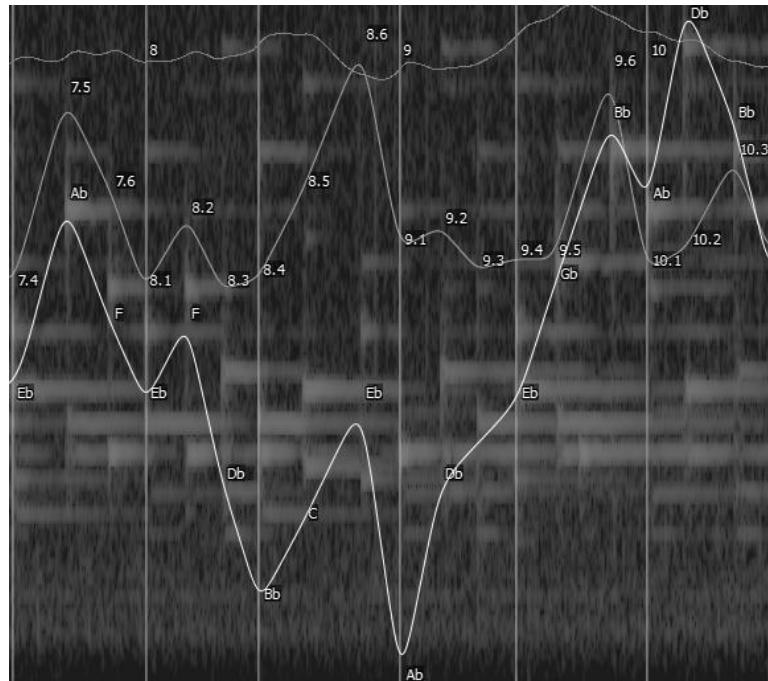


Music & Shape



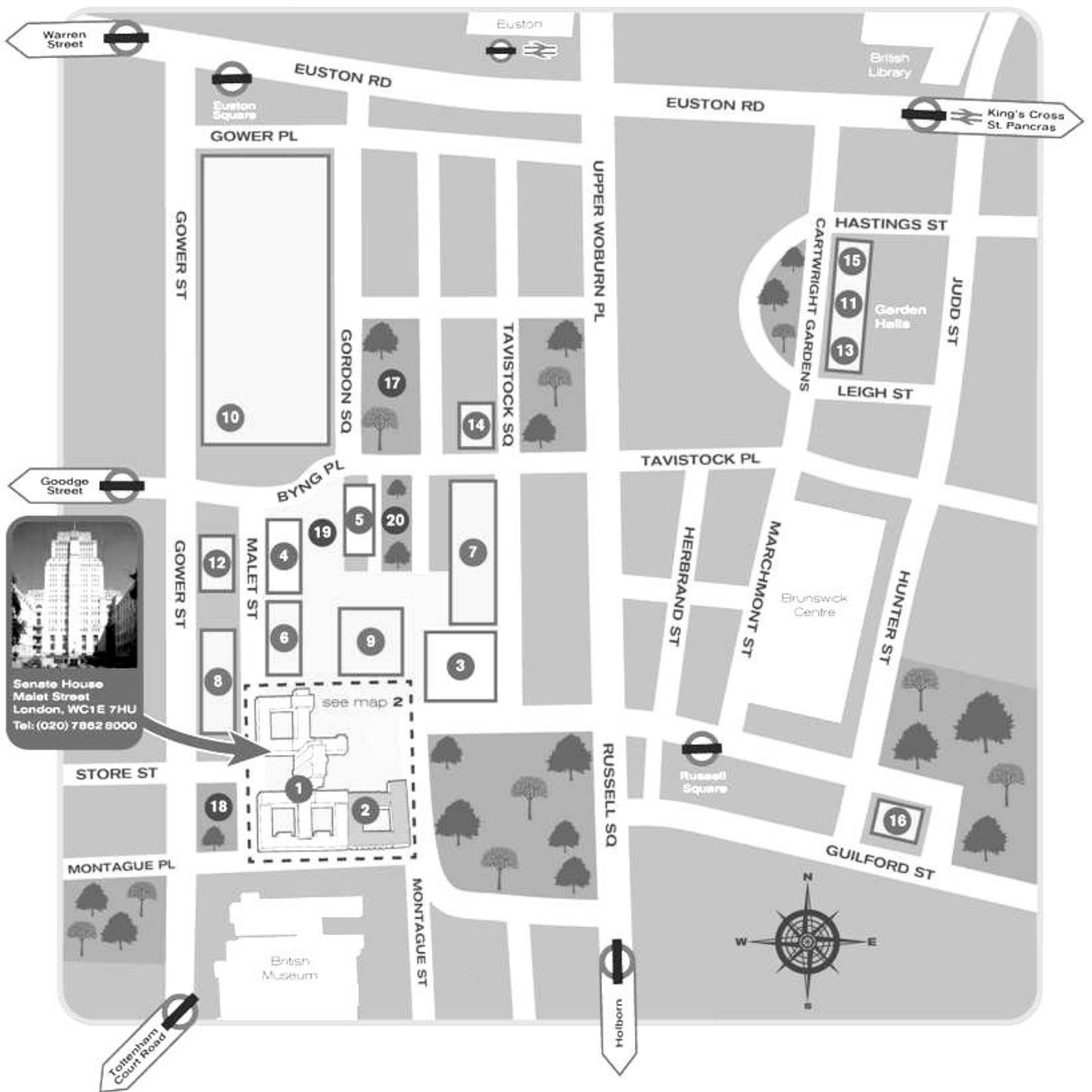
Thursday 12 – Saturday 14 July 2012

Senate House, University of London



AHRC RESEARCH CENTRE FOR MUSICAL PERFORMANCE AS CREATIVE PRACTICE





PROGRAMME

Thursday 12 July

- 10.30** **Registration and coffee** (Room G35)
- 11.10** **Welcome** (Room G22/26)
Daniel Leech-Wilkinson: Orientation around musical shape
- 11.30** **Cross-modal matching** (Room G22/26)
Mats Küssner: Visualizing sound: how musical training shapes cross-modal perception
- 12.15** Alex Billig and Daniel Müllensiefen: Crossmodal representations of melodic contour in music and speech
- 13.00** **Lunch and Poster presentation** (Room G35)
Sarha Moore: The Phrygian melodic cadence: metaphors and interpretations of the b2-I melodic gesture cross-culturally
- 14.00** **Emotion** (Room G22/26)
Peter Kaminsky: Shape as intensification: modeling the expressive potential of musical structures
- 14.45** Mine Doğantan-Dack: Tonality: the shape of affect
- 15.30** Jin Hyun Kim: Shaping and co-shaping vitality forms of music: beyond cognitivist and emotivist approaches to musical expressiveness
- 16.15** **Tea and Poster presentation** (Room G35)
Robert Fulford and Jane Ginsborg: Shaping musical descriptions: speech gestures used by musicians with and without hearing impairments when talking about music
- 16.45** **Gesture** (Room G22/26)
Andrew McPherson: Toward a truly continuous piano: real-time 3D measurement of gesture at the keyboard
- 17:30** Jason W. Solomon: The composite shapes and virtual motions of musical performance
- 18.20** **Keynote address** (Room G22/26)
Rolf Inge Godøy: Postures, trajectories, and sonic shapes

Friday 13 July

9.15 **Registration** (Room G22/26)

Visualisation

9.30 Anders Bouwer, Simon Holland and Mat Dagleish: Moving in harmony: the use of spatial metaphor and whole-body interaction to reframe harmonic tasks

10.15 Gissel Velarde and Tillman Weyde: The relevance of wavelet representation of melodic shape

11.00 **Coffee and Poster presentation** (Room G35)

Alinka Greasley & Helen Prior: Mix tapes and turntablism: DJs' perspectives on musical shape

Visualisation (cont.) (Macmillan Hall - lecture-recital; Room G22/26)

11.30 Oded Ben-Tal and Diana Salazar: Boreas: examining a system for musical shaping in interactive performance (lecture recital)

12.15 Dan Tidhar: Towards gesture-based visualisation of music

13.00 **Lunch** (Room G35)

Performing (Macmillan Hall - lecture-recital; Room G22/26)

14.00 Kathryn Whitney: Singing in duet with the listener's voice: a dynamic model of the joint shaping of musical content in live concert performance (lecture recital)

14.45 Bernard Lanskey: Shape metaphors prevalent in ensemble coaching: findings of a recent case-study exploring interactions between experienced performing musicians and international student ensembles

