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**Mental imagery and musical performance: An inquiry into  
imagery use by eminent orchestral brass players in the United  
States**

**Trusheim, William H., Ed.D.**

**Rutgers The State University of New Jersey - New Brunswick, 1987**

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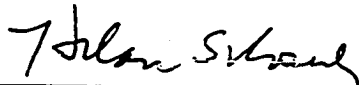
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AN INQUIRY INTO IMAGERY USE BY  
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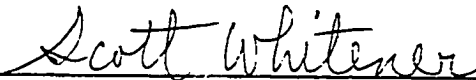
BY WILLIAM H. TRUSHEIM

A dissertation submitted to  
The Graduate School of Education  
Rutgers, The State University of New Jersey,  
in partial fulfillment of the requirements  
for the degree of  
Doctor of Education  
Graduate Program in Creative Arts Education

Approved by



Helane S. Rosenberg, Chairperson



Scott Whitener



Jeffrey K. Smith



Dorothy Heard

New Brunswick, New Jersey

October, 1987

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## ABSTRACT OF THE DISSERTATION

### Mental Imagery and Musical Performance: An Inquiry into Imagery Use by Eminent Orchestral Brass Players in the United States.

by WILLIAM H. TRUSHEIM

Dissertation Chairperson: Helane S. Rosenberg, Ph.D.

Artistic musical performance is externalized as skilled physical activity of the highest order, however, this outward manifestation is guided by complex internal processes which are personalized for each player. The objective of this study was to explore the potential of mental imagery as a component in the process of artistic performance in an elite group of orchestral brass players from five major symphony orchestras in the United States. Twenty-six respondents were interviewed face-to-face concerning the role and importance of mental imagery as an ingredient in their approach to performance.

This study follows a line of research which includes the work of Patrick, Roe, Eindhoven and Vinacke, Lindauer, Nass, Castellano, and Rosenberg in using distinguished individuals as subjects to learn about the artistic process. The interview format used was of the moderately scheduled, non-standardized type as described by Goetz and LeCompte (1984). Gorden's

(1983) model was used in constructing an interview guide which included major topics identified through a review of the literature in mental imagery and in brass performance. A four-phase analysis procedure was developed from the work of Goetz and LeCompte (1984) to identify, classify, and organize relevant statements from the interview transcripts.

Findings of the study were reported according to the following topics: Training and Experience, Mentors, Warm-Up, Tone Production, Musical Expression and Interpretation, Conductors' Imagery, Mental Rehearsal, and Performance Anxiety. Aural or auditory imagery was found to be a prime ingredient for the great majority of subjects. These musicians also experience and use visual, kinesthetic, and tactile images to add depth to their musical experiences. Subjects also report the use of imaging strategies in many important aspects of performance. Sources of imagery for these players include prior personal experiences as well as imagery which is evoked in response to the musical content of specific works.

This study holds broad implications for musicians, music educators, and psychologists in suggesting the importance of mental aspects of artistic performance as well as the suitability of professional musicians as subjects for further study.

## ACKNOWLEDGEMENTS

Many people have contributed in significant ways to the conduct of this research project. Dr. Helane S. Rosenberg, committee chairperson, has provided support, guidance, and encouragement as well as intellectual stimulation throughout my years of doctoral study. Helane's own research into mental imagery and the arts helped me to see the promise and potential of imagery in the field of musical performance. Dr. Scott Whitener, my own long-time mentor, continues to be an inspiration for all of my musical endeavors while upholding a personal dedication to musical excellence which stands as a model for all of his students. Dr. Jeffrey K. Smith has added a perspective to this study which has helped to keep this project on track throughout the investigation. Dr. Dorothy Heard has added her unique understanding of the artistic process, which blends psychology and the arts so successfully. These four individuals have my unending gratitude for the role that they have played in shaping my growth throughout my doctoral program.

Thanks to Dr. Regis B. Wiegand, Superintendent of the South River Schools, for his constant advice, support, and encouragement in this project as well as many others. Several individuals were particularly

instrumental in the process of identifying, contacting, and scheduling players to be interviewed. Thanks go to Dr. Scott Whitener, Professor William Fielder, Edward Palanker, Charles Schlueter, William Kuyper, Arthur Chodoroff, and Betty Eilers for their assistance in this task.

One of the most thrilling and stimulating aspects in conducting this study was the opportunity to discuss brass playing with the masters of the art. Thanks to all of the players who participated in this study for their willingness to share their valuable time with me in order to add their perspective as well as their wealth of experience to this study.

Thanks also must be given to the management and staff of the Hammett Computer Center in East Brunswick for their continual assistance with the word processing and printing of this document.

The arduous task of completing a doctoral degree can take a heavy toll on family life. I dedicate this work to my wife, Betsy, who has truly shared in its completion through her help, understanding, patience, and consideration; to my children Erich, Carrie, and Rachel; and to my parents, whose encouragement and support has meant more than they will ever know.



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## CHAPTER I

### BACKGROUND OF THE PROBLEM

Artistic musical performance is a goal to which many players aspire, but relatively few achieve. The adage that "practice makes perfect" is often taken as the underlying principle of a musician's preparation. Practice and repetition is the main avenue through which performers build the "craft" necessary to convey their musical ideas to an audience. The development of "mechanism", technique, and flexibility is a vital underpinning for successful playing. But the craft of playing is only one side of the issue of artistry in performance. The mental side of playing must be developed in consort with the physical side to present a balanced focus. As the technical foundation is being established, performance preparation must focus on the development of musical expression, interpretation, sound quality (tone production), and stage presence. While mechanical repetition and diligent practice can enhance certain of these skills and abilities, it is clear that other elements play a major role in the development of performance artistry.



Intellectual development is a major consideration in the preparation for performance. Knowledge of musical styles and conventions is critical in building an appropriate and meaningful interpretation of any musical composition. Learning in this area can be achieved through formal study (private instruction or "book-learning") and through listening experiences involving a wide array of musical idioms. Players must accumulate a vast personal storehouse of information and experiences which can be utilized as tools for effective performance. Intuition is important in knowing which tools to use in any given performance situation. Musical intuition is developed through actual playing experience and through listening to other players. These experiences also develop the ability to make critical aesthetic judgments.

Effective performance must grow out of a synthesis of skills, technique, and conscious thought. This thinking may be verbal in nature or it may be composed of other cognitive processes. Mental imagery may be one type of cognitive process that is important in synthesizing musical information, abilities, and experiences into artistic performance. Images in a variety of sense modalities may be relevant to the performer. Auditory, visual, and kinesthetic images certainly seem to be relevant to music. Players are

likely to store and recall aural images which are based on their playing and listening experiences. Kinesthetic images may be used as referents in gaining the proper feel of playing a passage. Visual images may also be important in the development of tone production, interpretation, or musical expression. Imagery strategies may also serve the performer in the areas of mental practice and reduction of performance anxiety.

The purpose of this study is to explore the role and function of mental imagery in musical performance through the perspective and experiences of twenty-six distinguished brass players in five major American symphony orchestras. These players, who are at the pinnacle of achievement in brass performance, serve as a rich resource in understanding the role of mental imagery as well as its implications for musical performance.

A thorough understanding of the mental imagery process is an essential foundation for the investigation of its role and function in musical performance on brass instruments. This chapter will trace the historical development of mental imagery in general, in particular fields of study, in the arts, in music, and in brass performance.

## Mental Imagery in General

### Historical Background

Interest in the mental imagery process dates back to the earliest psychological investigations of Sir Francis Galton, William James, and Edward Titchener (Samuels & Samuels, 1975). Galton (1880) studied the nature of imagery in scientists, normal adult males and Charterhouse schoolboys in an experiment which marked the first use of statistical analysis in studying a psychological phenomenon. Galton investigated the degree to which his subjects experienced various qualities of mental imagery including vividness, representation of color, extent of field of mental view, location of image (distance of view), ability to project an image, and size of image compared to reality. Galton used his procedure of "Statistics by Intercomparison" to identify subjects which would serve as exemplars of the imagery skills of each population. Galton found that the Charterhouse boys showed a greater propensity towards imagery than the adult population, and that scientists (many of whom were Fellows of the Royal Society) were less apt to report high degrees of mental imagery experiences than the normal adult male population (1880). With the rise of behaviorist psychology, led by the American John B.

