INFORMATION TO USERS

The most advanced technology has been used to photograph and reproduce this manuscript from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book. These are also available as one exposure on a standard 35mm slide or as a 17" x 23" black and white photographic print for an additional charge.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

UMI
University Microfilms International
A Bell & Howell Information Company
300 North Zeeb Road, Ann Arbor, MI 48106-1346 USA
313/761-4700 800/521-0600
An auralization-based curriculum as a methodology for advanced aural skills training for wind band conductors

La Reau, Marcia Ann, Ph.D.
The Ohio State University, 1989

Copyright ©1989 by La Reau, Marcia Ann. All rights reserved.
AN AURALIZATION-BASED CURRICULUM AS A METHODOLOGY FOR ADVANCED AURAL SKILLS TRAINING FOR WIND BAND CONDUCTORS

Dissertation

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By

Marcia Ann La Reau, B.M.E., M.M.

* * * * *

The Ohio State University

1989

Dissertation Committee:

D. Butler

A. P. Costanza

C. J. Kirchhoff

Approved by

[Signature]

Adviser
School of Music
Copyright by
Marcia Ann La Réau
1989
February 10, 1953 ......................................................... Born - Issaquah, Washington

1975 ................................................................................. B.M.E., Iowa State University, Ames, Iowa

1976 ................................................................................. M.M., Northwestern University, Evanston, Illinois


1978-1984 ...................................................................... Director of Bands, Southern Illinois University of Edwardsville, Edwardsville, Illinois

1985-1988 ...................................................................... The Ohio State University, Graduate Studies in Music

1988-1989 ...................................................................... Director of Bands, Gettysburg College, Gettysburg, Pennsylvania

FIELDS OF STUDY

Major Field: Music Education

Studies in Music Education: Professor A. Peter Costanza

Studies in Musical Perception: Professor David Butler

Studies in Wind Conducting and Literature: Professor Craig Kirchhoff
# TABLE OF CONTENTS

VITA ............................................................................................................................ iii

CHAPTER

I. INTRODUCTION ....................................................................................................... 1
   - Background ....................................................................................................... 1
   - Purpose .......................................................................................................... 5
   - The Problem ................................................................................................. 6
   - Research Questions ...................................................................................... 6
   - Assumptions ................................................................................................. 7
   - Limitations .................................................................................................... 7
   - Definitions ..................................................................................................... 8
   - Significance of the Study ............................................................................ 9
   - Procedures .................................................................................................. 10

II. HISTORICAL PERSPECTIVES ............................................................................. 13
   STUDIES IN SPORTS PSYCHOLOGY ................................................................. 19

III. METHODOLOGY ....................................................................................................... 32
   - Introduction ................................................................................................. 32
   - Questionnaire ............................................................................................ 33

IV. AN AURAL SKILLS CURRICULUM BASED ON PRINCIPLES OF
   AURALIZATION ..................................................................................................... 39
   - Introduction ................................................................................................. 39
   - Learning through Visualization .................................................................. 40
   - Preparatory Exercises ................................................................................ 44
   - Interval Awareness - visual ....................................................................... 45
   - Interval Awareness - tonal .......................................................................... 45
   - Interval Awareness - non-tonal contexts .................................................. 46
   - Intonation .................................................................................................... 46
V. SUMMARY, DISCUSSION AND RECOMMENDATIONS

Purpose ................................................................. 107
Methodology .......................................................... 108
The Curriculum ...................................................... 108
Discussion ............................................................. 109
Recommendations ................................................. 117

APPENDICES .......................................................... 119

A. QUESTIONNAIRE TO BAND CONDUCTORS ............. 119

B. SAMPLE TIME LINE ............................................ 121

BIBLIOGRAPHY ..................................................... 123
CHAPTER I
INTRODUCTION

BACKGROUND

This research began in 1978 as a result of my struggle with aural training. As a band director and trumpet teacher, I was in a somewhat unusual situation in that I could watch my private students in an ensemble situation. One student was having trouble blending and tuning within the section. Since the section seating arrangement changed with each selection, I wanted to be able to differentiate each of the six different trumpet sounds from the podium, in order to determine which student was causing the problem. It also seemed to be a convenient skill for a conductor to have. Each day I allocated some time to "visualizing" or "auralizing" the sounds of the trumpet section, beginning with one sound and eventually expanding to six. Several months later during a rehearsal, I just seemed to hear different sounds when the section was "tuning up." The following summer I spent three weeks
auralizing the individual sounds of the entire ensemble and mentally combining them together. During the following year, a practice regimen was carefully followed, and I began experimenting with learning to internally hear the sounds of scores without the presence of audible music. By carefully monitoring my aural skills practice, I deleted exercises that did not seem helpful, and I created exercises to accomplish specific needs of the scores that were being studied.

This research project began as an attempt to clarify the question of validity with regard to my aural skills practice, and to define whether or not the skills I had gained could be accounted for by the auralization exercises that I had practiced.

The terms "aural skills" and "ear training" have a wide variety of meanings to musicians. To theorists, or teachers of music theory, they may mean something entirely different than they do to professional performers or conductors.

Usually undergraduate curricula in music incorporate the training of such skills (however they may be defined) into the first two years of study. These classes are typically taught by music theory teachers, or teachers of other aspects of music who serve as
music theory teachers. Customarily, curricula incorporate music reading (clefs, meter, rhythm), pitch identification (intervals, harmonic idioms such as triads and seventh chords, cadence formulas, etc.), dictation (melodic, harmonic, rhythmic), and some facet of singing (solfeggio, use of numbers, etc.) into the scope of these classes.

It would seem reasonable to expect every conducting manual to discuss aural skills to some degree since they are critical to the development of conductors. Many conducting manuals do not mention aural skills; however, in those that do, there seems to be unified agreement that aural skills play a significant role in the conductor's ability to be effective (Jacob, 1944; Kahn, 1965; McElheran, 1966; Green and Malko, 1975; Prausnitz, 1983). There is also agreement that conductors should continue actively to develop aural skills, and that the ideal ear should be able to create sound images from a printed page of music and be able to picture the printed page while hearing musical sounds (Gerkins, 1919; Scherchen, 1933; Finn, 1944; Jacob, 1944; Prausnitz, 1983). There seems to be mutual agreement that a means to this end is bewildering to the authors of even the most recent and seemingly most popular conducting texts, since no
one has chosen to include more than brief surface recommendations for meeting these goals.

Textbooks make the assumption that conductors must have keenly developed aural skills or they must develop their ability in this area. The exact skills that conductors should develop have not been defined by these conducting manuals. Wrong-note detection is the only aural skill that has been identified as a specific need of conductors (McElheran, 1966). Other terms, such as aural imagination (McElheran, 1966), the science of re-creating (Finn, 1944), and the materialization of a musical image (Scherchen, 1933), offer nebulous descriptions of skills that conductors believe they have developed. Emil Kahn (1965) asserts that the conductor's "ear" is taken for granted and this is a grave error. The four recommendations included in Kahn's text, that are devoted to this subject are by far the most extensive in their scope. They are as follows:

1) Practice four-part dictation (several Bach chorale-like examples are given)

2) Practice wrong-note detection
3) Learn to recognize the sounds of different instruments
   (recordings, such as Ravel's *Bolero* are recommended for
   practice)

4) Learn to read a score with the inner ear (beginning with
   two and three part contrapuntal material and progressing
   to more difficult material)

An approach to these exercises is not given, nor is advice on how to proceed with the exercises, (i.e., should one take down the soprano first, and then the bass line, etc).

PURPOSE

The purpose of this study is to construct a curriculum that may assist wind conductors in learning aural skills through auralization. The curriculum will focus on those skills necessary for the successful rehearsing and performing of a musical composition. In order to realize this purpose, a history of imagery will be presented to introduce it as a long-existing element in the study of learning processes. A review of studies on imagery applied to sports will attempt to demonstrate the effectiveness of such
procedures as legitimate teaching methods. A list of aural skills common to rehearsing and performing wind band literature will be established through a questionnaire given to an expert conductor's panel. And finally, a curriculum will be proposed to teach the defined skills through the established method of auralization.

THE PROBLEM

Basic aural skills are taught in undergraduate curricula. However, there appears to be no literature, specifically for conductors, designed as an on-going development of those skills necessary for rehearsing and performing from the podium.

RESEARCH QUESTIONS

1) What are the skills necessary for competent rehearsing and performing as a conductor?

2) Is there sufficient background to warrant the use of auralization as a valid method for learning aural skills?

3) Can a curriculum based on auralization be created to teach aural skills?
ASSUMPTIONS

1) If imagery has been effective in achieving positive results in fields other than music, then positive results may be achieved in learning music skills as well.

2) It is assumed that the resultant curriculum is designed for conductors who regularly rehearse an ensemble.

3) The skills defined by the conductor's panel are those necessary for effective rehearsing and performing of a musical composition.

4) The acquired aural skills define the information that conductors may use while rehearsing an ensemble. They do not in any way insinuate a definitive style or interpretation of a musical composition.

LIMITATIONS

1) The proof of imagery as a valid teaching tool is limited to the results of studies in sports.

2) The aural skills included in the curriculum are limited to those defined by the expert conductors' panel.
3) The final curriculum is presented to serve as a prototype, without the substantiation of data-based research.

DEFINITIONS

Auralization, for the purpose of this study, will be defined as the perception of internal musical sound without external stimulus.

The terms "mini," "midi," and "macro" will be used to define the scope of listening. These terms are not intended as "buzz words." The rationale for using them - as opposed to more familiar terms, is to alleviate the personal connotations that more familiar terms may have for different individuals. For the purpose of this study, these terms will be defined as follows:

mini - refers to listening to a full ensemble and isolating the sounds of individual players.

midi - refers to isolating individual section or choirs, i.e. clarinets or horns, or brass as opposed to woodwinds.

macro - incorporates the sound of an entire ensemble
Chaining is a term used to define a process where one set of visualized movements are "linked" to another (Suinn, 1972). In this present study, chaining will refer to a process where the user will link one set of auralized sounds with another. This linking process can apply to any aspect of a sound, i.e. one might chain together the voices of a fugue subject as they enter, or chain the harmony to the melody of a chorale, etc.

SIGNIFICANCE OF THE STUDY

In order to test the effectiveness of a method, a curriculum must first be in existence. If the effectiveness of imagery as a learning tool has validity in other fields, then its application to teaching aural skills can be tested only after a curriculum or methodology has been developed. The significance of the study rests in the development of such a curriculum as a springboard for future testing. The results of such studies could lead to improvements of the curriculum and possibly affect current methods of teaching aural skills to musicians in general, as well as to conductors. Further, the curriculum would provide conductors with a method for self-improvement.
PROCEDURES

It is the purpose of this study to construct a curriculum that may assist wind band conductors in learning aural skills through auralization. The curriculum will focus on those skills necessary for the successful rehearsing and performing of a musical composition. In order to realize this purpose, the methodology will follow these procedural steps: 1) A history of imagery will be presented to introduce it as a long-existing element in the study of learning processes. 2) A review of studies on imagery applied to sports will attempt to prove such procedures as legitimate teaching methods. 3) A list of aural skills common to rehearsing and performing wind band literature will be established. 4) A curriculum will be created to teach the defined skills through the established method of auralization.

In several studies specifically involving imagery as a teaching tool, subjects have been able to increase their efficiency in performing certain tasks. The exact reason for the improvements could be viewed skeptically. Imagery might be given credit for improvements that could be attributed to repetition. Some studies in sports psychology indicate positive improvements for specific
tasks that can be attributed to the use of imagery as a teaching device. These will be discussed at length in Chapter II. For over 2000 years, something has existed that intrigues educated people to discuss a phenomenon and search for information regarding the nature of imagery. Although the terms, imagery and visualization appear most often, descriptive writings on the subject most frequently portray the fact that all of these writers are discussing a similar phenomenon. The history of imagery will be presented as part of this study because it is not basic knowledge to most individuals in the music field.

