MUSIC COMMUNICATION RESEARCH: THE CONNOTATIVE DIMENSIONS OF MUSIC MEANING

> Thesis for the Degree of Ph. D. MICHIGAN STATE UNIVERSITY EARL MARSHALL PALLETT 1967





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## This is to certify that the

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#### ABSTRACT

## MUSIC COMMUNICATION RESEARCH: THE CONNOTATIVE DIMENSIONS OF MUSIC MEANING

### by Earl Marshall Pallett

Little is known about the meaning of music. To put it another way, it is difficult to describe verbally the various components of music meaning and to explain or to predict the occurrence of certain components when listening to music. Both sociocultural and scientific conditions are such at the present time to warrant an attempt at a verbal description of the meaning of music.

Sociocultural conditions are: 1) availability of many different styles of art and music in particular. Many new styles are complex combinations of parts of traditional styles. Thus, more understanding of the basic aspects of music meaning (Western music of last four centuries) is necessary in order to more accurately and precisely interpret the specific meaning of different styles of music. 2) Not e nough of an attempt is made to consider the nature of music referents, whether they be abstract properties of many observable objects and events in the environment or unobservable emotional events. 3) Music education in public schools and universities needs improvement. They do not make sufficient use of verbal descriptive language in relation to music.

Several scientific theories and methodological techniques are: 1) Interest in communication theories, such as human cognitive processes, the most general connotative meaning of human languages, and the influence of verbal language on various cognitive processes. 2) New methodological techniques to analyze multivariate data.

The purpose of this study is to describe the connotative meaning of music. That is, the underlying dimensions of music meaning that are common to most people and most music. Also, a description of specific music pattern - connotative meaning associations will be begun.

Connotative meaning is to be defined generally in terms of verbal language. More specifically in terms of bi-polar adjective scales and finally as dimensions made up of the scales.

The task involves first defining the music code as clearly as possible in terms of the range of available elements and relations and music styles that have been constructed from it. Then to select a set of music patterns which will elicit a broad range of connotative meaning.

Second, a survey of theories about basic emotions, connotation, and more specific theories of the meaning of non-verbal codes and music lead to the development of hypotheses about the dimensional nature of music connotation in terms of which bipolar adjective scale selections are made.

In this research, 18 melodic patterns and 26 scales were selected. These were presented to 90 music students in June, 1966.

The methodological technique selected as most appropriate to analyze the data is factor analysis. It was applied to a correlation matrix of adjective scales to generate a set of independent factors. From these factors, inferences were made about psychological dimensions of connotation.

The results were rather clear. Four relatively independent dimensions appeared.

1) aesthetic evaluation: beautiful-ugly, graceful-awkward, etc.

- 2) mood-emotion: happy-sad, friendly-ominous, etc.
- 3) stability-tautness: deliberate-impulsive, stiff-elastic, etc.
- 4) dynamism: strong-weak, active-passive, etc.

### MUSIC COMMUNICATION RESEARCH:

## THE CONNOTATIVE DIMENSIONS OF MUSIC MEANING

Вy

Earl Marshall Pallett

## A THESIS

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### CHAPTER I

### INTRODUCTION

## Music as Communication

Communication is the most typical and prevelant of all human activity. A typical communication model (8) includes a source, message, channel and receiver. The communication process involves purposive source transmission and receiver interpretation of messages.

Generally, the source and receiver can be a society, institution, group, role or individual. In music, many sources and receivers have labels such as composer, performer, critic, listener, etc.

Both the source and receiver have certain important capabilities to facilitate communication: 1) skill in encoding or decoding the sign system code; 2) attitudes toward each other and the message; 3) knowledge about the message subject matter; 4) similar socio-cultural heritage.

The channel can refer to several things in relation to messages. It can be the message "vehicle", such as sound waves or, in terms of new technological developments, radio, television, etc. Besides this it can be the vehicle carrier, such as air. Finally, it can be the sensory decoding channels such as hearing.

Messages are the means by which human communication is attained. A message has several different aspects: 1) code -- system of signs and relations between them. The study of language codes is called "syntactics" (57). This includes the identification of sign elements, such as phonemes and morphemes, and the relations between signs, such as

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morphology and syntax (grammar).

2) content -- meaning or subject matter of the message. The study of language content is called "semantics". Relations between signs and referents outside the language are described. It also can include a description of the internal relations between the code referents or meanings.

3) treatment -- method of message construction. The study of language treatment is called "style". Regularities in the selection and combination of message code elements and relations of which the source has a choice is described.

Thus, message code and style description and analysis does not directly unearth message meaning. We must define the communication purpose in terms of the source or receiver and not in terms of a message description and analysis in isolation from a communication situation.

The major task for a communication researcher is to obtain an analysis of the meanings intended by the source and interpreted by the receivers plus determining who is the intended audience. This task can be discussed usefully in terms of two sets of concepts: specificity of intent (23) and instrumental, consummatory, expressive and coping behavior (8, ch. 1).

Generally, intentions can vary from highly specific to very nonspecific in terms of audience and meaning. Expressive refers to very non-specific source oriented intentions, such as a yell when kicked. Here the communicator is more concerned with expressing himself than with possible effects on certain others. "Coping" refers to specific intentions. Highly specific or "planned" communications are usually receiver oriented.

Any communication situation may be some of both. The music communication situation primarily is rather non-specific in terms of both audience and meaning specificity. Of course, commercial artists are more specific in intention than are fine artists. That is, the commercial artist may definitely want the receiver to buy the music but he is not too sure about the nature of the meaning. The fine artist uses music as an expression guided by internal, personal patterns of understanding and feeling. Thus, here rather low specificity of intent exists about communicating any particular effect to certain others.

Next, "instrumental" refers to using the message as a cue or tool to generate other behavior which will be rewarded. "Consumatory" refers to the interpretation of the message itself offering immediate reward.

Again, any communication situation may contain some of both. Music communication situations are primarily consummatory, where the effect may be dancing or an emotional reaction, etc.

Thus, it appears that music communication is not a very accurate and precise affair. A more detailed description of music communication in society might clarify the problem.

### Music Communication Today

In western society the church initially controlled the codification of music. Consequently, music was limited in its social purposes to maintaining the stability of religious work and other group rituals. However, during the Renaissance the individual began to free himself from antiquated political, economic and social restrictions. Music became a means to express more personal artistic needs. By the time of the

industrial revolution, with its increasing leisure time for the emerging urban, middle class music became "mass entertainment."

Generally, the social structure influenced the development of different kinds of music and different listener roles. The most traditional division is between classical or serious music for the elite vs. popular music for the masses. Today a trend exists in American popular music to assimilate much of classical music, with various modifications. Consequently, the division between these categories tends to dissolve as s tyles mature.

Nowadays, there is vivid evidence of a tremendous increase in the amount of cultural information that is accumulating and available for human use in advanced societies. This situation is due to the growth of scientific knowledge and technological developments such as mass communication media. Music from many centuries and many countries is being made available to more and more people. Many new art styles are appearing, some of which are combinations of older styles, such as "pop" art. This situation is caused equally both by the availability of examples of many past art styles and by the growing demand for art for all the people. After three centuries of being class-bound and nationbound, art has again become a property of all mankind (25). For the first time in history, music of one style or another has penetrated the everyday life of all members of society. As Jaqaue Barzun states:

> Music nowadays, whether we like it or not, is interwoven with the texture of our lives from morning till night. (6, p. 13)

The tremendous expansion of cultural life in America has

influenced the emergence of the cultural consumer as part of a "comfort" class (81). But Kaplan (41) feels there is an urgent need to improve the nature and role of cultural or aesthetic knowledge. Both artists and consumers need more accurate and precise knowledge of the meaning of the arts.

With the spread of art and entertainment via mass communication has come attempts by the media to instruct, criticize and evaluate these messages for the consumer. But, according to Deihl:

> ....compounding the confusion has been the birth of the worst thing ever to happen to the artist and his confused public -- the newspaper critic. These critics, along with sundry art historians, well meaning culture hounds, philanthropists, quiz show hosts, has created a garbled and profuse vocabulary and a distorted attitude toward art from which it may never recover. (20, p. 9)

Art education, of course, is given in the public schools and universities. This could be the best way for most people to obtain a basic, general understanding of the arts. But these courses are presently inadequate to prepare a person to deal intelligently with the vast amount of information about the arts in magazines, newspapers and television and with the many available art styles.

There seems to be a need, in particular, to improve music education in America. A movement is growing presently (48)(73) to broaden education in general music courses in secondary schools and university music appreciation courses emphasizing primarily a performance conservatory orientation and only classical music to include emphasis on the listener-

consumer-aesthetic orientation and many music styles.

A major difficulty with art education, and especially music "education" courses could be defined as a communication problem. Few teachers can lecture about the arts in a persuasive manner. Most music teachers go to the opposite extreme of the critic and use only dry, technical language. Leonard Bernstein on his TV series is a rare example of someone who is able to intermingle just the right kind and amount of verbal information to help involve the listener in the work of art.

More specifically, the problem is: what kind of verbal information is most significant? This leads to the underlying question about the meaning of music. A need exists for scientific research to empirically establish new knowledge about music communication.

One contribution can be made by a scientific study of music meaning in terms of a verbal description. This implies that the focus will primarily be on the receiver. The resulting description will be more understandable and of immediate use to educators and critics who can then incorporate it into programs of instruction for all music consumers.

### Music Meaning

Meaning commonly refers to the idea, response or interpretation of a sign. Thus it intervenes as the psychological conception of the external or internal referents, such as environmental objects or events, verbal behavior and emotional reactions.

According to Berlo (8, ch. 8), it is useful to distinguish between three kinds of meaning: structural, denotative and connotative.

First, a language code contains many signs which exhibit regularities of usage, such as word formation and sentence formation. When messages are constructed many more stylistic regularities are added. Structural meaning refers to the comprehension of these regular relationships between signs and other signs. For instance, one aspect of structural meaning would be the comprehension of redundancy or the ability to predict one sign from knowledge of another.

Second, denotative meaning refers primarily to qualities of objects and events outside the language named by language signs. Further, the best denotative meanings imply relationships to rather specific and concrete objects and events that are observable, such as "John F. Kennedy." Signs such as "teacher" are more abstract and relate to large sets of objects and also to large sets of possible behaviors. This sign has denotative meaning to the extent that there is agreement about the referent objects and properties between sources and receivers.

Third, connotative meaning refers primarily to personal experiences and less to qualities of external objects and events. Social experiences such as attitudes and emotions are communicated. When connotative signs such as "majestic" refer to the environment they usually are related to large sets of objects and in terms of abstract properties. Thus, because connotative communication about both persons and the environment is so difficult to trace to referents, traditionally it is assumed that less agreement exists among sources and receivers as to the referents.

What is the meaning of music? Or, of what is music a sign? First, an even more basic question is asked by Agron Copland:

Is there meaning to music? My answer would be "yes". And can you state in so many words what the meaning is? My answer to that would be "no". Therein lies the difficulty. (18, p. 19)

Music communication is unique in that the message consists of abstract temporal curved lines with little specification by a source of the nature of the referents.

This may lead to the conclusion that: a) no sign-referent relations exist; b) only structural meaning is available; c) music is unique in being a set of sound patterns which may have any possible object or event as a referent.

This situation should not be interpreted as a reason for concluding that a communication approach is fruitless. On the contrary, this is just what is most needed.

### CHAPTER II

### RELATED THEORY AND RESEARCH

### Introduction

To guide this study theory and research from the behavioral sciences will be drawn upon. Since all languages have a two sided nature (sign system and significant system), the division between syntactic and semantic descriptions will be most important in this chapter.

The syntactic description is usually developed prior to the semantic description. This is because a) the sign system is directly observable and b) the description of its structure should be developed as independently as possible of knowledge of the significant system to avoid bias. In this chapter, linguistic syntactic description is discussed followed by a discussion of music syntactic descriptive work.

Semantic description is more difficult because the significants are more complex and meaning is unobservable. An observable semantic study is provided by using verbal language. A new approach to the study of connotative meaning will be adopted. Theories of cognition and language are interrelated, culminating in a model of cognitive connotation. Based on verbal data, inferences can be made about the nature of meaning. Research evidence suggests that connotation has several dimensions.

Finally, comments are made in this chapter about what this research suggests about the nature of music connotation. A statement of specific

objectives for this study closes the chapter.

### Syntactic Description

It may be useful to first consider the approach to description in modern science. In scientific activity during the past fifty years or so a trend has appeared in the methods of describing phenomena. According to L. L. Whyte (87, p. 20), "science" more appropriately refers to the study of ordered complexity rather than to the study of simplicity. The use of concepts such as "organism" and "system" indicate this.

Any object or event can be conceptualized as a system. "System" refers to an interacting set of components, where each component is described in detail in terms of its structure.

The modern approach to the notion of structure includes traditional analytical "atomism" and intuitive "form-gestalt" approaches integrated within a new conception. Rather than emphasizing properties of basic elements in isolation (atomism) or on the qualities of phenomena as a whole (gestalt), theoretical emphasis is on overall structure.

Generally, all phenomena are characterized as consisting of many hierarchically organized levels of structure. Each level is defined in terms of a set of elements and relations. Elements have a potential for a set of relational or collective properties, and certain of these appear at each level to produce "functional wholes". In this study, relations will include either relational property values or statistical correlations. The present notion of structure implies an emphasis on the relations or arrangements between elements, within and between levels.

Generally, relations are of an interdependent nature rather than one-way dependence.

Basically, this research will be descriptive in substance. That is, attention will be on a "static" description of stable elements and relations holding among them. Later, these descriptive statements can be used for explanatory and predictive purposes within the framework of dynamic models and causal theory.

### Linguistic Description

The most well-developed syntactic descriptive work has taken place in linguistics. Linguistics has developed descriptive elements and relations which may be basic to all language descriptions. Thus, it will be profitable to discuss linguistics at some length.

The science of linguistics is divided into descriptive (a view of all the elements and relations available to a set of language users), historical (changes over time in terms of groups of language users) and comparative (changes across space in terms of groups of language users). The present consideration shall only be on the descriptive branch. Further, language only as sound and not as written symbol will be of interest.

Some of the most general aspects of the method of linguistic syntactic description should be mentioned. Traditionally, a taxonomic, unordered category approach has been used, based on same-different decisions. It is also deterministic rather than probabilistic because the goal is to specify the boundaries of all possible categories available for use, independent of any particular user communication behavior. That is, linguistics offers a picture of the elements and relations from

which any receiver selects in order to generate messages. The overall structure consists of a hierarchically organized set of levels.

The bulk of syntactic description is on the lowest levels. Here the sets of elements are of a maneagable size, less dependent on semantic variation and all elements are used with sufficient frequency so that the actual process of data collection and descriptive work is most productive.

Generally, the descriptive task for the linguist is one of reduction, going from the near infinity of encoded sounds used in language behavior to a small number which have a few common properties. Element and relation classes are identified on each level. Two important levels of structure must be distinguished: the lowest level includes element classes which have no semantic meaning in isolation (phonemes), while the next higher level element classes (morphemes, or more broadly and loosely the vocabulary of word) do have meaning in isolation.

Given the specification of these two levels of elements, a grammar of the language is developed. This includes classes of relations between elements, such as morphology and syntax. That is, a structural description of all permissibly sequences of elements is given. From this it is possible to distinguish between properly and improperly formed sequences, such as correct and incorrect sentences.

There are many different verbal languages. A goal of linguistics is to describe the category system (levels of elements and relations) from which all verbal languages draw upon to some degree. Each language is usually distinguished in terms of nationality or country divisions.

Whatever elements and relations are used by most all language communities can be considered as the "universals" of verbal language sign system.

According to Miller (53, p. 119), the notion of verbal "style" is used in relation to differences that exist between people who have been exposed to nearly the same culture and language background. In general, "style" refers to regularities in language user selection behaviors where choice exists. The description of styles can be nonquantitative or quantitative. Probabilistic analysis is used. Both the elements and relations identified in work on phonology, vocabulary and grammar plus new elements and relations identified from studies of composition practices are used.

For instance, "dialect" refers to a subgroup of people who use the same subset of phonemes. "Ideolect" refers to each individual difference in phoneme selection. However, most style analysis uses elements associated with significant variation in semantic meaning.

The most frequent element used is the word. In the area of content analysis (68), studies are made of propaganda, tabulating the use of different words which have the most significant intended meaning. Sometimes, the phrase or sentence unit is used. Also, type/token ratios are tabulated, where the interest is in how much a person repeats (token) an element (type). A related variable sometimes studied is that of vocabulary size variation across individuals. Sometimes the syllable unit is used in order to study the length and complexity of words selected. Similarly, the sentence length in terms of number of words is studied. In the area of Readability (44), word length and sentence length along

with personal words and personal sentences make up the four variables used in the Flesch Reading Ease formula (26). Besides all the above elements, sometimes differences in punctuation, such as amount of usage of periods or commas are studied.

According to Miller (53, p. 128), few linguistic studies of style have used more than a single variable at a time. He mentions only one study where the verbal style of two individuals were measured and described primarily with the word, phrase, clause and sentence elements, plus some syntactical relations and various other variables, such as tempo or number of words per minute.

In conclusion, many different descriptive elements have been used as style variables and only a few of them have been mentioned here. Most of these variables had only a few different values and usually were unordered category systems. It can be concluded that there are many ways to study verbal style. Perhaps a more relevant conclusion in terms of the needs of the present study is that with verbal language there are many ways to define variables which are significantly related to semantic meaning. How is this similar to work in music syntactics and how can it be a guide to help accomplish the present task?

### Music Description

First, other non-verbal language description which potentially may be more relevant than linguistics to some features of music will not be considered. (Examples are Kinesics (9), painting (40), facial expression (34), etc.) Primarily, they do not yet have as well developed

a syntactic description as does music itself. Some potentially relevant non-verbal language work will be in the development of classification systems of complex abstract forms.

Some aspects of the methods of music syntactics are similar to those of linguistic syntactics. A taxonomic approach with both unordered and ordered element categories is used. It is deterministic in relation to establishing the overall picture of possible elements and relations from which to choose. Also, music structure consists of a hierarchically organized set of levels. Finally, like verbal language music features discrete elements and sequential organization is dominant.

However, there are some significant uniquenesses to music research. Most important, the central task in musicology is not the description of overall structure of music in terms of permissible elements and relations, but is the historical study of music style (35). Thus, music studies never are very far removed from particular sources, in this case composers. This is probably characteristic of languages which serve primarily an "art" function. It is also appropriate to the methodology of humanistic scholarship, that of description of the authenticated document. Further, musicological studies are usually of written, graphic documents rather than of sounded documents. Within this context, communication questions about the nature of meaning are not studied because they require empirical testing of receiver responses. Linguistics is much more closely linked to psychology and other sciences than is musicology. Consequently, little work is done in musicology to improve methods of teaching courses in music literature and appreciation. The discipline of

Ethnomusicology (sometimes referred to as comparative musicology) is closely related to Anthropology and therefore does include both humanistic and scientific activity.

With respect to the development of a broad description elements and relations of music structure musicology has depended upon the work done in the sub-discipline of music theory. Within music theory has been developed many basic structural features which have not been questioned for many years. A brief description of the "pre-compositional" organization will further clarify why much of music research is that of style analysis.

The element set identified on the lowest level is very large and much larger than that which makes up the phoneme set in verbal language. This means that a large number of levels of structure can be identified. Also, music usually features more than a single sequence of tones. Thus, besides sequential structure the description must encompass a complex, simultaneous (vertical) structure.