15.30 Daniel Barolsky: "Time-shapes": Ernst Levy's performance of Brahms

16.15 **Tea and Poster presentation** (Room G35)

Sheila Guymer: Analyzing performer realisations of the *style hongrois* topic in Haydn

Performing (cont.) (Macmillan Hall - lecture-recital; Room G22/26)

16.45 Elaine Chew: Timing in performance: as a function of desired parsing and sonic effect (lecture recital)

17:30 Helen Prior: Shaping music in performance: exploring the experiences of violinists and harpsichordists

18.15 - 19.00 Jennifer MacRitchie and Bryony Buck: Embodying the shape of musical structure in performance

Saturday 14 July

- 9.15** **Registration** (Room G22/26)
- 9.30** **Popular Music** (Room G22/26)
Graeme Boone: Dark Star Mandala
- 10.15** **10.15** Samantha Bennett and Allan Moore: Tech-processual shaping of recorded popular song
- 11.00** **Coffee and Poster presentation** (Room G35)
Kris Worsley: Performing the melodic line: the aesthetics of visual shape and musical expression in the Age of Sensibility
- 11.30** **Structure** (Room G22/26)
Mattias Lundberg: Shape, curvature and contour as theoretical concepts and metaphorical devices in contrapuntal literature and repertoire: meaning, significance and consequences
- 12.15** **12.15** Vanessa Hawes: Comparing the shape of analytical and performative understandings of musical structure
- 13.00** **Lunch and Poster presentation** (Room G35)
Oswaldo Gonzalez-Lizausaba: The Undulatory Musical Analysis (UMA): a morphological approach to musical analysis
- 14.00** **Structure** (cont.) (Room G22/26)
Dan Tidhar: The shaping of unmeasured preludes (lecture recital)
- 14.45** **14.45** Milton Mermikides: Changes over time: the analysis, modeling and employment of improvisational structure
- 15.30** **15.30** Peter Lea: Sounding circular: the octatonic universe of George Crumb's *A Haunted Landscape*
- 16.15 -** **Tea** (Room G35, G22/26)
17.00 Afterthoughts and farewell

ABSTRACTS

Thursday 12 July

11.10 Daniel Leech-Wilkinson
Orientation around musical shape

Shape, as this conference programme already suggests, is a notion very widely used by performers, teachers and scholars of music, for whom it seems to do a lot of useful work. The CMPCP 'Shaping Music in Performance' project has taken several approaches to exploring the relationship between shape and music, and the conference is an opportunity for us both to report and to learn.

11.30 Mats Küssner (King's College London)
Visualizing Sound: how musical training shapes cross-modal perception

Background

The study of visualizations of sound and music (e.g. by means of drawings or metaphors) allows for valuable insights into cross-modal perception (Walker, 1987), the development of musical understanding (Bamberger, 1995), and the influence of music education on music cognition (Tan & Kelly, 2004). Particularly, comparisons between musicians' and non-musicians' visualizations of sound can reveal the impact of training on music perception and cognition.

Research questions

How do musicians and non-musicians represent basic properties of music (pitch, loudness, time) visually in a free drawing paradigm? To what extent does their educational background influence the representation strategies?

Aims

This study aims to reveal the characteristics of sound visualizations of sequences of pure tones varied in pitch, loudness, and tempo, as well as of two short musical excerpts, that arise from real-time performance drawings (i.e. drawing along as the sound stimulus is played) and from contemplative drawings (i.e. drawing in silence after the sound stimulus is played) in musicians and non-musicians.

Summary of content

The majority of musicians and non-musicians used height on the tablet to represent pitch (higher on tablet referring to higher pitches), and thickness of the line to represent loudness (more pressure for louder sounds). Musicians were more consistent and accurate in applying these strategies, but non-musicians showed more diverse and creative representation strategies. Moreover, non-musicians tended to neglect temporal aspects and made a cognitive distinction between sound and music.

Significance

This is the first study that compared musicians' and non-musicians' visualizations of pure tones in a free drawing paradigm. Digitally acquired data enabled exciting insights into the processes of sound visualizations (i.e. the very act of shaping sounds visually), which would have remained covert applying traditional paper-and-pencil paradigms.

References

- Bamberger, J. (1995). *The mind behind the musical ear: How children develop musical intelligence*. Cambridge, MA: Harvard University Press.
- Tan, S.-L., & Kelly, M. E. (2004). Graphic representations of short musical compositions. *Psychology of Music*, 32(2), 191-212.
- Walker, R. (1987). The effects of culture, environment, age, and musical training on choices of visual metaphors for sound. *Perception & Psychophysics*, 42(5), 491-502.

12.15 Alex Billig and Daniel Müllensiefen (Goldsmiths College) Crossmodal representations of melodic contour in music and speech

Background

Contour, the series of rises and falls in pitch over time, is an important perceptual and mnemonic feature in music and speech processing. Previous studies (e.g. Balch & Muscatelli, 1986) suggest that contour provides a representation of melodic shape which is consistent across visual and auditory modalities. Models for quantifying contour vary in the degree to which they compress melodic data, but it is unknown how closely these correspond to mental processes involved in perception and memory for contour.

Research questions and aims

The study sought to (1) evaluate the cognitive adequacy of four contour models, (2) investigate the role of musical experience and stimulus type in the perception of musical shape as described by contour.

Summary of content

Participants were played a series of clips – monophonic melodies and low-pass filtered sentences – and had to identify which of four images best represented each. All images in a trial were produced using the same contour model but only one was derived from the auditory stimulus. Four models were compared: Huron’s simple contour (Huron, 1996), polynomial curve contour (Müllensiefen & Wiggins, 2011), reduced line contour, representing all note onsets precisely but using only two pitch interval sizes, and step model contour (e.g. Eerola & Toiviainen, 2006). Musical experience, stimulus type and contour model as accounted for 44% of accuracy score variance ($p < .001$) in a regression model. Scores were significantly higher for melodies than speech, and increased with musical experience. The step and reduced line models outperformed Huron and curve models across participants and stimulus types.

Significance

The two more data-rich models facilitated the highest accuracy scores regardless of musical experience or stimulus type, suggesting their closeness to cognitive representations. The study also supports the idea of contour providing a cross-modal perceptual description of shape in both music and speech.

References

- Balch, W. R., & Muscatelli, D. L. (1986). The interaction of modality condition and presentation rate in short-term contour recognition. *Perception & Psychophysics*, 40(5), 351-358
- Eerola, T., & Toiviainen, P. (2004). Mir in matlab: The midi toolbox. In *Proceedings of the 5th International Conference on Music Information Retrieval*. Available from <http://ismir2004.ismir.net/proceedings/p004-page-22-paper193.pdf>
- Huron, D. (1996). The melodic arch in Western folksongs. *Computing in Musicology*, 10, 3-23
- Müllensiefen, D., & Wiggins, G. (2011). Polynomial functions as a representation of melodic phrase contour. In A. Schneider & A. von Ruschowski (Eds.), *Systematic Musicology: Empirical and Theoretical Studies* (pp. 63-88). Frankfurt: Peter Lang

13.00 Poster: Sarha Moore (Sheffield University)

The Phrygian melodic cadence: metaphors and interpretations of the b2-1 melodic gesture cross-culturally

Background:

Both melodic and emotional gestures have shapes that can be understood in terms of metaphors of verticality and narrowness. These metaphors directly connect in the interpretation of music, mapping between the two domains (Eitan and Granot, Spitzer). The b2, a semitone “above” the tonic, is considered to have a strong

attraction, acting like an arrow pointing to the tonic (Bharucha). Described as an upper leading note, it produces an “expectation” of “falling”, a gesture that often, in the West, has negative connotations (Huron).

Although the flat second scale degree is relatively rare in Western art music, it is common in Heavy Metal music, in Indian and Turko-Arabic art musics, and many genres arising from these.

Research questions:

Are the emotional associations for the b2-I gesture in regards to pitch “fall” shared by different musical cultures? How do performers from these traditions describe the character of the b2 degree? What role does expectation and ideology play in chosen metaphors?

Aims:

To explore how different cultures use the concepts of verticality and narrowness, through the variety of metaphors and interpretations of the b2-I melodic gesture. I argue that concepts of shape in music are steeped in cultural ideologies and traditions.

Content:

Through interviews with performers from different musical cultures, and analysis of performance recordings, I will illustrate some orientational metaphors used in reference to the b2nd degree, and the b2-I melodic gesture. From depression to relaxation; sadness to excitement; distress in the “narrow” semitone to pleasure at the anticipated release. This poster will provide diagrammatic evidence from primary sources, which shed light on theoretical discussions of “leading notes”, concepts of “naturalness” and “falling” melodic cadence.

