

The Origins of Musicality. Ed. by Henkjan Honing. Pp. xii + 351. (MIT Press, Cambridge, MA and London, 2018. £50. ISBN 978-0-262-03745-7.)

The Origins of Musicality asks the sorts of questions that fascinate students and the general public, but that more traditional musicologists have, in recent years, rarely ventured answers to: what is music, where does it come from, and why do we do it? Analysts, historians, theorists and ethnomusicologists have, understandably enough, become hesitant toward the broad and universalizing approaches explored by the generation of John Blacking, Deryck Cooke, Leonard B. Meyer and Alan Lomax since musicology's cultural and critical turn, with only Christopher Small's *Musicking: The Meanings of Performing and Listening* (Hanover, London, 1998) tackling the biggest questions head on and becoming influential for it. For better or worse, these questions are left to psychologists and biologists, who, when they seem to answer them, can pack out lecture theatres or even appear in the news. Traditional musicology, meanwhile, is rightly suspicious of broad conclusions drawn from small, ahistorical and culturally specific studies, and of the sorts of essentialisms and determinisms that can haunt them.

It is against this backdrop that the aims *The Origins and Musicality* may seem ambitious, even hubristic. Fortunately, however, the results are largely persuasive. Much of this is down to this edited collection's disciplinary diversity, which spans psychologists, biologists, neuroscientists, computer scientists and musicologists based in several countries, often within a single chapter. The book originates in 'a week-long workshop on the cognitive and biological basis of musicality' organised by the editor, Henkjan Honing, in 2014, which led to articles for a special issue of *Philosophical Transactions of the Royal Society* the following year that have now been updated for this MIT Press volume. Its stated aim is 'to identify the cognitive, biological, and mechanistic underpinnings for melodic and rhythmic cognition as key ingredients of musicality, assess to what extent these are unique to humans, and by doing so provide insight into their biological origins' (Honing, p. 3)

A key factor in the book's strength and usefulness, though, is more modest, lying in its extensive reviewing of what is now a prodigious and constantly updating body of literature and opinion. The book does not itself brandish (or even really contain) any pivotal new theories, but it does represent an invaluable and rich picture of the state of the art in fields where research can become outdated far more quickly than in traditional musicology. Where it does begin to build on this literature conclusively, it does so loosely and tentatively yet agreeably, assessing the breadth of the field of biomusicology and some of its key areas and guiding themes, such as 'foundational principles of biomusicology', 'core components of musicality' (Chapter 2, by W. Tecumseh Fitch) and 'fundamental constraints on theories of the origins of music' (Chapter 3, by Björn Merker, Iain Morley, and Willem Zuidema).

Throughout, explanations of the origins and purposes of music are routinely given as multiple and limited in scale, and this is down to a keen understanding of music's complexity and multidimensionality as a biological and cultural process and its multifarious relationship to the various dynamics of evolution. This is the antidote to over-simplistic framings of cause and effect, or what are called 'just-so stories.' The book repeatedly engages with two of the most famous potted explanations: Darwin's idea that music arose in aid of sexual selection (*The Descent of Man and Sexual Selection in Relation to Sex*; London, 1871) and Steven Pinker's description

of music as 'auditory cheesecake' (*How the Mind Works*; New York, 1997), that is, something that heavily rewards pleasure centres adapted for non-musical reasons in the same way that cheesecake responds to tastes developed long before that particular dessert was invented. In fact, both can be simultaneously true in certain ways, and all authors appreciate that selection pressures of many different kinds occur at different levels for many different components of musicality, whether psychoacoustic, vocalised, percussive, or involving synchronisation of sound or movement.

Equally beneficial is the substitution of the highly freighted term 'music' for 'musicality': '*Musicality* in all its complexity can be defined as a natural, spontaneously developing set of traits based on and constrained by our cognitive and biological system. *Music* in all its variety can be defined as a social and cultural construct based on that very musicality' (Honing, p. 4) This is a distinction that scholars across music studies would do well to observe, especially if they are in further-flung fields and find themselves engaging with biomusicology, or indeed any scientific musicology.

Operating assumptions such as these ensure that the kinds of assumptions about music-making that can undermine scientific studies of it are few and minor. Among the more notable of them is an occasionally recurring tendency to view musicality, especially vocalization, in terms of a series of discrete pitches and even 'notes' – a word that, like the 'song' in 'birdsong' or 'whalesong,' writers often caution is a vestige of (Western) human terminology. Nonetheless, such a framing would neglect continuousness in pitch or time, as in portamento or drone, and in the process oversimplify and anthropomorphise how sound and movement ought to be parsed.