No clear cut distinction is made that is analogous to the nonmeaning level (phoneme) and meaning level (morpheme) and so no distinction is also made between morphology and syntax. Therefore, the linguistic concepts of phonology and grammar do not apply very accurately at the present time. (Further empirical research may decide otherwise, if better notions of music meaning are developed.) It turns out in music that rather than just develop one set of meaning elements ("vocabulary") and relations ("grammar") from the lowest level element set ("phonology"), as was done in verbal language, several independent element sets and relation sets have developed from three subsets from within the lowest level set: 1) pitch has generated harmony, counterpoint and melody; 2) duration has generated rhythm;

3) timbre has generated orchestration.

The nature of each of these components of organization shall be described in Chapter III. In general, these components are relevant to different levels throughout the entire range of levels, as opposed to having them concentrated on the lowest levels as in verbal language. Actually, even the notion of levels is not clearly specified in music. Elaboration of this will also appear in Chapter III.

It must be made clear that each component with its elements and relations also is the location of the development of restrictions (permissible and non-permissible sequences). However, only the harmony and rhythm components feature an appreciable number of restrictions. Further, in music within a single component there may be several principles of practice, such as tonal or atonal harmony. However, as is characteristic of an art, a composer does not have to pay attention to any of the existing organization. (At an extreme, all of any piece of music is stylistic.) In sum, only a few "pre-compositional" constraints appear on many levels, so the constraints are never very "oppressive."

Given that music is an abstract art form having primarily connotative meaning, it is necessary to permit much freedom of selection on all levels and components of structure. This compensates for there being "less" depth or different kinds of semantic meaning for any given music pattern than exists for any given verbal pattern.

All of these components along with the lowest level element set define the nature of the music sign system that is available to a composer.

Music styles are defined by which and how many components are the object of selection and the uniqueness of their selection behavior, which consequently implies that "compositional" constraints are added to each component by each style. Given that there are few "pre-compositional" constraints and many components with many elements and relations, many different styles can be developed. Thus, it can be seen why much of musicology is style analysis.

Briefly, style divisions have been in terms of primitive - complex and Eastern - Western civilizations. A further breakdown by Palisca (66) is primitive music, folk music, European, Asiatic, Oceanic, African and North and South American music. Within the European schools or periods of style, such as romantic and classic, some universals in selection behavior have existed: pitch scales, triadic chords, fixed tempo, symmetrical measure groupings, etc. During the 20th century, most older styles are used plus many new styles have been developed.

Some comments should be made at this point about the use of musicological research to meet the needs of the present study. Generally, music style research has placed no special emphasis on the study of those variables which have the most semantic meaning as was done in linguistics. Also, no new variables have been added, probably because of the presence of so many variables within the many components. Due to the "humanistic" bias, elements and relations, such as tonality, chord progressions, motives, themes, and form sections, or overall features such as loudness, tempo, meter, etc., have been studied, without consideration for differences in semantic meaning. Some considerations have been made in psychology (21) about the semantic significance of these variables,

but further tests are needed. For instance, the phoneme-morpheme levels distinction needs to be tested.

Generally, Chapter III will demonstrate that the best approach in this study is to first slice into overall music structure in terms of lowest level elements and components. Some components, such as melody overlap other components considerably. Only one component, that of melody, will be studied. It will be shown to be sufficient for two reasons: 1) within this component, a broad slice across many music styles can be made. Thus, a rather broad range of meaning appears to be attached, possibly at least a small portion of all aspects of music meaning. 2) It permits a more careful selection of certain familiar, relatively well-defined variables on a hierarchically organized set of levels.

### Semantic Description

### Music sign-significant relations

An important distinction between verbal and non-verbal languages is related to the structural nature of the sign-significant relation. Generally, relevant structural relations can either be iconic (or resemble) or be arbitrary and not depend upon structural resemblances. Most language sign-significant relations include some of both. However, nonverbal languages, including music, primarily feature iconic relations.

Many different styles of music exist, from random music to more determinate program music. Theorists from Aesthetics, Psychology and Anthropology have ideas about the semantic meaning of music. "Causal" theories about the influence of music on various responses must wait until a more complete description of sign-significant relations is

accomplished. Theories which primarily describe iconic relations shall be considered first.

#### Iconic Relations

Formalists (69, part 10) stress only music sign-sign (as significant) relations, or structural meaning. Different formalists focus on different aspects of music structural relations. Although formalists do not refer explicitly to the notion of iconicity, most music sign sign relations vary in degrees of resemblance. For example, a motive will regularly be followed by a repetition or transposition of it.

The formalist theory of music meaning is too limited. First, in an absolutist fashion, it is implied that music meaning is isolated from meaning obtained from other sources. Second, although structural meaning is important in relation to all music styles, it is not a sufficient description of the meaning of music. Most all music is probably associated with emotions and feelings, too. Most theorists suggest relation to unobservable components of human emotional behavior. Actually, the simplest theory about the relation of emotion is that of hedonism or sensual enjoyment (69, part 2). Although the structural nature of the sign-significant relation is not made explicit, the basic materials of music, such as harmonic sounds and instrumental-vocal timbres, are felt to be related to emotional reactions.

Langer (46, ch. 8) spells out the relation to emotion more elaborately. She states that music, more than any other sign system, emphasizes the single purpose of enabling man to express abstractly the patterns of his most basic uniqueness: emotion. It is felt that man has

a need to symbolize emotional experience just as other experiences, and that the abstract forms of music seem to be most suitable. Further, music motion patterns are felt to be similar to patterns of emotion. Music is like the growth, deviation and resolution of emotions. Roger Sessions observes:

> ....in embodying movement, in the most subtle and most delicate manner possible, it communicates the attitudes inherent in, and implied by, that movement; its speed, its energy, its elan or impulse, its tenseness or relaxation, its agitation or its tranquility, its decisiveness or its hesitation. It communicates in a marvelously vivid and exact way the dynamics and abstract qualities of emotion. (78, p. 23)

Meyer (51) offers a more precise theory about the resemblance between music emotion. Meyer suggests that music patterns are related iconically to emotion arousal in terms of its probabilistic structural information.

The previous theories suggest that music is similar in important ways to internal emotional patterns. Other theories, such as Referentialism (69, part 3), posit that music communicates specific human emotions like happiness, anger, majestic, etc. Here the resemblance is based on relations to a more observable emotional behavior, such as skeletal movements. For instance, a piece of music might be bouncy which may only be similar to human motor movements occurring in "happy" events. With an event such as majestic or heroic, the relations of similarity become more tenuous. The significant cues of heroism depart from the immediate surface properties of the event and the music patterns that appear to be relevant (based on some research by this writer) are tonal chords, tonal sequential pitch intervals, brass instruments and medium or slow tempo, etc.

Copland begins to suggest the boundaries of iconic music meaning relations to emotional events:

How close should the intelligent music lover wish to come to pinning a definite meaning to any particular work? No closer than a general concept, I should say. Music expresses at different moments serenity or exuberance, regret or triumph, fury or delight ....take such a theme as the first main one of the Ninth Symphony (Beethoven) ...a feeling of strength, a feeling of power.... but one should never try to boil it down to "the fateful hammer of life", etc. That is where the difficulty begins. (18, pp. 20-21)

The above iconic relations also begin to suggest a shift from internal to external significants, some of which may not be primarily emotional events. Music may have iconic relations to objects and events, which themselves have either iconic or non-iconic emotion responses attached to them.

A few music styles, such as "program" music, may be practically identical to the external event and thus be similar to a large number of relevant cues in an event such as a bird call. Probably, there is a somewhat fewer number of similarities to important cues in events such as human motor movements or dancing. Even fewer may exist with temporal phenomena such as wind and water. Also, as was suggested by Sessions in relation to the nature of the music relations to aspects of emotion patterns, music is similar to conceptualized classes of abstract temporal forms, such as "stability", "elasticity", etc., which have a very large number of objects and events as members. Further, psychoanalytic theories (39) about music partially symbolizing basic but usually unconscious needs for feminity, sex, etc., would fit here. Finally,

Anthropologists feel that music is an integral part of culture and thus inevitably reflects its general structure and values:

.... the incorporation in sound, of dynamic tensions, tonicities and detensions that parallel, reflect or reconstitute those experiences in the individual biological-social life and in the collective social continuum characteristics of a culture. (77)

Generally, although much descriptive research is obviously needed, it seems that music is iconic to less properties besides rather abstract properties of most objects and events in the environment than is usually the case with most other human languages that have iconic relations, such as scupture, painting, etc. Further, the relations that exist may only be vague resemblances. However, music patterns may be similar to very frequently appearing abstract properties of most objects and events, such as stability, movement, tension, conflict, etc. Further, music patterns define a set of abstract forms which are highly regarded emotionally. Music expresses these patterns, making them observable. Thus, research into the nature of music sign-significant relations is certainly warranted.

### Arbitrary Relations

Most clearly arbitrary kinds of sign-significant meaning relations are of little interest, because they vary considerably across individuals and music style. For instance, a music pattern may be used in a film to denote a particular character or a certain piece of music may be someone's wedding music. However, a non-iconic relation of great generality is that of verbal language. It can be used to deal with some of the complexities of semantic description that are important to this study.

More specifically, most different kinds of music meaning are interconnected (cognitive organization) and also connected to emotional experience. In relation to the afore-mentioned aesthetic theories (formalism, kinetic-syntactic and referentialism), Meyer states:

> Any account of music communication that pretends to completeness must find a place for all three. The aspects of musical experience designated by these positions are inextricably linked. (52, p. 258)

Some of the sign-significant relations overlap, are redundant. This is especially true in the case of verbal significants. Most other significants also have verbal labels for their various states. (This has made it possible to write about these other significants in this paper.) It is with the use of verbal labels that the requirements set by Meyer can be met. It further turns out that the most music significants are labelled within the domain of connotative descriptive adjectives or verbs.

Whereas most semantic studies of human languages using verbal connotation are usually inadequate because more components of meaning (denotation), with music a connotative description appears to be sufficient.

Verbal connotations will be used for several reasons: 1) They are the most easily measured, because they are available to every receiver and they are observable; 2) They will reveal the broadest picture of overall music meaning, because they are used as labels for most significants; 3) The organization of this verbal translation may have some functional resemblance to the cognitive organization of music meaning; 4) They offer insight into the nature of individual and group abilities to communicate verbally about music.
The main goal in this study is to describe the meaning of music in an economical fashion. Afterward, a study can be made of the present methods of verbal instruction used in music education courses to supplement the presentation of music and suggestions made about developing more effective overall programs of instruction.

## Connotation

There are several sources of relevant research to serve as a guide for the development of a connotative description of music. This includes philosophers of aesthetics, linguists, psycholinguists, and social psychologists. Again, we shall begin by considering linguistics.

### Problems in Semantic Description

The semantics of verbal language has received less attention than syntactics (14). Three major difficulties are suggested: 1) The meaning of a particular sign, such as a word, usually cannot be studied to much of an extent in isolation, independent of a particular context of its use, for it can have different meanings depending on the context. That is, the context provides information leading to the definition, not providing the definition itself. 2) Given that there are many aspects to the semantic meaning of verbal items, a comprehensive definition would require the development of a classifitory scheme of all the objects and events in reality. 3) In terms of methodology, linguistics has never been prone to use the inferential method, which would be necessary in relation to unobservable referents.

Briefly, definitional work in linguistics has led to the use of the word unit and only in terms of denotative meaning. Based on the use of satisfactory grammatical and lexical meanings it is relatively easy to determine the meaning of larger sequences. Therefore, it has not been necessary to develop dictionaries for sentences. Actually, dictionaries do exist for some types of larger sequences (idioms).

Denotative meanings are the properties of verbal symbols which are essential for socially approved use in the speech community. Denotation includes grammatical and lexical components. This implies a division between structured and referential language significants. For instance, a grammatical definition may include reference to sentence structure (subject-predicate) and to form class (e.g., noun), while the lexical definition utilizes synonyms and specifies the property that this refers to in particular referent contexts (e.g., "strike" means such and such in the context of baseball).

The traditional definition of connotation used in linguistics which complements the traditional definition of denotation raises another problem: It has not been considered to be used regularly by most members of a speech community. It is considered an individual, personal matter, based on vague, uniquely defined external and internal referent contexts such as personality, attitudes, etc. That is, connotations of specific objects seems to vary continually within and between people. Consequently, no work has been done on the connotative definition of verbal units in linguistics.

In order to justify connotative definition research first requires considerable psychological analysis of the nature of the referent contexts

of a representative sample of people from a speech community. If a good deal of interpersonal agreement is revealed, then connotative definitional work would be useful.

It is posited here that connotation has both common and unique components. Most people would agree that they share many personal feelings with others, such as the "primary" emotions. Also, to some extent emotional behavior is learned. This increases the probability that most people share many personal behaviors, especially within a common environment, such as a particular socio-cultural system. We might assume then that human emotions have both a common and a unique component across individuals. The problem is to determine the nature of this commonality.

# Cognition

It seems that recent psychological research about human symbolic processes or "cognition" has suggested an approach which reveals aspects of connotation that operate in common across groups of individuals.

In contemporary psychology, the importance of theorizing about unobservable, "central" organism events is gradually being accepted. Cognitive theories are primarily about intervening psychological processes between symbolic input and output. "Cognition" traditionally referred to the study of thinking, but now encompasses intersecting phenomena distinguished with labels such as "meaning", "perception", "learning", "creativity" and "memory". The unifying theme is the individual's construction of an internal model of the universe around and within him by using symbol systems.

Two basic kinds of questions are asked about cognitive behavior: 1) How are the symbols decoded? That is, how is meaning learned? For instance, neo-behaviorists offer a "representational mediation process" (63, ch. 1) which features several stages of stimulus-response conditioning. Cognitive theorists (54) offer a cybernetic oriented approach featuring hypothesis testing. The present study assumes that connotative meanings are learned rather rapidly. Only adults have been studied and the assumption is that learning has reached a plateau and is relatively stable.

2) What do symbols mean? This is a question about cognitive structure or content and the concern of this study. Currently, psychological research is studying aspects of the internal organization of meaning which are relatively similar across individuals and sign systems. That is, underlying categories or dimensions of structure are suggested.

Generally, many music sign-significant meaning relations or concepts are developed and organized by most people. Following the model of cognitive content suggested by Bruner (12) which includes three modes of representation: enactive (motor), iconic (imagery) and symbolic (verbal language), most music concepts would be within the iconic representation. This includes percepts and images of the spatial and temporal fields and involves the connection of abstract music patterns with similar patterns conceptualized in relation to other phenomena. The central problem to be faced is how music patterns are grouped together and classified.

First, music patterns can be grouped based on structural variables developed in music syntactic description. But most of these variables are used in terms of structural meaning and not connotative meaning.

For instance, might music cognitive organization be in terms of the four categories of pitch, duration, timbre and loudness, or in terms of components such as melody, rhythm, and harmony? This is hardly likely when considering the ways in which enjoyable music patterns are described: stable, heroic, exploding. Possibly, connotative organization may lead to larger, more general groupings. In this study, we shall correlate structural variables to connotative variables and begin to expose the nature of there influence on cognitive organization.

Second, human emotional behavior plays an especially important role in the development of music cognitive structure. Langer (47, p. 71) suggests that perception is a process of simplification from the countless possible impinging stimuli and emotion is the act of emphasizing the exciting features of the simplification. Aldrich (2) offers an aesthetic mode of perception (opposed to a scientific mode) where perception moves to the surface of objects and emotion is allowed to engulf it. Obviously, not much is known about these interrelated phenomena, but it is likely that emotions influence the overall selection and organization of music cognitive structure. Also, emotion further plays an important role as an internal significant (abstract pattern of response) about which concepts can be developed and since it is present in the human receiver it operates as another part of the overall response to music. The concern of this study is only with emotions as it influences the selection and organization of cognitive structure which determines the interpretation of music patterns.

Third, many theorists (24) suggest and much research support exists for the notion that the nature of cognitive structure is dependent on

the nature of the languages that it processes. Especially verbal language is influential because it is the best means to facilitate the broadest range of intrapersonal and interpersonal communication. To quote Cofer:

> "Much thought involves, or, if you will, is verbal process and the form and content of a language probably makes some kinds of thinking and perceiving easier..." (15, p. 94)

That is, verbal language is not only used externally but internally. In psychological work, verbal elements and relations result in being used both as parts of hypothetical models of cognitive structure and as operational definitions of those unobservable phenomena.

It was mentioned above that Bruner suggests a symbolic mode of representation. It stresses methods of representation that are not necessarily similar to the phenomena being represented. That is, words do not usually resemble the object they are representing. When verbal language element classes and grammatical rules are learned, Bruner then states:

> "It becomes possible for him [child] to represent and systematically transform the regularities of experience with far greater flexibility and power than before." (12, p. 4)

Russian research by Vygotsky (85) has supported their notion of a second signal system which replaces classical conditioning with an internalized linguistic system for controlling experience itself. Thus, the symbolic representation may influence the iconic representation. For imstance, words have a structural feature of opposition (strong-weak) and this may influence the organization of concepts about music patterns

and other similar patterns. The nature and extent of influence needs much research. It is obvious that recognizable perceptual patterns exist far in excess of ordinary language words available to name them. Osborne points out:

> "When we need to talk about un-named shape qualities [in totum], we are at a loss and begin to use the language of metaphor, analogy and emotion." (62, p. 46)

Research is needed about the nature and organization of concepts about abstract visual and temporal forms. A useful beginning attempt will be made by approaching the complexities of music meaning through the use of verbal language. Fortunately, some recent work in psycholinguistics has completed part of the work.

The interest has been to study the common portion of connotative meaning for most people which is also common to most human languages. It is felt that a study of the commonness between people should precede a study of difference. This work was based partially on previous studies involving verbal descriptions of human emotions used to define many symbols in some human languages, such as facial expressions (88). It seems that a few emotion words are applied to many objects and events. Further, the study of synaesthesia behavior (63, ch. 1) revealed that stimuli from several modalities shared meanings and that most people seemed to share this integrated meaning system based on the use of verbal connotative labels.

The notion of "dimensions" of connotation is suggested by Osgood (63) where the research question shifts to: "which out of all the many

available connotative concepts (e.g., beautiful, majestic, balanced, floating, happy, etc.) usually do and do not covary regularly for most people?" By the use of a new multivariate methodological technique called Factor Analysis (33), it is possible to determine the amount of independence between the clusters of concepts. This model of cognitive structure includes a combination of quantitative mathematical and verbal language structural features, such as cartesian coordinate system, correlation and bi-polar adjective scales. The dimensions and adjective opposites may begin to offer some clues to the overall organization of music meaning concepts.

The results of the research by Osgood revealed several regularly appearing dimensions across different cultures and different symbol systems. Three major dimensions are: evaluation, potency and activity. The first refers to attitudinal judgments, the second refers to judgments such as strong-weak and hard-soft and the third refers to active-passive and excitable-calm judgments. Even though people may vary to some extent in their judgments on each scale, it appears that most people use these three dimensions. Thus, the notion of a common component of connotation is supported.

Given that music appears to have primarily connotative meaning, this kind of dimensional approach may turn out to represent a considerable portion of the music cognitive structure.

