BOOK REVIEWS

P. L. Marston
Physics Department, Washington State University, Pullman, Washington 99164

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Music Perception (Springer Handbook of Auditory Research)

Edited by Mari Riess Jones, Richard R. Fay, and Arthur N. Popper

Springer, New York, 2010. 264 pp. Price: $139.00 (hardcover), ISBN: 978-1-4419-6113-6

The past two years have been rather exceptional for music perception scholars, because of the publication of not one, but three, large-breadth handbooks that summarize this multifaceted research field: *The Oxford Handbook of Music Psychology* (Oxford University Press, 2009), *Psychology of Music: From Sound to Significance* (Psychology Press, 2010), and, finally, *Music Perception* (Springer, 2010), one of the last in the Springer Handbook of Auditory Research series. These updates were long due because the last publication with a similar scope was the second edition of *The Psychology of Music* (Academic Press, 1999). Although covering partly overlapping topics, these recent handbooks are rather different in function. The Oxford handbook has more of the characteristics of an encyclopedia of music psychology research: It is indeed a collection of rather focused and quickly consumable essays that often deal with highly specific research topics within a variety of domains (perception, neural processing, performance, etc.). The Psychology Press handbook has all the qualities of a course textbook: It lays down a comprehensive learning path that starts from the necessary foundations (e.g., acoustics and neurophysiology), passes through the most fundamental aspects of music perception, and spreads to various related fields (e.g., performance, development, social aspects, and emotions). Finally, the Springer handbook is for advanced students and researchers interested in the perceptual processing of musical materials.

The vast majority of the research summarized in the handbook focuses on the perceptual processing of musical patterns rather than of isolated musical tones (Chapter 1, by Riess Jones). For this reason, the handbook should have been more appropriately titled "Perception of musical patterns" if only one-tone musical compositions were the norm. Overall, each of the seven core chapters does a masterful job of summarizing a large amount of empirical work and theoretical development on specific research topics. The authors are to be commended because they do not fall into the common trap of pushing their own research agenda when writing a review essay. Among the various contributions, Chapter 3, by Krumhansl and Cuddy, is perhaps the most enjoyable because, thanks to its clarity and linearity, it presents a topic loaded in music-theoretic contents in an effortless manner: tonal hierarchies. Krumhansl and Cuddy bring together behavioral, computational, and neurobiological studies on this topic under the umbrella of a theory based on three principles: tonal hierarchies are both psychological and musical fact, and they are the product of statistical learning. Chapter 4, by Trainor and Corrigal, presents systematically the behavioral evidence on the effect of musical training and development on the processing of pitch, rhythm and metrical structure, and emotional musical information. Chapter 5, by Hunter and Schellenberg, is a captivating review of a very sensitive and methodologically hostile topic: emotions and music. After summarizing the main points of theoretical debate on emotions, both within and outside the musical domain, readers are presented with two fundamental topics for research in this domain (musical structure and emotions; measurement methods) and two more focused, but not less important, aspects of emotional response to music: chills and liking. Chapter 6, by McAuley, focuses on musical tempo and rhythm. Empirical results on the perceptual processing of tempo (e.g., preferred tempo, discrimination, production), and rhythm (grouping, beat, meter), follow a masterful review of the main models of perceptual processing for these aspects of the musical structure. Chapter 8, by Halpern and Bartlett, focuses on memory for melodies (short- and long-term) and examines the effects of musical structure and expertise. The last portion of this chapter is particularly engaging because, based on scientific evidence, it deconstructs several folk-psychology ideas about the effects of aging on the memory for musical materials. Chapters 2, by Patterson, Gaudrian, and Walters, and Chapter 7, by Large, are perhaps less in tune with the rest of the handbook, for different reasons. Chapter 2 is very focused in scope; it applies the concept of acoustical scale in a source-filter model to the perception of melodies and, most importantly, of musical instrument families and of register within the families of sustained-tone musical instruments. The chapter discusses some interesting online sound examples synthesized by manipulating independently the acoustical scale of the source and filter. The aim of Chapter 7 is instead to substantiate the hypothesis that a neurodynamic model based on nonlinear oscillators accounts for a large amount of empirical evidence on the human processing of sound (e.g., amplitude compression, aural harmonics, pitch) and music (tonality, rhythm).

As explained above, the handbook is better suited for readers already knowledgeable of various basic fields (e.g., music theory, acoustics). Indeed, only at times do authors present detailed definitions of the basic concepts (e.g., initial sections of McAuley's chapter on tempo and rhythm). The positive side of this is that the handbook delivers in a very short space a very large amount of information on the state of the art in music perception. Indeed, the detailed, up-to-date and systematic presentation of theoretical debates, empirical results, and controversial aspects of the literature give the researcher and the motivated student a head start in the design of novel experiments, and saves them the large amount of gruesome work necessary for distilling facts and theories from a very large number of journal papers.

In sum, the *Music Perception Handbook* is a precious research instrument. The community and the scientific field will undoubtedly benefit by this novel publication.

BRUNO L. GIORDANO
Centre of Interdisciplinary Research on Music Media and Technology
Department of Music Research
McGill University
Montreal, Quebec, Canada

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