Watson, interest in mental imagery waned. The study of an internal process which was difficult to operationalize in behavioral terms, was much too subjective for the behaviorist psychologists who embraced the philosophy of scientific positivism and modeled their methodology on the physical sciences. The overwhelming dominance of the field of psychology by behaviorism caused a fifty-year gap in research in mental imagery (Samuels & Samuels, 1975).

In 1964, Robert Holt wrote an article entitled "Imagery: the Return of the Ostracized" which encouraged renewed interest in the field of mental imagery as a scientific pursuit. Holt cites a practical reason for the resurgent interest in mental imagery:

Radar operators who have to monitor a scope for long periods; long-distance truck drivers in night runs over turnpikes, but also other victims of "highway hypnosis"; jet pilots flying straight and level at high altitudes; operators of snowcats and other such vehicles of polar exploration, when surrounded by snowstorms - all of these persons have been troubled by the emergence into consciousness of vivid imagery, largely visual but often kinesthetic or auditory, which they may take momentarily for reality. In such a situation, when serious accidents can occur on its account, practical people are not likely to be impressed by the argument that imagery is unworthy of study because it is 'mentalist' and virtually impossible to experiment on with animals. (1964, p. 257)

The concurrent rise of cognitive and humanistic psychology also contributed to the resurgence of interest in the mental imagery process (Khatena, 1984).

### Mental Imagery Defined

Alan Richardson, an Australian psychologist, wrote a seminal work on the mental imagery process (1969) which summarized theoretical and empirical research in the field. Richardson defines the mental image as:

[1] all those quasi-sensory or quasi-perceptual experiences of which [2] we are self consciously aware and which [3] exist for us in the absence of those stimulus conditions that are known to produce their genuine sensory or perceptual counterparts, and [4] may be expected to have different consequences from their sensory or perceptual counterparts. (1969, pp. 2-3)

Mental images can be experienced in any of six sensory modalities - visual (sight), auditory (sound), kinesthetic (movement), tactile (touch), olfactory (smell), and gustatory (taste). Richardson (1983) identifies four major types of images: after-image, eidetic image, memory image and imagination image. After-images can occur after prolonged or intense stimulation in a sensory modality. Visual after-images can occur after being exposed to a lightning flash. Kinesthetic after-images can occur after rocking in a boat for several hours. Auditory after-images can be experienced as a "ringing in the ears." Eidetic

imagery involves an image that is so vivid and clear that it is perceived as being the percept. Eidetic imagery is common in children, but rare in adults. Ahkter Ahsen (1982) has done extensive research in the use of eidetic imagery in the clinical setting and as a basis for artistic creation. Memory imagery is "the common and relatively familiar imagery of everyday life. It may accompany the recall of events from the past, the ongoing thought processes of the present or the anticipatory actions and events of the future" (Richardson, 1969, p. 43). Imagination imagery can be differentiated from memory imagery by the qualities of novelty, substantiality and color. These images may be unconnected with any specific memories (novelty), or seem to be physically present (substantiality), and may be extremely detailed and vivid (color). Richardson goes on to suggest that imagination imagery falls on a continuum with spontaneous memory imagery (Richardson, 1983).

#### Imagery in Various Sense Modalities

Mental images occur in a variety of sense modalities including visual (sight), auditory (sound), kinesthetic (movement), tactile (touch), olfactory (smell), and gustatory (taste). Various experiments have studied subjects' abilities to create images in

these modalities. Samuels and Samuels (1975) have written extensively on the use of visualization and suggest many exercises which improve one's ability to create and use visual images. Baker and Hill (1983) developed a "typology" for the visualization process. They suggest the lack of correlation between self-report measures of imagery and success in imagery tasks may result from a lack of specificity in self-report measures. They propose five stages of visual imagery based on specific imaging tasks (1983). These include the ALPHA level which represents the visualization of real-world objects, the BETA level which includes the recall of an actual image plus its manipulation, the GAMMA level where the imager invents a mental image of how a system functions, the DELTA level which includes a conceptual mental model whose analogues are extrapolations or abstractions, and a LAMBDA level where the imagery is uncontrolled or schizogenic and may indicate neurological or psychological pathology (Baker & Hill, 1983).

Shepard and Jordan (1984) studied the auditory image through experiments which suggest the presence of an "internalized musical scale." They suggest that subjects use an auditory image of the scale as a template in judging external auditory stimuli (Shepard & Jordan, 1984). Winnick and Brody (1984) investigated

the effects of auditory imagery in a word recall experiment. They found that the use of auditory images facilitated the recall of words with high auditory content (Winnick & Brody, 1984).

Kinesthetic imagery has been studied in a variety of contexts and disciplines. Edmund Jacobsen conducted ground-breaking research in kinesthetic imagery in the 1920's. He successfully measured minute muscle movements while his subjects imaged a variety of muscular tasks such as walking or running. He concluded that kinesthetic imagery experiences were normally accompanied by these minute muscle movements. Jacobsen developed a technique called "progressive relaxation" which is felt to facilitate imagery experiences (Samuels and Samuels, 1975). Hall and Buckholz (1983) studied the effects of imagery in the recall of movement patterns. They found high imagery patterns could be recalled more precisely than low imagery patterns. Kinesthetic imagery also plays a major role in Suinn's (1983) "Visuomotor Behavior Rehearsal" which has been used successfully in such sports as basketball, golf, tennis, and alpine skiing. Fleshman (1984) advocates the use of kinesthetic, tactile, and visual imagery in mime and theatrical movement training. Richardson (1983) reports on studies which measure the vividness of gustatory and



olfactory imagery. Findings of these studies indicate that physiological responses were correlated with preferences for certain types of food (Richardson, 1983).

### Imagery Capacities

Individuals vary in their capacity for controlling mental images and in the vividness of their images. Another important dimension of imagery is fluency - the ability to generate or experience a large number of images. Measurement instruments have been devised to assess individual differences in these abilities. Betts (1909) developed a measure of imagery vividness (Questionnaire upon Mental Imagery) which has been shortened by Sheehan (1967). The "Gordon Test of Vivid Imagery Control" (Richardson, 1969) is an accepted measure of controllability. Both of these instruments are self-report measures and depend on the voluntary formation of images by the subject. Sommer (1980) expresses a concern with self-report measures in imagery research. He cautions that studies of imagery based on self-report are sometimes hard to replicate and can be positively skewed at the upper end of the distribution (Sommer, 1980). Anderson (1981) has developed a form of content analysis as an alternative to self-report. He suggests that the detail of a

subject's report of an imagery experience is an indicator of the vividness of the image.

### Trends in Imagery Research

While much of the research in mental imagery has focused on self-report by the subject, a number of researchers have worked to investigate mental imagery capacities using experimental methodologies which are more clearly quantifiable (Paivio, 1971; Shepard, 1978; and Kosslyn, 1983). These kinds of experiments are significant in that they seek to quantify empirically various mental imagery processes which model processes in the physical world.

Alan Paivio (1971) studied the relationship of imagery and language and developed a dual coding system of associative learning. Roger Shepard (1978, 1984) built a theory of imagery based on mental rotation which is meant to substantiate the existence of imagery processes which mirror processes used in the physical manipulation of real world objects. Steven Kosslyn (1983) developed a mental scanning model which proposes a computer-based theory of mental imagery. Each of these theories will be discussed in turn.

Paivio's (1971) dual-coding theory rests on the premise that imagery occurs as an associative reaction to words and that it plays an important part in both

comprehension and memory of verbal material. Paivio suggests one coding system for words - a sequential system - and another for visual imagery - a parallel processing system. When verbal material is encoded into memory, both of these systems mediate the coding process. Paivio also distinguishes between types of meaning in language. "Representational" meaning is a low-order type of meaning and roughly corresponds to familiarity with the stimulus. "Associative" meaning refers to sequences or patterns of meaning which involve both verbal and imaginal processes. Paivio also treats the nature of the stimulus with importance in the encoding process. Concrete language differs significantly from abstract language in terms of referential meaning. Empirical research has shown that concrete stimuli have significantly higher image-evoking potential. The quantitative methodology that has been used in dual-coding research has involved associative learning of noun-pairs. Variability in the recall of these pairs has been attributed to the imagery potential of each pair (Paivio, 1971). A more recent approach to associative learning which also involves the auditory image has been done by Winnick and Brody (1984).