What connotative dimensions are involved in music communication? Possibly the above three dimensions will appear. No one has attempted empirical research of this particular nature with music. It is likely

that an evaluation dimension will appear. Music taste and preference phenomena has been of continuing interest to composers, listeners, social scientists and the commercial music business for hundreds of years (22). More interesting questions will be about the nature of the scales making up the evaluation dimension and of the nature of other dimensions and how they relate to evaluation. Chapter IV will study in detail all previous uses of the dimensional approach and suggest hypotheses about the nature of music connotation.

### Summary

Finally, to summarize, we have suggested that communication research is an interdisciplinary approach: from philosophy we have drawn a logical model for language analysis; from linguistics a descriptive model; from psychology a model of cognitive structure; from musicology descriptive work on variable identification; from aesthetics various theories about the meaning of music.

There are two goals in this study: 1) to describe the internal dimensional structure of the connotative meaning of music; and 2) to establish associations between music elements and connotative elements. On the input side, we intend to describe and manipulate music patterns and on the output side describe verbal connotative behavior, then inferences will be made about the nature the intervening cognitive content.

### Finally, to quote Rapaport:

The tracing of the pathways of the connections between musical structures and collective emotional needs would, I think, prove an exciting task. As far as I know, very little has been done in this direction. (70, p. 189)

# CHAPTER III

# MESSAGE STRUCTURE

## Introduction

The task in this chapter is to obtain a broad sample of music patterns. First, with the help of psychological and musicological theories, perceptually relevant aspects of music structure will be identified and described. This description will be carried on in terms of the linguistic scheme of phonology, vocabularly, grammar and style.

Secondly, it is suggested that all perceptually relevant structure is not equally relevant connotatively. Consequently, the most connotatively relevant component of music structure shall be selected. From this component a small sample of patterns will be selected in terms of three stages-levels, dimensions and variable values.

# Perceptually Relevant Structure

For the psychologist, perception or comprehension of the sign-sign relations or syntactics of music is the first stage in the decoding **Process.** But most syntactics descriptions and style analyses of music **have** been based on little empirical research about receiver decoding **abilities.** In this paper there will be no measurements of the ability to **comprehend various** patterns or features of certain patterns. Initially, **it shall be assumed that there is a good deal of agreement in this task of "stimulus definition" across receivers.** 

Prior research in experimental psychology has established that the basic low level units on pitch and duration are "perceptually relevant". Pitch range, pitch intervals and duration lengths are well within the thresholds (absolute, differential and terminal).

But "music" usually refers to temporal motion which implies the decoding of many sounds in sequence. Given that the input consists of a series of quickly decaying bits of sound energy, the receiver must "expand the present". Wertheimer (86, p. 72) states that when presented with a series of discrete stimuli, we do not as a rule experience a number of individual things. When the separate sounds are contiguous, they will interact so that the occurrence of each affects the appearance of the other. This interaction leads to the perception of relational properties and larger sequential meaning units. Larger wholes are experienced. In general, according to Boring (10, p. 168), relational properties (pitch intervals, etc.) dominate non-relational properties (absolute pitch values) in perception.

There are many relational properties that appear to be perceptually relevant. Kohler (45, ch. 6) states that a longer, more complex relational property of "shape" is the most important property of things. In pictorial research Gibson (30, chap. 5) and Attneave (3) feel that surface contour is an important cue since it is a high information region. Also, Miller (55) has found support for the notion that human beings use longer units ("chunks") because they are better at making slow, complex decisions (many alternatives) than fast, simple decisions.

Few psychological theories are available to deal with complex shape

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or form perception. Gestaltists and Associationists have both (based on different assumptions) offered very general laws of perceptual organization, such as proximity, figure-ground, closure, symmetry and contiguity, repetition, climax, contrast, return and balance, respectively. These can be summarized as aspects leading to a general law of simplicity: we see what is simplest. But these concepts are not sufficiently tied to stimulus variables from which to predict responses in complex situations such as listening to string quartets. Little of the necessary empirical testing of hypotheses has been accomplished because of the different POSSible locations of independent variable (distal or proximal) and tremendous number of stimulus variable that would have to be defined and controlled. Hochberg (38, p. 89) suggests angles and continuous lines Variables in relation to pictorial perception of single line drawings.

But music usually offers more complex patterns such as the following: As a melodic sequence gets longer, more relational properties (harmonic, rhythmic, melodic) and amount of past experience becomes significant in the perceptual selection process. Coding strategies are learned in order to separate relevant from less relevant elements. For instance, there is a need to separate major accented tonal relations from minor ornamentation. Hochberg would suggest that if presented with a sequence of tones, the simplest "path" will appear which connects the relevant tones. Little or no research is available to suggest a list of most probable basic "Patths" in music perception.

Initially, it is necessary to adopt the assumptions of the **Musico**logist that his syntactic descriptions containing many variable **identifications are perceptually relevant.** Actually, with few or no

denotative constraints on the construction of patterns, composers must be rather sensitive to receiver pattern perception decoding abilities. For instance, they follow rules such as not using pitch intervals greater than a 10th.

At this point there will be an overview of the syntactic description of music structure presented in terms of linguistic levels of analysisphonology, vocabulary and grammar, and style.

# Phonology

This term refers to non-meaningful, non-isolatable dimensions of the lowest level unit, commonly called the "tone". The tone corresponds somewhat to the "syllable" in verbal language. When considering the notion of phonology in relation to connotation, the criteria of lack of meaning of low level elements does not hold, but the criteria of no context independent, stable meaning does hold. Separate pitch and duration values may vary a good bit in meaning as the context grows larger and relational **Properties** become more important. Due to the accumulation of properties, they may increase in meaning as "parts" of larger pattern "wholes". Actually, these notions will be tested to some extent in this study. There are four basic properties or dimensions to consider on the lowest 1evel - pitch, duration, loudness and timbre. A rough estimate of the total number of combined values on these dimensions is 225. With this Ereat a number at the lowest level of structure, the possible structural **complexity** in terms of the variety of hierarchical development in a music composition is enormous.

#### Grammar

In one sense there is no vocabulary and grammar at all in music as in linguistics where all the users of the language accept a "common practice" set of "words" and syntax. To quote Myhill:

> The classification of possible tonal material into good and bad or (better) permissible and non-permissible is thoroughly out of place in a music theory for the present time. (58, p. 197)

Fewer general practices exist in music than in verbal language. Most of verbal language grammar resides at the lowest levels of structure, while the common practices in music appear at all levels but to a lesser extent. In music there is wider acceptance and even expectations of new vocabulary and grammatical rules which contradict old rules being developed and co-existing together which leads to a reduction in the range of usage of the old rules. For instance, atonal music was developed and co-exists with traditional tonal music and has achieved a wide range of acceptance in a manner that never happened, say, with the introduction of James Joyce's Finnegan's Wake in verbal language.

At this point a brief description of the overall available classes of elements and relations will be discussed. Within this organization on many levels, composers can construct music messages.

In Western music, the interest has focused primarily on developing **Components of organization derived from the basic pitch, duration, loudness and timbre dimensions.** Actually, the most effort has been devoted to **Pitch** and the least to loudness.

Important aspects of loudness, such as accents and dynamics are

incorporated and elaborated to a large extent as aspects of other components and so will be mentioned in these later contexts. General theories about the use of timbre have grown around the problems of orchestration and scoring music patterns for different numbers and combinations of voices and instruments. In the past several hundred years there have been many new instruments and the possibilities for different kinds and sizes of groups, from unaccompanied solos to symphonies, has increased. General practices have standardized the use of many combinations of timbres, such as string quartet, dance band, symphony, band, etc. (43). Other common practices are that percussion instruments are associated with rhythmic aspects of music, while strings, reeds and brass are assigned to harmony and melody.

Theories of temporal organization or "rhythm" as it is most commonly called have been neglected in western music, especially in proportion to its complexity and importance. There are three basic general practices that should be mentioned here: 1) pulse- one of a series of regularly recurring precisely equivalent stimuli, marking off equal units in the t emporal continuum. 2) Meter- the measurement of the number of pulses between more or less regularly occurring accents. There are strong and weak accents and the most frequent accent patterns are duple and triple. 3) Rhythm- another level of accented-unaccented pulse or beat patterns contained within the melodic sequence of tones. That is, in music there are different kinds of temporal organization operating simultaneously, where the meter is one and the melodic rhythm is another. (17)

Grammatical theories about pitch organization are of central interest in western music. There are three somewhat separable pitch centered components: melody and harmony, plus a counterpoint component based on an integration of some aspects of both melody and harmony.

Harmony has received the most grammatical attention in western music. Harmony refers to the vertical organization of many simultaneously occurring tones and to low level aspects of the sequential relations between these vertical arrays. The theory is based on the concept of tonality and has generated two general practices: tonal and atonal.

Tonality approach is based on the diatonic scale where different scale positions, such as the tonic and dominant, are assigned different significances. With the notion of the "triad" (root, third and fifth) as central a class of possible chords are available. Class relations or chord progressions follow the principles of root dominancy and dissonance reduction.

The atonal approach devises practices where the traditional tonal key centered dominance is neutralized. The basic feature is to use the 12 tone chromatic scale instead of the diatonic scale. From this has been developed a 12 tone row technique which determines the order of a sequence of pitches. In this way sequences are composed that tive no continual preference to any tone or interval. So the intervals and pitch shapes contribute to overall unity what tonal centers did in traditional practices. Actually, it turns out that the music is composed in such a way that the tonal center shifts rapidly, since it is perceptually impossible to completely eliminate tonality with the present phonology.

Generally, melody refers to shaped single tone sequences. Not much in the way of common practices have developed within the melodic component. Several large vocabulary classes are continually distinguished in musicological analysis, such as intervals, motives, phrases and themes. Rules for establishing relationships between these elements are the general aesthetic "laws", such as repetition, contrast, balance, continuity, etc., and various transformations, such as inversion, augmentation, etc.

The counterpoint component might more correctly be referred to as instrumental harmonic counterpoint in relation to polyphonic music (72). This deals with the means for developing musical structure with two or more simultaneously occurring sequential lines. It uses certain melodic vocabularies, such as interval and motive, in conjunction with most of the harmony elements and relations.

Briefly, higher level principles of organization have developed over the centuries. According to Copland (18, p. 76), given the goal of balance, the most basic principle to be applied on the higher levels is that of repetition. Various "forms" have appeared and apply to two broad levels: 1) based on the identification of thematic material, the divisions within a section of a piece are suggested. A familiar form at this level is ABA or AABA. Higher forms deal with entire movements, such as symphony, sonata and suite.

### Style

Since no pre-compositional organization is necessary, virtually all of the music vocabularies and grammars can contribute to the development of musical styles. Thus, style basically implies a regularized process of

element and relation selection or invention in order to generate messages. Since music vocabularies are very large, many different styles can emerge.

The first problem in style analysis is to determine what bodies of music are units of style. It might be a cultural area, such as Europe, or a school or individual, etc. In western music, certain selection combinations have obtained recognition and have been regularized. They have been labelled as "classic", "romantic," "jazz," etc.

The second problem in style analysis is to determine the nature of the homogeneity within a set of pieces. Nettl states:

The main purpose of describing bodies of music is, after all, to distinguish them from each other in ways which are significant in the sense that they reflect differences in cultural and historical tradition. Another purpose is to tell the listener what makes the music... have the particular effect on him which it has. (59, p. 187)

All the elements and relations of music organization are available to the musicologist. Traditionally, pitch aspects of music are used, such as tonality, scales, intervals and harmonic chords. Further, a statistical approach is needed to find out which variable values occur most frequently. The goal is to describe the behavior of many different variables using many orders of statistical analysis to find out not only the frequency of occurrence but the varied nature of the musical context in which these occurrences take place.

# Connotatively Relevant Structure

We have seen that there are many components of music-timbreorchestration, rhythm, harmony, melody counterpoint and forms. Each one of these components includes an extremely large number of pattern possibilities. However, it may be that neither all components nor levels of structure contained within them are equally relevant to connotative meaning. The interest is in those aspects of music which have connotative significance. According to Cooke (16, ch. 3) and Meyer (51, p. 7), the lower levels of structure seem to be most relevant to connotative meaning. That is, variation in connotative meaning is influenced by variation in patterns around the "attention span". This limits it to components such as melody, harmony, rhythms and timbre.

But are all these components equally relevant? Recently, Henkin (36) did an impirical study using factor analysis, of variations in preference of a wide variety of music excerpts from different styles. This study may help to answer the question. The results of the factor analysis of preferences showed two strong factors, easily labelled in terms of components. They are melody and rhythm. A weaker factor, called timbretexture-dynamic appeared also. It appears that these three are interrelated. No harmonic factor was pulled out. This agrees with Copland (18, p. 22) who states that melody, rhythm and timbre obtain the attention and concentration of the listener while harmony is taken for granted as an underlying aspect revealing itself primarily as a part of melody. Consequently, we might argue that harmony is closely related to melody in terms of connotative relevance since they both come from the

pitch dimension. Thus, the major contributors to expressive differences are the melodic and rhythmic features. That is, they have the most connotatively significant vocabularies.

This points up the fact that music vocabularies and grammars have been developed without enough empirical study of the nature of various aspects of human decoding such as perception and connotation. That is, harmony features the most well-developed grammatical theory of music, but it appears that our sampling does not necessarily have to concentrate on that region of the space which offers the most structural theory.

Are melody and rhythm equally important in terms of expression? Since melody intersects with most other components and thus contains rhythm, sufficient attention for the present can be given to rhythm just by sampling from melodic structure. Further, it contains the timbre, loudness and monophonic texture parts of the third factor. In general, this suggests that within melody appears most of the significant features of most kinds of music styles.

In conclusion, by selecting melody component or subpopulation of patterns, it will be possible to draw a sample which has a reasonable combination of scope and depth for the initial study of the connotation of music.

# Melodic Component Structure

Because of the complexity and role of melodic phenomena in music, there is only a minimal suggestion of elements and relations. These various elements and relations have been mentioned previously. More elaboration on definitions of melody would be appropriate. Melody is

defined as:

- 1) a sequence of two or more tones in which pitch is varied.
- 2) an upper (on the surface) "wavy" line among several simultaneously occurring lines.
- 3) a sequence with properties of symmetry, continuity, closure and singleness of tonality.
- 4) a sequence of period length (around 8 measures).

While most of these definitions consider melody in terms of high level wholistic units, the present research will focus on melodic structure where melody is the highest level of structure.

In order to begin to sample, an operational definition of the population is needed. Given that melodic phenomena is a part of a larger music space, the overall model will be based on a "matrix" method. Since many of the boundaries of the music space are undefined, first an n x m matrix of cells shall be considered, with melodic phenomena operationally defined as the first row of cells. To enable the use of one sampling unit on all levels the basic unit which differentiates each cell will be a tone. The symbols in each cell of Figure 1 refer to the simultaneous and sequential aspects of music structure. The first subscript refers to sequential music patterns of length from 1 to n tones and the second subscript refers to vertical, simultaneous music patterns of length from 1 to m tones.

The criteria of dealing with many levels of structure is central. Although there is no agreement in music theory as to the definition of levels of melodic structure each successive sequence in tone length is considered to be the next higher level.



c <sub>11</sub>	c <sub>12</sub>	c <sub>13</sub>	c <sub>l4</sub>	C <sub>15</sub>	c <sub>l6</sub>	c <sub>17</sub>	c <sub>18</sub>	c <sub>19</sub>	•••	•••	c <sub>140</sub>	
C <sub>21</sub>												
C <sub>31</sub>												
C <sub>41</sub>												
•												
•												
•												

Figure 1

Not only does melodic structure contain many levels but the tone contains pitch, loudness, duration and timbre dimensions where each of which consists of a cluster of variables with many values. It can be seen that several stages of sampling will be required: A) levels, B) dimensions, in terms of variables, C) variable values. These stages of sampling are interdependent. Since the melodic component contains a very large number of patterns and since the final sample of patterns must be rather small in this initial research, quite a number of limitations or constraints must be placed on sampling at every stage. So the sampling criteria must be selected with care.

#### Level Sampling

Given the tone unit, approximately 50 cells or levels of the first row are within the melodic sampling domain. In terms of Figure 1,  $C_{11} - C_{150}$ . Generally, the goal is to select enough melodic patterns to find the range of meaning across melodic structure. Using linguistic terms, it can be suggested that each cell contains a vocabularly. Since in temporal sequences the parts appear somewhat in isolation, it may be common to attach meaning to all cells. All cells but  $C_{11}$  have a set of sequential syntactical relations. At present the focus shall only be on a vocabulary sampling. Whether each cell contains a set of words similar in connotative meaning is to be determined.

As a first criteria, the sample must include a good spread of levels, so the lowest and highest levels shall be selected. To the extent that the lowest single tone unit,  $C_{11}$ , is phonemic in character the structure of syntactic theories of codes related to denotative use are similar to syntactic theories of codes related to connotative use. If there is consensus about the meaning of some properties of the single tone, then it will be interesting to find out the nature of its influence on meaning formation at higher levels. As for the highest level, melodies vary a good deal in length in terms of single tones. Initially, melodies or themes which are around 40 tones,  $C_{140}$ , in length shall be selected.

Since the rate of growth of connotative meaning probably is greatest at the lowest levels, a more complete sample should be taken. So besides  $C_{11}$ ,  $C_{12}$  and  $C_{13}$  shall be selected. For some music styles,

such as contemporary styles, even a three tone sequence may be used as a basic melodic unit upon which to generate longer sequences and unify a whole composition. More extremely, the frequent use of a two tone sequence, for instance, Stravinsky's "<u>Rite of Spring</u>" which features the continual use of the pitch interval of a 4th, attachs a specific character to the piece. At these lowest levels there should appear the most rapid expansion in kinds and amounts of connotation. Possibly, on level two intersubject agreement as to nature of meaning may increase markedly.

With reference to the middle levels or cells, no statistical data is available about the most frequently used cells. However, two broad classes of patterns have traditionally been posited: motive and phrase. So the task will be to sample from each of these classes.

A motive is usually no less than three tones in length and no more than six-eight tones in length. This is a typical expressive unit in baroque, romantic and modern styles. It is a label for the smallest (actually melodically incomplete) ideas or kernels with some pitch shape or rhythmic pattern of distinction used as the basic unifying unit in a composition. It probably has relatively context independent connotative meaning. So initially in this research, cell  $C_{16}$  shall be selected.

The phrase is a longer sequence which permits more internal structural relations such as tonality and meter. Thus, it is probably more context independent and melodically complete. In a sense, it is "one-half" of a melody or theme (4 measures long). It is the typical basic unit of classic, romantic and popular music. It may contain several different motives and seems to vary in length roughly from eight to twenty

tones. Actually, the variation in pattern lengths gets high within this higher level class of patterns. Consequently, phrases varying around cell C<sub>112</sub> shall be selected.

In making the above decisions, help has come from musicologists such as Reti (74), Newman (60) and Grout (31). In summary, six levels of structure have been sampled:  $C_{11}$ ,  $C_{12}$ ,  $C_{13}$ ,  $C_{16}$ ,  $C_{112}$  and  $C_{140}$ .

### Dimension Sampling

All the basic dimensions (pitch, loudness, duration and timbre) will be used as they are non-isolatable. Actually, all possible melodic properties will be available and the question becomes one of determining the nature of their appearance.

Each of these dimensions is to be conceptualized as being made up of one or more variables. Each has only one variable in C<sub>11</sub> but within the succeeding levels the number of variables increase due to the appearance of relational properties. Also, across dimension variables appear, such as contour and symmetry. The large number of variables within dimensions on higher levels are probably correlated in terms of their influence on meaning. So only a few variables on any level will need to be identified.

