

Adam Ockelford. *Applied Musicology: Using Zygotic Theory to Inform Music Education, Therapy, and Psychology Research*. Oxford, UK: Oxford University Press, 2010. ISBN: 978-0-19-960763-1 (hbk).

Like with all other art forms, music-making has the capacity to engage, inspire, enrich and excite the imagination, and encourages individuals to reach creative and expressive potential. First, music-making involves creating, making, performing, improvising, composing and listening to music. Individuals engage with the elements and concepts of music through performance, improvisation and composition of sound and silence from diverse cultures and places. Individuals learn the language, skills, techniques and knowledge of music in increasing depth and complexity with ongoing and disciplined practice. Individuals develop musicianship, critical thinking and aesthetic understanding.

Second, music-making involves exploring, responding, reviewing and evaluating music. Individuals respond to, communicate and evaluate music ideas. Ideas, meanings and values about personal, social and cultural worlds are constructed and communicated. Active participation in music-making fosters learning for life-long well-being, developing understanding of other times, places, cultures and contexts.

These dimensions are intrinsically interconnected to the development and learning of a musical mind. Individuals develop and learn (1) confidence to be a creative, innovative, thoughtful, skilful and informed thinking musician and a musical thinker; (2) musical knowledge, understanding and skills in performing, improvising, composing, responding and listening with intent and purpose; (3) aesthetic knowledge and respect for music and music practices across global communities, cultures and musical traditions; and (4) understanding how to use knowledge, understanding and skills to build a future as a global music citizen who engages with music for a lifetime.

*Musical development and learning* within and across dimensions is profoundly complex. Musical development and learning takes place in many formal and informal contexts. Much evidence-based inquiry and research regarding development and learning in this domain from conception and infancy, through childhood and adolescence and into adulthood has accumulated over at least 40 years. Moreover, inquiry and research suggests that development and learning in this domain has profound influence on development and learning in other domains.

Professor Adam Ockelford's current book concentrates attention on musical development and learning in children and young people with many classifications of complex developmental and acquired disability and/or impairment. The book is dedicated to the memory of one such young person "... from whom we learned so much ..."

There are many reasons to recommend this publication. Ockelford has had a lifelong fascination for music as a composer, performer, teacher and researcher. He started working with children with special needs, and noticed that a number of the children had special musical abilities.

Development and learning within and across all domains varies greatly within and across the many distinctive classifications of complex special needs. Development and learning varies greatly depending on the severity of the condition. Over many years, Ockelford has argued that capacity of these children and young people to interact musically offers a unique window into the diversity of and differential musical development and learning.

Ockelford contends that an adequate model of the musical mind remains a "... 'black box' ... advances in neuroscience notwithstanding ...". He acknowledges the strange workings – and misfirings – of the human mind whilst engaged in the dimensions of music-making.

... we are ... better at knowing *where* things happen in the brain ... how discrete areas of neural circuitry implicated in particular aspects of [music-making] link up ... but we [cannot] get a sense of the musical experience by viewing fMRI scans or EEGs ... knowledge and understanding of the musical mind will continue [to be derived] through metacognition ... (p. ix)

Ockelford brings the unique perspective, albeit rare application of music theory and musicology to inform inquiry and research of musical development and learning. He contends "... [music theory and musicology] will reflect how pieces of music are *usually* heard ...". Furthermore, he argues that

... [individuals] frequently underestimate their music making capacity ... a musical snippet ... humming [of a] melodic fragment or tapping [of a] rhythmic fragment ... is often all that is needed to provide a surprisingly rich and detailed view of [perception and] processing [in the musical mind] ... (p. x)

Albeit that *zygonic theory* (ZT) can only ever suggest limited insights, the approach contributes a valid and potentially valuable piece of the large conceptual jigsaw that is the musical mind of these children and young people. Contributions are informed by seminal research and scholarship in the University of Roehampton and beyond.

So how does music-making work? What effects does music making have? How does music-making have those effects? These big ideas have engaged thinking musicians and musical thinkers for at least 2,500 years, since the time of the metacognitive introspections of philosopher Pythagoras. The book engages the reader with a valuable, unique and creative approach to these age-old big ideas. Ockelford argues the transformative and translational application of his ZT approach to investigation of musical development and learning in these children and young people in the context of educational programs and therapeutic interventions.

Principles of ZT are outlined. The ZT approach is "psychomusicological" in nature. Although not named as such for some years, Ockelford considers the place of ZT to propose new approaches to collection, analysis and graphical display of data grounded in leading and diverse evidence-based inquiry and research in music theory and musicology. ZT is applicable within and across all types, styles and genres of music. Furthermore, ZT contributes to the inter-professional/interdisciplinary field of applied musicology.

Ockelford reasons that ZT offers a capacity to understand what happens musically in a similar way that a medical practitioner may ascertain the awareness state of a patient who has experienced brain trauma. Collection, analysis and display of data that would provide supporting evidence are by no means straightforward. ZT proposes measures of the degree of *intentionality* and *influence* of musical interaction whilst music-making.

Musical interaction may be employed to explicate and share thoughts and feelings usually captured and conveyed by language. Given the paucity or even complete absence of language in many children and young people with the many classifications of complex special needs, measures may suggest degrees of communicative intent during a musical interaction. It is assumed that music-making offers interaction within and between participants, i.e., an adult or adults (music educator or music therapist); and these child/children and/or young person/young people. The nature and/or levels of motivations and behaviours *change*.

Does the *intentional* and *influential* interaction whilst engaged in music making have an impact on the musical development and learning of children and young people with complex

special needs? If so, what is that effect? A series of vignettes concentrates attention on interaction within and between participants. Interaction is gauged by observing patterns of sound. Distinct algorithms are used to (1) analyse proportion sound patterns that are repeated (R); and (2) calculate the probability of repetitions of these sound patterns occurring by chance (P). The product  $R(1-P)$  is deemed a measure of the degree of *adult or adults'* intentional and influential interaction (I). An additional algorithm is proposed to measure degrees of intentionality and influence interaction *between* participants.

Ockelford reflects on the implications of his ZT on frameworks of musical development and learning in these children and young people. He explores the evidence-based inquiry and research for musical development and learning in children and young people with the classification of severe and profound learning difficulties and/or possibility of concomitant autism spectrum disorders (ASDs). He suggests that further substantial inquiry and research is required so that trajectories of musical development and learning in populations of children and young people with other classifications of complex developmental and acquired disability and/or impairment are mapped. Moreover, findings drawn thus far appear to suggest that stages in these trajectories are alike to “neurotypical” children and young people.

The *Sounds of Intent* project is traced over nearly 15 years since publication of a position paper in 2000. This project developed a framework of musical development and learning in children and young people with this specific classification of developmental and acquired disability and/or impairment. Six stages of musical development and learning were identified in relation to reactive, proactive and interactive domains of musical engagement. The framework provides a basis for policy and professional practice in various curriculum, assessment and reporting rubrics or schema designed for music education programs and music therapy interventions for practitioners that is grounded in observation and theoretically coherent.

Ockelford traces the application of ZT to the study of these children and young people, including a series of studies with colleagues in Goldsmith's and Institute of Education, both colleges of the University of London, in 2004. He has worked with some of these individuals, now adults, for nearly 30 years.

In conclusion, Ockelford's hope is that contributions of *zygonic theory (ZT)* are “. . . a good neighbour to . . . sister disciplines . . .” within and across the rapidly expanding inter-professional/interdisciplinary field of music psychology/science.

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