
EDITORIAL

The twenty-first century has ushered in an energised and prolific period in music history with the global creation and dissemination of music. The decreased cost of computer power coupled with increased processing speed has made the tools of music technology readily accessible to diverse communities worldwide, resulting in a multiplicity of musical genres. Alongside this global phenomenon, traditional youth music programmes forge ahead; many with curricular models developed in the mid-twentieth century serving local populations based on traditional acoustic repertoire.

This issue of *Organised Sound* aims to advance our understanding of the pedagogy of music technology, in particular electroacoustic music. We hear from a variety of educators from around the globe who describe their philosophical foundations and espouse their best practices in the pedagogy of electroacoustic music both in and outside of the classroom. From the joyful discovery of children engaging in the creation of electroacoustic music to the struggles of traditionally trained classical musicians learning to integrate live electronics in performance, this issue will spark personal inquiry and assessment of what educators do: teach.

To open this issue, Jeffrey Martin describes the gap between the adoption of information and communication technology (ICT) among youth school programmes and the learning outcomes that are respected and practised among electroacoustic musicians. He asserts that the difference in pedagogical philosophy between ICT educators and music educators must be reconciled prior to any discussion of best practices for electroacoustic music education, stating that school curricula are ‘generally disconnected from actual traditions and practitioners of electroacoustic music’. The author establishes the importance of actively engaging students in the creation and contextualisation of music as a means of inspiring lifelong learning of electroacoustic music. Martin cites the work of the Music, Technology and Innovation Research Centre at De Montfort University as one of the premier institutions that successfully connects projects aimed at youth programmes with the collegiate study of electroacoustic music.

The Music, Technology and Innovation Research Centre at De Montfort University has launched EARS 2, the successor to the original ElectroAcoustic Resource Site. This follow-up initiative is intended for a younger audience; it is a comprehensive youth-oriented curriculum designed to teach music using technology.

The curriculum is publicly available on an eLearning website (www.ears2.dmu.ac.uk). Authors Leigh Landy, Richard Hall and Mike Uwins base EARS 2 on the pedagogical philosophy of constructivism – that is, students learn by doing. Web-based materials such as listening examples, tutorials and exercises support active learning. A key feature of the curriculum is cross-platform software entitled *Compose With Sounds*, which encourages creativity through musical composition based on sound objects (*objets sonores*) or sound cards in this software package. Students can interact with tutors and their peers from around the globe about music through a social media module contained within the website. EARS 2 will undoubtedly have a profound impact by making music training publicly accessible.

Also from De Montfort University, Motje Wolf explores a pedagogical methodology designed to increase the appreciation of electroacoustic music among youth who are 11–14 years old. This research guides the listening examples module of the EARS 2 website by adopting musicological learning outcomes in three domains of knowledge: factual, conceptual and procedural. These knowledge domains are assessed using a qualitative pre- and post-test survey. The author reports a strong correlation between a change in a listener’s experience and that listener wanting to listen again and learn more about electroacoustic music, suggesting the importance of integrating musicological learning outcomes to increase accessibility to electroacoustic music.

Without question, the writings and compositions of Iannis Xenakis have had a profound and lasting impact on electroacoustic music. Rodolphe Bourotte and Cyrille Delhaye explore the pedagogical philosophy of Xenakis through the compositional tool UPIC (Unité Polyagogique Informatique du CEMAMu). Xenakis felt that music was essential in exercising human creativity and encouraged musical experimentation for people of all ages, unencumbered by the tedious learning of theoretical concepts. This article documents the import of UPIC workshops held throughout the world. The article includes reference to previously unpublished sources that have been discovered at the Centre Iannis Xenakis.

The pedagogical philosophy of Xenakis underpins the curricular design of a summer music programme at the Georgia Institute of Technology entitled *EarSketch*. This workshop designed by authors McCoid, Freeman, Magerko, Michaud, Jenkins, Mcklin and Kan introduces youth to computer science using a holistic

approach to music composition and remixing. Pre- and post-workshop student surveys measure the efficacy of the curriculum while establishing the groundwork for longitudinal research at the university or at other institutions interested in adopting the curriculum.