Dimensions and their variables can either be manipulated, held constant or permitted to vary in an uncontrolled fashion.

First, performance variables such as rubato, phrasing, articulation, and tone quality (differentiated from timbre) could not be controlled very well in this study. These variables are very difficult to measure. They might have been held constant if one performer had been found who played all the instruments to be selected. This was not possible in the present circumstances. However, by using "school" musicians tended to reduce the expression of extreme individualism and approximated holding these variables constant. In the future, these variables should definitely be manipulated.

Secondly, overall loudness level was held only approximately constant. It was found to be too difficult to vary when only using single instruments. It is much easier to vary when the group size varies. Other aspects of loudness such as stress and accent are varied as a part of other dimensions.

Many pitch, duration and timbre dimension variables are manipulated on a wide range of values. Actually, timbre refers to only one variable which reappears at each level.

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Variables on the two lowest levels are few in number and are identified clearly and precisely. They are listed below.

Variable selection is not so easy on the higher levels. More possible variables appear on succeeding levels. Various musicologists have suggested significant variables on these levels. For instance, Cooper and Meyer (17) and Nettl(59, ch. 5) suggested most of the duration variables. Dallin (19, ch. 2) and Cooke (16, ch. 3) suggested the pitch contour variable and narrow-wide pitch range variable. Grout (31) among others used the style category variable. Forte (28) among others was referred to for the tonality variable.

Few of these variables are identified very clearly. Especially the more commonly used but gross style category system (by period) and

melodic contour variables offer only vague clues as the nature and number of more objective variables to use as principles of classification. Many objective variables such as narrow-wide range, tonality, conjunctdisjunct, etc. are available. Both style system and objective variables are used but they are somewhat redundant.

The following is a cell by cell list of selected, manipulated variables organized in terms of dimensions.

- Cell<sub>11</sub> Pitch: absolute pitch levels. Duration: duration lengths. Timbre: instrumental music.
- Cell<sub>12</sub> Pitch: intervals and direction. Duration: distance pairs, speed. Timbre: instrumental music.
- Cell<sub>13</sub> Pitch: interval pairs and direction angle change. Duration: metric-non-metric lengths, speed. Timbre: instrumental music.
- Cell<sub>16</sub> Pitch: shape, major tonal-minor tonal-atonal, conjunct-disjunct, and melodic style category by period. Duration: staccato-legato, metrical-non-metrical lengths, repetitions-varied series of lengths, meter, speed. Timbre: instrumental music.
- Cell<sub>112</sub> Pitch: contour complexity, major tonal- minor tonal-atonal, narrow-wide range, melodic styles by period. Duration: staccato-legato, simple-complex length series, metricnon-metric lengths, syncopated-nonsyncopated, meter, speed. Timbre: instrumental music.
- Cell<sub>140</sub> Pitch: contour complexity, major tonal-minor tonal-atonal, narrow-wide range, melodic styles by period. Duration: staccato-legato, simple-complex length series, metricnon-metric lengths, meter, speed. Timbre: instrumental music.

# Variable Value Sampling

In the final sampling stage the actual music patterns are obtained and can be exibited. The previously selected variables all have two or more values or states. In general, these variables vary in terms of the clarity of specification of different values. This shall not be too much of a handicap in the present research because only a few values can be selected from each variable. Further, due to the gross differences between values to be sampled, the "cultural" definition rather than the "physical" definition of variable values shall be used. For instance, instead of defining a particular pitch value as 256 cycles it will be defined as middle C.

The main reasons why only a few variable values can be used are subject centered: availability of subjects in terms of class hours and subject fatigue. Given the maximum of one class hour, this results in being able to use a maximum of only 20 patterns. With six levels of structure, approximately three patterns can be used. Thus only three variables values at most can be drawn from each variable on each level.

The range of values of all variables on the lowest level are reasonably small in number, are defined clearly and are used with relatively equal frequency. That is, there is a subset of pitch values and duration lengths within which the usage is approximately equal, in relation to the typical melodic structure. Further, the values on all variables (pitch, duration) but one (timbre) are related quantitatively. When variable values are related quantitatively rather than nominally there are more interrelationships between the values and this helps to make the

basic sampling criteria of obtaining a wide number of values much easier to meet.

Four main categories of timbre values exist (percussion, string, reed, brass) and all are presumed to be used a significant number of times with melodic phenomena. The single most frequently melodic instrument is selected from each category in the initial research and sampling from all levels is only among these four instruments.

On level two and three the values of the variables are defined clearly but the quantitative nature is more complex. Further some information about frequency of usage has been collected here Ortmann (61), Fuchs (29).

The values on each variable will be sampled separately and then combined. To minimize bias from personal experiences with music, several sampling procedures were developed. The author along with several musicologists each selected values for each variable. These sets of values were compared and a set was selected. If there were several equally applicable patterns, then the selection was made by a random procedure. A more detailed specification of the value selections and combinations follows.

The following 18 patterns shall define the six levels of melodic structure to be used in this research:



pitch- a wide range selected within the frequent "melodic range"
duration - a wide range of duration lengths; speed = 100.
timbre - percussion (piano), string (violin) and reed (clarinet).



pitch - intervals of M2nd, P5th and octave; two down direction and one up direction.

duration - pair of long durations, pair of short durations and one of varied lengths; speed 50, 90, 120.

timbre - brass (trumpet) and clarinet and violin.



pitch- repetition of "zero" interval, varied pair (M2nd-M6th), and repetition of 2nds (M2nd-m2nd); zero angle or direction change, upward direction with slight direction change, down direction with no direction change.

duration - repeated metric series; combination non-metricmetric, repeated submetric series; speed of 80, 100, 140.

timbre - piano, violin and trumpet.

The complexity of melodic structure on the succeeding three levels requires the addition of more involved sampling procedures. Problems are exposed when dealing with the relatively complex high level variables. First, the variable values or, in the case of nominal relations, categories are oversimplified. A study of the schemes used by Dallin (19, ch. 2), Marquis (49, ch. 1), Cooper and Meyer (17), Copland (18, Ch. 5) and others reveals that many possible values on each of many variables are collapsed into a single category and the boundaries between categories are not clearly delineated. For instance, upward direction-downward direction-arch countour categories and repetitiousvaried duration length series categories reveal these weaknesses. As a rough check on the exhaustiveness and to counter the possible weaknesses of oversimplification the <u>Dictionary of Music Themes</u> (5) was used. It contains themes from over 10,000 of the most well-known music works composed in western civilization during the past four centuries. This was used to see if there were many melodic patterns that could be found which were not easily categorized by the above schemes.

Next, since complex higher level patterns include a tremendous number of possible combinations of variable values and the present interest is to find music meaning in terms of patterns that are used regularly, it seems best to sample "real" patterns that are familiar. It was possible to construct patterns on lower levels because all possible combinations are used.

To use real patterns produces sampling problems, as the variable values are already combined and so selection must be simultaneous. This makes it harder to meet the criteria of a wide range of values. So the sampling criteria becomes one of maximizing the overall differences between the three patterns to be selected on each of the three higher levels.

The sampling procedure continued as the patterns for each level were selected by the author and by the above mentioned musicologists. Given these patterns, a single set of three was chosen for each level so that no pattern contained a variable value which appeared with some other pattern such as a particular rhythm variable value being repeated across two patterns. The sampling was completed when maximum differences existed between patterns. In the case of equally adequate patterns, a random selection method was used.

A more detailed specification of value selections and combinations follows.



- pitch upward direction, downward direction, upward arch; atonal, major mode tonal and minor mode tonal; very disjunct, conjunct, and somewhat disjunct; modern, baroque and romantic styles.
- duration moderately staccato, staccato and legato; triple submetrical pattern, duple submetrical pattern and varied around metric length; speech of 70, 100, 130; two duple and one triple meter.

timbre - piano, clarinet and violin.



pitch - simple arch contour, complex contour with many direction changes, and oscillation contour; medium pitch range, very wide range, narrow range; major mode tonal, atonal, minor mode tonal; romantic, modern and folk song styles.

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duration - legato, staccato and moderately staccato; simple repetition of submetric, complex intermixing of fragmented duple and triple patterns, and repeated syncopation; speed of 100, 80, 120; duple meter.

timbre - violin, piano and clarinet.



- pitch simple oscillation contour, wide upward arch contour, and complex mixture of many downward and upward directions; narrow range, wide range with several climax points, lower position but wide range with many ordered, building climax points; simple diatonic major mode tonal, chromatic major mode tonal, atonal; folk song, romantic and modern.
- duration staccato, legato, intermediate; repeated metric length, repeated submetric, and alternately augmented pattern around metric length; speed of 140, 100, 80; duple meter.

timbre - clarinet, violin and piano.

## CHAPTER IV

# RESPONSE STRUCTURE

# Introduction

Just as we have described music structure in terms of various levels, dimensions and variables, we shall offer a description of music connotation structure. The main goal in this chapter is to describe music connotation in terms of dimensions through the study of the organization of verbal adjective variables which will lead to inferences about cognitive connotative structure.

By finding dimensions the definition of connotation can be reduced to only a small number of adjectives. Thus the attempt includes a reduction of the great amount of connotative conceptual redundancy that has occurred in communication about the meaning of music.

It is hoped that this definition will be relevant to most music, and most people most of the time. Therefore, a "structured response" approach will be used where the adjective variables are selected as a part of the hypothesized dimensional description and this fixes the overall domain of choice for the subjects. This makes it all the more important to study carefully a wide range of relevant research.

Chapter II maintained that research with connotative behavior developed jointly in many areas such as linguistics, psychology and aesthetics. This chapter will discuss the somewhat narrow descriptive theories of emotion, and the broader descriptive theories of connotation which utilize operational definitions in terms of verbal language.
These descriptive theories will be divided into three categories: 1) general code-free descriptions. 2) descriptions of the meaning of spatial and time oriented non-verbal codes. 3) descriptions of music meaning.

These theories are valuable in two ways: 1) they suggest hypotheses about the connotative dimensions of music. 2) they guide adjective sampling.

## General Code-Free Theories of Emotion and Connotation

These theories provide the broadest possible picture of the basic aspects of connotative structure. Possibly only a portion may be relevant to music connotation. Two ways of describing this structure have been used. First the categorical approach will be considered, followed by early and recent dimensional approaches.

One relatively recent categorical description of primary emotions by Tompkins and McCarter (82) offers evidence that there are nine primary affects: enjoyment, interest, surprise, fear, anger, disgust, shame, distress, and neutrality.

Another categorical theory by Plutchik (67) posits a similar set of categories but groups them in terms of bi-polar relations, and suggests that the variables within each bi-polar pair of categories are related in terms of an underlying intensity dimension. This structure is derived from animal and human adaptive behavior theory. There are four bi-polar categories: reproduction (joy)- deprivation (sorrow); destruction (anger) protection (fear); incorporation (acceptance) - rejection (disgust); orientation (surprise) - exploration (expectation).

The two descriptions differ slightly because the former does not include an incorporation category, while the latter does not include neutrality category.

Early dimensional descriptions of emotions for centuries suggested a single pleasure-pain continuum. An empirical test by Woodworth (88, ch. 5) some years ago using a variety of adjectives did not support a one dimensional description. In more recent research (76), two and sometimes three relatively independent dimensions have been found: pleasure, activation (or sleep-tension), attention-rejection (or control, extroversion-introversion, approach-withdrawal, etc.). Actually, much of this latter dimensional research was not code-free in that most of the results were based on only one important symbol of one code: facial expressions.

It appears that the categorical and dimensional descriptions of emotions are interrelated in that the categories describe more fully a limited set of familiar behavioral events, while the dimensions describe more abstract underlying properties of a larger set of possible behavioral events. Thus, any one of the categories might be partially related to one or all three underlying "referent" dimensions. Although it will be useful to compare the above categorical theories to the early categorical music meaning research at a later point in the chapter, the present descriptive study will only use the dimensional approach.

The most recent dimensional approach and that which most influences the present study is one that does not attempt to find the underlying dimensions of emotion. The phenomena of interest is human communication (symbolic behavior, sign learning theory) and the problem

has been to find the most generalizable aspects of meaning which appear to be relevant across all human symbol systems. Osgood (63) suggests that connotative meaning is most generalizable.

A model of overall cognitive structure is developed primarily around two theories: 1) neo-behavioristic association learning theory- representational mediation process, and 2) methodological technique of factor analysis.

Briefly, a "semantic space" is postulated as a region of some unknown dimensionality, Euclidian in nature (a multi-dimensional cartesian coordinate system). Factor analysis implies a mathematical classification procedure into a series of dimensions. The dimensions (or "a axes") are independent of each other. Further, there is some finite number of "representational mediation reactions" available to the organism, and the number of these alternative reactions corresponds to the number of dimensions in the semantic space. When a person judges some object or event, he "places" it on a psychological continuum defined by a pair of recriprocally antagonistic reactions which correspond to the bi-polar adjective scales. A rather limited number of specific scales can be used to operationally define the space and will be representative of the main underlying organism dimensions of connotative meaning.

Attneave (4) states that those who think that a factor analytic styled model is too complicated for human decoders are misguided in the wrong direction. Such a model is too simple.

But in the initial work by Osgood there was no development of hypotheses about the semantic (connotative) contents of these dimensions.

This lack of theory about the nature and boundaries of each possible cognitive dimension makes it difficult to interpret the results and assessing their validity, toward revealing something more about human behavior than how adjectives are organized.

Actually, the adjectives were initially organized as bi-polar opposites, permitting two directions besides intensity judgments. Kelly (42, ch. 2) offers evidence in support of this basic notion about the content of cognitive structure. That is, bi-polar relations are typical but not absolutely necessary.

Generally, the boundaries of connotation were and still are rather vague. The initial criteria was to select those features of connotation which would not vary in relevancy as the various codes and code symbols varied. Thus, the most frequently used and most abstract descriptive adjectives were selected. The set of scales included many summary evaluations (good-bad) and those which seemed to be relevant to the most abstract time and space properties of external objects and events (activepassive etc.).

Chapter I stated that Osgood found three main dimensions. Since the initial research, many replications have been made across codes and cultures and the same three dimensions continually appear. So it is likely that this research may be revealing some general organizational features of human cognition.

A more elaborate definition of each of the dimensions shall be presented now. 1) evaluation: this is the dominant first factor which operates somewhat like a general factor as subsets of its adjectives also appear on other factors. The definition comes from adjectives such as good-bad.

 2) potency - it is best defined by hard-soft, masculine-feminine, strongweak. It refers to the power, size, weight and toughness of objects. Two subsets of scales correlated highly to both potency and evaluation.
First, hedonistic goodness- beautiful-ugly and pleasant-unpleasant. Second, meek goodness - clean-dirty, graceful-awkward and weak-strong.
3) Activity - it is defined by active-passive and excitable-calm. So it refers to the quickness, excitement, warmth and agitation of objects and events. A subset of scales correlated highly to both activity and evaluation which is labelled dynamic goodness and included successfulunsuccessful, important-unimportant and progressive-regressive.

Two other dimensions of somewhat lesser importance in terms of explained response variance appeared. First, stability was defined in terms of stable-changeable, rational-initive and cautious-rash. Second, tautness was defined by angular-rounded, tight-loose and stiff-elastic. Several other factors appeared very weakly and might be defined as novelty, receptivity and aggressiveness.

What clues do we have to suggest hypotheses about the music connotation dimensions at this point? First, adjective selection shall be as broad as that by Osgood. The selection of abstract adjectives is very appropriate in relation music structure. Adjectives will be arranged in bi-polar fashion. By using adjectives from each of the dimensions gradually established by Osgood will offer a means of interpreting the present results. Initially, then, the hypothesis will suggest the three main dimensions of evaluation, potency, and activity.

However, the hypothesis is not yet in its final form, because when dealing with only music, it is expected to be both similar to the general structure and to differ in some unique way. To quote Osgood:

> In every instance in which a widely varied sample of concepts has been used.... the same three factors have emerged in roughly the same order of magnitude. When the sample of things being judged is restricted in some fashion, the nature and order of magnitude of the factors may change. (42, p. 72)

For instance, Osgood offers a general principle ("congruity") about code-dimension or, more specifically, concept-scale interaction: in the process of human judgment, all scales tend to shift in meaning toward parallelism with the dominant attribute of the concept being judged. For instance, the more evaluative the concept being judged, the more the meaning of all scales shift toward evaluative connotation. In the next section only non-verbal codes will be considered and it will be interesting to find out the nature of the shift among dimensions.

## Theories of the Meaning of Non-Verbal Codes

Non-verbal codes which are most relevant are those that evolve in time, such as film and the dance. However, no research on the connotative meaning of these codes has been done. Nor has it been done with architecture or sculpture and other non-verbal codes which are primarily oriented to aesthetic knowledge as is music. However, there is much literature in these areas (71) which do offer many descriptive adjectives, such as rushing-leisurely, floating-dragging, etc., that are primarily related to the temporal aspects of objects and event.

Overall emotional organization has already been mentioned in relation to several spatial oriented codes. Much of the early work on the

descriptive of emotions focused on facial expressions. Osgood recently applied his approach to this code (64) and found three dimensions. However, some differences appeared between these dimensions and those found when dealing with all codes. The first dimension was that of pleasure, which corresponds to evaluation. The second dimension was activity but the third dimension was best labelled as control and was more similar to stability than to potency. This suggests that activity is more important than potency in spatial codes. Also, stability may be a somewhat more important dimension of non-verbal code connotation.

A second piece of research focused on the connotative meaning of representational and abstract painting (83). Both artists and nonartists were used as judges. First, an analysis of the data based on non-artists responses to representational paintings produced the three main dimensions of evaluation, activity and potency. Activity accounted for the most response variance. When artists were used the same three dimensions appeared again but activity was even stronger and potency was even weaker. When non-artists responded to abstract painting, the semantic structure was a jumble and uninterpretable, but artists judgments produced a single, very strong evaluative dimension. That is, if the painting is evaluated favorable, it is also active and potent. This also implies that for abstract art activity and potency are interdependent and correspond to what Osgood calls a dynamism dimension.

However, when Tannenbaum and Eliot (80) used a set of two-dimensional abstract "nonsense" visual shapes, presented one at a time to air force personnel, activity appeared again as the first dominant dimension and

independent of potency. Three other dimensions appeared - evaluation plus two which were felt to be aspects of potency (size and shape of objects): masculine (hard-soft) and feminine (angular-rounded). The latter aspect of potency is called tautness by Osgood.

What further information about the music connotative hypothesis is suggested? The results are somewhat conflicting. However, the weight of evidence supports activity as the main attribute of spatial codes and thus may appear with music. Yet activity and potency may be interrelated in music connotation because music involves abstract forms. So a dynamism dimension may appear. Further, stability has appeared and since concepts of balance and harmony are very important in music aesthetics, it may appear as a significant aspect of music connotation. Lastly, tautness should be considered because music most centrally involves the perception of shapes.

#### Descriptions of the Meaning of Music

First, a good deal of searching for descriptive adjectives was done by this writer in articles on music in magazines and newspapers (High Fidelity, New York Times, Saturday Review, Downbeat, etc.). Two results seemed to appear: 1) Some descriptions were rather complex, and specific, revealing the critic's need to be creative ("flamboyant") etc.; However, 2) most critic's descriptions were chosen from familiar and basic research on music meaning. Consequently, reference shall only be made to the research, because the present interest is toward defining the broad underlying dimensions of music meaning.