The results of numerous studies in sports will be presented. This area has been chosen because more studies exist that parallel the type of learning (especially the learning of psycho-motor skills) that the researcher foresees in the final curriculum.

To establish a list of aural skills necessary for successful rehearsing and performing of wind band literature, a questionnaire will be established. To develop this list, the researcher will develop a form. The form will be examined for clarity and for necessary changes. This form will then be given to five conductors; interviews will be conducted and the results will be tabulated. The
chosen conductors will be clearly identified as capable of applying aural skills to conducting.

A curriculum based on auralization will be created to teach the defined skills.
Imagery played a role in the writings of philosophers centuries before psychology became a separate discipline (Kosslyn, 1980). A common terminology among translators does not exist and frequently descriptions are the most help in establishing that these philosophers were actually discussing what is now defined as visualization or imagery.

Aristotle (c. 384 - 322 B.C.) in his essay *On Memory and Recollection*, believed that thought was impossible without an image. Memory, conceptual or otherwise, required a mental image. He described a mental image as an ever-present copy of the thing to which the image referred. The power of sensation was responsible for the generation of these images. This belief in imagery, as a form of internal representation, became standard practice for several generations. Descartes (1591 - 1650), in his *Third Meditation*, subscribed to this concept. He believed that his
thoughts were pictures of objects which he called ideas. These ideas, or percepts, were generated from information stored in memory.

Hobbes (1588 - 1679) believed these images were related to physical events in the brain. In *Leviathan*, Part I, Chapter II, Hobbes likened the process to wind and waves. Once the wind ceases, the waves continue for quite some time. The same with images. They exist past the sensory experience. The difference between the terms "imagination" and "memory" depends on whether the emphasis is on the decaying process or the representations of the physical object. Hobbes writings include a very important point about imagination. He believed one could perceive images in whole or in part and these expediences could be compounded by the brain to form new images. Hence, from one perception of a man and another from a horse, one could perceive a centaur.

Spinoza (1632 - 1677) founded the concept that images could evoke many of the same responses (emotional) as do the actual objects. This eventually led to "image-desensitization" forms of psychotherapy.
A school of thought emerged in Britain (Kosslyn, 1980) that all knowledge is derived from sense experience (Flexnor, 1987). These philosophers became renown for the emphasis that the role of imagery has in the thinking process. Locke (1632 - 1794) believed that images were the vehicles for ideas. He called them secondary perceptions and described them as "the appearance of dormant pictures depending sometimes on the will" (Kosslyn, 1980, p. 444). He believed all of them to be impressions of former experiences. David Hume (1711 - 1777) referred to images as impressions and ideas - the differentiation being the degree of force or "liveliness." Impressions were more forceful. He believed that these mental impressions were made of information from all the senses, not entirely confined to "vision." Hume's notion that images are like weak percepts remains a formidable concept in current philosophy.

James Mill (1806 - 1873) divided all feelings (the term denotes sensory impulses rather than emotions) into two classifications: sensations and ideas. Sensations exist when the object ceases to be present.

Wilhelm Wundt (1832 - 1920), a German physiologist, is considered by many to be the founder of scientific psychology.
(Kosslyn, 1980; Brenner, 1985). He was appointed professor of philosophy at Leipzig in 1874, and in 1879 opened the first laboratory of experimental psychology. He attracted many graduate students who returned from their study with Wundt, determined to set up their own laboratories. Their goal was to achieve total independence from philosophy. The volume of his publications is enormous with articles on physiology, psychology, and philosophy. His knowledge was encyclopedic. He sought to identify the elements of consciousness through observations of social behavior (Harriman, 1967).

Wundt tried to construct a periodic table of the mind, to specify the elementary sensations of which all experience is composed and to specify the rules of composition. His main methodology in the laboratory was introspection, and the primary subject matter was imagery. His researchers tried to understand the structure of images. They defined images as percepts but without the immediate source of sensory stimulation. Wundt felt that the goal of psychology was to define the elements of consciousness, to define the ways in which these elements combined, and then determine the laws that govern them. Wundt felt
that images were spatially composite entities - a visual image made up of spatially distinguishable parts. He found aural images were also spatial. For example, in some experiments, when subjects were asked to recall the sound of a bell, they were able to determine the direction from which it originated. Wundt differentiated between two kinds of images: 1) percepts from sense impressions and 2) ideas or images of memory or imagination (Kosslyn, 1980).

Oswaldo Kulpe inadvertently discovered that some thoughts were not accompanied by mental images. Subjects were asked to lift weights and determine which was heavier. Frequently the subjects had no idea how they arrived at their conclusion. There seemed to be no conscious processing of former images or experiences, the judgment followed no sequence of events. The decision simply seemed to arrive in its final state. Other experiments by Kulpe indicated that one could understand the meaning of a given word quicker than one could form an image of the named object. This indicated that meaning and imagery are not one in the same (Moore, 1915). Although Kulpe's interpretation of the results of his study was moderate, others took his interpretations to indicate that Wundt's approach was flawed (Kosslyn, 1980).
There actually seem to be two different theories: thought processes that involved imagery, and thought processes that do not. For example, one need no sensory input to determine which is heavier - an egg or a ping pong ball.

John B. Watson, a behavioristic psychologist around 1913, claimed that all mental phenomena are accessible or reflected by imagery. He did not believe that imagery was a domain of the mind but instead, defined it as "subvocal thinking." This subvocal thinking was thought to consist of tiny movements in the larynx and, if technology was advanced enough - this movement could be measured. (Kosslyn, 1984).

In the early 1930's, psychologists began conducting experimental research on various effects of "mental work" on neuro-muscular activity (Freeman, 1931), and as a method to enhance task oriented learning (Sackett, 1934). The results of the experiments involving learning-enhancement merited additional research to quantify the optimum symbolic (mental) rehearsal time (Sackett, 1935). By the end of the decade, comparative studies were seeking to answer questions such as: "Are the benefits of visualization task-
specific and if so, what tasks are better served by visualization than the more traditional methods of learning?" (Perry, 1934).

The results of these studies prompted a focus on visualization by numerous individuals interested in the teaching of motor skills. Since 1930, over 100 studies have been conducted in the area of sports psychology. Convinced of the validity of mental practice, sports psychologists have consciously changed their teaching approach to reflect the results of experimental research for at least 18 years.

STUDIES IN SPORTS PSYCHOLOGY

Numerous research studies indicate that when visualization techniques are used during the acquisition of psycho-motor skills, something happens that significantly enhances the results. Although the terminology changes from study to study, the basic premise remains consistent that the perception of a skill without an external stimulus enhances the performance of that skill. The results to be presented in this chapter have been selected for their relevance to this study. However, no attempt has been made to
disregard results that would negate support of the thesis presented here. Sports psychologists have far surpassed the question of validity with regard to the effectiveness of imagery as a learning vehicle. Their current research seeks information regarding the enhancement of the visualization environment. The information presented here provides the basis for the resultant curriculum.

Following the acceptance of visualization as a learning enhancer, the question, "When does visualization provide the most benefit?" became the focus of experimental research. Many studies were conducted involving eccentric and even nonsensical skills such as wand-juggling (Corbin, 1967), and frisbee-disc putting (Andre & Means, 1986). The purpose for this skill selection was to compare a control group with variable groups with the knowledge that none of the participants could possibly have had any previous experience in acquiring the skill involved with the study. Similar studies included tasks such as the use of an Etch-a-Sketch and a stabilometer - a table-top skill game in which the participant tries to move a ball bearing through an elaborate pathway, laden with holes. The surface is controlled by two rotating axles manipulated by a single player.
from controls on adjacent sides of the box which houses the playing surface (Ryan & Simons, 1981).

Other studies focused on the application of visualization in skills where the participants have varying degrees of experience. In some studies, esoteric skills were chosen, such as "bean-bag" tossing (Zecker, 1982), where the amount of pre-testing familiarity could be used as a control variable. Therefore, some of the participants would be given certain amounts of practice prior to the use of visualization. The degree of "experience" with the skill could then be compared with the varying degrees of "pre-visualization" learning. Placebo groups were included in some studies (Richardson, 1967; Andre & Means, 1968; Mendoza & Wichman, 1978).

Further studies were conducted in which all participants had significant experience in the skills examined in the research. The participants' experience ranged from one to ten or more years experience, with motor-skills such as karate movement (Harris & Robinson, 1986), dart throwing (Mendoza & Wichman, 1978; Epstein, 1980), basketball free-throws (Vendell, Davis, & Clugston, 1943), and snow-ski racing (Suinn, 1971).
The results of studies conducted prior to 1967 have been examined and tabulated (Richardson, 1967). Richardson's findings, as well as an examination of studies conducted since 1967, indicate the same basic finding: the more experience a participant has had with a particular skill, the greater the benefit will be from "mental practice" (visualization).

There is a significant quantity of research that studied three particular types of test groups: a) mental practice, b) physical practice, and c) combined mental and physical practice (Richardson, 1967; Corbin, 1972; Feltz & Landers, 1983). In these tests, subjects were given at least some experience with the psycho-motor skills being tested. Following this experience, which might have varied from 20 free-throws with bean bags, to many years experience with Nordic ski racers, subjects were divided into three groups. The mental practice group was led through internal or external visualization. Examples of internal visualization would be directions to relax and mentally "rehearse" the given skill for a specific amount of time. These rehearsals were usually conducted in group sessions and directed by a monitor. External visualization might include viewing a video tape or listening to directions on an
audio-cassette. For example, Noel (1980), had participants relax and view video tapes of themselves completing successful first serves in tennis tournament situations. The objective was to improve first serve averages during tennis competition. In each study that included both internal and external visualization, internal methods of visualization proved more effective than the external methods.

In the second group, physical practice underwent a controlled amount of scheduled practice, for example, 30 basketball free-throws per day for 13 consecutive days. The third group consisted of a combination of mental and physical practice. The participants that combined both mental and physical practice experienced the most positive improvements of all three groups. Some of the studies incorporated relaxation (Ryan & Simons, 1981; Andre & Means, 1986) as part of the routine. In all of these studies, the relaxation group's scores were superior to other groups within each individual study.

After careful examination of the written accounts of the studies that have been discussed, the following observations may be made. None of the discussions of these studies included the
possibility that some of the participants in the physical practice
group (usually a control group without any visualization) might
unconsciously use visualization as a natural part of performance; i.e.
while standing at the free-throw line a player might "visualize" the
path of the ball into the hoop prior to executing the throw. This
process might have evolved inadvertently by the participant as a
natural part of skill development, prior to the study. Further, if an
explanation preceded the participant's performance, then the power
of suggestion might also have played a role. For example if a
comment were made such as, "This experience studies mental
practice. Please do not visualize your free-throws prior to throwing
the ball," some participants might have experienced difficulty in
following directions simply from the suggestion that they refrain
from the activity.

In the study by Vendell, Davis, & Clugston (1943), the results
showed that mental practice was about as effective as physical
practice. These results conflict with all the other studies that
compared physical practice with mental practice. Several observations might account for this discrepancy:

1) The study was conducted in 1943 and was only the fifth published study that involved the use of visualization. This was the forerunner of studies involving mental and physical practice. Although the earlier studies incorporated visualization in their methodology, the focus of the studies did not center on the effectiveness of the two alternate methods (mental practice and physical practice). Two of the earlier studies dealt with rote memorization (Sackett, 1934, 1935), one dealt with muscle endurance (Freeman, 1931), and the fourth dealt with five completely different tasks (Perry, 1939).