Significance:

Focus on the b2-I musical gesture may lead to other ways of seeing non-Western, non-classical musical forms. There are consequences from the non-coherence of metaphors cross-culturally to performance communication and composition.

References:

- Bharucha, Jamshed, 1996, “Melodic Anchoring” *Music Perception* 12: 1
Eitan, Zohar and Roni Y. Granot, 2006, “How Music Moves”, *Music Perception* 23: 3
Huron, David, 2006, *Sweet Anticipation: Music and the Psychology of Expectation*, Cambridge, MA: MIT Press
Spitzer, Michael, 2004, *Metaphor and Musical Thought*, Chicago: University of Chicago

14.00 Peter Kaminsky (University of Connecticut – Storrs)
Shape as intensification: modeling the expressive potential of musical structures

Our research is part of an interdisciplinary project involving performance, cognitive science, and music-structural analysis. This proposal focuses on *parametric intensification* (“P/I”) as a crucial feature of both music-structural and performance shaping processes; it draws on work by Rink on performance/analysis, Lester’s “heightening levels of activity” in Bach, Eitan on intensity, and Lisboa/Chaffin/Logan on performance preparation. P/I denotes the expressive potential for selected compositional elements—phrases/cadences, harmony/tonal structure, melody/motif, form, rhythm/metre, articulation/dynamics, texture/timbre (“PHMFRAT”)—to undergo intensification. Using as case study the Prelude from Bach’s D-major Cello Suite, we colour-code these parameters and assign an intensity level to each of zero-to-seven (visually displayed as lighter-darker) as the music unfolds (see Example 1 for mm. 1-11.) This music-structural data then is compared with dynamics and timing data drawn from multiple performances of the Prelude by cellist Tania Lisboa and interpreted for degree of correlation.

Our research questions include the following. How can the potential for expressive performance be manifested in music-structural parameters? What constitutes intensification? How can P/I contribute to understanding shaping performance by providing an analytical model? How can P/I be effectively conceptualized and visually represented? How *predictive* is P/I when compared with the interpretive choices of the performer?

Our aims in part are bound up with the Prelude itself. For this complex unconventional movement, we demonstrate that shaping becomes not only part of performance considerations, but also apprehending the formal process itself as three large waves of 3 intensification co-extensive with the (quasi-)ritornello iterations. Extrapolating from the degree of correlation between analysis and performance data, we consider the potential applicability of this methodology to other performances, and other works by Bach. By extending Lester’s, Eitan’s and Lisboa/Chaffin/Logan’s work, our research suggests a new dimension of performance and analysis studies by engaging diachronic/synchronic analytical perspectives and establishing a basis for comparing performance data.

References

- Eitan, Zohar. “Intensity and Cross-Dimensional Interaction in Music: Recent Research and its Implications for Performance Studies.” In *Orbis Musicae*, Volume XIV (2007): “Musical Performance and Musical Research”, 141-66.
- Lester, Joel. “Heightening levels of activity and J.S. Bach’s parallel-section constructions.” *Journal of the American Musicological Society* 54.1 (Spring 2001), 49-96.
- Lisboa, Tânia, Roger Chaffin and Topher Logan. “A self-study of learning the Prelude from Bach’s Suite No. 6 for cello solo: Comparing words and actions.” In *The Practice*

of *Practising*. Eds. Alessandro Cervino, Catherine Laws, Maria Lettberg, and Tânia Lisboa. Orpheus Research Centre in Music Series, Volume 4. Leuven, Belgium: Leuven University Press, 2011, 9-30.

Rink, John. "Analysis and (or?) Performance." In *Musical Performance: A Guide to Understanding*. Ed. John Rink. Cambridge: Cambridge University Press, 2002, 35-58.

_____, Neta Spiro and Nicolas Gold. "Motive, Gesture and the Analysis of Performance." In *New Perspectives on Music and Gesture*. Eds. Anthony Gritten and Elaine King. Aldershot: Ashgate, 2010, 267-92.

14.45 Mine Doğantan-Dack (Middlesex University)

Tonality: the shape of affect

Background

There has been no attempt in contemporary music psychology to explain one of the most important aspects of tonal organization, namely the existence of recurring patterns that lead to the central, stable pitch. In all world musics the process of shaping tonal movement that precedes the return of the central pitch is structured and not arbitrary (hence, the musical cadence). The stable pitch does not simply reappear, but returns following a *process of returning*. Exploration of the cognitive, affective and evolutionary significance of this phenomenon intersects with another line of research on the connections between the sensory bases involved in the perception and making of spatial shapes, and the abstract temporal shapes that lived phenomena represent for humans.

Research questions

What is the evolutionary significance of tonality, conceived as a dynamic system emerging from the shaping of memorable pitch patterns directed towards stability?
What are the correspondences between spatial shapes and the dynamic course of long-range lived phenomena – including emotions, narratives and music – that present themselves to consciousness as having 'shape'?

Aims

To establish further connections between music and emotions by proposing an evolutionary link between the emergence of tonality and of the human capacity to regulate inter-subjective dynamics by shaping the course of affect towards stable states.

Summary of content

Based on research in evolutionary musicology, cognitive neuroscience of music and affective psychology, I hypothesize that tonality provides an archetypal psychological space within which the human ability to shape different paths towards stable affective states could evolve. I also discuss the intriguing correspondence between locomotor judgments involved in the making of spatial shapes, and of judgments of intensity with

regard to emotional phenomena, both of which are guided by the subject's representation of the end-state – similarly to the significance attributed to end-states (cadences) in tonal movement.

Significance

This research contributes to both evolutionary musicology and music psychology by theorizing about the deep connection between tonal movement and affective dynamics, and also exploring the neglected notion of felt shape.

15.30 Jin Hyun Kim (Hanse-Wissenschaftskolleg)

Shaping and co-shaping vitality forms of music: beyond cognitivist and emotivist approaches to musical expressiveness

Background

A considerable amount of study on musical performance focuses on acoustic and gestural performance features of music in relation to perceived or induced expressiveness. However, the relation of shaping music to musical experience has received little scholarly attention.

Research questions

How is music shaped during the ongoing process of performance, and how is it experienced as expressive?

Aims

This paper aims to develop a theoretical framework that allows for discussion of a new perspective on musical experience in relation to the process of shaping music, moving beyond cognitivist analysis of performance features and an emotivist approach to the subjective experience of musical expressiveness.

Summary of content

Both acoustic and bodily-gestural features of musical performance can be described in terms of dynamic forms of movement possessing intensity, time, space and directionality, which as a whole are related to what Daniel N. Stern refers to as vitality affects. Vitality affects are neither purely cognitively perceived nor conceived of as subjective feelings induced by music; rather, they are experienced by co-shaping music during music perception. By taking up relevant theories developed at the end of the 19th and beginning of 20th centuries, and taking into account recent research on communicative musicality in infant-caregiver interaction, discussion is directed towards a biological basis for vocalisations that can both immediately manifest bodily states and remain sustained, shaping dynamic forms of movement, which renders them expressions. As a result, it can be claimed that musical experience taking place while both performing and hearing music is a process of co-shaping music (*aesthetic*

empathy) based on action simulation and kinaesthetic feedback accompanying auditory feedback, in conjunction with memory-based associations.

Significance

This paper provides a theoretical framework leading to a rethinking of both cognitivist and emotivist approaches to musical expressiveness, which have been dominant in theoretical and empirical studies on musical performance, and new hypotheses for empirical studies.

16.15 **Poster:** Robert Fulford and Jane Ginsborg (Royal Northern College of Music)

Shaping musical descriptions: speech gestures used by musicians with and without hearing impairments when talking about music

Background:

There is very little empirical research investigating the effect of hearing impairment on interactive music making. Verbal accounts suggest that many strategies are used to facilitate ensemble synchrony including the increased perception and generation of visual cues.

Research questions:

The study explored the strategies and modes of communication adopted by musicians with profound or moderate deafness or normal hearing in rehearsal and performance.

Aims:

Analyses were made of the rehearsal and performance of two works (a Bach flute sonata and a new piece) by a series of duos formed by three pianists and three flautists. In each group one player had normal hearing, and the others moderate or profound deafness.