The most well-known descriptive study of the internal organization of music meanings was done by Hevner (37) in 1936. A categorical approach was taken. A list of descriptive adjectives was selected from a set of frequently used emotion labels. The subjects checked the list to determine which adjective associated with which music. Thus the categories were determined empirically. Eight clusters were found and two kinds of interrelations between these clusters appeared: 1) similar to color theory, a "circular" structural law operated, where as one proceeded away f rom any cluster the nature of the content became less similar and the most distant cluster was opposite in meaning. 2) The clusters could also be related in a bipolar fashion to form four "dimensions." No further research was conducted to find the nature of the underlying dimensions. In relation to the present study, several of these "dimensions" might be a substructure within one more general dimension of music connotation.

This research by Hevner exhibited several methodological weaknesses, such as too restricted and poor techniques of sampling, which weakened the ability to make generalizations beyond the data. Also, there was no broader cognitive or semantic theories for interpreting the data. The resulting instrument turned out to be rather unreliable and of restricted use.

Several attempts at modifying the original Hevner clusters seem to offer some improvements. These will be described and displayed. First, in 1942, Ivy Campbell (13) found that 12 clusters were needed to describe music expression. Some of these categories were not obtained via empirical research but are nonetheless interesting. The following table reveals the categories although only a few adjectives are listed from a much

	gaity humorous	joy rejoicing	vigorous heroic	erotic passionate
-	solemn majestic reverent	tenderness sweet	calm detached	yearning pensive aspiring
-	so <b>rrow</b> melancholy	eerie ominous	cruelty satiric	rage violent agitated

larger group in each category in the original table.

Also, in 1954, Farnsworth (21) modified the Hevner description in the following manner. The circular relation is still in evidence but no attempt was made to determine the nature of the possibly two underlying dimensions.



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There are several cluster disagreements between Campbell and Farnsworth. Each had some categories that did not appear in the others because of differences in adjective sampling.

Adjectives varied in difficulty of use by subjects with music, such as yearning, tender, calm, pathetic, yielding, etc. These are mostly very complex descriptive terms.

Generally, these descriptive attempts offer depth but not much breadth in terms of connotation. Sampling of adjectives is still limited to simple to complex moods, personality characteristics with some denotational relations to specific subjects of objects and events in the environment.

It might be useful to compose the code-free categorical and dimensional research by Plutchik and Osgood to this early music meaning research.

For instance, calm, rage and violence may fall into the activity dimension. Rage, violence, plus cruelty, satric and ominous may fall into the potency dimension and the destruction - protection bi-polar categories. Possibly gaity, joy, heroic, passionate, solemn, pensive, sorrow, heroic and majestic will fall primarily on evaluation and reproduction-deprivation bi-polar categories, plus to some extent on incorporationrejection.

From the Plutchik categories it is suggested that evaluation (incorporation-rejection) could be independent of reproduction - deprivation under certain conditions. Possibly, a condition such as an aesthetic mode of decoding may be sufficient. Under this condition the pragmatic or instrumental meaning of surface cues do not contribute much weight to the

evaluation of the object. Also, in terms of aesthetic theories, most of these adjectives are within the referentialist position. Thus it could be that an emotion-mood dimension will appear independent of activity, potency, evaluation, etc. However, it is difficult to say how many of these adjectives will define it. It probably will be made up of basic moods such as happy and sad. Only a small sample from each of the above categories will be sufficient to obtain some notion of what dimensions underly the entire set of adjectives.

For the present purposes the following adjectives shall be sampled from the Campbell and Farnsworth clusters: gay, happy, humerous, extroverted, friendly, rash, violent, majestic, aspiring, delicate, pensive, sad, serious, introverted, cautious and ominous.

The object is to find dimensions that are not specific to a subset of music nor a subset of denoted objects and event properties. This will lead to a measuring instrument that has much generalizability and possibly more reliability. In future research, the underlying dimensions can be used to sort out the connotative components of the various complex adjectives such as heroic, whimsical, yearning, etc.

Other aesthetic theories about the meaning of music have never been subjected to empirical study. First, the formalists feel that music symbolizes nothing (of any importance) beyond itself. The understanding and enjoyment of music depends upon the comprehension of factors such as symmetry, perfection of proportion and other relatively spatialized, static aspects of structure.

Secondly, Meyer (51) and Langer (46), feel that the most important aspects of music patterns are the comprehension of dynamic, rapidly changing

growth, deviation and resolution. Further, Bearsley (7) suggests these dynamic structural properties have verbal labels, such as stability, complexity, abrupt, exploding, etc. These should increase the importance of stability and activity dimensions. Further, according to research by Rogge (75) these "kinetic" descriptions were easier to use in association with music patterns than were mood descriptions.

Now we will turn to available research using a dimensional approach to study music connotative meaning. First, Van De Geer, (84), presented a small set of pitch intervals (simultaneously occurring,  $C_{21}$ ) and only used a small set of scales with no stability adjectives present. The three main dimensions appeared. Interestingly, activity and tautness were collapsed and it was the strongest factor.

Secondly, Solomon (79) had a group of Navy sonar men judge the meaning of a set of sonar signals on 50 adjective scales. Generally, the three dimensions of evaluation, activity and potency appeared. However, potency accounted for more variance than did activity. Stability collapsed onto evaluation while tautness scales appeared on both activity and evaluation dimensions. So stability and tautness may operate in a complex fashion with music.

Finally, Brown, et. al. (11), studied the connotative meaning of vocal singers. Three sopranos, tenors and baritones were used. The selection of adjective scales was heavily slanted toward static spatial (timbre) properties with few dynamic temporal descriptive scales. Thus, the results revealed a large evaluative first factor and a second potency factor, but the other factors were difficult to interpret.

These research results are somewhat contradictory, especially in relation to activity and potency. Most of the above pieces of research featured very short simple "patterns" ( $C_{11}$  and  $C_{21}$ ). The only one which used extended patterns produced a potency dimension and no activity dimension, but this may have been due to scale selection bias.

Further suggestions can be obtained from some work by Osgood (63, ch. 4). For instance, judgments about the concept "time" produced no activity factor at all. It seems that things "in time" can be active, but time, at the extreme, operates as a referent outside the system, so to speak. Also, judgments of "symphony" produced all the three major factors, but activity was the weakest. Potency and stability were about equally strong. So one might consider that while activity seems to be strong in spatial oriented arts, potency might be the stronger in temporal oriented arts. In the particular case of music, activity and potency may turn out to be correlated and so a dynamism dimensions will appear.

# Hypothesis about Dimensions of Music Connotation and Scale Selections

Based on the foregoing information an attempt will be made to put the various pieces together and form a hypothesis about the meaning of music.

Generally, a six dimension structure is hypothesized (see Table 1). First, the three main dimensions of connotation were selected. One of the aims of this research is to see if they generalize across music symbol system. Secondly, modern aesthetic theories have supported the relevance of connotative dimensions such as activity, potency and stability to music.

Table 1. Hypothesis about Music Connotation Dimensions

Evaluation	Mood	Potency
good-bad	happy-sad	strong-weak
pleasant-unpleasant	gay-pensive	rugged-delicate
beautiful-ugly	humorous-serious	solid-hollow
graceful-awkward	friendly-ominous	plain-majestic
lucid-obscure	extrovert-introvert	formal-passionate

Act	ivi	tv
-----	-----	----

## Tautness

active-passive tender-violent aspiring-resolving floating-dragging

stiff-elastic tight-loose sharp-blunt

# Stability

steady-changeable cautious-rash leisurely-rushing deliberate-impulsive Thirdly, a mood dimension has been suggested based on the early music expression research and general theories about the structure of emotions. Lastly, in light of various results with simple auditory stimuli and spatial abstract shapes, a tautness dimension has been offered.

With respect to the adjective scales, 26 were selected. Due to methodological constraints each dimension has at least three adjectives on it. Since rather common adjectives have been used, no pre-testing of the bi-polarity relations appeared to be necessary.

The present research deals with many levels of melodic structure. This means that a study can be made of the stability of the dimensional hypothesis across levels. However, some suggestions about variations might be appropriate. Osgood's three main dimensions will hold up across all levels as will tautness. The stability dimension may not appear until the third level of melodic structure. Also, the mood dimension may not appear to account for much variance until the second or third level.

The above "pure" six dimensions hypothesis was stated in order to have a baseline from which to consider some of the various complex interrelations that have appeared in the previous studies between these dimensions. Some predictions of possible dimensional complexities are the following: 1) Evaluation and stability will collapse. 2) Activity and tautness will collapse. 3) Mood will be interrelated more with activity than with potency. 4) Activity and potency will collapse and a dynamism dimensions will appear. This reduces the number of suggested dimensions to only three or four.

In summary, the goal has been to suggest a set of independent dimensions which will be relevant to most music and most people most of the time. No prior research has attempted such a broad, general descriptive study.

#### CHAPTER V

## METHODOLOGY AND PROCEDURE

#### Introduction

Much has already been said about methodology in the previous chapters because theory and methodology are so closely intertwined. Generally, in this chapter the procedure for obtaining the data and the methods of analyzing this data will be discussed. The procedure includes a consideration of the message presentation, subject sample and questionnaire construction and administration. The methods of analysis includes the statistical design for analyzing the internal structure of connotative scales and the statistical tests for assessing the significance of the relations between music patterns and connotative scales.

#### Procedure

#### Message

Competent musicians from the Michigan State University Music Department performed and recorded on tape a sample of 18 melodic patterns (three from each level). The time length of the patterns varied from 1 second to 30 seconds and the time between patterns was at least 10 seconds.

Since it cannot be assumed that the order (prior context of other patterns) of the patterns is not influential toward producing similar responses across scales and intercorrelations between scales, an empirical test of this hypothesis was incorporated into the research. Three tapes were made, each with a different order of levels:

A) 
$$cell_{11}$$
 ----cell\_{140} B)  $cell_{140}$  ----cell C)  $cell_{16}$  -  $cell_{11}$  -  $cell_{140}$  -

 $cell_{12} - cell_{112} - cell_{13}$ . The initial pattern order within levels was at random (A), then they were numbered 1 - 18. Thus, for B, after the levels were reversed the patterns within each level were also reversed. For C, after the cells were randomly ordered, the patterns within were randomly ordered. Consequently, three entirely different orders were constructed by varying both levels and patterns. (See Appendix I).

#### Subjects

Three music education classes at Michigan State University were used. This was the second term in a course designed to train people to teach music in elementary schools. The three sections were assumed to be similar in most relevant variables. The total of 79 subjects were almost entirely junior girls, ranging in age from 19 to 26. The sections were of unequal n (31, 30 and 18). The class time length was 50 minutes and the task took approximately 40 minutes, about 2.5 minutes per pattern.

Classes were assigned randomly to one of the treatments. The three groups were used on successive days in the same room at the same time (3:00). During the presentation of the treatments, this author announced each level in an attempt to maintain high motivation and reduce boredom. The writer administered all three classes. A pre-test was run in order to aid the author in deciding what should be included in an opening verbal introduction and to learn to run the equipment (tape recorder) smoothly. These data were not included among the data to be analyzed.

## Questionnaire Construction and Administration

Basically, since the goal is to find the common aspects of connotation, a "structured response" approach has been used. The question, "What does this pattern mean?" is not equivalent to the question, "List all the associations you can make to this pattern?" It is the former question that is of interest and implies that the overall domain of possible adjective choices will be fixed in common for all subjects. Thus, a questionnaire utilizing the semantic differential approach of Charles Osgood (63, p. 19) was used.

The questionnaire was mimeographed on 8 1/2 by 11" paper. It consisted of an introductory page followed by 18 pages of response sheets, one for each pattern. The subject wrote down the announced music pattern number on the top of each sheet before responding to it.

The introduction obtained various information about the subject and explained the use of the rating scales (See Appendix II). The author read over the instructions and stressed that this was not a "test" with right and wrong answers. Further, the general context of melodic patterns to be presented was described in order to provide a similar frame of reference for the subjects when responding to each pattern.

A five step bi-polar scale was used:

++ + 0 - -good\_\_:\_:\_:\_::bad

Only two steps of intensity discrimination in each direction was felt to be sufficient in this initial research. The "zero" category implies that the structured response approach is not equivalent to a "forced choice" method.

The 26 scales on each page were systematically ordered. First, the "hard" or possibly less familiar adjectives were placed near the top left-hand column. This might have reduced the problem of subject fatigue by having the decisions become easier as he went along. Second, the scales were ordered so that from response to response the subject would alternate and not repeat within the hypothesized factors. It is assumed that the subjects all marked the left column and then the right column. Lastly, random procedure determined the polarity position. (See Appendix III)

## Methods of Analysis

## Major Design

The major hypothesis was concerned with the internal dimensions of music connotation. A preliminary analysis was made of the influence of the particular pattern context used in this study on the internal correlational structure by constructing three different pattern orders. Since this context could possibly effect both the central tendency or between scale correlations, both analysis of variance and homogeneity of correlation significance tests were used. Twenty-six simple one-way anovas were computed, with three pattern orders as treatments and the 26 different scales as dependent variables. If any scale was significant further anovas would be used to find out which pattern levels were the most influential. The homogeneity of correlation tests are more closely related to the main factor analysis. This test involves cell by cell comparisons across three matrices, thus three cell tests. Given a 26 by 26 matrix, this required  $(26 \cdot 25)/2 = 325$  three cell tests.

An overview of the steps involved in using factor analysis will be useful. Given 79 subjects responding on 26 scales for 18 messages produces approximately 37,400 pieces of data.



Figure 2

Grouping data first among the patterns for each subject and then across subjects permits correlating all possible pairs of scales in terms of the overall subject data for each scale. This produces a 26 by 26 matrix of correlations. A Pearson product-moment correlation technique was employed.

Assuming that the clustering of subsets of scales was not obvious from observing the surface data patterns among the correlation matrix cells, a principal axis factor analysis was applied to the correlation matrix. Briefly, this means that the adjectives are correlated to mathematically selected referent vectors (criteria of minimizing residual variance) and applied successively in an orthognal relationship. Further, in order to emphasize the simple (pure) structure of the data, a orthogonal varimax rotation was used, along with the Kiel-Wrigley criterion for limiting the number of factors. So the adjective scales were clustered about a set of independent vectors or "underlying" dimensions. Each dimension is operationally defined by the scales which correlate (load) highly on it. That is, the conceptual nature of the dimension is determined from the properties that the high loading scales have in common. This leads to reducing the connotative description of music from 26 or more concepts to possibly 5-10 relatively independent concepts.

Given six levels of patterns, a factor analysis was generated for each level and one for the combined levels. By doing a factor analysis for each level the amount of variance contributed by each level could be checked. Thus, the major design involved generating 7 factor structures.

#### Association Analysis

Hypotheses were tested based on the associations that subjects made between specific patterns and scales. That is, what meanings were attached to the scales?

The nature of the first hypothesis was that a significantly greater number of people judged the scale relevant than judged the scale irrelevant. In terms of the nominal level "scale" assumptions: any response not in the middle category or step is related (or relevant), the data on each scale can be placed into two groups (middle step/non-middle step). To test this hypothesis, a binomial (two category) exact test of statistical significance was most appropriate and a z approximation could be used as the group n was sufficiently large (79). This data is available from the frequency distribution for all subjects on each pattern and each scale.

In this case, 18 x 26 = 468 binomial tests were computed. Since the + and - direction categories were collapsed and since there was no interest nor likelihood of cases of significantly irrelevant results, the test could be one tailed and a .01 level of significance was selected.

A further hypothesis was tested for subject direction consensus in meaning, again using z approximation to the binomial two category exact test. This hypothesis is that a significantly greater number of subjects will judge the pattern in one direction or the other. So a two tailed test is called for, still only operating with nominal level assumptions (+1-). Again, 468 tests were computed and since this is rather exploratory research, it was felt that the level of significance for the direction relations be lowered to .05.

Lastly, it was of interest to find out which music patterns correlated most and least in terms of all the scales on each of the connotative dimensions. In order to do this, factor scores were obtained for each music pattern in each dimension. This implied 18 · 5 = 90 scores. Then the characteristics of the low and high scoring patterns were compared and contrasted in terms of variable value differences. Actually, these results were referred to only when they differed from the results obtained in the above single adjective associations.

In summary, this data was collected during June, 1966 at Michigan State University. It was then submitted to a computer for data processing.

#### CHAPTER VI

#### RESULTS

There are two sets of results to be reported: What specific connotative meanings do the melodic patterns communicate? What is the dimensional structure of melodic connotation? The results of the second question will be considered first because this study offers more complete information about it.

#### The Dimensions of Melodic Connotation

#### Prerequisite Statistical Test

First, a description is necessary of some results which are a prerequisite to consideration of the factor analysis results.

The total set of data was obtained from three matched classes, each of which was presented a different order of the 18 patterns to find out if pattern contexts would significantly influence the judgments about the meanings of many patterns. Twenty-six one-way analysis of variance designs were used, one for each scale as dependent variable. These results reveal significant differences (.05 level) only on a small group of scales: floating-dragging, pleasant-unpleasant, beautiful-ugly, rugged-delicate, gay-pensive and happy-sad. So it seems that context effects occur only in relation to some kinds of connotation.

The next point is to see which of the 18 pattern - pattern context combinations had the most influence on these scales. This produces 108 analysis of variance designs. The results show that very few of the

pattern-pattern context combinations contribute to the significant differences in scale use. The overall significance of the first four scales are produced by patterns 3, 5, 10 and 13. For the last two scales it is produced by patterns 3, 5, 10 and 15. A further study of regularities in the ordering of these patterns reveals that they are 1) patterns in at least one of the orders near the first of the series, or 2) first on a level, or both. This information will be useful when preparing future studies. However, these results do not necessarily reduce the value of the factor analysis results because this depends on correlations and not directly on means.

Given three 26 x 26 correlation matrices, a homogeneity of correlation test was administered, cell by cell in groups of three. The prior results with means on certain scales does suggest that heterogeneous correlations are most likely with those six scales. The results showed 21 (out of 325) significantly different cells where 90% were contributed by these six scales. But 16 significant results could be expected by chance alone (.05 level). Considering this, it appears that it will not be improper to study the overall factor analysis results.

## Factor Analysis

In order to determine the dimensional nature of melody, seven factor analyses were applied to seven 26 x 26 correlation matrices, one for each of the six levels of melodic structure and one over all combined levels.

## Results Over Combined Levels

The results of the factor analysis of the combined levels will be presented first. In developing the hypothesis about the dimensions, some

complexity was expected. The hypothesis in its simplest form was a six factor structure: evaluation, mood, potency, activity, tautness and stability. In its more complex form: evaluation, mood, dynamism, activity and tautness, and stability. How well did the hypothesizing do?

The resulting factor structure turned out to support much of the hypothesis. The five factor solution was chosen, based on various criteria: 1) Select as many factors as are psychologically meaningful; 2) Select factors only when they add a significant amount of explained variance (2-3%); 3) Kiel-Wrigley criteria of factor selection: at least three variables which have their highest loading on the factor.

