Conference Review

Report on the 10th International Conference of Students of Systematic Musicology (SysMus17)

Emma Allingham[1] and Christopher Corcoran[2]

Abstract

The 10th annual International Conference of Students of Systematic Musicology (SysMus) took place on September 13–15, 2017, at Queen Mary University of London (UoL). The SysMus series has established itself as an international, student-run conference series aimed at introducing graduate students to networking and discussing their work in an academic conference environment. The term "Systematic Musicology," first coined by Guido Adler (1885), nowadays covers a wide range of systematic or empirical approaches to theoretical, psychological, neuroscientific, ethnographic, and computational methodologies in music research. Presentations for SysMus17 focused on three central topics in relation to music: cognition and neuroscience, computation, and health and well-being. Each of these topics was the subject of workshops as well as keynotes by Prof. Lauren Stewart (Goldsmiths University of London and Music in the Brain Centre, Aarhus University), Prof. Elaine Chew and Dr. Marcus Pearce (both Queen Mary UoL), Dr. Daniel Müllensiefen (Goldsmiths UoL), and Prof. Aaron Williamon (Royal College of Music). Further presentations addressed issues relating to harmony and rhythm, musicians and performance, music and emotion, and sociology of music. This year's conference brought together early-career researchers from the fields of musicology, psychology, and medicine, allowing them to socialize, share their work, and gain insight into interdisciplinary approaches to their subjects. SysMus17 was organized by students at Queen Mary's Music Cognition Lab and was particularly marked by the series' 10th anniversary, the live streaming of all presentations via social media, and a carbon-offsetting Green Initiative. The proceedings of SysMus17 will be available on demand from the conference website (www.sysmus17.qmul.ac.uk) and the videos will be made available for public access.

Introduction

The International Conference of Students of Systematic Musicology (SysMus17) was hosted by Queen Mary University of London (UoL) from September 13 to 15 and marked the 10th anniversary of the annual SysMus, following last year's conference at the University of Jyväskylä, Finland.

This year's event, organized by students at Queen Mary's Music Cognition Lab, focused on topics surrounding the central themes of music cognition and neuroscience, computational musicology, and musicians' health and well-being. Each theme was the focus of one of the three keynote presentations held by five prominent speakers: Prof. Lauren Stewart (Goldsmiths University of London and Music in the Brain Centre, Aarhus University), Prof. Elaine Chew and Dr. Marcus Pearce (both Queen Mary UoL), Dr. Daniel Müllensiefen (Goldsmiths UoL), and Prof. Aaron Williamon (Royal College of Music). The three core themes

[1] University of Jyväskylä, Finland
[2] University of Cambridge, UK

Corresponding author:
Emma Allingham, Department of Music, University of Jyväskylä, Seminaarinkatu 15, 40014 Jyväskylä, Finland.
Email: emmaallingham21@gmail.com

were further supported through workshops on conducting music and health research, approaching literature reviews systematically, and using Electroencephalogram (EEG) and Musical Instrument Digital interface (MIDI) technologies for assessing the neural bases of musical performance.

Special guest Manuela M. Marin, one of the co-founders of the SysMus series, introduced the event and elaborated on SysMus's concept as an international, annual, student-run conference aimed at introducing graduate students to networking and discussing their work in an academic conference environment. In her talk, Ms. Marin also outlined the term "Systematic Musicology" as a historic concept initially defined by Guido Adler (1885), which nowadays encompasses systematic or empirical approaches to theoretical, psychological, neuroscientific, ethnographic, and computational methodologies in music research. As a result, the SysMus conferences showcase a number of diverse approaches and methods, allowing students to gain insight into fields beyond the scope of their own research and make contact with peers from those areas.

SysMus17 was particularly noticeable in its diversity, as the audience included not just musicologists but also students from the areas of psychology, computing, and medicine. Musically, too, the focus often went beyond traditional topics in Western classical music, with presentations highlighting features from traditional South Indian, Indian classical, Chinese, groove, and jazz music as well as musical and cultural aspects from Peru, Cameroon, and Sri Lanka. As such, this wealth of cultural and methodological approaches made SysMus17 a challenging and rewarding experience, sparking a lively exchange of ideas among attendees.