Summary of content:

The proportion of talking in rehearsal varied as a function of level of hearing impairment; profoundly deaf musicians talked significantly more than those with normal hearing. Verbal communication focused on structural and temporal aspects of musical co-ordination as well as stylistic interpretation. For moderately and profoundly deaf musicians, verbal descriptions of music were accompanied by spontaneous gestures using the hands, arms and upper body. These gestures illustrated musical parameters such as pitch, rhythm and loudness in ways that are predicted by literature on visual and tactile metaphors; variations in vertical position, horizontal position and intensity facilitated instructive verbal communication between players. Furthermore, these gestures usually combined a variety of cross-modal

associations at once and were capable of producing abstract visual representations of music that illustrated more complex ideas of musical style, expression and interpretation, facilitating collaborative verbal communication in music.

Significance:

The findings are discussed in relation to research on music and shape as well as literature about the use of gesture in speech and sign language.

16.45 Andrew McPherson (Queen Mary University of London)
Toward a truly continuous piano: real-time 3D measurement of gesture at the keyboard

The piano is a discrete instrument. Its sound is primarily determined by the velocity and timing of a series of individual key presses. Piano *performance*, on the other hand, is continuous, both in the sense that the pianist's motions are continuous in space and time, and in that performers routinely speak of performances having continuous shape: across sections, for instance, or within phrases. In particular, pianists frequently employ vocal metaphors, stressing the value of achieving a 'singing' sound [1].

The dichotomy between discrete and continuous exists in every keyboard performance, but a particularly interesting situation arises when pianists emulate vocalists or instrumentalists whose instruments do allow continuous note-shaping (e.g. violin). How can a continuous performance be best approximated by a series of discrete key presses? Does a pianist's body language show aspects of the other performer's shape that go beyond what can be sonically expressed at the keyboard? How would the emulation change if the pianist had the ability to literally shape within each note?

We have developed sensors measuring the continuous three-dimensional position of fingers on the keyboard. Capacitive touch sensors measure the location and contact area of each touch, and optical sensors record the vertical position of each key. When coupled to a suitable sound production mechanism (a synthesiser or an electromagnetically-augmented acoustic piano [2]), the pianist can control the pitch, dynamic and timbre of each note in real time. However, intuitively mapping finger motion to sound production requires a thorough understanding of existing keyboard technique.

We are therefore conducting studies of key touch as continuous motion using our sensor-equipped keyboards. The studies include excerpts from the traditional repertoire and emulation of a recorded vocalist. This talk will present the sensor

system and preliminary study results and discuss implications for the creation of truly continuous keyboard instruments.

References

[1] R. Gerig. *Famous Pianists & Their Technique*. Bloomington, IN: Indiana University Press, 2007.

[2] A. McPherson. The magnetic resonator piano: Electronic augmentation of an acoustic grand piano. *Journal of New Music Research*, 39(3):189–202, 2010.

17:30 Jason W. Solomon (Agnes Scott College) The composite shapes and virtual motions of musical performance

Commonplace language about music reflects that we conceptualize musical events in terms of shapes and motions transpiring within some type of space. This space and the motions occurring therein are purely metaphorical constructs: through the cognitive process of cross-domain mapping, the abstract target domain of musical phenomena is rendered intelligible by our concrete, embodied knowledge of spatial relations, shapes, and motion. Additionally, music theorists often use geometric shapes of varying dimensions, such as matrices, Tonnetze, and toruses, to represent associations among musical entities (scale degrees, chords, keys, etc.). These shapes, however descriptive, are not inherently musical—they do not exist within the music itself but simply depict musical relationships. To experience shapes and motions that are neither metaphorical nor representational, we can attend to the composite shapes emerging from the physical distribution of onstage performers as well as the virtual sonic motions that seem to travel among ensemble members.

Since at least the ninth century, spatialization has been a vital and deliberate component of both compositional and performance practice. How do we account for the spatial activity that takes place within the space of musical performance? This paper proposes a system for analyzing and interpreting these spatial features that draws upon Gestalt psychology, semiotics, and metaphor theory. Integer notation derived from contour theory is employed to diagram an ensemble space as well as to label the spatiotemporal form of a gesture unfolding within that space. After a brief analytic survey of spatial practices, I conclude that meaningful spatial activity is not limited to novel ensemble spaces intentionally spatialized. This research highlights a rich layer of musical activity that frequently takes a back seat to other musical parameters; it likewise holds the potential to impact performance practice by providing a means to determine the optimal ensemble layout for a particular work.

18.20 **Keynote:** Rolf Inge Godøy (University of Oslo)
Postures, trajectories, and sonic shapes

During the last decades, there has been a growing interest in the relationships between sound and body motion in music, resulting in several publications claiming that music is multimodal, i.e. that music in addition to sound also includes elements of body motion such as kinematics (visual images of motion trajectories), dynamics (sense of motion effort) and haptics (sense of touch): we hear the sound of a musical performance and at the same time see (or imagine) the body motions of the performers and mentally simulate the effort and sense of touch related to the performance.

One common feature of these multimodal elements in music is the notion of *shape*: we see or imagine the shape of the body motion trajectories, of the fluctuating effort, and of the tactile experience of playing the instruments (or the motions of the vocal apparatus in the case of singing). Also, notions of shape are well established in the perceptual attributes of sound as so-called *envelopes*, both in the overall dynamic unfolding of sounds and in the stable, as well as in the evolving, or even transient spectral content of sounds. And needless to say, notions of shape are integral to our Western conceptual apparatus as reflected in common practice music notation (and its more recent extensions such as MIDI) for representing e.g. melodic, textural and intensity shapes.

Given this background, the focus of my presentation will be on modeling shape in musical experience by sequences of key-postures of the effectors (fingers, hands, arms, torso, etc.) at salient moments in the musical performance (downbeats and other accents), with continuous and so-called *coarticulated* (fused) motion trajectories between these key-postures. Based on evidence from so-called *motor theories of perception*, sonic shapes can be linked with the shapes of such key-postures and trajectories, enhancing our understanding of music as multimodal embodied shapes.

Friday 13 July

9.30 Anders Bouwer (University of Amsterdam), Simon Holland (The Open University) and Mat Dagleish (University of Wolverhampton)
Moving in harmony: the use of spatial metaphor and whole-body interaction to reframe harmonic tasks

Background

Harmony is a demanding part of music theory. Pre-requisites typically include polyphonic instrumental skills and theoretical knowledge. Consequently, harmonic

skills are usually taught relatively late. To make learning about harmony more accessible for novices, while also offering new insights for experts, we have developed a physical computing system which systematically reframes harmonic tasks as spatial and navigational tasks focusing on two- and three-dimensional shapes, paths and relationships. Musical tasks are carried out by physical enactment. The system design employs whole-body interaction to encourage beginners to re-appropriate low level spatial and navigational skills to carry out a wide range of harmonic tasks.

Research questions

How can spatial metaphors support principled learning about tonal harmony? How can whole-body interaction be used to carry out intricate harmonic tasks?

Aims

Support and enrich learning about tonal harmony by the principled re-appropriation of existing spatial and navigational skills.

Summary of content

Song Walker Harmony Space allows beginners to gain experience of playing, and composing and analysing complex harmonic sequences. Theories of music perception and embodied cognition are used to reframe harmonic tasks spatially. Whole-body interactions are used to encourage beginners to re-appropriate existing spatial and navigational skills to physically enact a wide range of harmonic tasks, in small collaborative groups, using electronic dance mats, Wiimotes and a large-scale projection system. To guide learners in making effective use of the system, we have developed exercise materials addressing diverse musical tasks.

Significance

From evaluation studies with participants ranging from novices to expert musicologists, we found that the system allows beginners to rapidly learn to carry out relatively complex musical tasks while facilitating explicit communication about tonal harmony in new and useful ways.

10.15 Gissel Velarde and Tillman Weyde (City University)

The relevance of wavelet representation of melodic shape

Background

Shapes in melodies have been computationally modelled by gestalts metrics [1], neural networks [2] and statistical descriptors [3], among others. Wavelet coefficients provide an alternative and so far hardly explored representation, obtained by the decomposition of a signal into wavelet components at different scales and times [4]. Wavelet coefficients plotted into a scalogram provide a visual

representation that lends itself to visual detection of patterns and hierarchical structures.

Research question

Do wavelet coefficients represent information that matches human cognition of melodic shape?

Aim

The aim of the study is to explore the relation between human melody cognition and wavelet coefficients with a qualitative and a quantitative approach.

Summary of content

We represent a melody as a function of pitch over time and apply wavelet analysis with the Haar wavelet, essentially a short up-down movement. Our empirical results show that wavelet coefficients enable significantly better performance than pitch-time representation and segmentation in a melody-recognition model.