Pascal Terrien describes how the analysis of a work of art such as a musical composition transforms the artefact from an art object to a learning object. This process of transformation occurs during didactic transposition – that is, a teacher transforms the status of an artefact through epistemological questioning designed to advance student learning. Terrien applies this didactical approach to the composition *Metallics* by the French composer Yan Maresz.

The study of performance techniques in electroacoustic music is often missing in collegiate music curricula. Authors Bullock, Coccioli, Dooley and Michailidis document their experiences teaching the use of live electronics to instrumental music performers at the Birmingham Conservatoire in the United Kingdom. Using a case study approach, the authors explore several training methods and assess the efficacy of the training using a post-training survey. The article concludes with specific recommendations that could readily be adopted in higher education such as the installation of dedicated practice rooms so that musicians increase their practice with live electronics. Furthermore, the authors recommend a longitudinal study to determine the optimal curricular placement of the study of live-electronics performance techniques.

Alexander Refsum Jensenius develops a pedagogy for the study of interactive music based on the relationship between the physical action–sound coupling of traditional acoustic instruments and the design of the virtual action–sound coupling of digital music technologies. He asserts that poorly designed virtual action–sound coupling in contemporary instrument design can lead to frustrated and puzzled audiences. The author puts forth a theoretical foundation to guide instrument design that employs virtual action–sound coupling. This theory, rooted in aural expectations derived from the physical world of acoustic instruments, contends that design should be guided by the anticipatory sentience of the performer and audience. The theoretical foundation forms the basis of a collegiate course in Interactive Music at the University of Oslo.

As Henry Ford said, ‘Failure is simply the opportunity to begin again, this time more intelligently.’ This describes the mindset of Christopher Keyes in his article ‘Failure, Neuroscience and Success: Differentiating the Pedagogies of Music Technology from Electroacoustic Composition’. In this first-person accounting of pedagogical failure at the Hong Kong Baptist University, Keyes purports that neuroscience research suggests that, when teachers instruct beginners, they should make a clear delineation between learning the tools of music technology and learning the

craft of electroacoustic composition. Informed by this research as well as observing the learning process of his students, Keyes concludes that the ‘pedagogical flaw was in the focus on the technology behind the compositions, instead of the composition’.

Similar in motivation to the work of Keyes, authors Mark Ballora and Curtis Craig assess the music technology minor study programme at The Pennsylvania State University as they prepare for the possible development of a major in music technology. Influenced by their accrediting agency the National Association of Schools of Music (NASM) and informed by the philosophical provenance of existing courses and related disciplines, the authors offer a theory of consilient spheres of influence that serve three levels of student learning.

Influenced by the writings of Pierre Schaeffer and Pauline Oliveros, Doug Van Nort extends community-based learning on topics such as digital sound recording, sound reinforcement, and subjective listening and response by motivating collective inquiry contextualised by the creative process. His methods scale across a wide range of skill levels, age groups and formats. For this particular learning experience, a workshop format is employed for the co-creation that led to the installation *Constellate* (2012), which was installed in an elevator at the Tang Museum at Skidmore College.

This issue includes one off-thematic item. Andreas Bergsland applies the literary theory known as the *maximal–minimal model* to the comprehension and analysis of the use of the human voice in electroacoustic music. The maximal voice is one end of a continuum characterised by a clear and intelligible speaking voice. In contrast, the minimal voice is associated with vocal sounds that are manipulated, creating paralinguistic abstractions. Using the *Acousmographie* software developed at INA-GRM, he applies the model to *her reflection*, the third movement of Paul Lansky’s *Six Fantasies on a Poem by Thomas Campion*. Bergsland’s theory offers a well-defined model that will facilitate the musicological understanding of electroacoustic compositions that employ voice.

I hope you enjoy this issue as much as I have enjoyed considering the contributions of these experienced researchers and teachers. Reading about the theories, trials and tribulations of these pioneer pedagogues has roused a reconsideration of my own philosophical orientation toward the creative process of teaching. I would like to thank Leigh Landy and the Cambridge University Press for devoting an issue to this essential and timely topic. Also, I would like to express my sincere gratitude to all the reviewers who so generously gave of their time to advance our profession.

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