

Although written by 14 different contributors, the style of writing and level of presentation are reasonably consistent throughout. The authors of 12 chapters reside in England, with the U.S.A. and Canada being represented by one chapter each. This is an English handbook which is quite different in style and content from the handbooks which we have become accustomed to on this side of the Atlantic Ocean. This English handbook covers much of the same material as is to be found in "Handbook of Noise Control," edited by Cyril M. Harris, which was published in the U.S.A. in 1979. Harris' handbook is full of charts, nomograms, tables, and other pertinent design data. This work relies more heavily on prose descriptions than would an American handbook.

A large fraction of the citations is to the English literature, and several examples are given which are particularly pertinent to the English culture. For example, in the chapter on noise in the home, the appliances which are described include whistling kettles, electric toasters, and coffee percolators. Americans would not normally associate these sources with noise problems in the home.

While this reviewer is not sufficiently knowledgeable in law in the United Kingdom to comment, there is a major omission in the chapter on noise and the law in the U.S.A. The section which discusses federal statutes to control noise includes the efforts of the Environmental Protection Agency (EPA) to carry out the requirements of the Noise Control Act of 1972. Unfortunately, the activities of the EPA are only taken up through 1978. The termination of the EPA noise control program in 1982 is not described. The reader is left with the impression that the EPA program is still in progress.

The chapter on techniques of noise control is much too sketchy: Nineteen pages long with only four figures and one table. This chapter concludes: "Noise control has always been a difficult and frustrating task..." Perhaps so, but this will come as no surprise to the acoustical specialist who will have to look elsewhere for definitive practical solutions to noise control problems.

Summarizing, this is a handbook on "noise" rather than "noise control." A large amount of material is covered in a relatively small space. The expository level is largely descriptive; hence, the engineer and designer will need to consult one of the many references given for more detailed information. While this may not be considered the definitive handbook on the subject, it is a volume which many practicing engineers and others concerned with noise may find useful.

WILLIAM W. LANG  
*Physics Department  
Vassar College  
Poughkeepsie, New York 12601*

## Musical Structure and Cognition

Peter Howell, Ian Cross, and Robert West, Eds.

*Academic, London, 1985.  
xiv + 338 pp. Price \$57.50.*

This book constitutes a series of essays on a number of issues concerning musical cognition. Chapter 1, by Cross, provides a brief historical review of pitch structures in Western music, including a discussion of the

concept of tonality. In the next chapter, West, Howell, and Cross review a number of formal models of the representation of pitch sequences by the listener. Chapter 3, by Lee, provides an approach to the hierarchical representation of rhythmic patterns. There follows a chapter by Watkins and Dyson, which describes a series of experiments on the effects of tonal structure on ease of processing pitch sequences.

The next chapter, by Cross, Howell, and West, deals with the question of how listeners arrive at a sense of scale in the course of listening to a melody. Next, Sloboda and Parker report a study analyzing the attempts of subjects to recall a melodic fragment that is repeatedly presented. Chapter 7, by Edworthy, presents findings on the detection of differences in interval size and in contour in a melodic framework. Chapter 8, by Costall, considers whether or not pitch identification performance on the part of possessors of absolute pitch differs in principle from that of nonpossessors.

The last four chapters of the book concern performance. Clarke, in Chap. 9, describes a study which examines the timing of events in performances by skilled pianists. Chapter 10, by Baily, argues for a closer examination of the spatiomotor aspects of music as performed on specific instruments. Chapter 11 by Howell, and Chapter 12 by Harvey, examine principles governing voice production and feedback.

The chapter by West, Howell, and Cross, on "Modelling perceived musical structure," addresses a subject of considerable interest. The authors attempt to paraphrase and summarize several formal theories of the representation of pitch sequences by the listener. These include formulations by Simon and Sumner, Deutsch and Feroe, and Lerdahl and Jackendoff. It is unfortunate, however, that the chapter contains a number of errors (such as the substitution of Eb for D# in their recasting of Deutsch and Feroe's Fig. 1). Because of these, the reader is urged to consult the original sources rather than rely on descriptions of the models offered in this chapter.

Two chapters which, in this reviewer's opinion, deserve careful reading, are by Lee and by Clarke, both on the processing of rhythmic patterns. Lee begins with the assumption that when a listener perceives a given rhythm, he represents this as a tree structure that accommodates the notes and rests as terminal symbols. In the chapter, he considers various principles by which the listener arrives at the interpretation of a particular sequence as the realization of a particular rhythm. As Lee himself points out, this approach is concerned only with idealized temporal patterns, and does not consider the deviations from strict timing and fluctuations in tempo that are characteristic of real music (a problem for all existing clock models). This latter question is considered, at least at the level of the performer, in Clarke's study of timing in piano playing. One interesting point to emerge from this latter study is that differences in tempo are associated with differences in patterns of relative duration, since, for example, music is segmented into fewer units at fast tempi. It remains to be determined how the listener, in establishing a structural representation of a rhythmic pattern, incorporates his or her knowledge of the various principles underlying acceptable deviations from strict timing in live performances.

In general, this is a book for the specialist who already has a good knowledge of the existing literature in cognitive psychology and music theory. As such, it provides some interesting new findings in this interdisciplinary field.

DIANA DEUTSCH  
*University of California, San Diego  
La Jolla, California 92093*