We discuss the relation between wavelet coefficients and the musical features of a melody, such as phrase contour and boundaries, in case studies with melodic analyses and scalograms. Possible implications for models of melody perception and cognition will be discussed in the light of a new experiment on wavelet models for melodic similarity, which we are currently working on.

Significance

We found clear evidence that wavelets coefficients capture cognitively relevant aspects of melodies. This opens up interesting new opportunities for software tools and visualisation, as well as for automatic music classification and indexing in music information retrieval.

References

- [1] Buteau, C., & Mazzola, G. (2000). From Contour Similarity to Motivic Topologies. in *Musicae Scientiae*, 4/2, 125-49.
- [2] Weyde, T. (2002). Integrating Segmentation and Similarity in Melodic Analysis. In: *Proceedings of the International Conference on Music Perception and Cognition 2002*, pp 240-43, Sydney.
- [3] Conklin, D. (2006). Melodic analysis with segment classes. *Machine Learning*, 65(2-3):349-60.
- [4] Mallat, S. (2009). *A wavelet tour of signal processing*. Academic Press, Third Edition.

11.00 Poster: Alinka Greasley (University of Leeds) and Helen Prior (King's College London)

Mix tapes and turntablism: DJs' perspectives on musical shape

Background:

The notion of musical shape is widely used by performing musicians, but current studies have focussed on classical performing contexts. This poster is intended to begin the process of widening the scope of this research to include a specific 'popular' performing context, namely DJs performing on turntables.

Research questions:

Is there evidence that DJs also use the notion of shape in relation to music? How might this notion of shape manifest itself in the musical materials they produce?

Aims:

To ascertain the scope for future systematic research relating to the use of musical shape by DJs

Summary of content:

This poster will draw upon three sources of evidence concerning the use of shape by DJs. First, qualitative data from a single respondent to a questionnaire study investigating the use of musical shape by performing musicians will be used as a case study. Second, one of the authors will reflect on these responses in relation to her own practice as a DJ, using representations (including waveforms) of the sets she creates as illustrations of the shaping of music in this context. Finally, evidence for the use of shape in relation to DJs' sets will be gathered from online sources. It is hoped that these data will provide some sense of the use of shape by these musicians, and prompt further research in the area.

Significance

It is hoped that this poster might form a prompt for the necessary extension of the current work on shaping music in performance to incorporate turntable performers.

11.30 Lecture-recital: Oded Ben-Tal and Diana Salazar (Kingston University)

Boreas: examining a system for musical shaping in interactive performance

Works for instruments and electronic sound pose unique challenges and opportunities in shaping music. When the electronic sound is 'fixed' the instrumentalist may feel constrained by rigidity, a risk identified by McNutt (2003), Croft (2007) and Emmerson (2007). However in situations involving live and

interactive systems performers must adapt to an often temperamental and unreliable partner.

We offer a lecture-recital examining an approach to this challenge from the perspectives of both performer and composer. The live electronics in this instance are constructed using delay feedback loops, which are controlled by the flautist resulting in a game-like relationship between the player and the computer. The objective of the 'game' is to find a delicate balance in the feedback mechanism, creating a work structured from tensions between micro and macro shaping. The score incorporates elements of improvisation to assist the player in navigating this task.

Questions addressed will include the following. What level of freedom does the player experience? What constraints do the score and software impose? How important is performer familiarity with electronic music in general and/or the particular software? How does traditional instruction in flute performance inform the player's approach in this scenario? How do composer and performer navigate the shaping of this guided improvisation in the rehearsal process?

The lecture-recital will examine the performance practice of realising a work which calls upon the flautist to monitor, adapt and intervene in ways not commonly required in traditional flute repertoire. Very little scholarly writing on live and interactive music draws upon the valuable combination of composer and performer perspectives, alongside consideration of the rehearsal process. In this joint presentation we intend to uncover new and sought-after perspectives not only on the work in question, but also on broader notions of contemporary composition and performance practice.

12.15 Dan Tidhar (King's College London) Towards gesture-based visualisation of music

Visualisations of music are widely present in a variety of contexts, including research (e.g. musicology, and music information retrieval) and entertainment (e.g. video clips, and media players). Being derived from musicological analysis, audio feature extraction, or artistic inspiration, different visualisation methods vary considerably in the extent to which they reflect human intuitions about musical shape. In this study we explore these intuitions through observations of bodily gestures and their application to music visualisation.

Previously, we have explored hand-drawn visualisations created by experiment participants in response to musical stimuli, and investigated the insights they provide about intuitively perceived shape of musical segments and their performance. The

current paper presents an extension of the previous experiment to a 3-dimensional setting, an analysis of the resulting dataset, and its application for informing computational music visualisation techniques. We describe our gesture capture system, which is based on tailored software and motion capture technology, used to collect hand gesture data. We describe the experimental design, the obtained dataset, as well as some observations with regard to different participant subgroups (e.g. musicians vs. non-musicians). We compare and contrast the results of the 3-dimensional experiment with those of the above-mentioned 2-dimensional one. We conclude by outlining and demonstrating how these results can be used by music visualisation software to obtain gesture compatible visualisations which approximate listener intuitions about musical shape. Both the experimental study itself and its application to visualisation are novel and constitute a new approach to music visualisation as a whole.

14.00 Lecture-recital: Kathryn Whitney (Victoria Conservatory of Music)
Singing in duet with the listener's voice: a dynamic model of the joint shaping of musical content in live concert performance

Background

Every musician who reflects on creative decisions with listeners after a concert has heard variations on the sentence: "That may have been what you were doing in that piece, but I heard something quite different." Although potentially disheartening for careful performers, these comments positively highlight the active role listeners play in shaping musical content in performance. Reports such as these also raise interesting questions about the mechanism through which musical structures may necessitate joint shaping in performance. This presentation will explore the performative structure of musical content and will probe how music in performance may not simply invite, but may structurally require, the joint shaping of musical content in live concert performance by performers and listeners.

Research questions

Is musical content jointly shaped in song performance in concert? Does the performative structure of musical content dictate musical shape, and if so, how?

Aims

To demonstrate how musical content is jointly shaped in live song performance. To further understanding of the performative structure of music.

Summary of content

Introduction: overview of theories of musical shape (Leech-Wilkinson, Prior, Clarke, Sloboda, Rink, Juslin, Davidson) and how I propose to contribute to this area.

Position: outline of my research on the performative structure of music and my

theory that the joint creative shaping of musical content in concert is structural. Demonstration: a live performance of familiar and unfamiliar songs (inviting audience feedback) to demonstrate theories. Conclusion: positing of a performative model of the joint shaping of musical content in performance, as well as its theoretical and practical implications.

Significance

This work theorises and demonstrates a new definition of musical shape. It suggests that shape is both a potential and an actual joint performative action that is necessitated by the structure of musical content in performance.

14.45 Bernard Lanskey (Yong Siew Toh Conservatory of Music)

Shape metaphors prevalent in ensemble coaching: findings of a recent case-study exploring interactions between experienced performing musicians and international student ensembles

This paper takes forward and explores in greater detail one of the central findings of a recent case study which mapped interactions between professional coaches and advanced students as they prepared cross-instrumental ensemble works for performance. One of the key findings of this study was that at the centre of the communicative process there was significant utilization by all participants of shape metaphors, both through articulation and through non-linguistic demonstration.

The research setting was a two-week residential chamber music programme in Switzerland in June 2011 involving 37 students (17 nationalities) and 13 faculty staff from 5 international conservatories. Drawing on video observations of ensemble coaching, the study aimed to map aspects of commonality and diversity in approach evident in 18 coaching sessions by 10 faculty working with a range of newly created student ensembles in a range of cross-instrumental combinations of pianists, strings and wind players. This paper will focus more specifically on the very prevalent utilization of shape metaphors evident in the sessions.

Building on previous research by the author and taking account of existing frameworks in cognitive linguistics, this paper presents a typology of shape metaphors evident in interchanges between teacher and student and discusses its potential contribution to current pedagogical understanding.

In a context where attempts at documentation in relation to this area are relatively recent, this small-scale qualitative study aims to provide a further contribution to this evolving field, spreading the focus of such studies beyond the individual performer to the evident and necessary communication process involving coach and ensemble players.