Some of the five factors are easier to "label" than others. Since this research is somewhat exploratory in purpose, it seemed useful not to try to reduce the number of factors too severely until more work has been done. This present set of factors may provide useful hypotheses for future research. For an initial summary of the nature of the factors, four were clearly identified: evaluation; mood, stability plus tautness; dynamism. A fifth factor was more difficult to identify. (See Appendix IV)

These five factors accounted for 58% of the response variance on the overall factor analysis, which is more than reported in Osgood's research. But here there is a more intense focus on one symbol system and so it should be expected. Evaluation is the first and strongest factor, accounting for 21% of the variance, which is over one-third of the total of 58%. The second factor, mood, accounts for 14% of the variance. The third accounts for 9% of the variance and the fourth and fifth account for 8% and 6% respectively.

A separate discussion of the characteristics of each factor will be appropriate.

		I	II	III	IV	v	$h^2$
18	Graceful - awkward	.82	.03	02	.18	11	.73
12	beautiful - ugly	.80	.16	02	.16	12	.72
19	good – bad	.72	.23	.00	.25	13	.65
3	pleasant - unpleasant	.68	.40	06	.14	10	<b>.</b> 66
7	tender - violent	.68	.07	.07	.13	36	.62
22	delicate - rugged	.72	07	04	31	02	.62
21	maj <b>estic -</b> plain	.58	23	28	.22	.10	.53
2	floating - dragging	.68	.29	11	.05	.16	.58
4	aspiring - resolving	.59	.30	11	.09	.19	.50

Table 2. Aesthetic Evaluation

<u>Aesthetic Evaluation</u>: Graceful-awkward and beautiful-ugly have the highest loadings and the purest pattern and consequently deserve the most consideration when defining the underlying factor. Thus the factor might best be labelled as aesthetic evaluation.

Actually, all the rest of the scales have high loadings but they are less pure: good-bad, pleasant-unpleasant, tender-violent, delicaterugged, majestic-plain, floating-dragging and aspiring-resolving. In the case of several of these scales, this represents a divergence from the hypothesized grouping on the evaluation factor. Three out of four of the scales originally categorized as activity (tender-violent, floatingdragging, aspiring-resolving) resulted in being highly evaluative. Also, some scales considered originally as being on a separate potency factor (majectic-plain, rugged-delicate) resulted as highly evaluative. When potency and activity scales are loaded highly on the same factor, this implies the more general notion of dynamism. However, a separate dynamism factor appeared and its scales turned out not to have significant loadings on evaluation. Based on Osgood's hypothesis about the evaluative dimension collapsing onto the most significant features of a code, a subset of dynamism seems to be most important.

A possible rationale is available for these seemingly contradictory results. Possibly, the subset of hypothesized dynamism scales which loaded highly on evaluation are less abstract and have a more anthropomorphic (social) meaning than those which remained to define the dynamism factor. Thus they are not as independent of evaluation judgments. Especially when some of the scales used poles such as dragging, plain and violent. These scales might be characterized as describing relatively active time oriented (rather than static spatial oriented ) referent behaviors. Further, they describe subtle, sophisticated cues that are relatively observable on the surface of referent events. Further research is needed to improve this conception.

		Table 3 .	Mood-er	notion			
		I	II	III	IV	v	$h^2$
10	gay - pensive	.22	.83	07	.13	.04	.75
26	happ <b>y - s</b> ad	.21	.80	02	.18	.04	.73
5	humorous - serious	.00	.80	07	01	.03	•65
11	extroverted - intro- verted	.05	.60	26	.21	.11	.48
23	friendly - ominous	.46	.65	11	.10	14	.68

<u>Mood-emotion</u>: Scales which have their highest loadings and are most pure on this factor are humorous-serious, happy-sad, gay-pensive. Others are extroverted-introverted and friendly-ominous. Active-passive also loads fairly high on this factor. In terms of the relations between the scales, are all highly intercorrelated. Thus this factor contains adjectives describing basic emotions and personality features.

Pleasant-unpleasant also has a substantial loading on this factor, and is the only one of the strongly evaluative scales for which this occurs. Also, friendly-ominous has a relatively high loading on evaluation. This may be due to the fact that these are labels which refer to both internal emotional-arousal and emotional qualities of music.

In general, the hypothesis was supported that mood is independent of evaluation in relation to an essentially connotative code such as music.

		I	II	III	IV	v	h <sup>2</sup>
6	steady - changeable	.09	.03	.69	.16	12	.52
l	deliberate - impulsive	.03	14	.60	.17	19	.45
14	formal - passionate	20	08	.64	04	.15	.48
8	tight - loose	36	27	.55	.02	.29	.59
13	stiff - elastic	47	30	.53	07	.22	.64

Table 4. Stability-tautness

<u>Stability-tautness</u>: Several scales from the hypothesized stability dimension are the purest and have the highest loadings on this factor. They are steady-changeable, deliberate-impulsive and formal-passionate. Several tautness scales tight-loose and stiff-elastic, also have their highest loadings on this factor.

Tautness scales are also highly negatively related to evaluation. Thus, the elastic and loose poles are positively correlated to pleasing melodies.

The intercorrelations between the tautness and stability adjectives are relatively low, so this suggests that they are both correlated and define components of a third dimension, such as the frequently used style categories of classic - romantic.

Table 5. Dynamism

		I	II	III	IV	V	h <sup>2</sup>
25	strong - weak	05	.16	.06	.80	02	.68
17	solid - hollow	.10	.03	.25	.69	.05	.55
24	active – passive	.11	.47	16	.54	.19	.59
15	lucid - obscure	.24	.20	.01	•44	.05	.29

Dynamism: Potency scales actually load the highest and purest on this factor with scales such as strong-weak and solid-hollow. Active-passive also loads high and is highly intercorrelated with strong-weak.

Also, lucid-obscure, has a moderate loading on this factor. Osgood used a similar scale, clear-hazy, which was loaded on potency. Actually, this scale explained variance or communality is very low and may not have been a meaningful adjective pair for the subjects.

Generally, dynamism implies that strength and excitement seem to go together in music as was hypothesized.

Table 6. -----

9	rushing - leisurely	28	.04	01	08	.69	.56
<b>2</b> 0	rash - cautious	17	.21	38	.09	.50	.48
16	sharp - blunt	.25	.03	.13	.25	.55	.45

(Agressive-defensive or social activeness): This factor is defined principally by rushing-leisurely which is the purest scale and has the highest loading.

Other scales having their highest loading on this factor are rashcautious and sharp-blunt. Rash-cautious also has a moderate loading on the stability-tautness factor as was hypothesized. However, the intercorrelation matrix showed that it is highly correlated only to rushingleisurely.

In general, the nature of this factor is still in doubt. Leisurelyrushing may be similar to the fast-slow scale used previously by Osgood which was loaded highly along with rash-cautious and sharp blunt on a factor labelled aggression. Mitchell (56) states that much modern music appears to communicate this emotion. However, by defining it as social activeness relates it to dynamism although its correlation with the active - passive scale was not very high.

## Results For Each Level

The next question is how much the factor structures at each level vary from the overall factor structure as presented? Possibly, some clues may appear when studying these six structures to enhance or alter the present interpretation of the overall structure. It may be found that one structure is not sufficient.

On the following table the solution for each level is outlined. If there is no re-statement of the scales making up the factors, it implies that it is the same as the overall structure. However, the contents of the fifth factor are always listed.

			% explained
			variance
1. Single Tone Level:	I	Evaluation	21
_	II	Mood	15
	III	Stability-tautness, plus potency	10
	IV	Rushing-leisurely, violent-tender	
		rash-cautious	07
			53
2. Two Tone Level:	I	Evaluation	20
	II	Mood, plus Stability-tautness	18
	III	Dynamism	09
	IV	rushing-leisurely, violent-tender,	08
		rash-cautious, sharp-blunt,	
		impulsive-deliberate	
			55
2 Chart Mating Ianal	т	Funluntion	00
3. Short Motive Level:	ш. тт	Evaluation	22
		Stability-tautnoog	10
	TV	Potency	07
	v	mushing-leisunely wielent-tenden	07
	•	rash-cautious	07
			63
			00
4. Long Motive Level:	I	Evaluation	19
	II	Mood	14
	III	Stability-tautness, plus solid-hollo	<b>w</b> 09
	IV	Dynamism, plus rugged-delicate	07
	V	dragging-floating, resolving-aspirin	g,
		introverted-extroverted, (goes to IV	
		or I in four factor solution	07
	VI	rushing-leisurely, sharp-blunt, rash	-
		cautious, tight-loose, (these go to	
		factor IV in five factor solution).	05
			61
	-		0.1
5. Phase Level:	1 7 T	Evaluation	24
		Mood Stability toutness	15
		Stability-tautness	08
	1V V	Dynamism muching loigunglu tight loogo show	09
	v	hunt mash-contious	p-
		brunt, rash-cautious	<u>00</u> 62
			02
6. Melody Level:	I	Evaluation	19
	II	Mood	18
	III	Stability-tautness, plus cautious-ra	sh 08
	IV	Dynamism	09
	V	rushing-leisurely, tight-loose, shar	p- <u>07</u>
		blunt, and passionate-formal	61

It looks as though there is remarkably little variation in the dimensional space across melodic levels. There are four factors which appear regularly and distinctly. An index of factor structure of similarity was computed by correlating the first four factors across all the 6 levels. Given a lower bound of good fit = .72, the actual index turned out to be .88. Next, the explained variance across all levels varied from a minimum of 52% to a maximum of 63%. The ranking of factors in terms of amount of explained variance remained relatively fixed. The actual scale loading values do not even vary appreciably on the first four factors and thus have the same scales as highest loaders.

Some more specific analysis is warranted. First, most of Osgood's three major dimensions of connotation did not appear in a simple fashion. Only evaluation appeared on all levels. Activity was related continually across all levels to three different factors- evaluation, mood and dynamism. (Of course, Plutchik (67) did posit an intensity or activity dimension underlying his emotion dimensions.) Potency also turned out to be related to two factors, evaluation and dynamism, which it dominates. However, the dynamism factor did appear on every level, except that on the lowest level it collapses with stability-tautness.

The mood or emotion factor appeared even on the lowest level which was not expected. The highest scale loadings and communalities were continually on this factor. Thus, these scales appear to be the easiest to use. Also, as was predicted, it was continually relatively independent of the evaluation factor. This is possible since evaluation judgments in aesthetic situations can be based more solely on abstract surface patterning

and less on "survival" meanings such as emotion states.

It seems that stability-tautness should be recognized as a basic dimension of music connotative communication. It appears as an independent factor on all but the two tone level, where it collapses onto mood. The prediction was that tautness would appear on the lowest level and it did, along with stability. Stability scales continually are the higher loaders on this factor. In terms of explained variance it is always greater than the dynamism factor. It seems that this factor might be recognized as a factor that appears most strongly only with the music code. Also, it may define two components of the classic-romantic style categories. Then too, it may be basic to the kinetic-syntactic dimension of aesthetic communication referred to by Meyer (52). Still another interpretation is that it is a reflection in music of the general need for balance or control as was found in research with facial expression (64).

The fifth factor cannot immediately be recognized as a basic dimension of music communication. It appears on all levels but level four. The content in terms of scales varies somewhat. It is correlated to various other factors, such as dynamism, tautness (tight-loose on the three higher levels), and with evaluation (tender-violent on the three lowest levels).

It would be useful in relation to the overall results and especially in terms of factor V to mention that this research was pre-tested on a small group of advanced musicians (n = 11) from the Michigan State Music Department. The experiment went smoothly and the results are rather interesting. First of all, the first four factors were almost identical to those reported in the overall result, except that active-passive drops
away from factor II (mood) and has a much higher loading on factor IV which makes this factor more clearly defineable as dynamism. Most importantly, no factor V appears and sharp-blunt goes to factor III. Cautious-rash along with leisurely-rushing goes to factor IV.

Of course, this is only a beginning but some powerful regularities turn up. Further analysis of the relations between music and connotative structural elements may improve the ability to describe these results.

## Melodic Pattern Connotations

Attention will now shift to what the melodic patterns communicate in terms of interjudge agreement about scale relevancy and direction associations. This will be divided into two parts: 1) overall view of pattern and scale relevancy and direction consensus. Relevancy, in terms of the 5 step scale, means that a significant number of people marked any step but the neutral, middle step. Direction consensus means that a significant number of people marked a scale in one direction or the other; 2) the most intense directions of connotation associated with the patterns and factors are identified and analyzed.

# Relevancy and Direction Consensus

The following table contains the patterns of relevancy and direction consensus. The following coding procedure appeared simplest. If the pattern-scale relationship is non-relevant, then an "X" is used to indicate this. If the pattern-scale relationship shows direction consensus, then an "-" is used. Thus, an empty cell implies relevancy and direction consensus.

			M	elo	dic	Pa	tte	rn											
	Scale	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
F		v		v						_									
£.	booutiful - awkward	Ŷ		A V	Y	v		Y	v	v	v					Y	v		v
v P	$p_{assent} = ug_{assent}$	A Y		Λ	^	Λ		Λ	Λ	Λ	~ _					Λ	Λ		~
a 1	good - bad	x	x	x	x	x	x	x		x	x								
<u> </u>	tender - violent	x		x	x	x	x	x		x	~	x			x	x	x		Y
a	delicate - rugged	x		x	Λ	x	Λ	x		Λ		x			Λ	-	л		^
t	majestic - plain	••	_	••		••	-	_			_	_						-	
i	floating - dragging	х		х						х	х								
0	aspiring - resolving	x		x		-		х		•-	_				_	_			
n																			
	·																		
M	gay - pensive	X	v	X			-	v			v								
0	nappy - sad	X	X	X			-	X		ν,	X	v				v			
0	numorous - serious	X	X	X		-		X		X		Х				X			
a	extroverted - Introverted	X	X	X			-	X			-					X			
	Thendly - Ominous	~																	
S	steady - changeable	х				-	-		-	-	-	-						-	-
t t	deliberate - impulsive	-		-			-			-		-			-				
a a	formal - passionate	Х		Х		Х			-	Х		Х	-	-		Х	Х	-	
Ъυ	tight - loose	Х		-			-		-	-			-			-		-	
i t	stiff - elastic		-	-			-		-				-			-		-	
l n																			
i e																			
t s																			
<u>y s</u>																			
D	strong - weak						-		-					_				_	_
v	solid - hollow	-	х	-	-	-	_					_		_	_			_	_
n	active - passive	х	_	х				_	-				_	-				_	
a	lucid - obscure	X	х	X	х	х	х	Х	_	х	_			х	_	х		_	х
m																			
i																			
s																			
m																			
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Table 8 Overall Relevancy and Direction Consensus

There are quite a number of observations that can be made across all the scales and patterns. First, only low and high relevancy and direction consensus extreme shall be studied. (Quantitative data shall be stated in the following paragraphs by the number in the brackets.) Based on these results, additional comments will be made about the generality of the factor structure across levels and about a new conception of levels to take account of an important change in meaning.

First, low-relevant patterns are #1 (5), #3 (9) and #7 (14). High relevant patterns are #17 (26), #12 (25), #13 and #14 (24), #8 and #6 (23) and #10, #16, #18 and #4 (32). In general, the low levels of melodic structure are low relevant and the higher levels are high relevant. Most patterns generally turned out to be rather relevant.

Low relevant scales are tender-violent (6), lucid-obscure and beautiful-ugly (7) plus good-bad and rash-cautious (9). High relevant scales are majestic-plain, strong-weak, deliberate-impulsive and stiffelastic (18), pleasant-unpleasant, steady-changeable, tight-loose and solid-hollow (17) and graceful-awkward, gay-pensive and active-passive (16). High relevant scales are spread among all factors except factor V, but the low relevancy scales are contained only in factor I, IV and V. The general summary evaluation scales in factor I turned out to be low relevancy. In terms of factors, high proportion of low-relevancy factors are factors V, I and II (25-28%) while factors IV and III have the lowest proportion of non-relevancies (1) and 10%, respectively.

Next, which patterns and scales are low and high consensus? The low consensus patterns are #3 (45%), #6 (48%), and #1 (50%). The high consensus patterns are #4 and #16 (95%). In general, the low levels of

melodic structure are again low in consensus and higher levels are high consensus. For instance, level one is 65% and level five is 77%.

Low consensus scales are solid-hollow (41%), lucid-obscure (43%), sharp-blunt (50%), steady-changeable (53%), tight-loose (59%), stiffelastic (61%), formal-passionate (64%), and rash-cautious (66%). High consensus scales are floating-dragging,tender-violent, beautiful-ugly and good-bad (100%), pleasant-unpleasant, graceful-awkward and gaypensive (96%), happy-sad and delicate-rugged (92%), humerous-serious (90%), friendly-ominous (86%) and introverted-extroverted and rushingleisurely (84%). Here it appears that factors I and II are high consensus while factors III, IV and V are low consensus. This is interesting since the scales on the latter three factors presumably refer more to observably "surface" pattern cues, about which more intersubject agreement might have been expected.

Combinations of high and low patterns and scales on both dimensions can be revealing. First, are there any high relevancy and high consensus melodic patterns? #4 and #16. These then can be interpreted as the clearest and broadest in meaning. These patterns have cues that activate all five dimensions of connotation.

What are the low relevancy and low consensus patterns? #1 and #3. These then are the vaguest and least connotatively codable patterns.

What patterns have high relevancy but low consensus? #6. This pattern might be considered the most ambiguous and the one which exposes the most individual differences. Most people thought that many scales were relevant to this pattern but did not agree as to the direction of

meaning. Is it surprising that this pattern turned out to be a "medium" two tone length?

What patterns are low relevancy but high consensus? Possibly #7. This pattern is narrow but clear in meaning, primarily for factor III. One could call this a "pure" factor III pattern.

With reference to the scales, which are high-relevant and high consensus? pleasant-unpleasant, graceful-awkward, gay-pensive and possibly rushing-leisurely. If deliberate-impulsive and strong-weak (which are high relevant but not quite as high consensus) are also included, the point can be made that this set of scales included all the highest leaders with the purest patterns on each of the five factors. So, in general, these scales map onto some dimension and across all levels of structure, and general agreement exists about the direction of meaning. Scales such as these which are good operational definitions for each dimension would be used if only a very short form of the music semantic differential was permitted for testing purposes.

Next, which scales are low relevant but high consensus? Tenderviolent, beautiful-ugly and good-bad. These scales have the narrowest band of use in relation to the levels of patterns. In the present case, this portion of the evaluative factor only maps onto extended melodic sequences, the middle and higher levels of structure.

Which scales are high relevant but low consensus? Solid-hollow, steady-changeable, tight-loose, and stiff-elastic. Interestingly, these scales primarily come from factor III. Possibly, individual differences most influence these scales. The differences might be due to the

variation in the learned, general cultural context of meaning for these scales. Therefore, these scales may suggest different pattern variables for different people.

Finally, which scales are low relevant and low consensus? Lucidobscure and rash-cautious. These are scales which might be thrown out, especially the former which is not pure and has neither a high factor loading nor a high communality. Probably, the choice of labels was bad in these cases. For instance, lucid-obscure might better have been clear-hazy or simple-complex.

Some general conclusions are: 1) When factor I and II scales are used, there is consensus but they are not used as much (low relevant) on low levels; 2) Factors III and IV seem to be relevant to all levels but somewhat low consensus in meaning on all levels; 3) Factor V is medium relevant and medium consensus.

Based on these conclusions, insight into a new conception of levels of structure will offer a clearer relationship to the connotative factors.

First, pattern #1 had the lowest consensus and relevancy in terms of absolute numbers (3). Next fewest was #3. Both related primarily to factors III and IV and only slightly to factor I. Pattern #7, which featured a more extended but highly redundant sequence, revealed essentially the same configuration of meaning.