Conversely, it is refreshing to see such a breadth of human music-making taken into account, as evidenced by Sandra E. Trehub's, Judith Becker's and Iain Morley's teeming anthropological survey 'Cross-Cultural Perspectives on Music and Musicality' and in one of Merker, Morley and Zuidema's 'four principles:' 'that biomusicologists should seek to understand all manifestations of human musicality, from simple nursery tunes or singing in the shower, to expert bowmanship on a Stradivarius or the complex polyrhythmic improvisations of a Ghanaian master drummer... this principle is familiar to ethnomusicologists but not as widely appreciated by researchers in music cognition or neuroscience, where a focus on Western "high art" canon remains evident' (p. 30)

The book's opening chapters offer the broadest surveys of biomusicology and its potential guiding principles, and as such make both valuable contributions to this emerging field and introductions to it that can be read widely. After the outlines given by chapters 1-3, Laurel J. Trainor draws on the theory of auditory scene analysis to argue that the 'seemingly opposing views of musical origins—evolutionary adaptation versus a cultural creation—can be reconciled by going beyond simple notions of adaptive processes' (p. 81), thus addressing a question at the heart of biomusicology that all chapters touch on to varying degrees, that of what the layman would call 'nature versus nurture.' Though its accounts of the relationship between tonality and emotion are all-too-brief and scientifically inconclusive—and few cultural musicologists would be receptive to the idea that there is any significant biological basis behind the observation that 'music composed in the Western minor scale tends to convey sadness' (p. 97)—its laying out of the different ways in which musicalities may relate to evolution is usefully clear-eyed.

As the author of *Music, Language and the Brain* (Oxford, 2008), Aniruddh D. Patel is a key contributor, and his chapter also seeks to reconcile nature and nurture, arguing that music is a 'biologically powerful human invention or transformative technology of the mind' that 'triggered processes of gene-culture coevolution' (p. 113). Thus music is like fire or dairy farming: a human invention that then became involved in biological selection processes as an advantage. In the case of fire or dairy farming, the invention changed digestion; in the case of music, Patel suggests that it refined pitch control, the synchronization of auditory-motor behavior with others, and the use of working memory.

Thereafter, the book's chapters tend to narrow in focus and become more specialised. 'Searching for the Origins of Musicality across Species' (by Maris Hoeschele, Hugo Merchant, Yukiko Kikuchi, Yuko Hattori, and Carel ten Cate) is both informative on the methodologies for testing musicality in non-human species and incidentally rather fascinating for readers outside the field (did you know, for example, that carp can distinguish between blues and classical music?) Chapters 8 and 9 dive into the neuroscience of beat perception and the relationship between music and speech respectively, and will be of most use to more specialised readers but do yield significant conclusions about the music's inseparability from other modes of action and experience. Similarly, Chapter 10 looks in detail at genetic analysis and while it will not be an easy read for humanities scholars, it does survey an exciting emerging field that faces steep challenges but that can benefit greatly from major recent advances in technology – and the authors helpfully provide a glossary. There is no 'gene for music' and there never will be, but researchers have learned from genetic studies of families, and people with amusia, absolute pitch or known genetic syndromes.

The field of enquiry may then become more recognisable to traditional musicologists with the final chapters of the book. Chapter 10 could be of interest to analysts, since it offers a rigorous 'overview of research considering structure building and sequence generation in language, music and animal song' (p. 254) involving questions of the 'building blocks' from which these systems are built and taking in the information theory of Claude Shannon and the linguistic theory of Noam Chomsky. Chapter 11 might raise eyebrows by taking 'creativity' as its topic and then appearing to compare Mozart and humpback whales, but what follows is a largely convincing account of musical 'culture' from a non-human perspective, discussing it in terms of 'novelty,' 'complexity' and Wundt curves, and involving one of the book's most interesting passages, on the spread of whalesong in the seas around Australia.

In his chapter 'Affect Induction through Musical Sounds: An Ethological Perspective,' David Huron, one of the most prominent psychologists of music, looks at areas of music-making with respect to the 'signals,' 'cues,' 'indexes,' 'mirrors' and 'associations' found in the behavior of animals. Though it gets close to 'just-so' explanations that historians could well complicate, its framework of musical meaning certainly provides insights, such as on the relationship between 'cuteness' and vocal tract length. Finally, the book prudently allows for some historical relativism as historian Julia Kursell looks at Carl Stumpf, the author over a century ago of a book called *The Origins of Music*. Kursell is instructive on the strengths and limits of his thought as he researched the Nuxalk singers of British Columbia and people with amusia, including a man who could name and 'perform' the leitmotifs of Wagner's operas with rhythmic accuracy but shouted them with a complete absence of pitch perception or control.

The Origins of Musicality is effectively an update on another MIT Press edited collection, *The Origins of Music* (edited by Nils L. Wallin, Björn Merker, and Steven Brown; Cambridge, Mass & London, 2000), and indeed is something of an improvement on it, and not only because nearly twenty of research in a growing field has elapsed. As the slight change of one word in the titles attests, the present volume tends to assume less, is a little less anthropocentric, and entails a greater diversity of fields and literatures. It is likely to prove valuable well beyond traditional musicology, and the opening chapters will be of particular use to those of us teaching students about the intersections of music, biology and psychology, and indeed the breadth and variety of music studies in general. Readers should note (as Honing might have done) that this is a book about the origins of musicality rather than the present or future capacities of music, even if some of its assertions derive from extrapolations of the former. One hopes that composers, for example, would not regard this book as prescriptive, whether positively or negatively. The book's closest analogue for those more interested in the philosophical or artistic side of the subject matter is probably *The Book of Music and Nature* (edited by David Rothenberg and Marta Ulvaeus; Middletown, CT, 2001). Yet as *The Origins of Musicality* demonstrates, contemporary biomusicology is far from misguided, uncomplex and uncritical in its pursuit of the deepest questions surrounding music.

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