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Book Review

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Honing, H. (Ed.). *The Origins of Musicality*. Cambridge, MA: The MIT Press, 2018; 392 pp.: ISBN 9780262037457, $50.00 or £40.00 Hardback.

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Do you like music? is a typical question that rarely triggers a negative reply. But why is music so common in humans despite its lack of an obvious *evolutionary* function? This and other questions are tackled in *The Origins of Musicality*. The book is the most complete overview of the novel, interdisciplinary field also known as the evolution of music. Notice that the term *musicality* in the title is more accurate, as it emphasises the biological, perceptual, and cognitive aspects of the cultural artefact called music. This distinction is not a mere technicality; juxtaposing music with musicality is an achievement for this field, an operational distinction that the language sciences are still hotly debating.

Henkjan Honing treats us to a collection of wonderful chapters, written by all the main authorities in the field. Crucially, the chapters are self-contained and written with a generalist audience in mind, making the book accessible to anybody willing to engage. This is neither a popular science book, unlike Honing's (in press) forthcoming effort, nor a highly technical volume. Among others, this book could be the perfect answer to a prospective research student willing to do research on the evolution of musicality: Instead of obtaining a premasticated, ready-to-go research question from the supervisor, the student could be exposed to the richness of the field and readily grasp its many open questions. However, students are only one of the many possible users of this Swiss-army knife for music evolution research.

Each chapter of the book features insights from two or more classical disciplines. In no particular order, we find systematic musicology, auditory cognitive neuroscience, evolutionary biology, animal behaviour, genetics, theoretical linguistics, computer science, and developmental psychology. Honing is the one scholar that could attempt, and pull off, such a multidisciplinary endeavour. He was academically raised in informatics and artificial intelligence (Honing, 2006) while cultivating music performance and theory at the conservatory. Honing then extended his research to the psychology and neuroscience of music, performing experiments in human adults and babies (Winkler, Haden, Ladinig, Sziller, & Honing, 2009). Fascinated by the evolution of musicality, he then dove into the biology of music, also testing the perceptual underpinnings of music in birds and primates (Merchant & Honing, 2014). Such cross-disciplinary fertilisation, and Honing's vision, produced this unique volume.

Summarising the whole book would be impossible, but a few authors' perspectives are worth highlighting, together with some ideas recurring through the chapters. Tecumseh

Fitch's contribution deals with big-picture methodological approaches to biomusicology. It also shines for its effectiveness in summarising a bulk of scientific findings in a few paragraphs while suggesting new research venues. Based on Fitch's previous review papers, one can expect his hypotheses to predict and shape the field for the upcoming decade. A recurring theme throughout the book is the concept of gene-culture coevolution (e.g., Patel's and Trainor's chapters). New generations of school students are taught to (justly) admire Darwin's ideas, sometimes contrasted with Lamarck's naïve intuition that behavioural modifications would result in inherited traits across generations. In brief, we learn that Darwin was right and Lamarck was deadly wrong. Now, in the fields of biology (Bonduriansky & Day, 2018) and cultural evolution (Jablonka & Lamb, 2014), the idea that not only genes influence behaviour but also behaviour affects biologically inherited traits is gaining traction (de Boer & Thompson, 2018; Thompson, Kirby, & Smith, 2016). Likewise, and purely hypothetical for now, human music and musicality may have coevolved, mutually enhancing and shaping each other. More in general, a recurring thread in the book is the need to go beyond unproductive nature–nurture dichotomies (Fitch, 2011), realizing that humans are cultural animals (chapters by Fitch, Patel, Trainor, Merker, and colleagues). Cultural evolution (or glossogeny, as Fitch calls it) comes out of this book as a key counterpart of musicality (Fitch, 2017; Trehub, 2015); glossogeny can enrich Tinbergen's (1963) four classical questions surrounding mechanism, function, ontogeny, and phylogeny. Relatedly, over the last few years, increasing efforts have been made to understand the genetics underlying musical aptitude. Genetics and individual differences are the focus of the chapter by Gingras and colleagues (see also Järvelä, 2018, for an overview specifically aimed at psychologists, and Ravignani, 2018, for a perspective from cognitive biology). Likewise, studying musicality in animals other than humans is becoming increasingly acceptable and productive (see in particular, the chapters by Zuidema and colleagues, and Wiggins and colleagues). The best example of this cross-species approach is probably Patel's (2006) hypothesis on the connection between rhythm and vocal learning, which has spurred a series of experiments in mammals and birds (see also chapter by Merker and colleagues).

The reader mostly interested in auditory sensation, perception, and cognition will also find worthy material. For instance, Laurel Trainor's chapter showcases her intriguing ideas of how some features of musicality may piggyback on auditory scene analysis. Trainor takes us on a journey from the physics of sound to the psychophysics of the cochlea, from the cognitive processes explaining why bass lines must have a lower pitch (Hove, Marie, Bruce, & Trainor, 2014; Lenc, Keller, Varlet, & Nozaradan, 2018) to the connection between development and evolution. Likewise, the chapter by Julia Kursell is a brief history of auditory psychophysics and its relationship with hypotheses on music origins. This chapter also gives an idea of how young this field is, by noticing how recent its core building blocks are: e.g., Fechner's psychophysics is less than 200 years old and so is the Fourier transform.

A final insight from the book is that music goes well beyond auditory perception and cognition. For instance, lullabies sung across human cultures are inherently multimodal (see Sandra Trehub's chapter). Likewise, while Westerners mostly enjoy music via passive listening, many musical cultures around the World show strong contextual overlap between music and movement. Dance, a behaviour long neglected from a biological perspective, is gaining traction as a respectable field of scientific study (Brown, Martinez, & Parsons, 2006; Fitch, 2016; Ravignani & Cook, 2016). This goes in parallel with an increasing interest for rhythm in music cognition, exemplified by the seminal chapter spearheaded by Hugo Merchant (see Iversen, 2016, for alternative evolutionary perspectives on rhythm).

Reading the book triggered two thoughts in my mind. First of all, it inspired me to teach a course on the origins of musicality. This book would be a perfect companion for such a course, leading students through a path of evolution, anthropology, acoustics, neuroscience, and archaeology, to name a few. Second, it made me think how intellectually challenging must have been to partake in the Lorentz workshop in 2014, which spurred its participants to write this book's chapters. The workshop was a truly multidisciplinary meeting of social, human, and natural sciences. Beyond the challenges, looking at the group picture in the Preface, this workshop must have also been a lot of fun. This is how true interdisciplinarity looks like, and all readers will be inspired by it.

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