Roger Shepard has sought to objectify the measurement of imagery through his experiments in

mental rotation (Cooper and Shepard, 1984). Shepard and his research team devised a methodology which allowed for the measurement of a subject's reaction time in matching irregular polygons which were presented in various orientations. Line drawings of these stimuli were projected on a tachistoscope, a darkened box which could precisely control presentation time. Subjects were required to match drawings in both two dimensional and three dimensional rotations. The researchers found a linear relationship between reaction time and the amount of rotation required by the orientation of the drawings. They were able to determine an average rate of mental rotation for each subject and were able to use these individual rates of rotation as predictors of performance on further rotational tasks (Cooper and Shepard, 1984). Shepard used the data gathered through these experiments to develop a general theory which seeks to explain the imagery process. He calls the theory "psychophysical complementarity" which, briefly stated, suggests that imagined or perceived shapes are represented in memory by a set of points. When presented with a transformation or rotation of the original shape, the proximity of the two sets of points determine the ease of mental transformation or rotation. Shepard also suggests that our evolution in a three dimensional

world accounts for the development of our ability to transform or rotate shapes through mental imagery (Pinker and Kosslyn, 1983).

Steven Kosslyn and his students at Harvard have developed a model of the imagery process based upon an experimental methodology that had subjects scan a mental map with various fictional locations. The researchers asked subjects to take imaginary journeys to various locations on the map in the mind's eye. They found that subjects spent longer amounts of time imaging journeys to more distant locations on the map. They also concluded that subjects took more time to image large objects, three dimensional objects, and objects with great detail. The researchers suggest the findings of these experiments support the notion that mental imagery is a viable analogue mode of mental representation (Gardner, 1985). According to Kosslyn, the mental imagery process can be compared to the operation of a microcomputer, where files are called up from long-term memory, manipulated, and interpreted. Kosslyn contends that visual images are like temporary displays on a computer screen (Kosslyn et al, 1981). These researchers feel the mental scanning procedure and the resulting computer model of the imagery process substantiates the internal validity of mental imagery (Gardner, 1985).

The efforts of researchers like Paivio, Shepard, and Kosslyn represent an important trend in current research in mental imagery. However, John Yuille (1985) expresses serious concerns with the laboratory experimental approach to studying mental imagery phenomena. Yuille contends that most human behavior is context-dependent. By isolating certain behaviors in the laboratory setting, researchers remove the context from the situation, thus modifying the behavior. Yuille also feels that the dynamics of the laboratory situation tend to control the subject's behavior to the point that results can become biased in favor of the intended hypothesis. Yuille recommends that imagery research be conducted in the field setting with naturally occurring phenomena. This view supports the notion of conducting imagery research in the artistic process with working professional artists in the studio setting, the concert hall, a theatre, or a familiar practice room. Yuille cites ongoing research and applications in the field of clinical therapy as another important trend in current imagery research.

Clinical psychologists have experimented with the application of imagery strategies in a wide variety of therapy situations. Various behavior modification approaches and phobia-treatment methods utilize mental imagery strategies. Arnold Lazarus (1977) advocates

the use of imagery in the systematic desensitization of anxiety producing situations. Lazarus suggests that imaging progressively higher levels of anxiety can help to reduce the overall anxiety of the situation. He also suggests the use of imagery in the rehearsal of inter-personal encounters as a preparation for these situations (1977). Other writers have studied the effects of various imagery strategies on the treatment of phobias (Crits-Christoph & Singer, 1983/1984) and on anxiety situations (Wald & Fish, 1983). Suinn (1983) also discusses the use of imagery in the reduction of performance anxiety in athletic competition. These practical applications of mental imagery also contribute significantly to the body of knowledge about imagery.

Aspects of both the experimental model and the clinical model of imagery research have clear implications for the study of imagery in many other fields of human endeavor. While each of these approaches have their own special limitations, they also have their own special contributions to make in understanding mental imagery. The next section will focus on the study of mental imagery in the arts.

### Mental Imagery and the Arts

Martin Lindauer (1983) suggests that "images to the arts enchant us for the moment; afterwards they enable us to see (or hear or feel) the world in a new way" (p. 468). Lindauer identifies three major components which must be considered in any examination of imagery in the arts - the artist, the art object, and the art observer. Introspective reports have served as a major source of information on imagery with regard to both artists and art objects. The audience has been a major focus of empirical study for various researchers (Lindauer, 1977; Kreidler and Kreidler, 1972 for example). The following section will consider imagery in the arts from the perspective of the artist, the art object, and the audience.

#### The Artist's Perspective

One of the major sources of information about the artist's own imagery has been introspective reports by the artists themselves. Anecdotes, biographical and autobiographical accounts, historical records, and interviews with artists have provided a wide range of data on imagery from the artist's perspective. One of the most widely quoted accounts of imagery in artistic creation concerns Samuel Taylor Coleridge's writing of the poem "Kubla Khan". Coleridge was preparing to



write this work by doing various technical writing exercises and by reading Purchas' "Pilgrimage". He fell asleep while reading and experienced a dream which led him to write the major portion of the poem. The following passage from Coleridge's Biographia Literaria (quoted in Khatena, 1984, p. 6) describes the imagery experience which led to Coleridge's poetic expression:

In consequence of a slight indisposition, an anodyne had been prescribed from the effects of which he fell asleep in his chair at the moment he was reading the following sentence, or words of the same substance, in "Purchas' Pilgrimage": "Here the Khan Kubla commanded a palace be built, and a stately garden thereunto. And thus ten miles of fertile ground were inclosed [sic] with a wall." The author continued for about three hours in a profound sleep, at least of the external senses, during which time he has the most vivid confidence, that he could not have composed less than from two or three hundred lines: if that indeed can be called composition in which all the images rose up before him as things, with a parallel production of the correspondent expressions without any sensation or consciousness of effort. On awaking he appeared to himself to have a distinct recollection of the whole, and taking his pen, ink, and paper, instantly and eagerly wrote down the lines that are here preserved. (quoted in Khatena, 1984, p. 6)

Stephen Spender, a noted American poet, also credits imagery with an important role in the making of a poem. Spender (1964) writes about the evolution of a poem over a period of time emanating from an initial image of a vision of the sea stretched under a cliff. Spender states that "at this [initial image] stage, a

poem is like a face which one seems to be able to visualize clearly in the eye of memory, but when one examines it mentally or tries to think it out, feature by feature, it seems to fade" (p. 38). Spender credits hard work, with a concern for clarification of this vision, the music and the inner feeling, in the evolution of the poem from the initial image to the final version.

Enid Blyton, a noted writer of children's stories, has spoken eloquently about imagery experiences associated with her writing:

I shut my eyes for a few minutes with my portable typewriter on my knee. I make my mind a blank and wait - and then, as clearly as I would see real children, my characters stand before me in my mind's eye....The story enacted almost as if I had a private cinema screen there....I am in the happy position of being able to write a story and read it for the first time at one and the same moment. (quoted in Khatena, 1984, p. 6)

Visual artists also credit imagery experiences which guide them in their artistic creation. William Blake, the English poet and lithographer, is reported to have held casual conversations with the prophets Isaiah and Ezekiel in his waking imagination and that the inspiration for his painting Ancient of Days came from an apparition which he saw above the stairs of his house (Shoben, 1980).

Ben Shahn, a contemporary American artist, wrote at length about his own artistic process in The Shape of Content (1957). In describing the evolution of his painting "Allegory", he speaks of the images of fire from his childhood which became central features of this painting. Shahn discusses the nature of these images and the manner in which they contribute to the final work of art. He states that "for with the practiced painter it is that relationship [between inner ideas and images and the artistic medium] which counts; his inner images are paint images, as those of the poet are no doubt metrical word images and those of the musician tonal images" (1957, p. 57). Shahn discusses the importance of images and ideas which must be reconciled by the painter in the creation of a work of art. He states that "sometimes images are found - image ideas which are capable of great amplification, which can be built up to a high point of expressive power" (p. 59).