15.30 Daniel Barolsky (Beloit College)
“Time-shapes”: Ernst Levy’s performance of Brahms

The very name, “Variation Form”, suggests tensions between part and whole, between Classical and Romantic and, ultimately, between performance and composition. Composers in the 19th century struggled with these tensions and with the challenge of creating form out of this paratactic technique. Johannes Brahms’s *Variations on a Theme by Handel*, Op. 24, composed in 1861, is a work that scholars have celebrated for its demonstration of unity, coherence, continuity, structure, and *shape*. Yet in his 1959 performance of Brahms’s work, the pianist and composer Ernst Levy dramatically altered the score, selectively eliminating written repeats, re-conceiving many of the dynamic levels, and flexibly adjusting tempi.

In this paper I address the following questions. What new shape(s) emerge from Levy’s interpretation? What historical or theoretical aesthetic influenced or determined the pianist’s rendition? The purpose of this inquiry is to demonstrate that performers have the ability to create musical shape, even with pre-composed forms and, more important, that the musical forms that we historically associate with composition can both influence and derive from the imperative of performers to convey a compelling musical narrative.

Drawing from Levy’s writings, in particular his *Musical Morphology* and “The Shaping of Musical Ideals”, I argue that the Levy’s radical interpretation reflects his attempt to give the set of variations dramatic shape in a manner that anticipates John Rink’s mapping of the work’s “dynamic intensity”. [1] Unlike Rink, however, and those scholars whose analyses seek to derive or extricate musical structure from the collection of variations, Levy literally gives form to Brahms’s variations through his performance. Levy’s interpretation ultimately compels us to further explore the overlap between the aesthetics of performance and composition; applying the same organicist and Romantic aesthetic that motivated Brahms’s compositional structure in the first place, Levy reforms the score in order to reshape it in a Brahmsian manner.

Reference

[1] John Rink, “Opposition and Integration in the Piano Music”, in *The Cambridge Companion to Brahms*, ed. Michael Musgrave (Cambridge: Cambridge University Press, 1999), 79-97, at 87. In this same work Rink summarizes previous work on the work’s structure by Heinrich Schenker, Hans Meyer, and Jonathan Dunsby.

16.15 Poster: Sheila Guymer (Cambridge University)
Analyzing performer realisations of the *style hongrois* topic in Haydn

Gesture, shape and topic are related concepts. This poster presents a case study that is part of a PhD project exploring how topoi may be used as a methodological lens to analyze issues in performance. A benefit of topoi is their historical and cultural connections¹ (unlike the concept ‘gesture’, for example), although the performance practice histories of topoi, and how performers use and respond to them, have not been specifically researched. Another benefit is that an analysis using topoi ‘chunks’ the data of recorded performances in ways that are musically meaningful for comparative analysis, and that addresses some of the problems of previous analytic methods.²

This poster focuses on the *Rondo in Gypsy Style* of the Piano Trio in G Major by Haydn. It presents analyses of recorded performances by three ensembles, examining their realizations of the *style hongrois*, a topic whose performance practice many twentieth-century performers regard as a lost tradition.³ The selected recordings are by the *Thibaud-Casals-Cortot Trio* (recorded in 1927), the *Beaux Arts Trio* (recorded in 1972) and the *Van Swieten Trio* (a period instrument ensemble recorded in 2005).

Whilst all three recordings exhibit significant tempo fluctuation that is broadly in keeping with concepts of the *style hongrois* as a stereotyped performance practice (as identified by Jonathan Bellman),⁴ there is little correspondence, particularly between the 1927 and 2005 recordings, in where and how much tempo change is used. The results provide insights into ways that performers use timing to balance large-scale concepts of shape (for example, of structure across a movement in rondo form) with small-scale shaping at the phrase level (for example, in the realisation of *style hongrois* topic) whilst also working within received concepts of a stylistically-defined performance practice tradition.

¹ For example, research by Leonard G. Ratner, Elaine Sisman, Wye J. Allanbrook, Kofi Agawu, Robert Hatten and Raymond Monelle.

² For example, H. Honing and P. Desain, ‘Tempo curves considered harmful’, in J. Kramer (ed.), ‘Time in contemporary musical thought’, *Contemporary Music Review*, 7/2 (1993), 123-38; and also N. Cook, ‘Methods for analysing recordings’, in N. Cook, E. Clarke, D. Leech-Wilkinson and J. Rink (eds.), *The Cambridge Companion to Recorded Music*, Cambridge, Cambridge University Press (2009), 221-45.

³ For example, comments by David Soyer, cellist of the *Guarneri Quartet*, quoted in D. Blum, *The Art of Quartet Playing: The Guarneri Quartet in Conversation with David Blum*, Ithaca, Cornell University Press (1986), 166.

⁴ J. Bellman, *The Style Hongrois in the Music of Western Europe*, Boston, Northeastern University Press (1993); and J. Bellman, ‘Performing Brahms in the Style Hongrois’, in M. Musgrave and B. D. Sherman (eds.), *Performing Brahms: Early Evidence of Performance Style*, Cambridge, Cambridge University Press (2003), 340.

16.45 **Lecture-recital:** Elaine Chew (Queen Mary University of London)
Timing in performance: as a function of desired parsing and sonic effect

Timing is an essential ingredient of music performance. The question of timing is one that many experts consider to be innate and impossible to teach. This lecture-performance aims to make fundamental principles of timing in the shaping of a performance formal and concrete so as to make the skill tangible and transferable. Existing research on timing in expressive performance tends to be observational and aggregate, rather than explanatory and generative. With present engineering tools, researchers can determine or annotate beat onset times and instantaneous tempi. Previous research has abstracted template features such as final ritards and phrase arcs, and extracted micro-timing variations to calculate systematic deviations in mazurka and swing performance styles, with limited generativity.

This presentation aims to explain the shaping of a performance, with a focus on the stretching of time, using a generative (“how-to”) approach. The research will show how the stretching of time can be explained or modeled as a function of the desired parsing (as indicated by phrases, boundaries, groupings of ideas) and sonic effect (e.g. allowing for sound to dissipate). Questions include: Are there trends that can be explained by the interplay between sonic effect and timing? When is an entry too soon; can it be too late? How might the performer use timing to demarcate phrases, and what decisions must s/he make when the phrases overlap?

Timing devices based on desired parsings and sonic effects are more prevalent in music pieces and genres that allow for greater degrees of timing deviations, or that are narrative in nature. Specific examples will be taken from Peter Child’s Epilogue (a rag) from his set of piano pieces titled *Doubles* (1998-1999). Through the lecture-performance, timing decisions and the reasons for the choices will be made explicit, and generative models for the decisions proposed and validated.

17:30 Helen Prior (King’s College London)
Shaping music in performance: exploring the experiences of violinists and harpsichordists

The notion of shaping music in performance is pervasive in musical practice and is used in relation to several different ideas, from musical structure to musical expression, emotion, and tension; and in relation to specific musical features such as phrasing, the melodic line, and dynamics (Prior, 2011). Its highly versatile and multi-faceted nature prompted an interview study, which investigated the ways in which professional violinists used the idea of musical shaping in a practical context. An Interpretative Phenomenological Analysis of the violinists’ interview data revealed a wide range of themes, but the data also allowed the examination of the relationships

between the musicians' expressive (shaping) intent, their physical and technical actions, and the resulting sound, using Sonic Visualiser to analyse their musical demonstrations (Prior, Tidhar and Leech-Wilkinson, in preparation). The paper will present these data as a backdrop to the analysis of a second group of interviews, this time with harpsichordists, to compare the ways in which these two different groups of musicians employ practical and technical measures to achieve the musical shape they desire. Harpsichord players have been chosen specifically because of the perceived mechanical limitations of their instrument: whereas violinists can modify their bow pressure or vibrato to alter the shape of a note throughout its duration, harpsichord players cannot modify a note once it has been played, and cannot avoid the inevitable decay of the note they have played. They are also restricted in their ability to vary the volume of each note in relation to the next, another aspect of shape violinists discussed. Overall, harpsichordists are expected to form a fascinating contrast for the study of musical shaping.

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18.15 Jennifer MacRitchie (Conservatorio della Svizzera Italiana) and Bryony Buck (University of Glasgow) Embodying the shape of musical structure in performance

Background

When phrasing a piece of music, the majority of performers think about shape to guide the use of expressive parameters. As the body is a natural mediator between the performer's intention and the instrument, the way they move may reflect this sense of shaping.

Research Questions

Based on the evidence that performed body movements relate to the phrasing structure of the piece, this research considers how gestures arise from the content within these phrases. We explore how these gestures reflect the composed phrasing structure and relationships of harmony, melody and rhythm.