These patterns feature "central" and simple dimension variable values. That is, on the single tone level, less pattern internal structure exists. This is also true for very redundant extended sequences such as pattern #7. However, pattern #2 contained a high pitch and a long duration and all five factors appeared. Consequently, a more extreme deviation in variable value is required to have a broad connotative response attached. This is the method applied in a primitive language with the "yell".

On the other hand, what are the characteristics of the higher level patterns? Most high relevancy and high consensus patterns were from the higher levels. Generally, most two tone, motive, phrase and melody patterns continually revealed a considerable expansion of meaning, even without any extreme variable values. Thus, on higher levels it requires less extreme deviations to obtain a broad connotative response because more internal elements and relationships exist. These patterns have gestalt properties of continuity, contrast, completeness, closure, etc.

Given the original conception of melodic levels (# of tones), all the factors relate to all the levels. That is, it is possible to communicate on all factors from any of the six levels. Another conception is needed to make a distinction within the music code that will take account of an important change in meaning.

To take account of this particular change in meaning, only two levels will be posited. If the nature of the variable value besides the number of tones is taken into consideration, then a low level can be defined which will only relate to factors III and IV. That is, factors III and IV relate to all levels, but the low level meaning is entirely confined to these factors.

Thus, factors I and II, whose appearance on the lowest levels in terms of the original definition, was only based on a few significant

associations to melodic patterns, would not be associated with the lowest level in terms of the new conception. It seems that these two factors contained scales which had the most "social" meaning (e.g., specific emotion states). Thus, this level distinction takes into account amount of social meaning. The social meanings are not related to the low level. Or, a positive correlation exists between social meaning and internal structure.

It is difficult to say whether this conception of levels will be easy to operationally define. Further research is required to find the boundaries. If they can be defined clearly, then it would be more feasible for composers to take account of it.

# Specific Nature of Pattern Connotation

Each pattern will be presented in music notation with a description of its specific adjective meaning organized by factors and levels. The underlined adjectives are most intensely related to the pattern and contribute the most to the description of its meaning. The distribution of subject responses to this underlined subset (96 out of 257 total significant direction consensus adjectives) is in Appendix V. The tabulated results for all 257 adjectives is in Appendix VI.

The specific connotations associated with each pattern are very interesting. However, for the present we will seek more general findings which cut across many melodies and adjectives.



Long Motive Level

violent

serious III stiff, tight,

IV strong, active

deliberate, formal

V rushing, rash, sharp

10



- happy
- III elastic, loose
  - IV strong, active, lucid
  - V leisurely

I pleasant, graceful, good, beautiful, floating, majestic,

- aspiring
- II sad, pensive, serious, introverted
- III steady, deliberate
  - IV strong, lucid, solid
  - V leisurely, cautious

Phrase Level









16

I pleasant, graceful, good, floating, aspiring, rugged, plain; II gay, happy, humorous, friendly, extroverted; III deliberate, steady, loose, elastic IV strong, solid, active, lucid; V leisurely







I pleasant, graceful, beautiful, good, floating, aspiring, delicate, tender II pensive, sad, introverted, serious; III deliberate; IV V leisurely, cautious, sharp

18



stiff; IV active;

What are the general relationships between melodic pattern dimensions (rather than levels) and connotative adjectives? Two approaches exist: 1) From the point of view of the sign system, given certain patterns and variable values, what is the variation in connotative scales and factors? 2) From the point of view of the significant system, given certain dimensions and scales, what is the variation in patterns and variable values? Actually, this kind of analysis can barely be started here because it requires a much larger set of patterns.

The sign system approach will be taken first. What scales and factors are strongly related to certain variable values which appear in a set of patterns? In terms of the most general relationship, what variable values seem to dominate the overall meaning of any pattern context in which they are present? That is, certain adjectives would appear whenever a certain variable value is used.

Actually, it is unlikely that any completely context independent (unconditional) variable value associations to adjectives will be found when comparing all possible combinations of values across the entire music population. Thus, inferences from the present results must be withheld until there is further research. The following table contains some of those which were found in the sample.

Table 10 Pattern-Scale Associations

Timbre piano: pensive, awkward, dragging and ominous. violin: floating, tender, and majestic. clarinet: floating, plain and friendly. Pitch conjunct patterns (4, 7, 9, 16): plain, steady and deliberate. up direction patterns (6, 8, 11, 12, 17): aspiring. down direction patterns (4, 18): resolving. narrow pitch range patterns (4, 7, 9, 11, 15, 16): strong and solid. wide range patterns (6, 8, 10, 13, 14, 17, 18): (not with potency scales). minor patterns (12, 18): sad, serious, and introverted. major mode patterns: both happy (16) and sad (13). atonal patterns (10, 14, 18): awkward, bad, rugged, dragging, pensive, stiff, tight, formal and sharp. tonal patterns (11, 12, 13, 16, 17): graceful, beautiful, good, floating, elastic, loose, steady and leisurely. Duration

staccato patterns (5, 6, 9, 10, 11, 15): strong and active. legato patterns (2, 4, 12, 13, 17, 18): strong. simple repeated duration length rhythm patterns: deliberate and strong.

Some observations might be made of these results. First, the pitch dimension variables feature the most unconditional associations. They cut across all dimensions of meaning. Only the tonality variable is related broadly to the evaluation dimension, as well as to all other dimensions. So this is an important variable on all dimensions which is not surprising considering the importance of the concept of tonality in western music.

Secondly, only a few duration variables appear. Those are associated primarily to dynamism scales.

Thirdly, timbre is primarily associated with evaluative and mood dimensions. This is likely to occur with the more "static" music variables.

Lastly, it seems that if one side or pole of a scale is associated with one extreme variable value, the other adjective pole is not necessarily associated to the variable value at the opposite extreme.

Not we will turn to the second significant approach. Given four connotative factors defined in terms of subsets of adjective scales, what is the variation in pattern and variable values? That is, what pattern and variable values most frequently appear with each factor?

The description of each factor will only be based on those scales which load most highly on it (except when factor scores are used). Patterns will be divided in terms of associations with either "positive" or "negative" direction on the factor. The pattern in first position is the most intensely associated with the adjectives. The variable value associations will be taken from these patterns.

Factor I: Aesthetic Evaluation

graceful - 13, 2, 8, 12 awkward - 1, 18 beautiful - 13, 2, 11, 12 ugly - -good - 13, 2, 11, 16 bad - 18 pleasant - 16, 5, 11, 15 unpleasant - 7 tender - 13, 2, 8 violent - -delicate - 13, 2, 12 rugged - 18 plain - 1, 3, 18 majestic - -floating - 11, 6, 16 dragging - 18, 7 aspiring - 9 resolving - --

Positive evaluation associates most intensely with familiar, romantic, tonal music. Negative evaluation is most strongly connected with both modern, atonal music and very redundant patterns. In general, this can be conceptualized as two extreme endpoints of a pattern information continuum where the lowest evaluation is at each end and the highest evaluation is in the middle information region. That is, a curvilinear relation between evaluation and pattern information is evident.

Factor II: Mood

gay	-	16,	9			pensive -	14,	18, 7, 4
happy	-	16,	9			sad -	18,	14, 4
humorous	-	16				serious -	12,	4, 8, 10,
							13,	17, 18
extroverted		16,	9			introverted -		
friendly	-	16,	5,	9,	11	ominous -	18	

Positive mood is most strongly associated with relatively fast speed of tones, clarinet and staccato, while negative mood is most strongly associated with slower speed and legato.

Factor III: Stability-Tautness

steady - 7 deliberate - 7, 4 formal - 7, 18, 4 tight - 7 stiff - 7 Only the positive pole has any intense adjective associations. Thus some less intense direction consensus associations with the negative pole (shown in Appendix V) will be used for contrast. Positive stability strongly relates to very redundant patterns with few pitches, repeated single duration length, and tonal. Positive tautness also includes atonal patterns. Negative tautness is associated with patterns that feature properties much like those associated with positive stability. So the cues that map into both sides of tautness scales seem to map into one side of the stability scales. Since the tonal-atonal variable and the melodic contour variable (redundant to complex) seemingly do not influence positive tautness, it may be affected more by duration cues.

Factor IV: Dynamism

strong = 16, 1, 3, 5, 9, 10, 15
solid = -active = 16, 9, 11
lucid = 11, 16

Positive dynamism is strongly related to features such as staccato, melatively fast speed, submetric duration lengths, narrow-medium pitch mange. Furthermore, it can be tonal or atonal. This suggests that dynamism relates rather equally to both pitch and duration dimensions. There is practically no intense use of negative dynamism. Factor scores give some evidence that patterns #7 and #18 feature variable values that are negative dynamism. These variable values are generally the opposite of the above values associated with positive dynamism. Factor V

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leisurely - 13, 12, 8, 5, 2
cautious - 13, 12, 4
blunt - --
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This pole of factor five is strongly allied with slow, romantic, tonal patterns. For purposes of contrast, a look at the less intense associations with rushing and rash (Appendix V) find atonal and complex contours with wide pitch range. In general, the associations are with both pitch and duration variables.

An interesting result has appeared with the last three factors: Only one scale direction has been used extensively. A discussion of this is contained in Appendix VII.

Some observations about factor - pattern meanings are in order. First, no low level pattern is the most intensely associated pattern with any of the factors. Patterns such as 13, 16, 7 and 18 are important.

All factors are associated with pitch variables. It appears also that duration variables are important with all factors. Possibly, even though both pitch and duration relate to all factors, they are not always equally important? For intance, it appears above that mood may have stronger relation duration than pitch. More research is needed to answer this question.

## Summary

Generally, both the sign and significant oriented analyses will lead to one overall description of music code - connotative meaning relationships.

Relationships of the widest possible nature have been described in the present study. In the future, conditional relationships will need to be studied.

Overall, it seems that all the underlying dimensions of the music sign system (pitch, duration, timbre, loudness) probably are associated with all the underlying dimensions of the significant system (evaluation, mood, stability-tautness and dynamism). A more exact description of the relationships will reveal much more complexity. This future research requires the use of much larger samples of patterns on all levels, within and across all components, such as harmony, texture, etc.

In conclusion, the results of this study offer more information about the inner structure of music connotation but less information about music pattern relationships with connotation. This is due to the nature of the music pattern sampling which focused on only covering the breadth of the connotative space and therefore did not use all components nor variable values in many pattern contexts. Future research of this latter nature depends for its success on the completion of research of the former nature.

#### CHAPTER VII

# DISCUSSION

### Introduction

This chapter contains two sections: an integrated summary of findings and future research needs. Each section will be divided in terms of relations within the connotative component and relations between the melodic and connotative components. Further, the section on future research needs includes two parts: theory and methodology.

# Summary of Findings

# Dimensions of Music Connotation

The broadest generalization is that music appears to have a good deal of meaning. Further, when decoding music on the presently selected number of scales, there seems to be a considerable amount of correlational redundancy. Only a few general groupings appeared. Four and possibly five dimensions have been found to describe music connotative structure. The first four are: aesthetic evaluation, mood, stability-tautness and dynamism. Each of these dimensions contained many high loading scales, so defining the dimensions was not difficult. Also, each had many relatively pure scales on it. Thus the independent character of each could be identified.

An interesting finding is that evaluation turned out to be the strongest dimension and graceful-awkward turned out to be the highest loading scale on the evaluative dimension. Mood was the second most important factor and stability-tautness and dynamism were third and

rather equal.

The evaluation dimension contains scales which were originally considered to be activity, potency and tautness scales. However, these s cales appear to be less abstract and have more of a "social" component, thus being more evaluative in character. It is suggested further that these scales are related to more temporally active and potent social events.

In contrast to the results obtained when working with spatial nonverbal codes, activity neither appeared independently nor as the strongest dimension. As hypothesized, a dynamism dimension did appear. This is testimony to the interdependency of music properties. It also suggests that activity is more significant in spatial oriented codes and potency is more significant in temporally oriented codes, because potency dominates the dynamism dimension.

In terms of notions about melodic levels used in this research, remarkably little variation appeared in the dimensional structure across levels. Even though variation exists in the direction consensus and intensity of scale use, the correlational use shows that the four main dimensions continually are present. However, it was revealed that the appearance of evaluation and mood was not based on many significant associations to melodic patterns on the lowest level.

This is the first empirical demonstration that people cut up the world somewhat in accordance with the different aesthetic theories. It appears that the referential position is independent of the absoluteexpression position. The mood dimension corresponds to the former position and stability-tautness and dynamism correspond to the latter position. Further, the absolute-expression position has the most generality across

levels. The referential position appears not to be relevant to the lowest level.

Lastly, the scales based on the early categorical research in music expression by Hevner and others turned up primarily on the mood and evaluation dimensions. A suggestion can be made about how these two independent dimensions underly the circular arrangement of adjective categories. The mood dimension would be placed vertically through the middle (6:00 - 12:00) and the evaluation dimension would be placed horizontally through the middle (9:00 - 3:00).

#### Melodic Pattern - Connotative Relations

Only a few general findings can be given here. The broadest finding is that all patterns had some meaning.

More specifically, to make an oversimplified but possibly useful generalization, low level patterns are low-relevant and low consensus while high level patterns are high relevant and high consensus.

Two patterns on the single tone level related only to dimensions, III and IV, while all other patterns (except one) on all levels related to all dimensions.

Consequently, another conceptualization of levels has been offered in association with connotation. Both the internal structure (more than just number of tones) and the dimension of meaning must be taken into account. All melodic structure is meaningful on dimensions III and IV. Dimension I and II only associate significantly with patterns which have a certain amount of internal structures. Thus the phoneme - morpheme level distinction is relevant only to the referential aesthetic position. Given the notion of a neutral least meaningful region in terms of variable values, a certain amount of vertical or horizontal extremeness is needed in order to activate the entire connotative space. For example, a single tone implies little horizontal complexity, so proportionally more vertical extremeness is required if there is an intention to communicate on all dimensions. Of course situations may appear where the intention is to communicate on only a few dimensions.

Findings about the relationships of patterns and melodic variables to connotative dimensions can only be glimpsed at. In general, all basic melodic dimensions are associated with all dimensions of meaning. However, the results suggest that pitch (especially tonality) and duration are most importantly associated with most dimensions of connotation. Possibly duration is most strongly associated with the mood dimension and the tautness aspect of dimension III. From the opposite point of view, evaluation and dynamism appear to have the broadest set of relationships to melodic pattern dimensions.

#### Future Research Needs

## Dimensions of Music Connotation

#### Theory

The most obvious need is to measure the meaning of more components of music and manipulate more variables, separately and in combination, in order to see if the present set of dimensions is generalizable or if some alternations are needed.

It appears that the original, relatively small set of 26 scales will need some modification and possibly enlargement. This implies increasing

the boundaries of conceptualization of music connotation. Of course, as the scales change, the dimensional nature may alter somewhat and the relative importance of dimensions may change in terms of amount of explained variance.

The goal is to explain as much response variance as possible in relation to that aspect of connotative responding which is common to most all music. This implies that an explanation of 100% of the response variance will never be attained. The difficult question is to specify the probable cutoff point. For instance, 75%? As more scales and more music are used some idea about this may develop. Of course, dimensional structures only in relation to specific music style subsets using only more specifically relevant scales could account for more variance.

Some changes in scales can be suggested based on the present results: 1) The need for more adjectives related to higher level, more complex melodic shape properties such as angular-rounded, ornate (or fancy) - plain, vigorous-placid, etc. 2) The need for novelty dimension adjectives such as interesting-boring and expected - surprising. 3) The need for more timbre-texture-orchestration adjectives such as lushaustere, warm-cold, hard-soft, etc. 4) The need for some uni-polar labeling such as steady-unsteady, active-inactive. 5) A change in some of the ambiguous polar labels such as obscure, blunt, resolving, hollow. 6) The deletion of some scales such as lucid-obscure. 7) The addition of scales to help clarify the nature of the dimensions, especially stability-tautness and evaluation.

The present use of verbal language in music appreciation courses might now be discussed. Roughly, music appreciation verbal material language can be divided into four categories:

1) technical, structural terms such as interval, rondo, etc.

2) historical, sociological terms, about social context of composer.

3) emotion or mood terms, such as delicate, tender, etc.

4) abstract form terms, such as elastic, floating, etc.

In music appreciation courses, it seems that the first two categories are stressed the most. The third category is given a little attention but the fourth category is slighted.

It is suggested that the last two categories have the most consummatory value. They make up the dimensions of music connotation. It is assumed that these adjectives are used by most people in relation to many objects and events and the pattern correlates may be relatively familiar to all and similar among all even though obtained from various different specific referents. Thus, the use of these adjectives in conjunction with structural terms may facilitate music pattern concept attainment which will be maximally rewarding in relation to listenerconsumer use of music.

A practical future goal is to develop an instrument for measuring music connotation. It could have a variety of uses: 1) measure the meaning of a single piece of music; 2) measure the meaning of a sample of pieces from one composer to assess the central tendency in connotation from this composer. 3) measure similar aspects of a style or period of music; 4) measure the connotative sensitivity of a student, proceeding on to a study of individual differences in relation to connotative responses to music; 5) measure the amount of composer-listener connotative communication, by comparing the responses of composers on the instrument to the responses made by listeners on the instrument. This would offer composers a broader range of feedback about the meaning of their composition, in a relatively effortless manner. Actually, after the measuring instrument has been checked for reliability (homogeneity and stability), then only a few, maybe as few as eight or ten, of the main defining scales on the dimensions will be necessary in any measurement situation.

The main application of this instrument should be in the area of public school music education. Music appreciation courses need to accept a broader notion of the meaning of music. The teaching of music as a feature of the general education of all students in primary and secondary schools is important because it is the single, most frequently used art form. So whatever aesthetic sensitivity children develop depends primarily upon their contact with music.

This immediately suggests developmental research. In what sequence do dimensions of connotation appear? Which appear first with children? Or, what are the main dimensions of meaning in children's music? There might be a most frequent order of appearance among the four dimensions. Does evaluation appear first with the implication that tastes and preferences precede all other meaning? Or do the dimensions with the most generality appear such as stability-tautness and dynamism?

This study may have some relevance to audio-visual instruction research. This study has found four independent variables with which to

determine the effectiveness of methods of instruction using music such as music and film.

Work might begin on typologies of adjectives, using the high loading and pure adjective scales on each of the four dimensions as referent axes. Then a complex adjective having impure loadings and possibly having specific denotational relations, such as "heroic", could be defined in terms of its amount of dynamism, evaluation, stabilitytautness and mood. Given the measurement of many of the frequently used but complex adjectives in association with music patterns, a basic question would be how many clusters appear and what is the nature of each cluster? Also, in relation to the general categories of emotion, how many are frequently relevant in music communication?

This research has limited itself to a concern with only one stage or component of receiver decoding-connotation. In the future, as the measurement of pattern perception improves, it will be interesting to study the interdependencies among these components. In the present study it has been assumed that most people are operating similarly with respect to pattern perception. This is less likely to be correct as the patterns become increasingly complex because differences in taste, attention, familiarity with music styles among other variables begin to exert a stronger influence. But if connotative discriminations are not as precise as pattern structural discriminations, then some variation among individuals' perceptual behavior will not affect connotative behavior.