Henry Moore, the great English sculptor, suggests that the sculptor

gets the solid shape, as it were, inside his head....He mentally visualizes a complex form from all round itself: He knows while he looks at one side what the other side is like; he identifies himself with its center of gravity, its mass, its weight; he realizes its volume, as the space that the shape displaces in the air. (quoted in Samuels and Samuels, 1975, p. 250)

Dan Nadaner (1985) discusses the theoretical place of imagery in art education. He draws on the work of Rudolph Arnheim in asserting that the mental imagery of art students

contains many more potential artistic representations than the tradition of Western art has emphasized, and that images of spaces, personal histories, feelings, and concepts exist and are accessible to introspection with proper guidance. (1985, p. 88)

Nadaner also advocates the use of mental imagery exercises in understanding trends in contemporary art because "unlike the -isms of the art world...imagery exercises are based on simple and straightforward relationships between thought and representation, between image and art" (1985, p. 89).

A study of the drama literature reveals some characteristic references to the use of imagery by theatre artists. Michael Chekhov (1953) feels that the actor's personal imagery plays an important role in characterization for the stage. Chekhov recommends several scenarios for imagery use by actors in preparation for performance. Chekhov goes on to suggest that the actor learn to manipulate and use these images in building a role. He asserts that this must be an active endeavor in order to be fully useful:

You must ask questions of these images, as you would ask questions of a friend. Sometimes you must even give them strict

orders. Changing and completing themselves under the influence of your directions and orders, they give you answers visible to your inner sight. (1953, p. 23)

Chekhov also suggests that the actor must utilize the "Third Eye", an eye which monitors the actor onstage from without. This use of imagery - to see oneself as the performance unfolds - could be useful to any performing artist.

A major issue concerning imagery and the artist is the identification of a model which explains the process through which the internal representation (image) becomes externalized in an artistic product. Rosenberg and Pinciotti (1983) have developed a theoretical framework for the imagery process in the creative arts. The "iii Framework" is a three-part process which involves image, imaging, and imagination. In the first phase of the process, arts participants build a personal storehouse of images ( $i_1$ ) based on observations and experiences. These images can serve as material for arts production. Imaging ( $i_2$ ) involves the mental manipulation of the image, which may be voluntary or may occur spontaneously or unconsciously. Imaging could be used for problem-solving purposes in any art medium, or it could be free-form or autonomous in nature. The imaging component could be thought of as a period of "playing around" with artistic

materials. Imaging can involve specific strategies such as rotation (see Cooper & Shepard, 1984), inversion, augmentation, diminution, or combination of images. Imagination ( $i_3$ ) starts internally and may represent a novel solution to a problem or novel material for an artistic product. Imagination may remain as an internal process or it may be externalized through action. It is the enaction of the imagination process that may result in an externalized artistic product (Rosenberg & Pinciotti, 1983).

The iii Framework has served as the theoretical basis for imagery-based approaches to arts education (Chrein, 1982 and Pinciotti, 1982) and has been further explored as a component in the artistic process by Castellano (1983) and Rosenberg (in press). Theoretical models such as the iii Framework may be among the most significant pathways to discovering the importance of mental imagery strategies in all of the arts.

#### The Art Object

Akhter Ahsen (1982) thoroughly discusses the imaginal nature of the art object in terms of its structure such that it is differentiated from ordinary image objects. He identifies the quality of "magic" in art as the essence of newness. Ahsen feels that the

art object breaks the mold of Aristotelian logic in that it allows for a paradox of contradictions and differences:

Magicality of the art object derives from its position as the paradox in experience in the way it obliterates the boundaries between I and it, between inner and outer, between mind and the concrete, even between life and death....The viewer has to go beyond the stereotype of knowledge, of "merely looking at" to "truly seeing," to go beyond the the "literal commonplace" into the "unusual," which links disparate images in a new composition containing the magical. The viewer scans the memory referents, breaking apart the usual perception modes, putting them together from a fresh angle. (1982, p. 217)

Ahsen asserts that this newness is not tied to memory function in that newness in art is sustained over repeated exposure to the art object:

An artistic image of great potency is too moving and dynamic to be called a memory. As the audience is captured by this image, many new facets and points of view continue to be generated from it. Thus, repetition of a previous experience involving an art image is not memory since, in spite of its repetition, the art object continues to retain its newness. (1982, p. 219)

Ahsen (1982) postulates that the arts image is sufficiently strong to make a deep sensory impression and that a new and complementary form of perception is important in dealing with those images which emanate from within. This new form of perception allows for a reconciliation of external experiences with inner subjective experiences (images) through the art object.

Martin Lindauer (1983) cites research that is focused on the imaginal content of various works of art. One example of this sort of research is an unpublished study by Nancy Hoag (cited in Lindauer, 1983), who used a content analysis approach to investigate the imagery in two of Herman Melville's works. She coded sentences from selected pages of the two novels for their sensory referents. Every twentieth page of Moby Dick (1929) was coded as was every fifteenth page of Pierre (1969). A total of 376 sensory referents were found in the samples of the two novels, 192 in Moby Dick and 184 in Pierre. Hoag found a significant difference in the two novels in terms of their use of sensory referents. Moby Dick was found to be a more visual novel than Pierre, which was primarily tactile. This sort of analysis, which may provide a reliable source of useful information, does not take into account the readers' reactions (Lindauer, 1983). The next section deals with imagery in art objects from the perspective of the arts observer or audience.

#### The Audience Perspective

Many researchers in the arts have chosen to base their investigations on the arts observer. Kreitler and Kreitler (1972) developed their theories on the psychology of the arts based on the audience



perspective. Their reason for this choice was simply that arts observers were much more plentiful and available for study than the artists themselves. Lindauer (1983) cites the importance of the art audience in sustaining interest, over time, in an art work or an artist's reputation. This section will briefly describe some representative research into the imagery of the audience evoked in response to works of art.

In a 1977 study, Lindauer focuses on the imagery characteristics of aesthetic persons, appreciators rather than creators of the arts. From a large sample of undergraduate psychology students, Lindauer identified subjects with high and low levels of aesthetic values. He compared these two groups of subjects based on an extensive battery of tests and an in-depth interview. The interview dealt with the subject's aesthetic activities including doing the arts, appreciating the arts, and scenic-observational (non-traditional) aesthetic activities. Lindauer tested the subjects in four different areas - self descriptions, artistic ability, creativity, and imagery. Lindauer used two self-rated measures of imagery, one of which was general and the other modality-specific. Subjects ranked their imagery in general and then rated the vividness of their imagery

as aroused by phrases representing each sense modality. While aesthetic and non-aesthetic subjects did not differ significantly in the magnitude of their imagery scores, Lindauer found significant correlations between the imagery scores of aesthetic subjects and their scores on the other measures. This correlation supports the value of imagery ability for these subjects who were regularly engaged in aesthetic activities. Lindauer summarizes the findings of the study as follows:

Aesthetic people, compared to non-aesthetic persons, were more consistent, regular, and predictable in their imagery response to those measures which reflected a sensitivity to the arts and art-related events in general....they can call upon their imagery or depend on it to be there in response to the arts. (p. 359)

Lindauer recommends that the focus of further imagery research be centered on a "select rather than random sample of subjects, one in whom imagery is more likely to be regularly evoked or consistently present" (p. 359).

John Drummond (1984) posits an interesting view of the theatre experience from the perspective of the audience. He claims that "in the theatre, images are created less by the performers on stage than by the audience" (p. 99). He uses a hypothetical example of an audience attending a 1601 production of Hamlet at

the Globe Theatre in London to underscore the importance of the audience's imaginal contribution to the theatre experience. His major point is that the audience must suspend disbelief in accepting the many conventions of the theatre. He credits the rituals of the theatre - buying tickets, dressing specially, arriving at the theatre - as instrumental in building anticipation for the theatre experience. Along with this anticipation is the willingness to use the imagination as part and parcel of the overall theatre experience.

These writers, while approaching the problem from various perspectives, establish the importance of imagery in the arts in general. In the next section the focus of the study is narrowed to reports of mental imagery in music.

