THE STRUCTURAL DETERMINANTS OF MELODIC EXPRESSIVE PROPERTIES*

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It is common to describe music in terms drawn from the vocabulary of emotions. For example, the opening theme of the second movement of Beethoven's *Eroica* sounds solemn and mournful. This phenomenon has received considerable experimental investigation (see Levi, 1978, 1979, pp. 39–59, for a review of this evidence). The primary finding is that in a matching task judges can agree in their selection of emotional terms to depict a musical excerpt. The amount of agreement varies with procedure (e.g., the number of terms from which selection is made) and the musical materials presented.

Although consensus in assigning emotional terms to music appears to be a reliable phenomenon, the empirical evidence has accumulated independently of any theoretical interpretation. Another problem, discussed below, is that the factors governing the selection of particular emotional terms for a given musical piece remain elusive. The present study views the description of music in emotional terms from the Gestalt theoretical conception of physiognomic perception. Thereby, a framework for predicting the selection of such emotional terms is formulated and tested.

A full discussion of the Gestalt concept is provided by Arnheim (1949) and Kofka (1940); the present author has adapted this conception specifically to music (1978). In summary, the Gestalt view regards that emotional terms, as in the example above, denote phenomenal attributes in the auditory perception of the music known as expressive properties. The class of all such perceptual properties takes its name from the particularly salient expressive qualities attending human physiognomy. As a variety of whole property, expressive properties are held to depend on the structure of the entire percept to which they belong and are altered

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by the manipulation of conditions which determine this structure. These conditions typically are the kind of stimulus relations available in a given material. In terms of the example above, the problem becomes one of determining (a) the perceptual structure of the Eroica theme which makes its depiction as solemn and mournful appropriate, and (b) the stimulus relationships sufficient to achieve a perceptual organization of this kind.

The Gestalt concept of physiognomic perception is unique, at least to the knowledge of the present author, in hypothesizing a testable relationship between perceptual structure and expressive properties. It is pursued here despite controversy over several aspects of Gestalt theory. For example, the concept of expressive property is founded on the Gestalt view of perceptual organization. Reliance on this conception seems allowable even in the absence of a universal and/or mathematical statement for all the Gestalt organizational principles (see, for example, Hochberg, 1971, pp. 433–442, for a review of the problem). Logically, this and other theoretical problems need not be resolved to find Gestalt concepts applicable to particular empirical phenomena.

In order to test the Gestalt concept musically, it must be shown that musical structure determines the choice of emotional term in describing music. To this end, the following hypothesis is offered: the structure of a melodic figure, or that formed by related figures, determines the expressive properties of that figure or related figures. The term "structure" refers to the sequence of internal groupings comprising a melody as a perceptual unit. In turn, this structure is assumed to depend upon the system of relations within the auditory stimulus distribution. This author (1978, 1979, pp. 12–39) discusses the kinds of evidence which support the conception of melody as a class of structured, auditory figure.

Testing this hypothesis is the main concern of the present study. Two tasks remain before empirical evidence may be presented. First, the present hypothesis must be assessed in the light of available findings. Second, in order to guide the experimental manipulation of melody, structural characteristics must be identified whose expressive value is known or may be inferred. An auxiliary hypothesis will be formulated to this end below.

A number of investigators have used the direct manipulation of musical excerpts to study the determinants of applying a particular emotional term to such excerpts. Rigg (1964) summarizes these findings to construct a larger picture of musical expressive determinants. The studies he reviews employ a methodology set forth by Hevner (1936): an excerpt from a piece of music is altered by changing one feature in isolation (e.g., slow to fast tempo, high to low register, or major to minor key); the emotional terms selected for the original and the