In the first recorded study utilizing imagery, Freeman (1931), tried to find out why visualization was effective rather than determining the conditions under which it proved most effective. Perry's study (1939) tried to discern if visualization was task-specific.

2) Vendell, Davis and Clugston's study was the first to compare three groups: 1) no practice, 2) mental practice,
and 3) physical practice. These are not the three groups used in the later studies (see discussion on pp. 25-27) since a combination of both mental and physical practice was not used as a control group. This might account for the differences in study results. Inasmuch as this was an emerging line of investigation there were no other studies to use as guides. The discussion in the study admits that mental practice is a significant but uncontrollable variable as the procedures were defined by the study.

3) The experiment was conducted with two sets of participants and two motor tasks. Junior high school aged boys were divided up into the three groups and completed the experiment with dart throwing. Senior high school aged boys were divided similarly and performed basketball free-throws. In both groups, the skills tested were primarily motor skills. It was not until 1972 (Corbin) that the relationship between cognitive and motor skills, as they associate with visualization, would be better understood. These
relationships were subsequently confirmed in 1981 by Ryan and Simons and the results have served other psychologists by providing guidelines for variable control in more recent research.

4) Following the 1943 study by Vendell, Davis and Clugston, Corbin (1972) and Mendoza (1978) determined that direct practice might be more effective in some experiments where non-cognitive tasks were used. This was attributed to immediate feedback during physical practice.

5) The exact procedure used during the Vendell, Davis and Clugston research is not clear. Furthermore, when the participants were finally divided into their respective groups, the final number of subjects was only four per group.

A total account of these studies conclude that visualization is more of an asset with tasks that combine cognitive skills with motor development than with those exercises that do not involve cognitive tasks. This would be important to the sport psychologist. However, with the acquisition of aural skills in music, all the skills
are categorized as psycho-motor tasks, and this particular characteristic of visualization-aided learning is an asset, rather than a concern.

A few researchers (Suinn, 1971; Andre & Means, 1986) have studied the effects of slow-motion visualization, i.e. mental rehearsing of a skill at a slower rate of execution. The results indicate that the technique is not an asset in acquiring new skills but serves as an asset to error elimination in skills where the participant had previous experience. Andre and Means studied frisbee basketball shooting over a time span of five days. Suinn worked with Nordic ski racers, training for Olympic competition, who obviously had a significant amount of experience. However, in the Suinn study (1971), practice groups showed immediate and significant improvement during their preparation for Olympiad XII.

Unfortunately, since interest in this field is relatively new, research is difficult to compare because variables are still inconsistent and experiments are extremely diverse. Long-term research does not exist. However, following the careful comparison of the experimental studies and their reported results, the following conclusions may be suggested.
The most obvious application of these results to aural skills learning in music is that the more experience a conductor has had, the more benefit should result from auralization practice (Vendell, Davis, & Clugston, 1943; Richardson, 1967; Andre & Means, 1968; Suinn, 1971; Mendoza & Wichman, 1978; Epstein, 1980; Ryan & Simons, 1981; Zecker, 1982; Feltz & Landers, 1983; Harris & Robinson, 1986). This experience would be all-inclusive, from undergraduate aural-skills training, ensemble participation, and concert attendance to conducting band rehearsal. More important is that the use of visualization is self-perpetuating - the benefits are compounded in a "domino-effect." This author suggests that the greatest benefit will be gained by those individuals who are simultaneously involved in a systematic rehearsal schedule. The application of visualization to specific tasks, such as the isolation of an individual part while listening to the entire ensemble, i.e. any experience with one aspect of visualization will further enhance all other skill acquisition.

The greatest benefit from visualization occurs when a schedule is composed of 1) physical practice, 2) visualization, and 3) brief rest periods (Richardson, 1967; Gould, Weinberg & Jackson,
Therefore the curriculum presented in Chapter IV will recommend physical practice exercises to be followed by auralization exercises.

Sports psychologist to the U.S. Nordic Ski Team at the VII Olympiad in Insbruch and an avid believer in visualization, Suinn (1971, 1972, 1977) began using a mental practice "chaining" technique as part of the team's training. He began the experiment with a control group and a group working with the chaining technique (number of each was not given). Within a week the control group was abandoned because of the impressive results observed for the mental practice chaining group. Although additional research in chaining techniques does not exist, this technique is the only information available that outlines an approach to the use of visualization for compound psycho-motor task assimilation.

Visualization-chaining is the practice of reprocessing the product of one visualization operation through a second sequence of exercises. For example, a relay runner might divide a race into three sections: the start, middle, and baton hand-off. After mentally rehearsing each part, the three sections might be visualized as one unit, thereby "chaining" them together. The process can be repeated
indefinitely. In the following curriculum (Chapter IV), after basic psycho-motor skills have been presented, auralization chaining is the basis for the assimilation of those skills into musical contexts.
CHAPTER III

METHODOLOGY

INTRODUCTION

In order to apply a teaching method to the area of aural skills for conductors, it is first necessary to define the skills that are specific to conducting. With the exception of wrong-note detection, mentioned in Chapter I, conducting manuals have not identified the specific skills necessary for conductors (discussion can be found on pp. 2-4). Carlsen (1981) presents a list of what he believes to be some of the auditory perception skills required by musicians. He discusses intonation, melodic sequences, melodic variation and transformation, polyphonic textures, harmonic sequences, tonality, tempo variation, rhythmic patterns, timbre identification, balance, and metric organization. Just how this list has been derived is not included in the discussion. Although he occasionally uses the conductor as an example in some of his explanations of the skills, it eventually becomes obvious that he is referring to choral directing.
rather than wind band conducting. The bibliography might provide suggestions for further reading on perceptual skills for musicians in general.

For the purpose of the curriculum proposed in this research (Chapter IV), it was important to acquire a list of skills specific to wind band conductors as they perceived their particular needs. This author could not locate research that was directed toward conducting. Consequently, a questionnaire (Appendix A) was developed and evaluated by ten experienced conductors for its content validity. Five conductors, who have been identified by the author and members of the dissertation committee as capable of applying aural skills to conducting, were interviewed personally by the researcher. The following discussion is a presentation of the questionnaire and the results of the interviews.

QUESTIONNAIRE

The questionnaire consists of a list of eight categories of skills, each divided into three areas of listening: solo, section, and ensemble listening. Conductors were asked to rate each area as it related to the aspects of general application. In an effort to
encompass all possible factors, conductors were allowed to recommend additional skills of music listening where the areas might apply during the form evaluation and during the actual interviews.

The eight types of skills listed on the questionnaire are: Interval Awareness, Functional Harmonic Identification, Intonation, Articulation/Note Shape, Balance/Texture, Structure/Form, Timbre Combinations, and Rhythmic Definition. Interval Awareness refers to the relationship between two musical tones in the twelve-tone, equal-tempered scale, commonly used in Western music. Functional Harmonic Identification relates the harmonic association of a sonority to a tonality, i.e. subdominant, mediant, etc. The category Intonation (musical), pertains to "in-tuneness" or lack of conflicting, audible beats between two or more musical tones. Articulation/Note Shape refers to the shape of different aspects of one or more tones, this definition includes the initiation, sustaining portion, and release of tones. The section on Balance/Texture concerns the relationship of one or more sounds to a whole unit with regard to volume as well as the different musical connotations of the term "texture" such as monophonic, homophonic, or polyphonic.
Structure/Form refers to the overall shape of sections of a composition and how they relate to the architecture of the entire composition. This section includes thematic and motivic elements, phrases and phrase groups, as well as larger design elements of the composition. The next section, Timbre Combinations, refers to the resultant sounds of instrumental timbre syntheses in all setting combinations (unison, octave doublings, harmonic, etc.). This section includes the combination of different solo sounds as well as combinations of like instruments sounding the same pitch, such as the resultant sound of ten clarinets playing the same pitch.

Rhythmic Definition pertains to the placement of musical tones within the divisions of metric structures and tempo. Depending on the musical context, many of the eight sections are perceptually interrelated.

The points on the scale were: "mandatory," "very important," of "secondary importance," "occasionally important," or "does not apply." In each area, without exception, conductors agreed that, depending on the musical context, every aspect of aural skills, as defined by the questionnaire, was mandatory. There was unanimous agreement that all of the areas were interrelated and
frequently a conductor would need several different skills simultaneously in order to solve problems in a given situation.

Each interview was conducted in a private setting by the researcher. Each interview began with a brief description of the dissertation and the role that the interview would play in the final product. A copy of the questionnaire was given to each person to be interviewed. After the conductor had read the questionnaire, an opportunity to ask questions was provided. In order to achieve the most consistent responses, the researcher presented each question individually, and each conductor was asked to approach each question as if they were conducting a music rehearsal. For example, with regard to the question on "articulation and note shape," how important would it be for the conductor to be able to isolate the sounds of an individual player (mini phase) from the ensemble? In the same situation, how important would it be to be able to isolate the sounds of an individual section (midi phase)? When the conductors being interviewed were unsure of the application of a particular question, the researcher included a musical example from a well-known score.
Initially, three of the five conductors were unwilling to consider the individual questions of the questionnaire. Two responses to the situation were 1) "If it deals with ear training, I'm all for it; it's all important!" and 2) "I don't know how any of this could be unimportant." The third conductor declared his philosophies of teaching, conducting, aural skills, music study and performance. In each situation, the researcher eventually succeeded in returning the focus of the conversation to the individual questions presented by the questionnaire.

The questionnaire results for four of the conductors were unanimous. The one questionnaire that varied slightly from the other four resulted from the first interview and the researcher felt that the presentation of the questionnaire might have been slightly different. In order to confirm the questionnaire results, the one interview was repeated six months following the first interview using an identical questionnaire. The conductor asserted that he did not remember his responses from the initial interview. The results from the second interview matched with the responses from the other four conductors. In each area, without exception, conductors agreed that, depending on the musical context, every aspect of aural
skills, as defined by the questionnaire, was a necessity. There was unanimous agreement that all of the areas were inter-related and frequently a conductor would need several different skills simultaneously in order to solve problems. Two conductors voiced concerns that were not included on the questionnaire. One concern regarded the relationship between note shape and musical line or phrasing. A phone conversation with that individual clarified that his concerns could easily be handled in the category of Structure/Form. The second conductor's concern pertained to expressive qualities, musical flexibility and tone quality. The conversation during the interview determined that expressive qualities and musical flexibility were elements of interpretation and performance practice, an area beyond the scope of this research. The third area, tone quality, could be included in the category of timbre combinations.
CHAPTER IV

AN AURAL SKILLS CURRICULUM BASED ON PRINCIPLES OF
AURALIZATION

Introduction

The curriculum is divided into two sections: auralization preparation and auralization exercises. Auralization exercises will be presented in three catagories for each of the skills identified by the questionnaire. The three catagories will be 1) physical exercises, 2) auralization exercises and 3) chaining exercises. Each category will be presented through its application to these three phases: mini, midi and macro. The preparatory and physical exercises do not directly utilize auralization, however, they are presented as part of the auralization preparation.

The organization of the curriculum follows the order of the categories from the questionnaire. Two of the categories, "interval identification" and "intonation," can be dealt with more directly without involving musical issues; consequently, they are treated
differently. Exercises for the development of interval identification are found in the preparatory exercises at the beginning of the curriculum. Exercises regarding intonation are located in the last section of the curriculum.