#### Mental Imagery and Music

The role of mental imagery in music can be studied from a variety of perspectives. The following section contains descriptions of imagery from the viewpoint of the composer, the conductor, the performer, and the theorist. Sources of data include anecdotal reports, biographical works, essays, speeches, and informal interviews. Taken together, these considerations of imagery serve to build an overview which attests to the

importance of imagery in music composition, musical performance, and musical perception.

### Composers on Imagery

Anecdotal reports of imagery use in music are plentiful. Composers such as Schumann, Brahms, Mozart, Berlioz, Tchaikovsky, and Wagner have alluded to the importance of imagery in their compositional process. Marie Agnew (1922b) studied letters and autobiographies of great composers in order to discover the type and characteristic features of their imagery. This study is composed of introspective and anecdotal accounts of five composers - Schumann, Mozart, Berlioz, Tchaikovsky, and Wagner. It substantiates the value which each of these artists placed on imagery in their musical lives. Schumann was perhaps the most revealing of these composers on the subject of imagery. He speaks of "inner hearing" which he used to compose, to develop interpretations, and to study compositions:

Philosophers...are certainly mistaken in supposing that a composer who works according to an idea, sets himself down like a preacher on a Saturday afternoon, portions out his task in the customary three parts, and works it up accordingly. The creative imagination of a musician is something very different, and though a picture, an idea may float before him, he is only then happy in his labor when this idea comes to him clothed in lovely melodies. (quoted in Agnew, 1922b, p. 282)

"Picture" is the pivotal word in this passage. Schumann's use of this word suggests that for him, the musician's creative imagination exists in the form of an auditory image of the composition.

Mozart's compositional process was primarily a mental one. He would carry around complete compositions in his head, writing down individual instrumental parts without benefit of a score. Mozart described his compositional process articulately and in great detail:

My subject enlarges itself, becomes methodized and defined, and the whole, though it be long, stands almost complete and finished in my mind, so that I can survey it, like a fine picture or a beautiful statue, at a glance. Nor do I hear in my imagination the parts successively, but I hear them, as it were, all at once....The committing to paper is done quickly enough, for everything is, as I said before, already finished, and it rarely differs on paper from what it was in my imagination. (quoted in Agnew, 1922b, pp. 283-284)

Berlioz was known to be a sensitive musician with an active imagination. He also heard his compositions mentally and objected to the use of the keyboard in composing. He is known to have experienced musical passages in his dreams, writing them down upon awakening. In speaking about his dreams, Berlioz stated:

Next night the obstinate motif returned more clearly than before - I could even see it written out. I started up in feverish

agitation, humming it over and - again my decision held me back, and I put the temptation aside. (quoted in Agnew, 1922b, p. 284)

Agnew describes Tchaikovsky as experiencing markedly spontaneous images of compelling power. He is reported to have experienced this powerful musical imagery from an early age. Melodies would come to him in rich and vivid form, fully harmonized. The following passage offers a description of Tchaikovsky's compositional process:

I never compose in the abstract; that is to say, the musical thought never appears otherwise than in a suitable external form. In this way, I invent the musical idea and the instrumentation simultaneously. Thus I thought out the scherzo of our symphony - at the moment of composition, exactly as you heard it....Began the fifth scene, and in imagination finished it yesterday, but in reality only got through it early today....During my journey, while composing [a symphony] in my mind, I frequently shed tears. Now I am home again, I have settled down to sketch out the work, and it goes with such ardour that in less than four days I have completed the fifth movement, while the rest of the symphony is clearly outlined in my head. (quoted in Agnew, 1922b, p. 286)

According to Agnew, Wagner seemed to be most aware of the concept of the image through the writings of his contemporaries in the field of psychology. He wrote of visualizing themes and characters for his music dramas in terms of mental images:

My whole imagination thrilled with images; long-lost forms for which I had sought so eagerly shaped themselves ever more and more

clearly into realities that lived again. There rose up before my mind a whole world of figures, which revealed themselves as so strangely plastic and primitive, that, when I saw them clearly before me and heard their voices in my heart, I could not account for the almost tangible familiarity and assurance in their demeanor. (quoted in Agnew, 1922b, pp. 486-487)

Khatena (1984) cites the composer, Johannes Brahms as a major source who credited divine inspiration in his composition. Brahms states:

When I feel the urge [to compose] I begin by appealing directly to my Maker...I immediately feel vibrations which thrill my whole being...In this exalted state I see clearly what is obscure in my ordinary moods; then I feel capable of drawing inspiration from above as Beethoven did...These vibrations assume the form of distinct mental images...Straightaway the ideas flow in directly from God, and not only do I see distinct themes in the mind's eye, but they are clothed in the right forms, harmonies, and orchestration. (quoted in Khatena, 1984, p. 5)

In 1926, Henry Cowell, a contemporary American composer, was asked to write an article for the Journal of Psychology describing his compositional process. Cowell was identified by Louis Terman as a potential musical genius at an early age and was included in one of Terman's now famous longitudinal studies. Cowell (1926) speaks eloquently about his own use of auditory imagery in his compositional process. He makes the point that detailed auditory imagery abilities were vital to him in perceiving the compositions of others

and also in composing and writing down his own musical creations. He makes an interesting point - that by working to improve his ability to image the works of others, to hear them in great detail in his mind - he found that he improved his skill at controlling his own creative images to the point where he could mentally experience every detail of the composition. He states:

The most perfect instrument in the world is the composer's mind. Every conceivable tone-quality and beauty of nuance, every harmony or disharmony, or any number of simultaneous melodies can be heard at will by the trained composer; he can hear not only the sound of any instrument or combination of instruments, but also an almost infinite number of sounds which cannot as yet be produced on any instrument. (1926, p. 234)

Cowell described his imagery as a mental flow of musical sounds (auditory images) which he could control at will. He used this flow to mentally rehearse and refine his own compositions to the point that once they were written down, he rarely changed them at all (Cowell, 1926).

Aaron Copland (1952) also speaks of the importance of musical imagination. He deals with imagination in various aspects of musical perception - composer, performer, and audience. Copland speaks about the importance of the auditory image for the composer:

The way music sounds, or the sonorous image, as I call it, is nothing more than an auditory concept that floats in the mind of the executant or composer; a prethinking of



the exact nature of the tones to be produced.  
(1952, p. 21)

Copland also makes an important point about the imagination of others (performers and conductors) in interpreting his music. As a prominent composer, Copland acknowledges the importance of the performer in discovering the potential of a work of music. He comments that one of his most enlightening experiences is finding new insights in one of his works through the imagination of another conductor or player:

I should like to think that any one of my works is capable of being read in several ways. Otherwise, a work might be said to lack richness in meaning ....It is from the finest interpreters that the composer can learn most about the character of his work; aspects of it that he did not realize were there, tempi are slower or faster than he had himself imagined were the correct ones, phrasings that better express the natural curve of the melody. Here is where interaction of the composer and interpreter can be most fruitful. (1952, p. 49)

Roger Sessions (1970) also speaks of the importance of the composer's use of the imagination as a vital part of the compositional process. Sessions feels that composers experience a constant flow of musical ideas in the form of auditory images:

The process is constant and all-pervasive; it can be said that tones and rhythms - musical patterns which he improvises - are somewhere in his mind at virtually every moment, and that these can be brought at any time to the surface of his consciousness without any difficulty. (1970, p. 76)

Sessions speaks about the importance of taking control of these images and using them actively in the compositional process. Like Cowell, he realizes that the composer's mind is one of the most useful workspaces for composition:

The composer...does not do his work, or any part of it while simply sitting alone at his desk, but carries it with him - in his ear, not his pocket - constantly. It is something to which his imagination may contribute at virtually any moment, whatever the occasion or circumstances. (1970, p. 80)

Sessions goes on to mention an example from his own work where a musical image took on a life of its own compelling him to finish a composition for unaccompanied violin which he had decided not to write:

I found myself mentally toying with half-formed fragments of violin music; and in due time, somewhat to my surprise and even consternation, musical ideas began to shape themselves, leading my imagination in a very definite direction; and it became clear to me that I must write the piece after all. (1970, p. 82)

Sessions describes the imaginative process in composition as one which is driven by a creative result - not governed by rationality or "shrewd calculation":

The aural imagination is simply the working of the composer's ear, fully reliable and sure of its direction as it must be, in the service of a clearly envisaged conception [*italics in original*]. The conception, developed in consequence of the musical ideas with which the composer started out, is the premise of everything that happens in the work which he is composing.... The conception is itself a musical image, and in bringing it

to fuller realization, the composer is not pursuing a line of reasoning, but producing an object - [a creative result]. (1970, p. 110)

The accounts of these composers attest to the importance of the imagination in the creative process used in musical composition. Imagination is also important in the interpretation of these compositions for conductors and performers.