The conference was also the first of the series to fully embrace digital possibilities by making extensive use of online resources and social media, allowing digital presentations and Q&As via teleconferencing and video, and live streaming every presentation via its Facebook group. The resulting videos will be made available online and also edited into a showreel for future use. All this was made possible by the generosity of the conference's sponsors: Queen Mary UoL, ESRC, ESCOM, and SEMPRE.

Cognition and neuroscience

As might be expected from a conference of this nature, a prominent topic in presentations across all three days was the cognitive and neurological processing of music, which was linked to fields as diverse as literacy, amusia, earworms, language, education and training methods, infancy learning, music appreciation, time flow, and expectation in music.

The first academic presentation of the conference, Prof. Lauren Stewart's enlightening keynote entitled "Music of the Hemispheres," set much of the tone by linking neurological and cognitive research to literacy, amusia, and earworms. Prof. Stewart used the talk to introduce the

audience to some key projects from across her career, explaining each project in turn and describing how it would shape the wider trajectory of her research. Starting with her early work, she described how her PhD project was concerned with tracking cognitive changes during the acquisition of musical literacy, involving the charting of changes in the brains of participants as they learned to read and play music over a number of weeks.

This project led to her later work on amusia, during which she was able to place an online test for amusia on a British Broadcasting Corporation (BBC) news website that remarkably generated data from over a hundred thousand participants, allowing her to reach the small population of amusics. Working from this huge data set, Prof. Stewart was able to show that amusics' deficiencies in retaining musical information are similarly present for experiences outside the musical domain, such as pitch patterns in speech, and that while amusics have problems explicitly processing musical statistical irregularities, they are able to process them at the implicit level.

When her focus shifted to involuntary musical imagery (INMI, more commonly known as "earworms"), a second collaboration with the BBC would once again generate a large amount of data. Insights gained from this wealth of information allowed Prof. Stewart to demonstrate that INMI occurs more frequently in individuals with a music background and that individuals experiencing the phenomenon frequently recall their earworm's tempo with remarkable accuracy, eventually leading her to investigate the phenomena in relation to mental homeostasis, mind-wandering, and differing states of alertness. She finished her presentation by highlighting the importance for young researchers to collaborate with media organizations, stressing that her collaborations with the BBC strongly benefitted her own research career, as they allowed her to gain access to mass data not just once, but twice.

Several other presentations connected issues of musicological concern to cognition and neurology as the conference progressed. This included linking music to language processing, such as in Miriam Tenderini's talk on how bilinguals' first language exerts a more powerful affective priming effect than the second when coupling emotion words with music, or in Miriam Drakoulaki's poster on linking linguistic and semantic grammatical judgments to musical cadences.

A widely referenced topic was that of the way cognitive processes underpin musical learning, including in Lucianna Hammond's talk on applying real-time video feedback to piano studies and Suzanne Ross's presentation on the differences between learning an instrument with and without auditory feedback. The educational theme continued in presentations on infancy learning, as Sinead Rocha explained her project on infants' spontaneous motor behavior and how it may be linked to spontaneous motor tempo induced by parental height and walking rhythm, while Lotte Armbrüster examined a possible relationship

between melodic intervals in babies' cries and auditory feedback in the womb.

Neurology and cognition were also linked to more classic issues of musicological concern, such as in Stefanie Bräuml's poster on applying the emerging and still controversial field of neuroaesthetics to music appreciation, or in Theresa Schallmoser's poster on the role of familiarity and tempo in assessing time flow in music, as well as in Hayley Trower's talk on applying zygonic theory to listeners' feedback on musical expectancy for repeated stimuli.

Music and health

The topic of music and health, a central theme across the entire conference, was represented in terms of musicians' health and well-being as well as in a therapeutic context. It also was the focus of the keynote presentation by Prof. Aaron Williamon, in which he outlined the ongoing four year, cross-conservatoire project Musical Impact that aims to enhance UK musicians' health and well-being. Musical Impact encompasses three main strands of research: a longitudinal study of the psychological and physical health of musicians in the UK, an exploration of the demands placed on performing musicians, and the study and development of health promotion for both music professionals and students.

Prof. Williamon began by outlining some disturbing background figures, quoting that 70–85% of music students report suffering from playing-related injuries (a rate even higher than the reported 70% for American football players), while 15–25% report experiencing debilitating anxiety. From his own research, Williamon reported that music students scored lower on stress management and coping skills than the general population and scored highly on levels of perfectionism. However, this was countered by findings that music students reported higher levels of overall well-being than the general population, scoring more highly on associating meaningfulness with their lives, although not scoring higher on happiness. Prof. Williamon suggested that while being a music conservatoire student may be linked to a unique set of stressors, playing music every day might add a deep sense of meaning to students' lives.