**Learning through Auralization**

The process of learning through auralization will incorporate a sequence of exercises that will be divided into three categories: 1) physical exercises, 2) auralization exercises, and 3) chaining exercises. Physical exercises are so termed because the sound used in the exercises is audible (recordings, tapes, live performance, etc.). Also, these exercises frequently include the use of a written score for the music that is used. Auralization exercises use the same sections of music, however, the sound of the music is imagined. In chaining exercises, a selected part of the total sound is imagined and additional sounds are chained until the entire sound complement is auralized. For example, the bass line from a chorale might be auralized, and the tenor part might be added or chained, followed by the alto and soprano parts.
Physical exercises are differentiated from auralization exercises simply by the presence or lack of audible sound. For each reference to physical exercises, any recorded or live sound will suffice. A recommendation would be to use rehearsal recordings of scores that are currently being prepared for performance. Tape recordings of material sight-read during a rehearsal, or recordings of any composition, will suffice. Scores are frequently required. The auralization exercises parallel the physical exercises and one might find greater benefit from working through a physical exercise, immediately followed by the correlative auralization exercise. In many instances, auralization will provide an advantage to physical exercises, since during the imagined playback of sound, tempo can be accelerated to quickly move to particular points for study, or, sound can be suspended for the same purpose. For example, while studying cadential chords, one can mentally accelerate tempo to move quickly from one cadence to another, thereby enhancing comparative study. When the desired point is located, the sound can be mentally "suspended" while pursuing aspects of study. This particular aspect is especially helpful during chaining exercises. Exercises throughout the phase sequence may automatically incorporate
chaining principles. For example, mini exercises involving one instrument, say first trombone, automatically "chain" when the midi phase requires the auralization of the entire section and the user is auralizing the same passage from the mini phase. Whenever possible, the user should incorporate a method of verification. For example, if one were auralizing a chorale, and determining the harmonic progression, then a score of that music should be available for verification. If one were notating a familiar melody, then a piano or other instrument could be used to verify the user's responses.

The exercises presented here are not intended to be used as a rigid sequence or practice procedure. They are presented as a springboard to investigate methods of self-improvement. Variations, extensions and additional possibilities should be created by individuals as they tailor this concept to the specific skills they wish to enhance and also to the composition they choose to study as they pursue improvement of their aural skills. The precise schedule or amount of time that a person chooses to practice is dependent on their background, current capabilities and schedule. However, if practice can be associated with regular score study as part of
rehearsal preparation then rehearsals will also provide the advantage of feedback. Whatever the selection of literature for study, it is important to focus on musical issues that are inherent to the composition. For example, if a contrapuntal composition were used, one might focus on chaining the individual entrances together. A chorale-like setting would lend itself to a study of intonation and harmonic progression. Adapting literature currently being studied and/or conducted, and maintaining a practice schedule that contributes to the efficiency of regular rehearsing would be a recommended approach to aural skill enhancement. The order of study for the categories is dependent on the needs of the composition under study. Some categories may not apply to some compositions. Further, some of the exercises within the phases of each category may be unnecessary for particular compositions. Hence, all of these exercises may be adapted to the particular composition being studied. If a section of a composition contains elements that are not specifically covered in this curriculum, then exercises should be easily created from the principles presented here.
Preparatory Exercises

This curriculum is not designed to teach the aural skills generally taught by undergraduate classes for music majors. It is designed to assist conductors in furthering the development of those skills particularly pertinent to conducting, and assumes that the user of this curriculum is actively engaged as a band director and participates in a regular rehearsal schedule.

Since the benefits of auralization are significantly enhanced by experience (see Chapter II), and since the aural skills attained in college classes may have waned, the following set of "pre-auralization" exercises are recommended. This researcher strongly urges that these preparatory skills be practiced on a regimented schedule. Since the background, experience and schedule of each individual would necessarily be different, determining which exercises to use and how much time to spend would be a personal decision. Selection process and scheduling are beyond the scope of this research. These exercises are presented here to emphasize the importance of basic skill acquisition prior to auralization and as a spring-board for the maintenance of these skills as an integral component of enhanced learning through auralization.
Interval awareness - visual.

1. Look at any music and name the melodic intervals as quickly as possible.

2. Choose an interval and write consecutive ascending and descending intervals above a randomly chosen note. For example, consecutive ascending perfect fourths would be: C, F, B-flat, etc. Select clefs that may be more difficult.

3. Notate any melody you can imagine (verify with an instrument if necessary).

Interval awareness - tonal.

1. Sing scale patterns utilizing a tonality system. The particular system: solfeggio (movable do or fixed do), numbers etc. is not as important as re-familiarizing oneself with a basic process of correct categorical pitch determination.

2. Sight sing melodies.

3. Sight sing individual parts to a score while listening to a recording.
Interval Awareness - non-tonal contexts.

1. Sing successive intervals, ascending and descending, e.g. six major seconds, five minor thirds, three perfect fourths, etc.
   Implement octave transpositions as necessary to accommodate vocal range.

2. Sing two alternating intervals, ascending and descending, i.e. major seconds followed by perfect fourths. Implement octave transpositions as necessary to accommodate vocal range.


4. While listening to a recording of non-tonal music and viewing a score, sing individual parts.

Intonation

1. Set an electronic tuner or other fixed-pitch instrument to sound a pitch. Vocally match the pitch, slide slightly flat, then slightly sharp, then back in tune. Sing a minor second higher than the sounding pitch and repeat the process. Continue by expanding the initial interval by half steps.
2. Continue in the same manner as Exercise No. 1, except with
descending intervals.

Rhythm and Meter.
1. Listen to any music and determine the meter, i.e. simple-triple,
etc.
2. Notate rhythms of a familiar melody.
3. Notate rhythms from any recording.
4. Set a metronome to a moderate tempo. Hand tap (drumming) or
verbally subdivide the beat in half, then thirds, fourths, etc.
5. Develop Exercise No. 4 by increasing and decreasing the speed of
the metronome.
6. Continue developing Exercise No. 4 by including "odd" divisions of
the beat, such as fifths, sevenths, tenths, etc.
7. Perform two rhythms simultaneously. As skill develops, work
out "odd versus even" exercises. For example, two versus,
three, two versus five, three versus four, etc.
FUNCTIONAL HARMONIC IDENTIFICATION

Physical Exercises

Mini phase.

1. With a recording and score of a familiar composition, listen
   and/or sing individual parts. At cadence points, determine the
   chordal function of the note (root, third, fifth, etc).

2. Expand the exercises of number one to include as many chord
   structures as possible, i.e. try to identify all the melodic tones
   by their chordal function.

3. When chord members are easily defined, determine the function
   of individual parts - i.e. root of dominant seventh chord.

4. Using a recording, during sustained harmonies, listen for specific
   timbres of chord members (i.e. third of chord - played by the
   oboe, trumpet, etc.). Check score for verification.

Midi phase

1. Expand the exercises from the mini phase to incorporate entire
   sections of the ensemble (horns, clarinets, etc.).
2. At cadential points determine which chord tones are played by specific sections and in what part distribution. For example, at a final cadence, trumpets play root, third, and fifth. Uppermost part plays the fifth, middle part plays the third and the root is in the lowest part.

3. Determine chordal functions (tonic, dominant, secondary functions) of the chords from Exercise No 1. Check score for verification.

Macro phase.

1. Listen for and define cadential structures in simple tonal examples.

2. Expand Exercise No. 1 to as many harmonic elements as possible.

3. As technical facility increases, select compositions with expanded chromatic harmony.

Auralization Exercises

Mini phase.

1. Think through the sound of a familiar composition, preferably the same one used in the physical practice from the previous
exercises. Listen for specific parts, i.e. oboe. Try to
determine chordal function of the notes, especially at
cadences (root, third, fifth, etc.). Suspend the sound to analyze
functions of tones. Refer to the score as often as necessary for
verification.

2. Expand the exercise to include as many chord structures as
possible. Refer to the score as necessary.

3. When chord members are easily defined, determine function of
individual parts as in the physical exercise.

4. Imagine standing in front of your ensemble. Internally think
through a composition. Mentally suspend harmonic sounds,
chosen at random (cadences or long notes, for example).
Mentally focus on a section of the ensemble and mentally
increase the dynamic level of those players. Then define as
many chord member locations as possible (i.e. third of chord in
upper voice. etc.).

Midi phase.

1. Visualize yourself in front of your ensemble, suspend any sounds
from a familiar composition and focus your attention to
different sections. Mentally increase the volume of the
selected sounds and try to determine which section member is
playing which chord tone (Refer to Exercise No. 1 of the mini
phase from the physical exercises in this section.)

2. Mentally play-back the sounds of one or more phrases, isolating
specific sections. For example, try to imagine the clarinet
section performing a phrase from a tutti section of a
composition. Suspend cadential points and determine chord
functions.

3. Expand Exercise No. 2 to incorporate as many chords as possible.

**Macro phase.**

1. Mentally play through a composition, listening for the harmonic
elements established through score study and through the
previous exercises in this section (both physical and
auralization exercises).

2. Mentally play through a composition, suspend as many sounds as
possible and confirm the harmonic elements established
through score study.
3. While auralizing the sounds of a composition, suspend the sound of a cadential point. Try to memorize it. Then accelerate the tempo to the next cadential point and compare the chord with the first memorized cadence. Continue in a like manner throughout the composition. Refer to the score for verification.

Chaining Exercises

Mini phase.

1. Select a section of a familiar score, select a particular part and auralize the sound of just that part. Repeat the exercise with different parts, then chain them together. Continue until all the parts have been chained together. Finally, auralize the sounds of the score and focus on the harmonic elements from all of the previous exercises in this section.

2. Expand Exercise No. 1 to an unfamiliar score. Chain together individual parts, then auralize all of the sounds and identify harmonic elements as are appropriate to the musical composition. Finally, verify harmonic elements through analysis.
**Midi phase.**

1. Select cadential points and build the chord from the bass up, chaining together the pitches of specific timbres. Repeat the process for different sections.

2. Select phrases and chain together the sounds of different sections, confirming harmonic score study. For example, auralize the first clarinet part, add the second clarinet part to the first and repeat the process until the entire section is heard as one unit.

4. Repeat Exercise No. 2, auralizing different sections with the same phrase.

**Macro phase.**

1. Auralize the sounds of a melodic line of one phrase of a composition. Follow with the bass line from the same passage. Chain both sounds together, proceeding as slowly as necessary. Gradually add all parts to complete the pitch representation. Refer to the score as necessary.
2. Select cadential points and chain together the sounds of different sections. (Refer to midi Exercise No. 1 in this section.)

3. Select phrases and chain together section sounds (e.g. begin with flutes, chain double reeds, horns, etc.) - especially those studied in Exercise No. 3 from the midi section. Confirm the results of harmonic score study.
STRUCTURE/FORM

Physical Exercises

Macro phase.

1. Select a recording and listen to the composition to discern the
   formal structure as it unfolds. Begin with compositions of
   short duration and expand to longer pieces. Verify the results
   with scores and/or analysis.

   Note: Books on musical form may provide recommendations
   for study.

2. Develop visual representations of formal structures (memorable
   musical elements that seem important, especially returning
   ideas) and construct a "time line" of formal events while
   listening to music. For example: the opening measures in the
   Overture to Candide might look like \[ \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \]. An example of
   a time line is given in Appendix B.

3. Return to the time lines constructed in Exercise No. 2 and listen
   for phrase structure. Indicate phrase length under the time
   line. So the beginning of Hindemith's March from Symphonic
   Metamorphosis might be 4,8,8, etc.
4. While viewing a score and listening to a recording, try to focus on particular elements. So, begin with melodic elements and listen to the score, focusing on the melodic information. Then listen again, focusing on elements of the accompaniment, then special effects, etc.

Midi phase.