#### The Conductor's Imagery

It is said that Richard Wagner, the great nineteenth century operatic composer, established the modern expressive tradition of conducting with his essay "On Conducting" (1869/1964). Wagner based his interpretations on highly-personalized images of and associations with the music that he was interpreting. He felt that only a "tone-poet" (composer) could be truly capable of interpreting the work of another "tone-poet". In "The Artwork of the Future" (1849/1964) he spoke of the symphonies of Beethoven as dealing with a new instrumental language whose logic was the logic of feeling. In "The Origins of Modern Opera, Dance, and Music" (1850-51/1964) Wagner discussed the symphonies of Beethoven:

The characteristic of the great compositions of Beethoven is that they are veritable poems, in which is sought to bring a real subject to representation. The obstacle to their comprehension lies in the difficulty of

finding with certainty the subject that is represented. (p. 160)

Wagner goes on to provide detailed literary programs for the Eroica Symphony, the Coriolan Overture, and the Ninth Symphony. These programs represent the highly-personal images that Wagner experienced based on the music of Beethoven. Wagner's imagery is evident in his own operatic works which are based on German myth and legend. In keeping with his theory of "Gesamtkunstwerk" (total art work), Wagner clearly saw musical, visual, and dramatic images as a whole in his mind's eye as he created his operas. He seems to have used this same imagery faculty as an interpreter and conductor of the works of other composers.

Charles Munch, one of the great French conductors, also spoke of the importance of the use of imagery in developing his interpretation of a musical work (1955). He used his own personalized imagery as a vehicle for suggesting musical interpretations to members of his orchestra. Munch experienced imagery in various sense modalities in response to musical works. He commented that colors or scenes came into his mind as he studied a score and developed his interpretation of the work: "music always suggests something to me: just a color or a landscape or perhaps a sensation that be felt and expressed only in sound" (p. 54).

Leonard Bernstein (1959) also comments on the importance of the conductor's ability to form an aural image of a work while looking at the score. Bernstein feels that "the extent to which [the conductor] can hear the printed notes in his head is in a way a measure of his talent" (p. 142). Bernstein also reacts to music in terms of a variety of images which are suggested to him directly by the musical materials in the score.

#### Imagery for the Performer

In Of Music and Music-Making (1957), Bruno Walter, the eminent conductor and musician, underscored the close relationship between music and the theatre. He relates the task of the actor to that of the musical performer who has to come to terms with the creator (playwright or composer) in order to bring a work of art to life. Imagination must lead the interpretive artist in the reproduction of an art work through an assimilation and understanding of its content.

Whereas, from the words of the poet, figures beckon to the actor who, look, speak and move as do the people of the bright, real world of the actor's experience, to us musicians there rises from the printed page the dark world of sounds with its irrational shapes. (1957, p. 26)

He goes on to clarify the imaginative act for musicians:

We conceive its variations, developments, and involutions as life-like images into which we may bodily step, as the actor steps into the life and fate of dramatic characters. (1957, p. 27)

Other references also allude to the importance of mental imagery in musical performance. A survey of various interviews presented in the Instrumentalist, one of the primary journals of instrumental music, identifies a number of performers who speak briefly about the use of mental imagery strategies in connection with musical performance. Vincent Cichowicz, a renowned teacher of trumpet and a former member of the Chicago Symphony Orchestra, spoke of the importance of mental imagery in trumpet tone production. While he did not elaborate on this comment in the context of the interview, he seems to hold mental imagery to be important in musical performance (Chapman, 1985). Itzhak Perlman, the virtuoso violinist, credits imagery with a role in both tone production and musical expression and phrasing. Perlman believes that tone production begins as a mental construct, "it's a question of how you want the violin to sound, and how you hear it in your head" (Bradle, 1984, p. 15). Other writers have advocated the use of imagery strategies in the development of performance skills such as trombone legato (Elias and Jones, 1985) and the development of sound breathing

procedures for proper support in playing (Soloman, 1982). While none of these articles deals extensively with the use of imagery by the performer, they suggest the importance of imagery in musical performance.

#### The Theorist's View

The foregoing accounts of composers, conductors, and performers suggest a highly-personalized use of imagery and imagination in music. Other writers investigate a more general use of imagery by broader populations of individuals. Leonard B. Meyer (1967) proposes a theory of musical meaning which includes two different types of meaning - "embodied" and "designative". Embodied meaning comes from the meaning of the musical materials themselves. Elements such as pitch, melody, harmony, rhythm, and timbre have intrinsic meaning. Designative meaning is a personalized interpretation which is evoked by the musical materials. Designative meaning may exist in the form of images in various sense modalities. These associative meanings may be rich and elaborate and have been shown to be an important factor in the memory for musical passages (Delis, Fleer & Kerr, 1978; Hiroaka & Umemoto, 1981).

Bennett Reimer (1970) discusses an important theoretical base for aesthetic reaction to music.

"Absolute Expressionism" (based on Meyer, Langer, and Dewey) supports the view that musical materials themselves should be the basis for developing an understanding of the music and an aesthetic reaction to it. Reimer cautions against the overemphasis on associative meaning. While aesthetic perception of a work must come from the musical elements of the work itself, associations that naturally follow can be important, but must remain highly individualized.

These theoretical views, though briefly stated, also lend credence to an imaginal component in musical creation, performance, and perception. The following section will focus on specific areas of imagery use in brass performance.

#### Mental Imagery and Brass Playing

The investigation of a number of current texts on brass playing reveals some important views on the role of imagery in brass performance. Major references for this section will be Keith Johnson's (1981) The Art of Trumpet Playing, Severson and McDunn's (1983) Brass Wind Artistry, Robert Weast's (1979) Keys to Natural Performance for Brass Players, Delbert Dale's (1965) Trumpet Technique, and Irving R. Bush's (1962) Artistic Trumpet: Technique and Study. A review of these texts has identified a number of areas which hold potential



for imagery use by the brass player - creation of a sound image, imagery in musical expression, mental rehearsal, and anxiety reduction. In the following section, each of these areas will be discussed in turn.

#### Creation of a Sound Image

A number of current texts mention the use of mental imagery in the creation of a sound image. Johnson (1981) states that "without a clear concept of a beautiful trumpet sound, all instructions lack direction and meaning" (p. 4). Johnson suggests that the first step in developing this concept is to listen to a wide variety of musical styles and examples. The auditory images that result from these experiences can then serve as models from which the player can shape his own sound. Johnson suggests:

Since we do play essentially what we hear, it is vital that we hear in our minds the best sound of which we can possibly conceive. Because every listener and player develops preferences for certain types of sound, most players have formulated in their minds a particular sound that they consider to be the ideal, which serves as a model for their work. (1981, p. 53)

Weast (1979) also feels that the acquisition of a clear "aural concept" is an important step in a player's development. Weast asserts that this acquisition must take place during each player's formative years and must be based on the best available examples of

playing. Weast believes that imitation is a vital first step in the development of an "authentic" instrumental timbre:

A quality, authentic sound and style is only possible to the player possessing a mental reference or memory of good playing by others ....They serve as models to imitate for the best in tone, style, technique, etc....For a given quality to take hold and become rooted into the psyche, the student must have an intense desire to imitate that quality. After a certain point of imitation, the developing player will naturally individualize his traits. It is disastrous for a player to become set in tone and style in an individualistic way before authentic qualities of artists have had their influence on him. (1979, p. 58)

Johnson suggests that it is the concept that guides playing more than a manipulation of the musculature of the face and fingers. He credits the natural learning process as the instrument which accomplishes this feat. Johnson states that "if we allow our minds to call up the color and character of the sound, the extraordinarily refined system of mind and body will provide the desired result " (1981, p. 38). Weast (1979) also believes in the importance of "aural knowing" as a guide for the physical aspects of brass performance. Weast feels that "the musical thoughts and intentions of the mind can cause all physical playing parts, especially the vibrating lip, to activate and respond automatically" (p. 6). Weast calls the relationship between the musical mind and the

physical aspects of playing "the musical connection." He cites the importance of the "aural, nonverbal sense" that is developed in the musical mind as a controlling factor in brass performance.