The Musical Impact project also included physical fitness screenings for musicians, which found that while musicians tended to exceed government recommendations for physical activity and scored highly for cardiovascular fitness, they scored very low on tests of core strength and flexibility. While Prof. Williamon currently could not offer any explanation for why musicians demonstrate higher cardiovascular fitness (although breathing techniques and performing in standing or stressful positions come to mind as possible avenues for research), the reported low levels of core strength and flexibility may be related to common complaints among musicians of neck and lower back pain.

Arguing that looking after UK musicians' well-being is equivalent to looking after the cultural well-being of the country, Prof. Williamon highlighted the need for specialized guidelines and more support for performing musicians. This need is addressed by one of the consequences of the Musical Impact program, the Healthy Conservatoires Network, which brings together departments within conservatories as well as entire institutions to share best practices and create a discussion forum.

The topic of musicians' health and well-being was continued in several poster presentations and a paper. Raluca Matei's paper presentation entitled *A Health Course for Music Students: Design, Implementation, and Evaluation* discussed a new undergraduate module in health promotion at the Royal Northern College of Music, which included raising awareness of specific health-related vulnerabilities of musicians and offering a toolbox of coping strategies. Although qualitative evaluation of the course is still underway, quantitative analysis of questionnaires showed that participating students came away with an increased perceived knowledge and awareness of relevant topics, though causality was not inferred due to the lack of a control group. Poster presentations addressing musicians' health and well-being included Álvaro Chang-Arana's factorial analysis of the Kenny Music Performance Anxiety Inventory (Kenny, Davis, & Oates, 2004) in a Peruvian sample, as well as Anthea Cottee's study of the mindfulness-acceptance-commitment (Gardner & Moore, 2004) approach as an intervention for music performance anxiety.

The therapeutic application of music was another topic covered from several angles. Dr. Dawn Rose presented a paper investigating the underlying mechanisms and individual differences behind music- and dance-based interventions for people with Parkinson's disease by exploring the efficacy of various modalities and tempi of sensorimotor synchronization as well as the varying levels of musical experience of patients. Of particular note was the use of the stomp box as a tool for measuring synchronization, which allowed participants to tap with their feet rather than their fingers, creating a more manageable, natural task for some Parkinson's sufferers. In addition, Michelle Ullor's poster presentation explored whether people could be trained to use musical imagery as a therapeutic intervention for anxiety, while a workshop designed by Katie Rose Sanfilippo and Dr. Neta Spiro explored some of the practicalities and methodological challenges facing music and health research.

Computational musicology

In addition to music and health and music cognition, computational musicology was one of the three core topics of this year's SysMus. A panel discussion with Dr. Daniel Müllensiefen, Dr. Marcus Pearce, and Prof. Elaine Chew allowed each speaker to give an overview of their career

and their computational approaches to musical problems, before discussing the impact of computing on future music research.

Dr. Müllensiefen focused on computational feature modeling, outlining his work on defining formulas for music with specific perceptual attributes—for example, a formula to determine the likelihood that listening to a piece of music will result in an earworm. Using his earlier algorithms that can classify songs based on their musical features, many of which are part of his open source toolbox *FANTASTIC* (Müllensiefen, 2009), Dr. Müllensiefen was able to develop his earworm formula by extracting features from songs that were reported often as earworms, while controlling for their popularity by comparing them with similarly successful songs that had not been reported as earworms.

A different approach to computing was offered by Dr. Marcus Pearce, whose work aims to model human prediction of stimuli through computational modeling. Dr. Pearce discussed his development of the software *Information Dynamics of Music* (IDyOM) (Pearce, 2005), which uses statistical learning and probabilistic prediction to model human expectations of musical structure, but also considers enculturation effects of musical expectations. Although, as Dr. Pearce pointed out, many psychological processes underpin probabilistic prediction in humans, statistical learning is likely to help listeners develop probabilistic cognitive models.