1. Refer to the charts devised during the macro phase study in this section. Listen to the music and trace one specific section of the ensemble. Whenever that section participates, indicate their presence under the time line. For example, trace the horn section throughout a composition. When they participate, indicate with "H________," or some other convenient shorthand. Continue by listening for other sections.

Note: In some pieces, it might be advantageous to combine sections, especially if a particular group does not participate very often. For example, instead of listening for the trombones, then the euphoniums, then the tubas, they might all be combined as the "low brass" section and require only one
listening. This might be an approach to formal sections within a composition as well.

2. With the chart from Exercise No. 1, continue listening with a recording and indicate the role of the sections as they participate, i.e. accompaniment, theme A, special effects, countermelody, etc.

Mini phase.

Continue with the charts from all of the previous exercises in this section, listen to the score again for individual solos. Notate their presence on the chart. Determine relationships between orchestration and form.

Auralization Exercises

Macro phase.

1. While referring to the chart constructed during the physical exercises in this section, auralize the entire composition.

2. Determine the points of structural significance, for example, the point of return of the main theme in a rondo form. Auralizing
the selection, "fast forward" to the moments indicated.
Mentally compare the points for similarities and differences.

3. Determine the loudest points in the piece. Auralize each and
mentally compare the sounds. If some should be louder or
most loud, then mentally create that effect.

4. If other elements regarding form and phrasing are of import to a
specific composition, then mentally review the piece for those
elements, as in Exercise No. 2.

**Midi phase.**

1. By referring to the chart created during the physical midi
exercises in this section, auralize the composition, mentally
listening for the sections reviewed earlier.

2. As in the correlating physical exercise (Midi phase, Exercise No.
2), auralize the sounds of the score by role. For example,
auralize only melodic elements during a "mental playback" of
the composition. Then auralize only the accompaniment.
Expand the exercise for any other specific elements that are
particularly appropriate to the musical selection.
Mini phase.

1. Referring to the charts from the physical exercises of this section, auralize any sections that utilize solo sounds.

2. Using the charts from the physical exercises as a guide, auralize the selection. Begin by selecting one of the solo instruments. "Fast forward" to the point in the piece where that instrument begins its first solo. When the solo is finished, "fast forward" (use the time line as a guide) to the next solo point. Compare the sections for any relationships between orchestration and form.

Chaining Exercises

Mini phase.

Auralize the sounds of a composition and isolate individual parts.

(Select individual parts that have structural significance, for example, if theme one is presented by the solo oboe, then the oboe part would be a good candidate for this exercise.) Chain the isolated part to all other sounds in the composition. Try to auralize the role that the selected part plays in total form of the composition.
Note: The construction of a time line of selected individual parts might be an asset. The choices for the time line might include thematic material, special effects, accompanimental material, rests, etc.

Midi phase.

1. Auralize each formal section, first with melodic information, then by "chaining in" the accompanimental sounds followed by any other elements defined by the Physical Exercises, Midi section, Exercise No. 2 and Physical Exercise from the Mini phase. Refer to the chart as necessary.

2. Continue Exercise No. 1, by implementing the same procedure for each formal section of the piece.

Macro phase.

1. Auralize the sounds of the entire selection, referring to the preconstructed chart only when necessary.

2. From the data recorded on the preconstructed chart, auralize the sounds of similar sections. For example, auralize the first presentation of theme one, then "fast forward" to the next
appearance of that theme. Continue through the composition, listening and comparing the settings of the theme. Refer to the chart or the score as necessary.

3. Apply the procedure of Exercise No. 2 to any returning material, pertinent to the musical selection.
RHYTHMIC DEFINITION

Physical Exercises

Mini phase.

1. Refer to the Preparatory Exercises, Rhythm and Meter, 1-7.

2. With a recording and a score of a familiar composition, listen to individual parts, subdividing with hand taps (drumming) or by singing the individual pitches and verbalizing the subdivision. Begin with simple subdivisions and expand.

3. Develop Exercise No. 1 into as intricate subdivision as possible. Disregard verbal subdivision and tapping when the intricacy of the subdivision is too difficult to execute.

4. With a recording and score, scan through the individual parts by beat, measure, or phrase, verbally subdividing.

5. With a recording, trace a musical motif or theme through the performance, listen for differences between the different realizations of the same figure.
Midi phase.

1. With a recording and score, focus on the sound of individual sections, subdivide internally and listen for discrepancies in the performance.

2. With a recording and score, focus on instruments that perform similar parts (strata), subdivide internally, and listen for discrepancies in the performance. For example, if the flutes, oboe, trumpet I, and euphonium all have the melody, then focus on those parts and listen for rhythmic discrepancies.

3. Expand Exercise No. 2 to other musical functions such as accompanimental figures, special effects, (sforzandi, bell tones...) etc.

Macro phase.

1. With a recording and score select sections that offer rhythmic unison passages. Internally subdivide and listen for discrepancies.

2. Develop Exercise No. 1, by studying musical excerpts that incorporate two rhythmic ideas, then continue on to three ideas, etc.
3. Expand Exercise No. 3 to incorporate any rhythmic idea used in the composition.

Auralization Exercises

Mini phase.

1. This exercise parallels Exercises No. 2 and 3 from the physical exercises (mini phase) above, however, the recorded sound is replaced by auralization. Auralize the sounds. Use the score if necessary, focusing on individual parts, subdividing with verbalization until the intricacy of the subdivision is too difficult to execute, then subdivide internally. When auralizing the sounds of an entire composition, without the score, it might be advisable to refer to the charts created in the Structure/Form exercises.

2. This exercise parallels Exercise No. 4 from the physical exercises (mini phase) above. Again, the recorded sound is replaced by auralization. Scan the score from top to bottom, maintaining internal subdivisions.

3. Mentally auralize the sounds of a composition, focusing only on those instruments that perform a particular musical idea. For
example, theme one, any motif, etc. As timbres change, insure rhythmic accuracy through internal subdivision.

4. Select excerpts where tempos change gradually (*ritardandos*, and *accelerandi*, etc.). Auralize the sounds of the instrument(s) that have the melodic or most important line, while internally subdividing. Maintain a smooth transition from the first tempo to the second.

**Midi phase.**

1. Select sections of the ensemble (horns, double reeds, etc.) and auralize their sounds throughout formal sections, while internally subdividing as intricately as possible.

2. This exercise parallels Exercise No. 2 from the physical exercises (midi phase). Auralize the different strata of sounds, i.e. every instrument that has accompaniment, then melody, countermelody, etc. Expand them as in Exercise No. 3, physical exercises (midi phase).

3. Select excerpts where tempi changes gradually. Auralize the sounds of the instrumental sections, subdividing to maintain a smooth transition from one tempo to the next.
Macro phase.

1. Practice auralizing the sounds of each formal section of a selected composition in slow motion. With slower tempos, increase the depth of the subdivision.

2. Expand Exercise No. 1 by increasing the tempo without decreasing the internal subdivision. Continue until performance tempo has been reached.

3. Select excerpts that maintain more than one rhythmic idea (any contrapuntal texture). If necessary, chain together the sounds of the excerpt. Internally subdivide through the passage. If possible, switch from one motive to another. If necessary, begin by using the score. When possible auralize the sounds without it.

Note: Rounds, such as Row, Row, Row your Boat, or Three Blind Mice work well for preliminary exercises.

4. Select excerpts that require a tempo change. Auralize the sounds of the section and subdivide internally to maintain a smooth transition from the first tempo to the second.
Chaining Exercises

Mini phase.

1. Select a section of music that requires a steady tempo. Chain the sound of a metronome to the sound of a single instrument. Continue chaining to incorporate the full instrumentation.

Note: It may be helpful to begin this exercise with sections that incorporate only a few instruments.

2. Select a section of music and chain an individual line to an internal subdivision. Continue chaining to incorporate the full instrumentation.

Note: It may be helpful to begin this exercise with sections that incorporate only a few instruments.

Midi phase.

1. This exercise parallels studies from the auralization section (midi phase). Chain together the sounds of selected timbres, maintain internal rhythmic subdivision. If necessary "rehearse" in a slower tempo.
2. Select passages where tempos gradually change. Chain together the sections auralized from the mini and midi phase during the auralization exercises in this section.

3. For each formal section of a piece, subdivide through the sounds of each section in the ensemble, then chain them together.

4. Continue as in Exercise No. 3, however, instead of adding instrumental timbres, begin with a particular stratum (say, melody) then add another stratum of instrumentation (i.e. countermelody, or accompaniment).

Macro phase.

For each formal section of a composition, chain together the sounds of each section while maintaining internal subdivision. When the entire sounds have been chained, move to the next formal section and continue throughout the composition.
TIMBRE COMBINATIONS

If an individual is unsure of the timbres throughout the entire range of each instrument in their ensemble, then these preparatory exercises may be an asset. Since the topic of timbre combinations is not usually studied in undergraduate aural skills classes, the following exercises are recommended. They may also be helpful to conductors when they change ensembles, (i.e. guest conducting, chamber ensembles, etc.).

Preparatory Exercises

If the conductor is able to auralize the sound of each instrument throughout its entire range then proceed to Exercise No. 2. Be sure to include the percussion section.

1. Choose a recording and score to any sonata or concerto for the instrument under study. Listen to the recording several times and try to memorize the timbre that matches the range for each instrument. Then auralize the sounds of the selected work without the recording. Be sure to include the percussion timbres.
2. With a tuner or pitch fork, determine the sound of the lowest note in the range of each instrument. Auralize the sound of that instrument playing an ascending and descending chromatic scale. If this is difficult for some instruments then refer to Exercise No. 1.

3. Apply Exercise No. 2 to the instruments of the percussion section by dividing it into three timbral groups: skins, metals, and woods. Compile a list and determine the sounds of instruments for each group as they apply to voices. For example: skins would have the timpani and bass drum as bass voices. Timpani, parade drum, tom-toms and conga drum might be used for the tenor voices; timbales, snare drum for alto voices; and bongo drums, piccolo snare drum and tambourine (both skin and metal) for soprano. Be able to auralize each category of these instruments as well as differences that might occur from mallet changes.

4. Mentally picture the rehearsal room or seating arrangement of the members of an ensemble. Auralize the sound of one flute player on a selected pitch. Chain the sounds of the entire section playing that pitch by auralizing the sounds as each
player initiates their tone. When one section is complete, move to the next section and begin again. Do not chain the sounds between ensemble sections yet. Repeat this process to include each section of the ensemble. Be aware of sound directions when working with each section, i.e. if the trombones are located to the right of the podium in the ensemble setting, then auralize their sound coming from that direction. Finally, begin again and chain together the collective sounds of each section of the ensemble as they enter (*tutti*) on the selected pitch.

5. Expand Exercise No. 4 to incorporate chords. For each section of the ensemble, auralize a voicing of a triad by chaining together the individual entrances of the chord members. For example:

   first clarinet - root,
   second clarinet - third,
   third clarinet - fifth

Finally, chain together the sounds of each section of the ensemble.

6. Develop Exercise No. 5 by re-scoring the chord to include different dynamic and/or color possibilities (i.e. every
instrument scored in ranges that are capable of the greatest degree of softness, loudness, brightness, or darkness, etc.).

7. As skill develops, expand the harmonic spectrum. For example, ninth, eleventh, and thirteenth chords; quartal or quintal chords, added note harmonies, polychords, etc.

8. Randomly select individual timbres from the ensemble and auralize each entrance, first on chord tones and then expanded as in the first five exercises above. For example, piccolo, clarinet, trombone, and baritone saxophone.

9. Auralize the sounds of a hymn or choral. Randomly orchestrate each line, one at a time and chain together the resultant sounds. Begin with only one timbre per line and gradually chain unison and octave doublings. For example, auralize the melody in the oboe, then chain the horn sound for the alto part, clarinet timbre for the tenor part and finally the bassoon for the bass line. For the doubling or unison timbre, add the flute to the melody, one octave higher. Then add three horns to the alto line, etc.
Physical Exercises

Mini phase.