Johnson credits the sound image with a major role in the refinement of tone quality. Listening to accomplished brass players and to different styles of music and playing develops a repertory of sounds for the player's own use. Imagination is important in the process of manipulating and adapting this repertoire of sounds into the ideal. Through the process of constantly comparing one's actual sound with the sound image in one's mind, the refinement of tone quality takes place.

Severson and McDunn (1983) support these views of concept in tone production. They see this concept as a mental image which controls the actual production of sound:

We hold and nurture the musical goal in our mind first. Later we attempt to produce that musical goal. It may take several attempts before we are successful, but with that goal in mind, we continue to strive to achieve it. The better and more vivid the concept is, the better the result. Nothing occurs in the body that is not controlled or permitted by some facet of the mind. Our point is that musical artistry proceeds from mental concept to physical manifestation, and no other way! In order to perform better, we have to conceive the result we desire in more completeness and finer detail. Time spent mentally creating the image is much more

effective than tedious rote repetition. (p. 15)

Beyond suggesting the development of a concept based on an image, these authors feel that by hearing the auditory image more vividly, actual tone production can be improved. Severson and McDunn credit imagery with a role in the refinement of tone quality and other aspects of playing:

The more complete the mental concept of tone quality, intonation, phrasing, and rhythmic feeling is, the better the result will be. The concept should be kept continuously in mind until success is achieved. (p. 18)

Severson and McDunn suggest imaging exercises to enhance the development of these aspects of playing. To refine tone quality, they advocate imagining full sounding chords played by various combinations of brass instruments. They also suggest an exercise which uses auditory and visual imagery to improve tone production. This exercise has the player imagining a middle B-flat played by progressively larger numbers of brass players. The authors suggest that this exercise facilitates the development of a full, robust tone quality (Severson & McDunn, 1983).

Dale (1965) alludes to the use of mental imagery in the development of trumpet embouchure:

Though the trumpeter cannot of course actually see his lips functioning inside the mouthpiece, he must acquire a mental image or picture of the various lip movements before

he can hope to have absolute control of his embouchure. The value of this mental picture, and the simple physical sensations concerning correct lip function cannot, I believe, be over-emphasized. (p. 23)

In this example, Dale recommends the use of a visual image to aid in understanding the function of the embouchure. He also underscores the importance of the development of a tonal ideal which varies from player to player. He suggests that intelligent listening is important to the player's development and recommends hearing and comparing a wide range of outstanding players in the concert hall or through recordings. These listening experiences serve as models for each player's tonal ideal. Dale summarizes the importance of mental processes in musical development:

I have come more and more to realize the valuable use of thought: establishing a concept of tone or a style of playing, and then observing its eventual influence on performance. I can only urge the student to develop the capability of "setting" or thinking the proper mood, tone, and timbre and then transposing that thought or concept into terms of the instrument - discovering ways and manners and techniques of putting the thought into practical musical use. (p. 48)

In this excerpt, Dale advocates the use of mental processes to guide one's playing. While he fails to use the term "imagery", his approach could be interpreted as an imagery strategy. His recommendation that the student set or think the "proper mood, tone,

or timbre" suggests the presence of an auditory image which guides actual performance on the instrument.

Bush (1962) also suggests the use of imagery in the development of a concept of good trumpet tone. Like Johnson (1981) and Severson & McDunn (1983), an auditory image seems to be the primary focus for good tone production:

Before a student can produce a qualitative tone, he must have a mental picture of the tone he desires. This mental concept of a desired tone is the result of discriminative listening (p. 49)....This concept of an ideal tone will undoubtedly change as the individual's playing matures, but he must constantly have a mental picture of the tone for which to strive. Without this mental picture, the tone will probably always be just another nondescript sound. (Bush, 1962, p. 53)

Bush's idea of discriminative listening matches the other authors' (Johnson, 1981; Severson & McDunn, 1983) concept of developing a repertoire of previous musical sounds and experiences. He also stresses the importance of maintaining the mental picture (image) through the maturation process although he does not speak of the refinement of tone quality through the refinement of image.

#### Developing Musical Expression

Musical expression deals with the shaping of musical phrases. This shaping can involve dynamics, tempo alterations, and other nuances in playing.

Johnson (1981) describes phrasing and suggests an imaging technique appropriate to its development:

Phrasing to a musician is like the delivery of spoken lines to an actor. Timing, breathing, volume, and inflection are vehicles of clarity and meaning. Assuming one understands the context in which a passage is to be played, its phrasing should be worked out clearly in one's mind before it is attempted on the trumpet. (p. 43)

Johnson suggests that working out many issues of phrasing in the mind develops the player's concept of the piece as a whole and guides him in the performance of the selection. Imagery can be useful here as the player develops a mental image of the phrase and tries on different interpretations through the manipulation of the image. Differences in volume, inflection, articulation, and tempo can be mentally rehearsed and refined through imaging strategies. A final interpretation for performance could be developed through the imagination.

Severson and McDunn (1983) suggest the simulation of better phrasing. This process consists of imagining a musical passage and manipulating various elements of good phrasing such as volume, articulation, breath, and inflection. They state:

If you want to achieve better and better results, then you mentally have to create the image in a better and more precise way (p. 35)...Imagine your musical phrasing until you REALLY begin to hear it in your performance. If your imagination is vague at first,

continue to energize your imaginative powers. In due time, the air and lips will obey whatever your creative mind imagines and demands. (p. 46)

### Mental Rehearsal

Severson and McDunn (1983) place great emphasis on the importance of mental practice. They assert that mental practice can be equal in importance to actual practice:

The harnessing of your genius through daily mental practice will increase the imaginative power of your creative mind and will advance you as rapidly and as far as your motivation will take you. (p. 38)

Severson and McDunn also suggest various strategies for use during mental practice. One strategy is to mentally imagine the sound of the C major scale, concentrating on the sound of each note and any intonation problems that might occur. Manipulating the sound of this scale in the mind tends to improve the concept of the sound when the scale is actually played (Severson & McDunn, 1983). Another strategy for mental practice involves the imaginal performance of a short musical passage while comfortably blowing air through the horn. The purpose of this exercise is to develop the idea of relaxed and comfortable playing. They summarize their view of mental practice as follows:

Time spent in quietly imagining your sound as more and more beautiful, full, dramatic, subtle, rich, and expressive will give you



better results immediately. Mental practice is effective practice....As your mind develops, you will be able to look at a phrase or an entire musical composition and be able to form an indelible interpretation almost immediately. (p. 109)

This view of mental practice in music is supported by writers in other fields. Maxwell Maltz (1960) developed a technique which he calls "Psycho-Cybernetics" which uses imagery strategies to change aspects of behavior. Maltz recommends the use of mental rehearsal type strategies to prepare for a variety of situations in everyday life. These techniques are also applicable to musical performance. Suinn (1983) underscores the importance of mental rehearsal in sports performance. He offers documentation for the effectiveness of multisensory imagery in improving performance in skill-related areas. Rosenberg and Pinciotti (1983) also mention the use of "compressed rehearsal" in drama activities. In compressed rehearsal, drama participants run through the details of an enactment in the wink of an eye prior to the actual performance.