Lastly, when future research uses a much broader range of subjects, a closer study can be made of the relation of the dimensional structure

based on grouped data across all subjects to the dimensions generated by each subject. A factor analysis can be run for each individual. Then factor structure comparisons can be made to get directly at individual differences in factor structures. To the extent that there are differences, personality variables and other sociological variables such as occupation, role, etc., might be possible intervening influences. In the present research it was likely that all the groups were quite similar, but there were not independent measures on, for instance, personality variables to check this possibility. Several of the dimensions might have been generated due to several major differences in personality among the subjects.

## Methodology

One possibly important influence on the nature of the dimensional results is the particular design: factor analysis, based on a productmoment correlation matrix, A check on this influence can be made by replicating the research using another technique for analyzing the data. For instance, a multi-dimensional scaling approach could be used, such as the method of triads (1). In this design the subjects generate their own attributes (or scales) along which the patterns are compared, and direct comparisons are made between patterns so that judgments are relative, rather than absolute. Another technique is the Guttman nonmetric factor analysis of paired comparison data (32). Still another is McQuitty's hierarchical classification procedure (50).

The information obtained about the possibility of some patterns being more context-dependent than others on certain connotative scales

must be taken into account when preparing future experiments. One way is to present a group with a brief subset of patterns that reveal the structural range and boundaries in, for example, a pre-test instruction. Another way is to place the context dependent patterns near the last of the series.

Next, there may be a need to alter the form of the scale as it is presented in the measuring instrument. First, the + and - cues to scale direction may have added an evaluation bias. Secondly responses in the center step or category are ambiguous because they can mean several different things: irrelevancy; don't know; equal amount of both poles, etc. The problem is to pull these necessary aspects of responding apart without increasing appreciably the subject task time, fatigue and possible error.

Empirical studies of the most common adjective bi-polar relations used in relation to music are needed. Some adjectives probably have multiple relations to several other adjective contrasts. It may be important to select a certain pairing in order to avoid decoding difficulties, for example, when one pole is very clear but in association with an unexpected contrasting adjective, confusion results. Thus, a poor selection on one pole ruins the data on both poles.

An important task is to check the reliability of the instrument. Reliability contains two components - homogeneity and stability. Alternate forms can check homogeneity while a test-retest procedure can check stability. The simplest immediate way to begin is to repeat the presentation of several patterns within the context of an experiment.

There are many other methodological problems, such as the many assumptions underlying the scale: equal interval steps; polar endpoints are opposite and equidistant; etc. Much work is presently being done to test these assumptions.

# Melodic Pattern - Connotation Relations

#### Theory

In the present research, overall music structure has been sliced first in terms of components and then sliced across music styles as best as was possible from within the component. It is hoped that the melodic component will turn out to be sufficient in obtaining some notion of all the dimensions of music connotation. By using only one component it was possible to delimit the number of dimensions, levels and variables more quickly. Then variable values could be selected based on a clear notion of what would be needed in order to have a representative sample. Due to this approach the ability was improved to compare and contrast the resulting connotative meanings of patterns and levels, since all the patterns were defined in terms of the same set of variables.

The most obvious future research need is to manipulate more variables simultaneously. Other connotatively significant components and dimensions such as overall loudness, performer variables, harmony, texture and orchestration, must be measured both in isolation and in combination to find out about their connotative significance. Unlike non-verbal communication research in an area such as facial expressions where there is an observable referent which can guide the selection of

significant variables, almost every conceivable aspect of music structure may have some significance in terms of connotation.

New music structure variable can be created. There are many ways to operationally define variables: non-metric categories, quantitative measures of the ordinal or interval metric variety, log formulas, ratios, internal structure probabilistic relations, complex concepts with multiple variable indicators, etc.

For instance, Dallin (19) states that there are 4-5 different categories of melodic contours. Each category can be viewed as using many different variable values in a set of configurations which have some basic meaning similarity among them and some meaning difference from any of the other categories. Without elaborating on the details at this point, this definition should be subjected to empirical testing in terms of hypothesized differences in connotative meaning across categories. After presenting all possible combinations of values on appropriate variables to a group of subjects, who shall respond on several scales, it will be interesting to find out if 4-5 hypothesized clusters turn up in the response data. Possibly the data on pattern meanings will lead to collapsing some of the categories or enlarging them and even ranking them.

Within the above example appeared the basic approach to determine the conditionality of pattern variable value relations to connotative meanings. That is, as variable value combinations vary, how do connotative meanings vary? If the meaning of one value, from each of several variables, is measured in isolation, what is the resultant meaning when all the different values are combined? The goal here is to predict meaning change.

For instance, value combinations on several variables may produce a summative increase in meaning on a scale. For example, if an increase in rhythmic activity accompanies a rise in countour to the peak of a melody, the effect is made stronger.

In general, mathematical models of intra (besides inter) - language sequential and simultaneous combinatory rules involved in part-whole organization within the connotative component can be developed. Possibly only certain classes of mathematical functions will fit the data and predict behavior change. There are two kinds of predictive situations: 1) quantitative combinations: additive or multiplicative within a single scale; 2) non-quantitative combinations: emergence of new adjective scale relevancy. It may be more difficult to predict meaning change on some dimension scales than others. Meyer (51, ch. 8) thinks it will be easier to predict meaning change on scales from dimensions III and IV which appear to be more closely related to more observable surface features of music patterns.

When much of the above research has been accomplished, then large scale studies of music styles can be attempted. Modern jazz, folk music, romanticism, etc. can be measured and compared and contrasted in terms of scales and dimensions of meaning. The connotative distances between styles can be obtained.

The unique stylistic features of various well-known composers can be identified in terms of connotative meaning differences. For instance, Paisley (65) suggests that a distinction should be made in terms of major and minor encoding habits of composers. Possibly the minor, more subtle encoding habits may have a different connotative meaning than the

major encoding habits, thus turning out to be the interpretation that is used when referring to the most pleasing aspect of a particular composer.

Trends in style change within composer, school, etc. can be studied in terms of trends in meaning change.

Also, styles can be compared in terms of the nature and amount of uncertainty and ambiguity of meaning for various receiver populations.

# Methodology

Facet Design (27) is applicable to the present interest in manipulating many variables in all possible combinations. Given sets of values in each variable (facet), all possible combinations of values will be generated (variables). With relatively exhaustive manipulation, multi-dimensional interaction effects can be studied. Correlations between generated variables may appear as a "simplex" or possibly a "circumplex".

Also, analysis of variance can be used in conjunction with a facet design to determine the relative influence of different combinations of variable values on variation in meaning.

Finally, multiple regression can be used to establish quantitative predictive equations, where several pattern variables which are highly correlated to variation on some connotative scale are employed in linear combination to predict changes in connotative variation.

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### APPENDIX I

## Three Group Pattern Order

A	В	С
1	18	10
2	17	12
3	<u>16</u>	<u>11</u>
4	15	3
5	14	2
6	13	<u> </u>
7	12	17
8	11	18
9	10	16
10	9	5
11	8	6
12	7	_4
13	6	13
14	5	15
15	4	<u>14</u>
16	3	7
17	2	9
18	1	8

#### APPENDIX II

MUSIC COMMUNICATION STUDY Department of Communication Michigan State University

NAME:\_\_\_\_\_\_\_AGE:\_\_\_\_\_SEX: MALE\_\_\_\_FEMALE\_\_\_\_

#### INSTRUCTIONS:

On each of the following pages is a series of adjective pairs. For each page a melodic pattern will be presented. Between each adjective pair are five spaces, for instance:

> ++ + 0 - --1) friendly :\_\_:\_:\_:\_: ominous

You will be asked to make one judgment for each adjective pair. If, to you, the melodic sequence seems very "friendly," you would place a check in the first space, under the double plus (++).

If the melodic pattern seems <u>somewhat</u> "friendly," but not extremely so, you would place a check in the second space, under the single plus (+).

If the melodic pattern seems <u>somewhat</u> "ominous" you would place a check in the fourth space, under the single minus (-).

If the melodic pattern seems very "ominous" you would place a check in the fifth space, under the double minus (--).

Finally, "friendly ominous" may not be an adjective pair which is relevant to this particular melodic pattern. Or, it may be hard to decide whether it is "friendly" or "ominous." In this case, you would place a check in the third or central space, under the zero (0). This means "undecided" or "irrelevant."

For the melodic sequences in this questionnaire, there are no right or wrong answers. The best response is what you feel is appropriate. We are interested in what these melodic patterns mean to you.

### APPENDIX III

Melodic Pattern #\_\_\_\_

	++ + 0			++	+	0	-		
deliberate	:::::	impulsive	formal	:	:	:	-:	-:	: passionate
floatin	:;;;;;	dragging	Lucid	:	:	:	. <b>:</b>	.:	:obscure
pleasant	::::::	unpleasant	sharp	:	:	:	_:	_:	_:blunt
aspiring	::::::	resolving	solid	:	:	<b>:</b>	_:	_:	_:hollow
humorous	:::::	serious	graceful	:	:			_:	_:awkward
steady	::::::	changeable	good	:	:	:	_:	_:	:bad
tender	::::::	violent	cautious	:	:	:	.:	-:	:rash
tight	::::::	loose	plain	:	:	<u>-</u> :	_:	_:	_:majestic
leisurely	:::::	rushing	rugged	:	:	-:	_:	:	_:delicate
gay	::::::	pensive	friendly	:	:	:	_:	_:	_:ominous
introverted	::::::	extroverted	active	:	:		_:	_:	_:passive
beautiful	::::::	ugly	strong	:	<u>:</u>		_:	_:	_:weak
stiff	::::::	elastic	happy	:	:	<b>:</b>	_:	_:	_:sad

### APPENDIX IV

		Evalua- tion	Mood	Stability- Tautness	Dynamis	m	
		I	II	III	IV	v	$h^2$
18	graceful - awkward	.82	.03	02	.18	11	.73
12	beautiful - ugly	.80	.16	02	.16	12	•72
19	good - bad	.72	.23	.00	.25	13	.65
3	pleasant - unpleasant	.68	.40	06	.14	10	.66
7	tender - violent	.68	.07	.07	.13	36	.62
22	delicate - rugged	.72	07	04	31	02	.62
21	majestic - plain	.58	23	28	.22	.10	.53
2	floating - dragging	.68	.29	11	.05	.16	.58
4	aspiring - resolving	.59	.30	11	.09	.19	.50
10	gay - pensive	.22	.83	07	.13	.04	.75
26	happy - sad	.21	.80	02	.18	.04	.73
5	humorous - serious	.00	.80	07	01	.03	.65
11	extroverted - introverte	d .05	.60	26	.21	.11	.48
23	friendly - ominous	.46	.65	11	.10	14	.68
6	steady - changeable	.09	.03	.69	.16	12	•52
1	deliberate - impulsive	.03	14	.60	.17	19	.45
14	formal - passionate	20	08	.64	04	.15	.48
8	tight - loose	36	27	.55	.02	.29	.59
13	stiff - elastic	47	30	.53	07	.22	.64
25	strong - weak	05	.16	.06	.80	02	.68
17	solid - hollow	.10	.03	.25	.69	.05	.55
24	active – passive	.11	.47	16	.54	.19	.59
15	lucid - obscure	.24	.20	.01	.44	.05	.29
9	rushing - leisurely	28	.04	01	08	.69	•56
20	rash - cautious	17	.21	38	.09	.50	.48
16 F	sharp - blunt	.25	.03	.13	.25	.55	.45
	whater let	.21	. 111	na	00	06	r ~ (

#### APPENDIX V

Distributions for Intense Adjective Associations Single Tone Level 2 1 3 + + - --++ - --++ + - --++ 4 1 majestic delicate 17 34 2 0 rugged plain 16 27 5 3 majest: plain 27 22 strong 25 14 9 2 weak graceful 24 35 4 4 awkward strong13 26 9 1 weak stiff 15 22 9 3 elastic tender 0 violent 14 31 8 leisurely 11 32 5 3 rushing beautiful 13 29 7 3 ugly Two Tone Level 4 5 ++ + - --++ + - -deliberate 31 33 3 3 impulsive pleasant 26 33 7 1 unpleasant humorous 0 2 42 20 serious strong 13 37 7 0 weak 0 4 40 18 pensive friendly 20 30 100 ominous gay 16 28 5 2 passion- leisurelyll 32 9 1 rushing formal ate cautious 10 35 4 3 rash happy 0 2 33 15 sad rugged 13 29 8 0 6 ++ + floating 11 30 8 0 dragging aspiring 16 30 90 resolving Short Motive Level 7 8 ++ + - --+ ++ steady 51 23 1 1 changeable leisurely rushing 11 45 3 0 graceful 0 2 21 27 awkward humorous 1 3 35 18 serious stiff 43 26 3 l elastic rugged 1 6 35 14 deliberate tight 37 27 4 0 loose graceful 21 39 9 1 awkward 0 4 26 19 pensive gay tender 11 42 8 2 violent

Short Motive Level (continued)

++

9

+

active 23 36 passive 3 1 strong 14 38 4 2 weak 21 happy 27 5 0 sad gay 14 38 5 l pensive introverted 1 5 32 12 extroverted aspiring 16 25 7 2 resolving friendly 10 32 7 3 ominous Long Motive Level 10 11 ++ ++ + - ---19 34 6 2 strong weak good 15 31 5 0 bad humorous 2 7 26 18 serious beautiful 12 33 5 1 ugly graceful 12 43 8 1 awkward 12 active 19 34 8 1 passive friendly 14 39 8 2 ominous ++ + lucid \_ ----8 35 9 0 obscure floating 18 42 6 1 dragging humorous 0 0 43 29 serious pleasant 25 39 5 2 unpleasant leisurely18 41 2 0 rushing cautious 5 40 5 1 rash graceful 24 41 6 0 awkward tender 17 36 - 4 4 violent rugged 4 4 37 12 delicate beautifull1 33 -4 3 ugly Phrase Level 13 14 ++ + ---++ + \_ -humorous 0 0 22 42 serious gay 1 3 31 25 pensive beautiful 25 33 4 1 ugly humorous 2 3 26 24 serious leisurely 19 45 6 0 rushing happy 3 6 31 13 sad tender 27 41 4 0 violent rugged 2 3 37 18 delicate 15 good 24 30 5 0 bad ++ + --graceful 33 35 6 1 awkward strong 15 35 8 1 weak cautious 11 30 8 rash pleasant14 43 11 0 unpleasant Melody Level

٠.

16 17 ++ + ---++ + ---pleasant 37 34 2 0 unpleasant humorous 0 3 40 19 serious friendly 30 2 ominous 36 0 happy 33 32 2 0 sad strong 20 39 2 0 weak good 14 40 2 2 bad 39 23 5 0 pensive gay 5 humorous 19 33 l serious introverted 5 15 extroverted 1 35 floating 30 5 l dragging 18 active 25 37 7 l passive lucid 12 35 7 0 obscure 18

graceful	l	2	30	26	awkward
humorous	0	4	29	28	serious
gay	0	5	37	21	pensive
floating	1	6	22	29	dragging
friendly	1	7	28	24	ominous
rugged	19	28	6	1	delicate
good	1	7	28	15	bad
plain	19	24	5	3	majestic
formal	18	25	5	З	passionate
happy	2	6	35	18	sad

+

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# Appendix VI

Melodic Pattern Connotative Meanings

	1	2		3		4			5			6			1	2		3	4		Ę	5			6	
	123	345	6 <b>7</b>	891	10	113	122	13	141	15	16	17:	L8		12	345	67	891	101	112	131	L4]	L51	61	718	}
graceful	х	X	х	х		х	х	х		х	х	х		awkward		х	х		х			х			>	<
beautiful	Х		Х			Х	Х	Х				Х		ugly								Х				
good				Х		х	Х	Х		Х	Х	Х		bad								Х			X	ć
pleasant	XX	K X	Х	ΧХ		Х	Х	Х	Х	Х	Х	Х		unpleasant		Х	Х								X	(
tender	х			Х			Х	Х						violent					Х							
delicate	Х		Х	Х			Х	Х				Х		rugged		Х		х	Х			Х		х	Х	,
majestic				Х			Х	Х						plain	Х	XXX		Х				Х	Х	Х	X	<
floating	Х	Х	Х	Х		Х	Х	Х		Х	Х	Х		dragging		Х	Х					Х			X	ć
aspiring	Х		Х	ΧХ		Х	Х	Х			Х	Х		resolving		Х									X	(
gay		X		X		Χ			• •••	Χ	Χ			pensive	X	Х	X	X	Х	Х	X	Χ			XX	Ī
happy		Х		Х		Х				Х	Х			sad		Х		Х		Х	Х	Х			хх	(
humorous											Х			serious		Х	Х	Х	Х	Х	Х	Х			хχ	(
extroverted		Х		Х		Х					Х			introverte	d	Х				Х	Х	Х			хх	(
friendly		X	Х	ΧХ		Х		Х		Х	Х			ominous		Х			Х			Х			γ	(
steady	XX	ΧX	X				Х	Х		X	Χ			changeable								Χ				-
deliberate	Х	ΧХ	Х	X	Х		Х	Х		Х	X	Х	Х	impulsive												
formal	Х	Х	XX		Х				Х					passionate												
tight	Х	Х	X		Х				Х				Х	loose		Х	2			х	Х			Х		
stiff	Х	Х	Х		Х				Х				Х	elastic		Х	<u>c</u>	Х		Х	Х	Х		Х		
strong	XXX	XXX	X	X	Χ	Х	X			X	Χ			weak												_
solid			Х	XX	Х		Х			Х	Х			hollow												
active		X	Х	Х	X	Х				Х	Х		Х	passive		Х	<u> </u>									
lucid						Х	Х				Х			obscure												
rushing					Х									leisurely	X	XX		X	X	X	X		X	X	X	
rash				Х	Х									cautious		Х	<u> </u>			Х	Х			X		
sharp			Х	Х	Х				Х			Х		blunt		Х										

#### APPENDIX VII

An interesting problem has appeared and should be discussed briefly. The following table shows the overall usage of both adjective poses. The factors are ranked in terms of equality of usage.

	+	-
TT	23	36
v	8	15
I	68	33
III	33	10
IV	30	_1
	162	95

Pattern meanings varied quite a bit for dimensions II, V and I but not for dimensions III and IV. Actually, within III: \_\_\_\_\_\_

+	
21	1
12	9
	21 12

so for the stability component of dimension III and for dimension IV, only one direction was used in terms of consensus.

In terms of scales, strong-weak, solid-hollow, formal-passionate, lucid-obscure, and deliberate-impulsive only resulted in intersubject agreement in relation to the first pole with the present set of patterns. For these scales the second pole was always used less. Other scales in which the second pole was usually ambiguous are leisurely-rushing, sharpblunt, steady-changeable, serious-humorous, plain-majestic, aspiringresolving, beautiful-ugly, tender-violent and active-passive.

There are several reasons for treating these poles in this manner: 1) the sample of melodic patterns was not broad enough to map across the connotative space. That is, the sample of adjectives was too serious, graceful, plain and possibly not sufficiently majestic, passionate,

### APPENDIX VII (continued)

humorous, violent, weak and passive. Of course, it could be that melody alone is infrequently associated with these connotations. Maybe these poles are most frequently associated with other components of music or when all components appear together.

2) bad choice of labels on the less used polar positions. Possibly obscure, blunt, hollow, rushing and resolving are vague in meaning.
3) music connotative organization on some of the scales, especially in factors III and IV, are uni-polar. Some scales might be changed, such as steady-unsteady, and active-inactive. It could well be that all these reasons are applicable.