With a recording and score of a familiar composition:

1. Locate areas of unison or octave instrumental doubling. Listen to the excerpt several times and try to aurally define the different timbres that comprise the sound.

2. Locate areas of sustained tones and aurally define the instruments with identical pitches (include octave doublings). For example, define every instrument that sounds the fifth of the chord, etc.

3. Listen to areas of unison of octave doubling. Identify specific timbres from the musical contexts (melody, countermelody, bass line, "off-beats," etc.). Be sure to include percussion timbres.

Midi phase.

With a recording and score of a familiar composition:

1. Locate areas of sustained tones and aurally isolate the different section timbres within the sound, i.e. listen to the four horn sounds and define their function (root, third, fifth...).
2. Listen for musical function (melody, accompaniment, countermelody, bass line, etc.) and then define the instrumentation by section. Be sure to consider percussion timbres.

Macro phase

Listen to the selection or excerpt and memorize the sound of the ensemble. With the score, listen for individual sounds and section sounds. This will be needed for the auralization and chaining exercises that follow.

Auralization Exercises

Mini phase.

1. As in the physical exercises in this section, refer to excerpts in a familiar score that incorporate unison or octave doubling. Mentally isolate the different individual timbres that comprise each voice while auralizing the sounds of the composition.

2. With a familiar score, auralize the sound of a section and listen for the musical function of individual voices. For example,
which individual voices have the melody, accompaniment, countermelody, etc. Be sure to include percussion timbres.

**Midi phase.**

1. Refer to excerpts of a familiar score that incorporate unison or octave doubling. Auralize the sounds of the music and aurally isolate the different section timbres. Mentally suspend sounds (chosen at random or selected for study) and isolate the section timbres that comprise the sound.

2. Refer to excerpts of a familiar score and auralize the compound timbres that comprise the musical aspects (melody, accompaniment, counterpoint, etc.). Be sure to include the percussion section.

3. While referring to a score, auralize the sounds for each section in the ensemble. For example, observe the double reed parts in the score and try to auralize their sounds. Be sure to include the percussion section.
Macro phase.

1. Auralize the sounds of a familiar composition. If necessary, refer to the score. Suspend the sounds of any cadence point, and change the dynamic balance of the musical aspects of the composition, i.e., if the melody is played by clarinet, horn and trombone, increase that sound. Then alter the balance of any other components that entail timbre combinations for example *sfz*’s, *fp*’s, etc.

2. Reverse the procedure in Exercise No. 1 above by suspending the sounds of any cadence point or sustained sound and disregard different sections of the ensemble. For example, while suspending the sounds of the ensemble, disregard the horn section (mentally extract their part from the total sound). Then delete the saxophones, then the trombones, etc.

3. Listen to sections of a composition and auralize dynamic changes of any aspects that utilize timbre combinations (melody, accompaniment, etc.). Listen to the same selection as many times as necessary to focus on all the timbre combinations in use.
Chaining Exercises

Mini phase.

1. Select a section of music. Chain together the sounds of individual timbres. Begin with melodic material and then chain any accompanimental sounds.

2. Divide the ensemble into different categories as follows:
   - Upper woodwinds
   - Lower woodwinds
   - Upper brass
   - Lower brass
   - Percussion

First chain the individual sounds for each category. Then chain together the sounds of each section of music.

Note: It may be helpful to repeat the section sounds several times before chaining each section together. It might also be helpful to rehearse a section of a score in these five categories and use a recording of that rehearsal during the physical exercises.
Midi phase.

1. As in Exercise No. 1 (Timbre Combinations, Physical Exercises, Mini phase), select a recording and score, locate excerpts that include areas of octave and/or unison doublings. Chain together the sounds of the instruments for each specific doubling. Then repeat the process without the recording. Include the percussion section.

2. While studying a score, auralize the sounds of the timbre doublings as they relate to musical components (melody, etc.). Chain one sound to another until the instrumentation is complete. Do not forget the percussion section timbres.

3. Divide the ensemble into sub-categories as follows:

   Sub-category No. 1

   1. Flutes and single reeds

   2. Double reeds

   3. Brasses
Sub-category No. 2

1. Upper woodwinds
2. Lower woodwinds
3. Upper brasses
4. Lower brasses

Chain together the individual sounds for each part of the sub-categories.

4. Divide a composition into the following texture categories:
   1. Monophonic
   2. Homophonic
   3. Polyphonic

First chain any timbre doublings in the monophonic section. Chain together the sounds of the homophonic and polyphonic sections as they are divided in the sub-categories of Exercise No. 3 of this section.

**Macro phase.**

1. As in Exercise No. 1 (mini phase) of this chaining section. Select a recording and score, locate excerpts that include areas of octave and/or unison doublings and chain together the sounds
of each musical line. Hence, all of the sound combinations of the melodic line chained to all of the sound combinations of the bass line, etc. Include any rhythmic support from the percussion section.

2. Select polyphonic excerpts and chain together the different timbres.

   **Note:** Fugues or fugal excerpts work especially well.

3. For the sections of homophonic and polyphonic textures defined in Exercise No. 4 in the Midi section, chain together the sounds for each sub-category.
In this chapter, the term "texture" is used to indicate the differences between monophonic, homophonic, and polyphonic music. The terms "polyphonic" and "contrapuntal" will be used interchangeably. The term "balance" indicates the degree of loudness or softness between musical lines within the confines of the textures listed above. When several instruments perform the same part, either in unison or in harmony (monophonic or homophonic), the issues may overlap with those discussed in the section on timbral combinations. Consequently, several exercises may appear in both discussions. If the program user has worked through the exercises from the section on timbral combinations, then several exercises, especially the physical exercises, might be omitted from this section.
Physical Exercises

Mini phase.

With a recording and score of a familiar composition:

1. Locate areas of unison or octave instrumental doubling. Listen to the excerpt and try to aurally define the different timbres that comprise the sound.

2. Locate monophonic areas and aurally define the instruments with identical pitches (include octave doublings). For example, define every instrument that sounds the fifth of the chord, etc.

3. Locate contrapuntal areas and aurally define the sounds of individual instruments for each voice.

Midi phase.

With a recording and score of a familiar composition:

1. Locate homophonic areas and aurally isolate the different timbre sections within the sound, i.e. listen to the four horn sounds and define their function (root, third, fifth, etc.).

2. Listen for musical function (melody, accompaniment, countermelody, bass line, etc.) and then define the instrumentation by section. Be sure to consider percussion
timbres. Listen especially to areas where there are contrasting degrees of loudness between the different musical functions. For example, select areas for listening where the accompaniment is substantially softer than the melody.

3. In contrapuntal sections of a work, aurally define timbre combinations for each voice.

Macro phase.

Listen to the selection of excerpt and memorize the sound of the ensemble in sections that specifically reflect the three textures: monophonic, homophonic, and polyphonic. With the score, listen for individual and section sounds within *tutti* areas of the score.

**Auralization Exercises**

Mini phase.

1. As in the physical exercises in this section refer to excerpts that incorporate monophonic texture. Mentally isolate the different timbres that comprise each line while auralizing
the sounds of the composition, then aurally experiment with the dynamics of individual timbres.

2. Develop Exercise No. 1 to incorporate the auralization of wrong notes into the textures as a method of working on wrong-note detection.

3. With a familiar score, auralize the sound of a section (choose at random or areas needing study) and listen for the musical function of individual voices. For example, which individual voices have the melody, accompaniment, countermelody, etc. Be sure to incorporate the percussion timbres. Experiment with dynamics while auralizing the entire ensemble sound.

**Midi phase.**

1. Refer to monophonic or homophonic excerpts of a familiar score. Auralize the sounds of the music and aurally isolate the different section timbres. Mentally suspend the ensemble sounds and listen for different section timbres. Mentally experiment with the dynamics of different sections.

2. Auralize polyphonic excerpts of a composition (use the score if necessary) and distinguish the section sounds that comprise
each voice. Be sure to include percussion timbres, especially when they lend rhythmic support to melodic or accompanimental functions. Mentally experiment with different balance combinations. For example, if the third clarinet, horn section, and alto saxophone perform one line of a fugue, alter the dynamics of the three instrument timbres to achieve different colors for that line.

Macro phase.

1. Auralize tutti excerpts of a familiar composition. Refer to the score if necessary. Include areas that incorporate each type of texture, monophonic, and polyphonic. Increase and decrease the dynamics for each musical function, i.e. increase and decrease the volume of the melodic line, then the same for the countermelody, accompaniment, etc. Use the same procedure for any other musical components, i.e. special effects such as sforzandi, glissandi, etc.

2. Auralize tutti excerpts of a familiar composition. Refer to the score if necessary. Reverse the procedure of Exercise No. 1 above, by suspending sounds and deleting the timbres of
different sections of the ensemble. For example, while suspending the sounds of the ensemble, mentally extract the horn part from the total sound.

3. Mentally refer to sections of a composition and auralize dynamic changes of any aspects that utilize timbre combinations (melody, accompaniment, etc.). Repeat the same selection as many times as necessary to focus on all the timbre combinations.

**Chaining Exercises**

**Mini phase.**

Select any section of a composition whose melodic material is presented by a solo instrument. Chain the sounds of the solo to the sounds of the entire accompaniment. Auralize differences of balance. For example, the accompaniment might be chained to the solo at an almost inaudible dynamic. Or the procedure might be reversed (inaudible accompaniment).

**Note:** The point of this exercise is to first determine the most desirable balance between the individual voices as they relate to the texture of a given selection. A solo indicated as
soft in the score may need to be louder, depending on the context. The second purpose of this exercise is to experiment with differences from the optimum balances. By predetermining the discrepancy in the preferred balance, and auralizing those sounds, it is hoped that if a similar problem arose in rehearsal the solution would be more obvious. Another application of this exercise would be to select a portion of a score currently being rehearsed where the balance is unsatisfactory. Through experimentation of chaining and auralization, work to achieve the undesirable effect of the ensemble as it currently sounds. Once the sound is achieved (mental sounds) then the solutions might be more obvious.

Mini phase.

1. Select a recording and score, locate excerpts that include areas of octave and/or unison doublings. Chain together the sound of the instruments for each specific doubling. Then repeat the process without the recording. (Include the percussion section.)
2. While studying a score, auralize the sounds of the timbre doublings as they relate to musical components (melody, etc.). Chain one sound to another until the instrumentation is complete.

3. Divide the ensemble into sub-categories as follows:

   Sub-category No. 1

   1. Flutes and single reeds
   2. Double reeds
   3. Brasses

   Sub-category No. 2

   1. Upper woodwinds
   2. Lower woodwinds
   3. Upper brasses
   4. Lower brasses

   Chain together the individual sounds for each part of the sub-categories. Then experiment with different dynamic balances for each part of the exercise.
4. Divide a composition into the following texture categories:

1. Monophonic
2. Homophonic
3. Polyphonic

First chain any timbre doublings in the monophonic section. Chain together the sounds of the homophonic and polyphonic sections as they are divided into the sub-categories of Exercise No. 3 in this section. Experiment with the dynamic balances between the voices in the homophonic and polyphonic textures.

**Macro phase.**

1. As in Exercise No. 1 (mini phase) of this chaining section, select a recording and score, locate excerpts that include areas of octave and/or unison doublings and chain together the sounds of each line. Hence, all of the timbre combinations of the melodic line chained to those in the bass line, etc. Include any rhythmic support from the percussion section. Mentally alter the dynamics of the chained sounds to achieve different balances.
2. Select contrapuntal excerpts and chain together the different timbres. Experiment with different dynamic possibilities between each of the timbre combinations.