Finally, Prof. Elaine Chew discussed her approach to computational thinking and introduced some of the software models she designed. She explained the concepts behind some of her work, including *VoSA* (Chew & Wu, 2004), a musical voice separation algorithm that is based on principles of human auditory streaming, and the *Spiral Array Model* (Chew, 2000), which identifies the key of a given piece of music using 3-D spatial reasoning in real time. As Prof. Chew pointed out, rather than model human thinking methods, her programs aim to maximize scalability and simplicity in order to solve problems in the most accurate and efficient way, producing processes that are similar to those of human thinking in outcome but not in method.

Finally, the panel discussion among all three eminent academics ended with a conversation about the future of computational research in music. The panel highlighted the advantages of computational thinking and stressed the usefulness of investing in computer programming skills for young academics, while reminding everyone present that it is never too late to start learning computing. The panel also emphasized that systematic musicology is a multifaceted field and that collaboration with researchers from different areas of expertise is often an important step toward learning new skills. In addition, it was posited that those who are new to computational techniques may find that the process of learning computing helps with finding new approaches to problem-solving in general.

Harmony and rhythm

The conference also featured a number of systematic examinations of a more historical and theoretical approach. Twentieth-century composition technique was the focus of both John Chun-fai Lam's work, which assessed the use of the anhemitonic pentatonic as a Chinese scale ("gamme chinoise") in works by Ravel, Schmitt, and Stravinsky, and of Josh Bamford's highly entertaining virtual presentation, which focused on how listeners perceive serialist compositions to be more "random" than truly random computer-generated music. Harmony was similarly scrutinized by Konstantinos Giannos, who applied the concept of a General Chord Type to nontonal contexts in order to shed light on chord encoding and root finding, while Jaco Meyer tested Larson's theory of musical forces (Larson, 2012) by applying it to Debussy's *Syrinx*.

Another popular topic area included the physiological and psychological aspects of rhythm perception. Interestingly, a distinct ethnomusicological focus on cross-cultural exchange was recognisable in several of the relevant presentations, such as in Gesine Wermke's poster on how Cameroonian Nso children performed sensorimotor synchronization tasks to typical Western rhythms, or in Jay Appaji's poster on Western listeners' recall ability for South Indian percussion rhythms. Rhythm's ability to induce movement was examined in Jan Stupacher's very engaging presentation, which had the audience grooving in their seats and focused on using near-infrared spectroscopy to measure physiological responses in reaction to low- and high-groove music. Movement's ability to induce rhythm, on the other hand, was central to Juhn Nam's talk on how conductors frequently condense a passage from Beethoven's Symphony No. 7 from triple to duple meter, as well as in Robyn Moran's poster on her computer-designed tapping test modeled on Iversen and Patel's Beat Alignment Test (Iversen & Patel, 2008).

Musicians and performance

In contrast to peering into musical experiences from the viewpoint of fields such as cognition, analysis, or health, several projects also dealt directly with the experiences of performing musicians. Keith Philips' work on strategies in jazz improvisation used video-stimulated recall to capture comments from musicians on their own recent improvisations, complementing cognitive approaches to the issue with qualitative feedback. Jasmine Tan took a more physiological route, measuring heartbeat-evoked potential in performers in different states of musical flow, and found that flow is likely linked to heightened interoception (sensitivity toward one's internal body signals). Sensitivity to movement was the focus of Georgios Diapoulis' work, who used motion capture techniques to track expressive movements in two violinists playing together, in order to identify relevant kinematic characteristics for future

research. Movement was also the theme of the so-called TeXpo exhibition, where conference visitors could try out instruments designed for people with severe disabilities and talk to the instrument builders about their designs and intended applications.

Music and emotion

Closely linked to health aspects, music and emotion was another topic explored by various poster presentations, such as Chloe McGregor's work on exploring the auditory perceptual abilities that may be involved in a person's ability to discriminate between different emotions in music. A study presented by Emma Allingham and Anna Czepiel took a more harmony-specific route, exploring the acoustic features and perceived emotional changes that occur in one musician's playing as the tonal context shifts from major to minor. Other projects related to emotion took more classic psychological approaches, such as Scott Bannister's qualitative study on responses associated with experiences of musical chills, Landon Peck's psychometric assessments of experiences of musical awe, and Makarand Velankar's quantitative study of listener responses to perceived emotion in Indian Classical Raga music.

Sociology of music

With many systematic research techniques originating in the social sciences, it wasn't entirely surprising that the study of music as a social phenomenon should feature heavily at SysMus. A broad range of topics was explored from a variety of methods and angles, serving to pave the way for future research into how people interact with and take meaning from music in a social context.