Aims

This research aims to discover how performers use their interpretation to shape the musical structure through the use of their body. We suggest that these individualised movements are responses to the underlying structure, examining differences and similarities between consistent and diverging structural interpretations.

Summary of Content

Performances of two Chopin preludes by nine highly trained pianists are analysed for overall movements of the head and upper body. Differences are examined between the types of movement produced across the regions of the body. Directional movement and velocity measurements are related to musical phrasing structure of the two preludes, with differences in interpretation compared. Detailed analysis of speed and direction of 28 three dimensional markers located across the upper body allows us to visualise the placement and contour of these embodied shapes.

Conclusions support the theory that body movement in performance is based on phrasing structure, and is constructed using a combination of rhythmical content and structural importance of each phrase.

Significance

By examining the link between performers' movements and composed structure, we strengthen understanding of the connection between body and instrument. Such an understanding allows further exploration into the nature of visual communication in musical performance.

Saturday 14 July

9.30 Graeme M. Boone (Ohio State University) Dark Star Mandala

The Grateful Dead's 'Dark Star' is the most iconic song of this iconic band, and for good reason: its radical evolution from two-minute single to extended exploratory jam exemplifies like no other the band's identity and evolution in its classic formative period. In two recent articles, building on an earlier analytical paper, I argued for the relevance of the *mandala*, a holistic Eastern and Jungian theme common in the psychedelic 60s, to the Dead's performances in general and to 'Dark Star' in particular, and constructed specific mandalic shape-analyses that take account of all the song's principal musical motives and improvisational strategies up to mid-1969, involving 67 recorded performances.

The over 200 concert recordings of 'Dark Star' across its full performance history (1967-94) allow us to trace the song's broader development from embryonic to extreme states of improvisational elaboration and beyond. In this paper, I propose to set one classic recorded performance of the song against this full developmental history, on the one hand, and against the analytical mandala concept on the other, literally illustrating the evolving shape of the song/performance by means of the mandala image.

The paper explains the mandala as a music-analytical concept; surveys the musical history of 'Dark Star' as a vehicle for exploratory improvisation; and more closely analyzes one exemplary recording, with the help of a mandalic video in which relevant aspects of the improvisations are illuminated, including motivic thematicism, episodic/dramatic structure, tonal tension and resolution, projections of chaos and order, song limits, and the counter-insurgencies of foreign songs and chord progressions that can invade 'Dark Star' jams at any moment. Through it, (in)stability is visualized as an essential feature of the song's paradoxical identity.

References

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10.15 Samantha Bennett (University of Westminster) and Allan Moore (University of Surrey)

Tech-processual shaping of recorded popular song

This paper identifies the concept of musical 'shape' as an aspect principally of texture and gesture. In this context, texture relates to the quasi-physical relationship between a recording's (processed) sound-sources; gesture relates to the sound-recordist's interaction with her/his medium (the sound desk and related technology). 'Shape' is thus a measure of the way these elements change across the course of a recording.

The 'shape' of a popular recorded song can be considered to derive from many factors. The era in which the recording was made, the skills and techniques of the performer(s), the timbral qualities of instruments, the acoustic environments in which both performance and listening take place, all impact upon the recording's *macro* shape. Less commonly acknowledged in popular music discourse are the influences on the recording of technological potential, and of recordist and processual technique, yet these micro factors play a subtle, vital role in 'shaping' what we eventually hear. Specifically: microphone position, the placing of sound-sources within the stereo field, the positioning of sounds to the forefront or rear of the mix and the manipulation of frequency and time contribute greatly to the differentiated textures which fill out that very shape.

Building upon existing research pertaining to spatial positioning in recorded song,[1] this paper uses a reconfiguration of Edward Hall's theory of 'proxemics'[2] and the functional distinction between various 'proxemic spaces'[3] as a basis for examining relationships between tech-processual attributes in recorded popular song and

reception. Drawing upon ethnographic research including first-hand interview material with a range of recording practitioners, this paper will demonstrate how uses of technology and applications of processual technique give 'shape' to a recording. The paper illustrates tech-processual shaping using examples of contemporary, popular song including Madonna's 'Hung Up', Hot Chip's 'Ready for the Floor', Lady Gaga's 'Poker Face' and MGMT's 'Electric Feel'.

References

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- [3] Those being: Intimate, Personal, Social, Public. As detailed in: Hall, E. (1966) *The Hidden Dimension*. New York: Doubleday. pp. 113-29.

11.00 Poster: Kris Worsley (Royal Northern College of Music)

Performing the melodic line: the aesthetics of visual shape and musical expression in the Age of Sensibility

In his essay of 1792, 'On Sketching Landscape', William Gilpin compared the lines of a landscape composition to the shape of a musical phrase, stating that 'it may admit many little alterations...and yet resemblance is not disfigured: as the same piece of music, performed by different masters, and graced variously by each, may yet continue still the same.' The comparison is by no means the only one of its type, though is perhaps more explicit than most in making a parallel between the aesthetics of line and shape in the depiction of nature, and the shaping and embellishing of the melodic line.

In this poster, I will examine a number of key writings on visual aesthetics from the second half of the 18th century, questioning the extent to which these writings can throw fresh light on our understanding of aesthetics of compositional technique and performance practice of the period. Special attention will be given to English writers on art of the period, including William Hogarth, Joshua Reynolds and William Gilpin and the extent to which aesthetic writing in the Age of Sensibility engaged with wider aesthetic traditions of European theory of the visual arts and of music performance. The principal aim is to show that the art of shaping a musical phrase in performance by means of emphasis and embellishment was related to wider aesthetic concerns, in particular demonstrating that perceptions of various national styles in the visual arts

and in musical performance often shared their aesthetic roots with a nation's perceived relation to the state of nature.

The results are significant and show that those factors which demonstrated the feeling for good taste in musical performance were not isolated to the medium of music, but were deeply influenced by and interlinked with perceptions of national identity in relation to a nation's closeness to the state of nature.

11.30 Mattias Lundberg (University of Uppsala)

Shape, curvature and contour as theoretical concepts and metaphorical devices in contrapuntal literature and repertoire: meaning, significance and consequences

Throughout the substantial extant literature of counterpoint treatises in Western musical tradition, the concept of space figures in two clearly distinguishable ways. The first of these builds on the concept of space *prima facie* as location, i.e. the placement of musical pitch within a larger space, or range of altitudinal frequency. This conception has had great consequences for abstract typology and classification in modal and tonal music theory. The second principal use of the concept of space, with which we will be primarily concerned here, relates to linear melodic shape – or even image – within the mentioned space. Concepts such as “morphe”, “linea”, “processio”, “forma”, “Kontur”, “forme”, “shape”, “curvature” and many other (originally visual or tactile) notions have been borrowed wholesale into theoretical and methodological frameworks pertaining to the question of how to practise and perfect melodic writing. Unlike the above-mentioned concept of space as discrete pitch, the concept of melodic shape has thus had great consequences for practical matters of musical composition.

This paper investigates to what extent, and in which contexts and situations, shape can be regarded as concrete or abstract in music. Many, but not all, occurrences of shape-related terms and conceptions presuppose from the outset the concept of musical space, in which cases they typically add further qualification to abstract typologies. Particularly interesting are the cases where the theoretical notion comes into conflict with the audible or visible shape, as for example in the case of *inganno* writing, where the hexachordal functions and symbols of a melodic unit are kept intact while the melodic shape is often altered considerably. Such cases open up important theoretical and practical questions regarding the structure of musical shape, such as whether or not shape, when regarded as structure, resides on the perceptual or theoretical level.

12.15 Vanessa Hawes (Canterbury Christ Church University)
Comparing the shape of analytical and performative understandings of musical structure

Do analytical and performative understandings of musical structure correspond, and if so, how? How can different perceptions of musical structure be compared usefully using graphical or other methods? How might this comparison be useful to a practising performer and/or analyst?

This work builds on previous research addressing the identification and description of connections between structure and experience in musical perception and performance of Baroque music [1]. In the current research, differences in the perception of structure in tonally ambiguous music are explored, comparing the shapes of graphical representations of structural understanding. The work draws on a number of threads in current musicology: music and gesture [2]; an ecological approach to musical perception [3]; and musical analysis. The test music is drawn from the tonally ambiguous music of the turn of the twentieth century in order to concentrate on structural elements of music other than tonality. Three different perceptions of structure of short songs and piano pieces are compared:

- (a) Existing and new analyses, using established analytical methods;
- (b) Structural points implied by the performer through an analysis of gestures, drawing on existing work in music and gesture; and
- (c) Structural points implied by the performer as indicated by score-markings and interview.