3. For the sections of homophonic and contrapuntal textures defined in Exercise No. 4 in the midi section, chain together the sounds for each sub-category.
ARTICULATION/NOTE SHAPE

The term "articulation" indicates the contour of the beginning and/or end of tones. Articulation will be used interchangeably with the term "note shape." The interpretation of these terms will vary between individuals, contexts and acoustical situations, as would the interpretation of terms like *staccato*, *legato*, and *marcato*. The issue of note shape, especially the beginnings of tones, is complicated by the different methods required to initiate tones on different instrument groups (i.e. single reeds, double reeds, flutes, brasses, percussion, etc.). For example, initiating a tone on a single reed instrument is physically different than initiating a tone on a brass instrument. The issue becomes more complex when considering implications of range and dynamics (degree of volume) within each instrument group. Reference to the term "note shape" indicates the perceived shape rather than the acoustical attributes of a generated sound. I do not believe that such distinctions would benefit this study. The important point is to insure that each individual user can clearly define their personal preference with regard to the initiation and termination of sounds in musical contexts.
Exercises in this section may seem to repeat those of other sections. Although the exercises may "read" the same, the focus here is on note shape rather than combinations of sounds. The purpose of the physical exercises is to increase the conductor's awareness of note shapes with a focus on the beginnings and endings of sounds. This is not a change from any of the other sections in this chapter, however, this specific topic is not generally discussed in undergraduate aural skills classes, and a study of conducting issues may not have viewed this issue from this perspective. The auralization exercises are a direct extension of the physical exercises. The purpose of the chaining exercises is to focus on specific components of the total sound perception with regard to note shape. Some preparatory exercises are included that may be helpful. The user should be familiar with the two sections on timbre combinations and texture/balance before beginning this part of the study.

No attempt has been made here to define or interpret acceptable performance practice or musical style. The purpose is twofold: 1) to provide a means for defining one's individual preference, and 2) to
provide a vehicle to define the elements of change necessary to achieve that preference.

Preparatory Exercises

1. Divide the sounds of the ensemble into groups by methods of tone production as follows:

   1. Flutes
   2. Single reeds
   3. Double reeds
   4. Brasses
   5. Percussion
   6. Strings (String bass)

For each instrument, auralize the following perceived note shapes on a tone in the middle register of that instrument. For example, auralize a flute playing notes in each of the different shapes below.

1. ■
2. ▶
3. ◀
4. ◄
2. Expand Exercise No. 1 to compare differences that occur with changes in *tessitura*. For example, consider each timbre and note shape in three different registers: high, medium, and low.

3. Expand Exercise No. 2 to incorporate different degrees of volume: soft, medium and loud.

**Physical Exercises**

**Mini phase.**

With a recording and score of a familiar composition:

1. Locate areas of unison or octave instrumental doubling. Listen to the excerpt several times and try to aurally define different articulations that comprise the sound. Be sure to listen for endings of notes as well as beginnings.

2. Locate passages where several instruments perform rhythmically identical figures. Mentally isolate the individual timbres and compare the shapes of the sounds.

3. Select passages that simultaneously incorporate different elements of articulation. Isolate individual timbres from contrasting elements and compare the shape of sounds. For example, compare the contours of the second oboe playing an
accompanimental figure with that of a trombone playing the bass line or lowest part.

**Midi phase.**

With a recording and score of a familiar composition:

1. Select passages that incorporate section playing and listen for the shape of instrumental sections within the total sound.
2. Locate musical sections that incorporate contrasting elements with regard to articulation. Mentally isolate the different instrumental section sounds and compare the note shape between different elements of articulation.

**Macro phase.**

Locate musical passages that contain *tutti* sounds followed by silence. Listen to the overall shape of the release. Isolate individual and section timbres and compare the shape of their release to that of the entire ensemble.
Auralization Exercises

Midi phase.

1. Auralize a passage from a familiar score. Determine the exact shape of the beginnings and endings of phrases. Auralize the passage again and isolate individual timbres.

2. Auralize passages from a familiar score that incorporates contrasting elements of articulation. Determine the desired effect with regard to the shape. Mentally isolate individual sounds.

3. Auralize contrapuntal passages from a familiar score and determine the note shape of individual lines. Repeat the sounds of the selection and mentally isolate individual sounds within the composite textures.

Midi phase.

1. Auralize a passage from a familiar score that incorporates section playing. Determine the exact shape of the beginnings and endings of phrases. Auralize the passage again and isolate section timbres.
2. Auralize passages from a familiar score that incorporates contrasting elements of articulation and section playing. Determine the desired effect with regard to note shape. Mentally isolate section sounds.

3. Auralize contrapuntal passages that incorporate section playing from a familiar score and determine the note shapes of individual lines. Repeat the sounds of the selection and mentally isolate section sounds within the composite texture.

**Macro phase.**

1. Auralize *tutti* sections of a familiar score and focus on areas of unison phrasing (beginnings and endings). Determine the desired shape of the entire sound.

2. Expand Exercise No. 1 to incorporate sections where contrasting articulations are simultaneously present. For example, some instruments might play off-beats while others play a *legato* melody.
Chaining Exercises

Mini phase.

1. Auralize a passage from a familiar score. Determine the exact shape of the beginnings and endings of phrases. Auralize the passage again and isolate individual timbres. Finally, chain together the timbres, beginning with the lowest sounds and working through the orchestration by *tessitura* until all timbres have been chained together.

2. Auralize passages from a familiar score that incorporate contrasting elements of articulation. Determine the desired effect with regard to note shapes. Mentally isolate individual sounds. Then, chain together the individual timbres, beginning with melody and working through other elements.

3. Auralize contrapuntal passages from a familiar score and determine the note shape of individual lines. Repeat the sounds of the selection and mentally isolate individual sounds within the composite textures. Then, chain together the sounds that incorporate each line in the texture. Finally, chain together the sounds of each part of the counterpoint.
**Midi phase.**

1. Auralize a passage from a familiar score that incorporates section playing. Determine the exact shape of the beginnings and endings of phrases. Auralize the passage again and isolate section timbres. Begin with only one timbre and chain the other timbres together to incorporate the total sound.

2. Auralize passages from a familiar score that incorporates contrasting elements of articulation and section playing. Determine the desired effect with regard to note shape. Mentally isolate section sounds and reconstruct the sounds by chaining section sounds together until all timbres are included.

3. Auralize contrapuntal passages that incorporate section playing from a familiar score and determine the note shape of individual lines. Reconstruct the passage by chaining the section sounds together until the composite texture is auralized.

**Macro phase.**

1. Auralize *tutti* sections of a familiar score and focus on areas of isolated sounds. Determine the desired shape of the sound.
Then reconstruct sections by chaining the timbres together, 
beginning with the lowest, gradually adding the higher timbres.

2. Expand Exercise No. 1 to incorporate more elaborate settings 
such as phrase beginnings and endings, contrapuntal textures, 
etc. in order to practice isolating note shapes within textures.
INTONATION

It is impractical to have an available ensemble to assist with intonation exercises and even if such an ensemble were available, it is unlikely that all the members would be able to play their instruments exactly in tune, not to mention the ability to consistently perform with a particular degree of out-of-tuneness. Consequently, these exercises vary slightly from the format of the previous sections of the curriculum.

Physical Exercise

Step 1: Set an instrument (tuner) to sound a constant tone in a comfortable singing range (or playing range on an instrument.) Match the pitch by singing or playing; then slide slightly flat, then slightly sharp, and then back in tune.

Step 2: Sing or play one-half step lower (the sounding note from the tuner remains constant) and repeat the process of pitch alteration (sharp, flat, in tune).

Step 3: Sing or play a major second lower than the sounding pitch and the performed pitch by increments of a half step.
Step 4: Continue to expand the interval between the sounding pitch and the performed pitch by increments of a half step.

Step 5: Repeat the entire process, ascending instead of descending.

Note: This exercise can be used with two individuals. One plays a constant pitch while the other executes the tuning sequence, then the individuals change roles and repeat the process.

Auralization Exercises

Mini phase.

1. Auralize a familiar melody played by a trumpet with certain notes played out of tune. For example, think of a trumpet playing *Happy Birthday*. Whenever the fifth scale degree occurs in the melody, it is slightly sharp. Repeat the process and mis-tune the second scale degree, etc.

2. Expand Exercise No. 1 to incorporate all of the other instruments. Be sure to practice with timbres in the highest and lowest pitch offerings for the auralized timbres.
Midi phase.

1. Auralize the sounds produced by the physical exercises in this section.

2. Expand the Exercise No. 1 to incorporate different timbre combinations. For example, compare two trumpets performing the exercise, and then consider bass clarinet and euphonium.

3. Expand Exercise No. 1 by auralizing timbres and octaves that necessarily incorporate compound intervals. For example, after auralizing two trumpets, exchange one trumpet for trombone (playing one octave lower), and then tuba (two octaves lower).

4. Auralize three similar instruments (i.e. three horns) playing a triad. Be sure to mentally place the instruments in a designated location, including distance and direction. So, if the horn section in the user's ensemble is usually in the third row at approximately ten o'clock, then imagine that the sound comes from that location. Imagine the root of the triad sliding slightly flat, then sharp, then in tune. Repeat the process for the third and fifth of the triad.
5. Expand Exercise No. 4 by 1) changing the inversion of the triad, 2) changing the registers of the voicing, 3) changing the timbres, 4) mixing timbres, 5) adding additional instrumentation, etc.

Macro phase.

1. Auralize the sound of an entire ensemble playing a designated tone (say, concert B-flat). Auralize different sections of the ensemble playing sharp or flat. (If necessary, implement a chaining exercise to determine what the initial sound would be like.) Also, the "entire ensemble" might designate several sections of a concert band but not necessarily every section.

2. Auralize an ensemble playing a triad (chain the sounds together if necessary). Mentally alter selected timbres or chord members to determine the effect it has on the overall sound.

3. Auralize sonorities from a familiar composition. Mentally suspend the sounds and alter the pitches of selected timbres or chord members. For example, what would an ensemble sound like if the lower brass were flat compared to the lower woodwinds? What if the situation were reversed?
Note: The exercises in this section on intonation can all be applied to "wrong-note" detection. Instead of mentally altering the pitches, mentally insert wrong notes.

Chaining Exercises

Mini phase.

1. Chain together any of the sounds required in the auralization exercises from this section.

2. Consider the sounds of the ensemble and listen for individual sounds (use a score if necessary). Chain the sounds of a particular instrument playing slightly out of tune.

3. Expand Exercise No. 1 by changing the designated timbre that plays out of tune. Be sure to consider the instruments that play tones in the outer extremes of the musical pitch spectrum (i.e. piccolo, contra-bassoon, etc.).

Midi phase.

1. Auralize the sounds of a familiar composition in a fully scored section. Chain together the sounds and alter the pitch of
different sections of the ensemble, i.e., auralize the horns playing sharp, etc.

2. Expand Exercise No. 1 to incorporate logical possibilities. For example, trumpets in the upper register playing sharp, or piccolo playing flat, etc.

Macro phase.