While Daniel Fiedler presented on the trajectory of adolescents' musical development and factors contributing to how interest in music as a school subject has declined over the years, Katharina Schäfer discussed her work on how music can act as a substitute for social interaction by reminding us of past life events, people, and emotions, much in the same way as TV and literature can do. In addition, Pablo-Mendoza Halliday offered a philosophical perspective on how to define musical genre, concluding that the concept of genre encompasses social constructs, cognitive appraisals, and musical properties. Ekaterina Pavlova explored the use of madness as a commercially successful trope in the music industry, considering madness as a fluid social construct with gender implications. Furthermore, poster presentations exploring the sociology of music included a study of mobile listening habits and their relation to traffic safety (Eva Shurig), an analysis of the contribution of music videos to young people's listening experiences (Johanna Wilson), and an examination of how sociocultural identity contributes to musical distaste (Elizabeth Kunde and Kate Leonard).

Closing remarks

As emphasized in the event's closing remarks, given by the authors, this year's conference reflected the diversity of the field of musicology and highlighted how collaborating across disciplines and gaining a wider view of fields and methodologies can help create more efficient research designs. In addition, the SysMus conference series offers an invaluable platform for young researchers to learn from each other, form important working relationships with peers, and hone their presentation skills. Since this year marked the 10th birthday of SysMus, the atmosphere was particularly special, underlined by the end-of-conference birthday party which gave attendees the chance to unwind, perform music together, and reflect on how the conference series has brought people together over the years.

Of particular note at the conference this year, in addition to the live streaming of presentations and video conferencing, was the Green Initiative, which aimed to make the conference as environmentally friendly as possible by minimizing paper usage through digital technology and offsetting carbon emissions entailed by the attendees' travel. In addition, awards sponsored by ESCOM were given to Sinead Rocha for the best presentation and Josh Bamford for the best video presentation. Proceedings for SysMus17 will be available on demand from the conference website www.sysmus17.qmul.ac.uk.

Next year's conference, SysMus18, will take place from June 6 to 8, 2018, at the Centre for Studies on Musical Gesture and Expression at the Federal University of Minas Gerais (UFMG) and at the State University of Minas Gerais (UEMG) in Belo Horizonte, Brazil, under the joint supervision of Prof. Dr. Maurício Loureiro (UFMG) and Prof. Dr. Luiz Naveda (UEMG). It will be the first SysMus conference to be held in Latin America. More information is available at www.musica.ufmg.br/sysmus2018.

References

Adler, G. (1885). Umfang, Methode und Ziel der Musikwissenschaft. *Vierteljahrschrift für Musikwissenschaft, 1,* 5–20.

Chew, E. (2000). *Towards a mathematical model of tonality.* Unpublished doctoral dissertation, Cambridge, MA: MIT.

Chew, E., & Wu, X. (2004). Separating voices in polyphonic music: A contig mapping approach. In U. Kock Wiil (Ed.),

Computer music modelling and retrieval: Second international symposium (pp. 1–20). Berlin, Germany: Springer.

Gardner, F. L., & Moore, Z. E. (2004). A mindfulness-acceptance-commitment (MAC) based approach to athletic performance enhancement: Theoretical considerations. *Behavior Therapy*, *35*, 707–723.

Iversen, J. R., & Patel, A. D. (2008) The Beat Alignment Test (BAT): Surveying beat processing abilities in the general population. In K. Miyazaki, et al. (Eds.), *Proceedings of the 10th International Conference on Music Perception and Cognition (ICMPC10)* (pp. 465–468). Sapporo, Japan: ICMPC10.

Kenny, D. T., Davis, P., & Oates, J. (2004). Music performance anxiety and occupational stress amongst opera chorus artists and their relationship with state and trait anxiety and perfectionism. *Journal of Anxiety Disorders*, *18*, 757–777.

Larson, S. (2012). *Musical forces: Motion, metaphor, and meaning in music*. Bloomington, IN: Indiana University Press.

Müllensiefen, D. (2009). FANTASTIC: Feature analysis technology accessing statistics (in a Corpus) (Technical Report v. 1.5). London, England: Goldsmiths, University of London. Retrieved from http://www.doc.gold.ac.uk/isms/m4s/

Pearce, M. T. (2005). *The construction and evaluation of statistical models of melodic structure in music perception and composition*. Unpublished doctoral dissertation, City University London.