Data required for (b) and (c) are gathered at various points during the rehearsal process. Methods for the graphical representation of the results are then explored, and comparisons made.

The work complements current music psychological research involving shape and gesture, bringing musical analysis alongside psychological approaches, making connections between musicological sub-disciplines.

References

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- [3] Clarke, E. (2005) *Ways of Listening* (OUP).

13.00 Poster: Oswaldo Gonzalez-Lizausaba (Université Paris I)
The Undulatory Musical Analysis (UMA): a morphological approach to musical analysis

Background

In the last decades, an unquestionable expansion of morphologic disciplines as: Fractals, Chaos, Catastrophes, Dissipating Structures, among others, was produced. New ways of conceiving and understanding reality are growing and disrupting many fields of scientific and artistic activity. If we conceive of music analysis in the context of this morphological revolution, musical structures, processes and their representations should be reconsidered. Basically, the UMA method offers: 1. The study and representation of each musical structure by means of undulatory shapes. 2. Several types of models: a. The undulatory model, in which the work's kinetic behaviour is visualized. b. The algorithmic model, where all the relevant structures represented as morphogenetic processes are described as results of undulatory algorithms.

Research questions

In the context of this innovative morphological perspective, what and how is the form of a piece of music? Understanding a piece of music's form as a process, is it possible to model that process? How is this form revealed by the UMA method?

Aims

Through the analysis of two piano pieces by Schönberg and Boulez, we will demonstrate some of the UMA capabilities to generate morphologic models of the musical time (tempo), rests, pitch (undulatory trajectory), durations and dynamic structures, as well as full form models of each piano piece.

Summary of content

Two musical works: 1: Pierre Boulez' *Structures Ia* for two pianos, 2: A. Schönberg's *Piano piece II* from *Six little pieces for piano* op. 19, where studied. The analysis established: 1. Pertinent structural relations: symmetries, repetitions and differentiations within one or more musical structures. 2. Undulatory and algorithmic models of each work where presented. 3. The complete form of each work where obtained and plotted.

Significance

UMA opens new ways for understanding the unrevealed new area of music forms. New promising fields of research for music morphology are possible. Research in the field of music cognition is invaluable: undulatory trajectory (form of a piece of music) could be an interesting key for developing further research for music cognition.

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14.00 Lecture-recital: Dan Tidhar (King's College London)

The shaping of unmeasured preludes

Unmeasured preludes are a very particular genre of harpsichord music in which rhythm and meter are either heavily under-specified or not specified at all. These preludes present the performer with a particular challenge because, in addition to other expressive performance parameters, the harpsichordist (or lutenist in the case of lute preludes) needs to determine the temporal structure of the piece. This gives rise to a unique process of temporal shaping, which this recital aims to expose.

The recital will present unmeasured as well as measured music by Louis Couperin, François Couperin, Jean Henri d'Anglebert and Jean Philippe Rameau.

The following points will be covered by the lecture:

- Historical context
- Expressive means in harpsichord performance
- Contrast, similarities, and relationship between measured and unmeasured harpsichord music
- Shape related decisions in unmeasured preludes interpretation, demonstrating different resolution possibilities and presenting criteria for choosing between them
- Visual shape in the unmeasured notation – a brief look at the manuscripts; the relationship between visual and musical shape.

14.45 Milton Mermikides (University of Surrey)

Changes over time: the analysis, modeling and employment of improvisational structure

Background

The ability of the seasoned jazz musician to shape an improvisation into a musically effective structure is a hard-won and much-admired skill. However, the understanding of this fundamental skill is often veiled in mystery, with the majority of jazz improvisation research and pedagogy focusing on harmonic negotiation, vocabulary and instrumental technique, rather than the formation of larger-scale musical structures. As a jazz practitioner, composer, educator, theorist and music technologist the author was motivated to research this issue deeply, and examine its far-reaching practical, compositional and theoretical implications.

Research questions

Is it possible to build an analytical model that can reveal improvisational structures and forms? Are these forms appreciable to the performer and listener? What are the theoretical and practical implications of such a model to performance practice, pedagogy and composition?

Aims and Outcomes

This paper presents, from a practitioner's perspective, a consolidated model of jazz (and other stylistic) improvisation. This is drawn from a wide range of theoretical (Pressing, Wishart, Berliner, Borgo, Xenakis, Raup, Schoenberg et al.) and pedagogical sources (Crook, Bergonzi, Damian, Liebman et al.) as well as the author's own heuristic inquiry. In this model, a musical object is seen as possessing an array of properties available for modification, and existing at a point in multi-dimensional musical space (M-Space). Improvisation is represented as the artful carving of trajectories through M-Space via corresponding gestural manipulations of consynchronous musical parameters (expressive contours), which may form larger-scale musical structures. This view of improvisation offers practical applications for performance, an analytical framework to appreciate a wide range of repertoire, and a strong supporting mechanism for pedagogical and compositional practice.

15.30 Peter Lea (University of Western Ontario)

Sounding circular: the octatonic universe of George Crumb's *A Haunted Landscape*

Shapes found in the scores of George Crumb's music often perplex performers and academics alike. Musical staves written in spirals, circles, crosses and more, force the musician to negotiate this music differently. In an interview with Edward Strickland, George Crumb stated that his music might even "sound circular, like a wheel going around." (1991) While the music may undoubtedly look circular, it is not immediately

apparent how it may sound circular. Crumb's "Twin Suns" from *Makrokosmos II* (1973) is symbolically notated using two circular staves to represent the two opposing suns. Using the terms zenith and nadir, Richard Bass evokes the imagery of the relationship between celestial bodies to describe opposing pitch events in his analysis of this piece. (1987) Analyses of Crumb's non-symbolically notated music often imply circular transformational procedures, but these transformations frequently seem too far removed from the musical surface to be a potent metaphor (e.g. Scotto, 2002).

I will demonstrate how a recurring chord progression in Crumb's *A Haunted Landscape* (1984) sounds circular by combining visual shape with aural perception. The motion between each of the chords in this progression, and its subsequently altered iterations, can be modeled within an octatonic universe. Visually, this universe is shaped both like a spiral, and a circle: a self-repeating right-handed bounded helix—or simply, a DNA strand wrapped around on itself in the shape of a donut. Unlike other transformational universes that are usually only valid for a single piece, this model is applicable to many of Crumb's works. Because of the universality of this octatonic model across Crumb's repertoire, specific patterns emerge—not unlike certain paradigms in tonal music—which have important implications for shaping a performance of his music.

Places to eat in Bloomsbury

Torrington Place

Costa at Waterstones
(Café in basement)

Patisserie Valérie
(Café/light lunches)

Planet Organic
(Health food to eat in or take away)

Woburn Place

China City
(Chinese open lunchtime and evening)

Poppadom
(Indian buffet lunchtime and evening)

Taverna Yialousa
(Greek)

Jacques Wine Bar
(Light lunches, bar food)

Russell Square

Russell Square Gardens Café
(Café/snacks all day)

Friend at Hand
(Pub)

Pret a Manger
(Café/take away)

Tottenham Court Road

Nero at Paperchase
(Café on the first floor)

Pret a Manger
(Café/take away)

Marks & Spencer
(Café and sandwiches to eat in or take away)

University Precinct

South Block Café
(Ground floor behind ceremonial staircase; open 8.30 am to 6 pm; sandwiches, soup, jacket potatoes)

SOAS
(Self-service and Russell Restaurant open lunchtime; food with an oriental twist)

Costa at Birkbeck
(Café on the ground floor)

Southampton Row

The Old Amalfi
(Range of pasta and pizza served lunchtime and evening)

Il Fornello
(Italian food served lunchtime and evening)

Nero
(Café and sandwiches to eat in or take away)

Store Street

The College Arms
(Pub with food)

Ristorante Olivelli/Paradiso
(Range of Italian pasta and pizza served lunchtime and evenings)

Café Paradiso
(Coffee, pastries and savoury snack lunches)

Towards Holborn

British Museum Court Restaurant
(Open daily for lunch, for dinner Thursdays and Fridays)

Truckles of Pied Bull Yard
(Wine bar and Restaurant [basement] serving traditional English meals served lunchtime and evening)

Brunswick Centre

Carluccio's
(Italian, light meals served throughout the day and evening)

Patisserie Valérie
(Café/light lunches)

Yo Sushi
(Japanese conveyor belt eat in or take away)

Starbucks
(Café)

and many more ...