1. Chain together the sounds of a familiar composition. While listening to the sounds, alter the pitch of different musical functions (bass line, melody, counter melody, etc.) in the composition.
CHAPTER V
SUMMARY, DISCUSSION AND RECOMMENDATIONS

PURPOSE

The purpose of this study was to construct a curriculum that might assist wind band conductors in learning aural skills through auralization. The curriculum was to focus on those skills necessary for the successful rehearsing and performing of a musical composition. In order to realize this purpose a history of imagery was presented in order to introduce it as a long existing element in the study of learning processes. A review of studies on imagery applied to sports was presented as an attempt to prove such procedures as legitimate teaching methods. A list of aural skills common to rehearsing and performing wind band literature was established. And finally, a curriculum was proposed to teach the defined skills through the established method of auralization.
METHODOLOGY

It was the purpose of this study to construct a curriculum that might assist wind band conductors in learning aural skills through auralization. The curriculum was to focus on those skills necessary for the successful rehearsing, and performing of a musical composition. In order to realize that purpose, the following procedural steps were followed. 1) A history of imagery was presented in Chapter II to introduce it as a long existing element in the study of learning processes. 2) A review of studies on imagery applied to sports was presented in Chapter II in an attempt to prove that such procedures are legitimate teaching methods that have produced positive results. 3) A list of aural skills common to rehearsing and performing wind band literature was established. 4) A curriculum was created (Chapter IV) to teach the defined skills through the established method of auralization.

THE CURRICULUM

The curriculum presented in Chapter IV is based on the conclusions of the studies on imagery as it applies to sports. The chapter order is taken from the questionnaire and the sequence of
exercises were based on the visualization environment as interpreted from studies in sports psychology.

DISCUSSION

A brief history of imagery in the disciplines of philosophy and psychology was presented as a background to the research that led sports psychologist to begin their own studies in the use of visualization as a learning technique.

The review of studies in sports psychology has been offered in this research as evidence that visualization has been effective as a learning tool, and that since both sports and music heavily rely on psycho-motor skills for performance, its application to teaching aural skills in music is logical. There are two points to be remembered here. First, the studies themselves are not conclusive with regard to the effectiveness of visualization. Although there are over 100 of them, the conditions and limitations are still extremely diverse from study to study. There is not one instance, that I know of, where even one study was repeated, in the exact same manner, as a confirmation of the initial results. Long term studies do not exist. Furthermore, because of the limitations of our
current technology, I do not believe there is a way to isolate the exact reason for the test results. Consequently, I do not believe there is a way to determine if positive improvements are actually the results of visualization. Furthermore, the meaning of visualization probably varies from one person to another. If one person were asked to imagine a successful free-throw (basketball), the imagery might draw heavily upon emotional feelings. However, a different subject, with more or less experience, might focus on the physical sensations of a successful performance.

The second aspect of these studies is the results that seem to be consistent - outside the mechanics of research. I have investigated the studies of sports psychology and in doing so, I have also witnessed a change in the approach to athletic training, as evidenced by written philosophies. The history of research studies in sports psychology spans more than the past 50 years. Their historical perspective revealed several changes in the approach to athlete training. The most obvious change was in the focus of the experimentation with regard to visualization. The earliest studies were concerned with neurological changes in subjects while performing "mental practice" sessions (Buxton, 1942; Freeman,
The next set of studies indicated a change in attitude, from the neurological affects of visualization, to the effect that visualization had on the subjects' performance ability (Knapp & Dixon, 1950; Gilmore & Sturlow, 1951; Kelsey, 1961; Cratty, 1963; Tufts, 1963; Egstrom, 1964; Corbin, 1967; Richardson, 1967; Stebbins, 1968; Oxendine, 1969). The approach to athletic training changed from one dealing primarily with physical conditions (neurological changes), to one that included psychological training as well, i.e. positive attitudes may enhance physical performance. The initial studies were conducted and reported by psychologists; however, sports trainers began conducting their own studies with much greater frequency and with far greater specialization as indicated by the publication of their own Journal of Sport Psychology.

So, the focus on visualization moved from the neurological effects to the physical effects (ca. 1931-1960) and from 1960 to 1975, studies were developed to assist mental training in athletes. The most recent research represents a melding of the first two stages. The results of the studies tend to indicate that mental training can improve performance and in certain environments, can
enhance aspects of learning that pertain to psycho-motor skills. Studies since 1970 have focused on environmental characteristics that enhance the effectiveness of mental practice. These studies, in particular, have been an asset to this research and have been used as the foundation of this curriculum.

The third part of this research was the development of a list of aural skills necessary for successful rehearsing and performing from the podium. Chapter I maintains that, except for wrong-note detection, such skills had not been identified. It seems ironic that this particular ability was not on the initial list that was evaluated and none of the individuals, that participated in the evaluation of the questionnaire, added that specific skill to the list. When the five conductors were given the actual questionnaire with the opportunity to add or delete any items, again, wrong-note detection was not mentioned. This may be considered a flaw in the testing and the curriculum as well, since wrong-note detection is not addressed as a separate aural skill. Since all the conductors that participated in the questionnaire primarily conduct ensembles that are essentially competent (in a technical sense), an interpretation might be that wrong-note detection is not essential in those
particular environments, but might have more validity in different environments such as junior high wind programs. Another interpretation would be to acknowledge that wrong-note detection is a basic skill that is taken for granted. A third interpretation would be that wrong-note detection is not a necessary skill for the rehearsing and/or performing of a wind band.

Another possible flaw in the questionnaire is the definition of "articulation/note shape." Throughout the study, this has applied to the shape of the beginning and ending of sounds. The possible flaw is that if a tone is extended for any length of time, then there are several other aspects of shape that could be addressed, such as the shape of the middle of the note. The shape of notes (tones) could even be broken into categories that might include the attack rate, decay rate, sustaining volume, and release rate. Aspects of note shape within a musical context is addressed in the section on Structure/Form.

Inasmuch as a vehicle was devised, evaluated, and implemented for the purpose of this study, indeed, there is a list of aural skills that conductors (at least some) believe are important to develop. However, I am not convinced that the issues identified in
the questionnaire are actually the issues pertaining to aural skills. I believe that they may be the perceived issues, but I am not convinced that conductors really know what it is they do—that makes them (and others) believe they have motivated an improvement. I do not believe that we can be sure of the exact issues at this time. Maybe our technology needs advancing, maybe the problem is in cognitive science. When a conductor tries to verbalize a desired musical effect—the task is difficult at best and erroneous assumptions may be made. For example, suppose a conductor perceives a section of music to be out of tune and out of balance, and asks the ensemble to adjust their balance in a certain way. Then the conductor perceives improved intonation. The conductor might believe that balance directly improves intonation. This may be true. Obviously it changed the conductors perception of the intonation. However, the intonation problems may simply have been softer and less audible.

The final section, the creation of a curriculum to teach the defined aural skills, using auralization as a teaching methodology, was tedious but not difficult. I believe that that part of the curriculum is successful as it is defined by the limitations of this
research. However, as it stands, I do not recommend it as an approach for conductors to learn music. In order to satisfy the predetermined goals of this research, it was necessary to by-pass what I believe to be the more pertinent aspects of music learning which would involve the aesthetic essence of a composition. I believe that the curriculum successfully meets the requirements of the research, but has become too tedious to be useful in a field situation. If a conductor were to attempt each exercise in the curriculum, then I believe that their aural skills might improve. However, it would probably take several months, and consequently, it is quite impractical.

I believe that if this approach to aural skills is presented as a "new" method of teaching, many teachers might be unlikely to consider it. It is ironic that we tend to maintain those things that are familiar to us, even though they may be ineffective. Current methods of aural skills have been established, and pedagogy classes in aural skills have trained teachers, very few of whom are conductors, in the use of those methods. This researcher does not propose this curriculum as an alternative to undergraduate aural skills but rather as a method for the continuation of aural skill
development. Further, as the curriculum is presented in this research, it is impractical as a method of learning music. If conductors were to practice systematically each exercise as it is presented in this curriculum, they might not be able to work through more than four or maybe five scores in a year, or even in their lifetime. The point is that the curriculum satisfies the research goals but is impractical for individuals that do not know how to use it. An application of this methodology is needed as the next step in the assimilation of auralization into the self-teaching of aural skills.

Even as it stands, with all its impracticality; to my knowledge, it is the only attempt to identify a systematic method for the continuation of aural skills development. None-the-less, before the method is used, I would like to rewrite it with a more applicable approach. Although this research specifies that this curriculum was written for conductors, the use of auralization as a learning tool in music could be applied to many learning situations.
RECOMMENDATIONS

If there is more than superficial interest in the development of aural skills for conductors, then the first recommendation would be to keep current with the research in sports psychology, since the research is established and the correlations to this area in music are formidable.

The second recommendation would be in the area of music research. Graduate students interested in wind band conducting frequently seem to struggle to find research topics that are not related to the history of the wind-band or to music analysis. I believe aural skills is a topic of concern for all areas of the music discipline, but especially to conductors. Experimental research, particularly in the area of music perception, might lay the foundation for improvement of music teaching in all areas. Before this can happen, there must be a commitment from conductors to participate and direct experimental research, for the betterment of the profession.

Any new method will necessarily need revisions, and hopefully, if this method is used, then observations and research can assist in further revisions. This or any other method (if others were
constructed) could lay the foundation for testing and determining effectiveness (to the best capabilities of our current technology), for the purpose of improving the effectiveness of individuals in the music profession.
APPENDIX A

QUESTIONNAIRE TO BAND CONDUCTORS
QUESTIONNAIRE TO BAND CONDUCTORS

Below is a list of aural skills that may or may not apply to conducting bands or wind ensembles. Each skill is divided into three sub-areas: mini; midi; and macro. The term "mini" refers to listening to a full ensemble and isolating in ones mind, the sounds of individual players. "Midi" refers to isolating sections or choirs within a full ensemble sound, and "macro" designates the sound of the entire ensemble. For each skill listed below, assign one of the following designations in the space provided. Please indicate areas of concern that are not covered in the given list by using the spaces provided.

1) mandatory
2) very important
3) secondary importance
4) occasionally important
5) does not apply

<table>
<thead>
<tr>
<th>Skill</th>
<th>mini</th>
<th>midi</th>
<th>macro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval awareness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functional harmonic identification</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intonation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Articulation/note shape</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balance/texture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structure/form</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timbre combinations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rhythmic definition</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>____________________________</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>____________________________</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>____________________________</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX B

SAMPLE TIME LINE
SAMPLE TIME LINE

Overture to Candide, Leonard Bernstein

EXPOSITION

\[
\begin{align*}
A & \quad \cdots - \cdot \cdot \cdots - \cdot \cdot \cdot \cdot \cdot \quad B \\
& \quad \cdots - \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \quad \text{\textit{trans.}} \quad A \\
& \quad C \quad \text{\textit{trans.}} \quad \text{\textit{trans.}} \quad \text{\textit{trans.}} \quad \text{\textit{trans.}} \quad \text{\textit{trans.}} \\
\end{align*}
\]

RECAPITULATION

\[
\begin{align*}
A & \quad \cdots - \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \\
& \quad B \quad \cdots - \cdot \cdot \cdot \cdot \cdot \cdot \cdot \\
& \quad C \quad \text{\textit{trans.}} \quad \text{GP.} \\
\end{align*}
\]

Coda

\[
\begin{align*}
D & \quad \cdots - \cdot \cdot \cdot \cdot \cdot \cdot \cdot \quad E \quad \cdots - \cdot \cdot \cdot \cdot \cdot \cdot \cdot \quad A \\
& \quad (B) \quad \text{\textit{Has}} \quad \text{\textit{c?}} \quad \cdot \cdot \cdot \cdot \cdot \cdot \cdot \quad \text{\textit{c?}} \\
\end{align*}
\]

Possible Sonatina Form
BIBLIOGRAPHY


Kendall, Alan. (1976). The Tender Tyrant, Nadia Boulenger, MacDonalds and Jones.


Sackett, R. S. (1935). The Relationship between the amount of symbolic rehearsal time and the retention of a maze habit. *Journal of General Psychology, 13*, 113-120.


