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Music Cognition

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Though it had a share in the long histories of philosophy and psychology, the study of music cognition emerged as a separate academic specialty only in the 1980s. The editing of an important reference, Deutsch's *The Psychology of Music* (1982), the founding of a scholarly journal, *Music Perception* (1983–), and the publication of a collegiate textbook, Dowling and Harwood's *Music Cognition* (1985), helped to focus and coordinate what had been a diverse set of inquiries located in departments of music, psychology, philosophy, neurology, physics, and computer science. This consolidation took place primarily in North America, but the study of music cognition has always been thoroughly international. The very first International Conference on Music Perception & Cognition (ICMPC) was held in Kyoto, Japan (1989), and today seven national or multinational organizations participate in hosting its large biennial meetings.

In the preface to Dowling and Harwood's text, the authors give special praise to three scholars whose work has been foundational to the field: Hermann Helmholtz (1821–1894) for his *Die Lehre von den Tonempfindungen als physiologischer Grundlage für die Theorie der Musick* (1863), Leonard B. Meyer (1918–) for his *Emotion and Meaning in Music* (1956), and Robert Francès (1919–) for his *La Perception de la musique* (1958). Helmholtz's physiological research showed that understanding how the ear transforms vibrations into the sensation of tones could inform such traditional music-theoretical subjects as consonance and dissonance. Meyer's studies of gestalt principles demonstrated how certain emotional reactions to music could be initiated by the frustration of expectation. Francès's studies of listeners' responses showed how the methods of modern psychological experiments could be adapted to important questions of music theory and aesthetics. The interests of these great pioneers are still important in the field of music cognition. Helmholtz's focus on the physiology of the ear has now been transformed into the study of the entire auditory system, aided by electroencephalographic (EEG) and brain-imaging technologies (e.g., fMRi). Meyer's interest in musical pattern has now been integrated into the larger questions of human pattern recognition, memory, and retrieval. And Francès's adaptations of research paradigms from cognitive psychology were just the first of thousands of controlled studies to follow.

In the main, research in music cognition is judged by the standards of empirical science. In some cases music-cognition research groups are thus eligible for funding from national or multinational science foundations. Such support has been very important in fostering brain research related to musical tasks. As with many publications in science,

one sees the prevalence of multiple authorship. The interdisciplinary nature of "the science of music" leads to the formation of research groups whose members each contribute their special training and expertise to the collective wisdom of the group.

Though researchers in music cognition often use empirical methods, statistics, and computer simulations, they are interested in more than just "averages." Individual differences are an important area of study in psychology generally, and in music cognition in particular. Researchers study individual differences in music performance, perception, recognition, and recall. Most studies in music cognition show a wide range of individual difference, which may be due to differences in musical training and memory, or possibly also due to different ways in which active listeners help to construct their own experience of a piece of music. Many studies lead to the inevitable questions about the relative roles of "nature versus nurture," and an important subspecialty in music cognition concerns itself with answering such questions. Obviously that work has implications for music education, and for developmental psychology generally.

Just as Jean-Philippe Rameau relied on the acoustician Saveur for information about overtones, or as Riemann relied on Helmholtz for information about the sensation of simple musical intervals, so today music theoreticians may rely on research in music cognition for information about the human ability to "think" in sound. Research in music cognition thus serves as a lens to project the latest findings in cognitive science onto the interests of scholars with special interests in music.

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