Experimental studies have also explored the use of mental rehearsal. One example of this type of research was conducted by Stuart Ross (1985) who studied the use of mental rehearsal by college trombone majors. These trombonists, who were attending several midwestern

universities as undergraduates and graduate students, were randomly assigned to one of five treatment conditions. These treatments included No Practice, Physical Practice only, Mental Practice only, Mental Practice with Slide Movements, and Combined Practice. Mental practice procedures included an imagery component which asked the subjects to feel and hear the piece in their mind's eye as they mentally practiced the etude. Results of this study showed that combined practice seemed to yield the greatest gains in performance. Ross suggests that this was due to the fact that subjects could utilize the most effective strategies in both mental and physical practice. Ross feels that the greatest benefits of physical practice are derived from the use of sound feedback from actual playing in developing pitch and rhythmic accuracy. He suggests that the major benefit of mental practice may come from actually working out pitch and rhythmic patterns in the mind while developing an interpretation of the etude.

Eloise Ristad's A Soprano on Her Head (1982) applies many of these mental practice techniques to a wide variety of problem areas for the performing musician. Ristad advocates many different forms of "internal rehearsal" which involve various imagery strategies. She suggests the use of aural, visual,

kinesthetic, and tactile images to deal with technical, interpretive, and expressive problems in performance. She advocates the use of movement and kinesthetic imagery in discovering the expressive qualities of a piece. She also suggests a kinesthetic imagery technique which she calls "muscle memory in reverse" to mentally rehearse the feel of playing beforehand. She has also successfully used visualization in helping student composers develop ideas for compositions. In general, Ristad looks to use some form of imagery to create a change in the performer's perspective and awareness in order to create a requisite change in some aspect of playing.

#### Reduction of Performance Anxiety

Another area of musical performance which seems to have potential for imagery is the reduction of performance anxiety. Custer and Trahan (1984) recommend the use of creative imaging in the reduction of performance anxiety in musical performance. They draw on strategies and techniques used in behavior therapy and recommend the use of relaxation exercises prior to performance.

Several writers in the field of clinical psychology have identified uses of imagery which seem to have potential for the professional brass player.

Lazarus (1977) outlines the use of systematic desensitization in the reduction of phobias. He recommends the development of a hierarchy of phobic situations and consequences which can be managed successively through imagery exercises. He also advocates imagining the worst possible consequence of a phobic situation in order to reduce the fear of dealing with the actual situation. It seems as if these strategies may be applicable for performers who suffer from acute symptoms of stage fright.

Other imagery methods for the reduction of anxieties and phobias have been experimentally tested. Wald and Fish (1983) found that systematic desensitization was effective in reducing test-taking anxiety. Crits-Christoph and Singer (1983) determined that a positive imagery strategy was an effective method for dealing with various phobias. These imagery strategies may prove useful for the performing brass player. Suinn (1983) alludes to the use of mental imagery to reduce performance anxiety in athletes. He borrows ideas from behavioral therapists in desensitizing athletes to unproductive tension. Carola Grindea edited a collection of articles dealing with Tensions in the Performance of Music (1978). Some of the articles speak of tension as a negative factor in performance. A system of relaxation exercises is

recommended for the performing musician. This system, called the "Alexander Technique", is congruent with the use of relaxation in mental imagery training. One of the main tenets of the Alexander technique is that the musician perform in a state of relaxation and physical balance. Teachers trained in the Alexander technique utilize various imagery strategies in promoting this balance in performers (Grindea, personal communication, July 16, 1986).

Ristad (1982) advocates the use of a variety of imagery techniques to quell feelings of anxiety about performance. She applies forms of guided imagery and pretend to the musician's preparation for major performances. One of her major points deals with using imagery to lessen the power of inner judges which can undermine performance. Ristad suggests a broad spectrum of imaging activities which can be used to counteract feelings of stage fright.

Severson and McDunn (1983) take a positive approach to the use of mental imagery in preparing for a performance. They suggest that the player should pre-picture the musical quality of a solo or recital performance. This process has the player imaging the actual performance experience in front of an audience. Severson and McDunn (1983) go as far as to suggest that the player should picture positive audience response

and the receipt of accolades for a fine performance. They call this "mental programming for success" (p. 46).

Green (1986) draws a number of parallels between Gallwey's Inner Game theories in sports performance and musical performance. Green makes a number of suggestions which would allow the player to lose himself in performance. He suggests that concentration could be drawn away from the "Self" through various imaging strategies to allow the player to perform to fullest potential. These exercises are primarily visualizations dealing with the building of sensitivity to various aspects of performance which allow the player to focus on the music rather than on the self.

This review of current brass texts, as well as various examples of imagery research, supports the view that imagery holds a significant potential for brass performance. The areas of creation of a sound image, development of musical expression, mental rehearsal, and reduction of performance anxiety will be considered as further examination of the literature will be done to search for an appropriate methodological foundation for this study.

### Summary

This chapter has presented the basic theoretical framework for a study of the role and function of mental imagery in brass playing. The field of mental imagery in general has been considered. The function of mental imagery in a number of other areas has been explored, leading to a discussion of mental imagery in the arts in general, in music, and in brass performance. A review of brass literature has revealed a number of areas which show potential for imagery use in brass performance. These areas are the development of a sound image, imagery in musical expression, mental rehearsal, and reduction of performance anxiety. This review serves to identify general areas of importance in developing a line of questioning for the interview of professional brass players. This foundation suggests further investigation into the potential role of imagery in brass performance.

### Statement of the Problem

Based on the theoretical literature in the fields of mental imagery and brass performance, there seems to be great potential for the application of imagery strategies to various components of the continuing development of brass players in general. While some methods credit mental imagery with an important role in

a number of performance situations, there has been no systematic study of the role and function of imagery use by brass performers. Further investigation of this problem could be significant in adding to the body of knowledge in both fields.



## CHAPTER II

### REVIEW OF RELEVANT RESEARCH

#### Overview

This study of mental imagery in musical performance has few prior research models. Since little prior research which is directly related to the topic has been identified, research in allied areas must be used to give direction to the study. By considering the nature of artistic performance, several fruitful lines of research can be identified. Three important components in the process of artistic musical performance are learning, the development of artistic skill ("craft"), and creativity. Learning is important for the performer in building and maintaining consistent artistic performance. The performing artist must also develop craft - the fundamental skills necessary for performance. Artistic performance involves the ability to act as a co-creator with the composer (see Copland, 1952 and O'Grady, 1980) in realizing a composition through personalized musical expression - the externalization of inner ideas and

feelings and/or images through artistic playing. These components suggest that a review of relevant imagery research in learning, skill development, and creativity may be productive in directing this study.

The first section of this review will consist of a survey of characteristic literature in learning, skill development, and creativity as it pertains to the study of mental imagery. In the second section, the focus will be narrowed to relevant research into the art-making process. Through this survey, the researcher will also seek to identify an appropriate methodology for the present study of orchestral brass performers.

#### General Imagery Research

General imagery research in learning, skill development, and creativity can be particularly relevant to the present study. Learning plays an important role in preparation for performance by creative and interpretive artists. Aside from the obvious implication of learning a part or a role, performers must be constantly concerned with learning about their particular artistic medium and about themselves (metacognition). Creativity is certainly a prized commodity for both creative and interpretive artists. Therefore the role that mental imagery plays

in these general areas could be important to the present study of performing artists. The following sections will review characteristic imagery research involving learning, skill development, and creativity.

### Mental Imagery and Learning

A number of writers have advocated the use of mental imagery strategies in various learning situations. The following studies summarize the range of this research and suggest the potential of imagery use by performers.

### Imagery in Associative Learning

Rohwer (1970) reviews early research on the effectiveness of learning of paired-associate items. He suggests certain guidelines which are appropriate for this type of learning. First, he shows concrete nouns are more easily learned than abstract nouns. He also finds that visual stimuli are usually more effective than simple verbal labels. Rohwer concludes that learning experiences should provide opportunities for the use of imagery so that the learners can develop their capacities in a wide variety of situations. The major importance of imagery research for instruction, in Rohwer's view, centers around the properties of the material to be learned and also the characteristics of

mental activities that lead to effective learning (Rohwer, 1970).

Other current research has also focused on paired-associate learning. Hunter, Moore and Wildman (1982) compare the effectiveness of learning noun pairs using visual cues and visual images. Their findings suggest that a mental picture may be an effective surrogate for actual pictures in certain learning situations. Harrison (1984) determines that mental imagery strategies can be effective in improving students' performance on multiple-choice tests. She bases her work on Paivio's theories of imagery and language and identifies dual-coding (verbal and pictorial) of the stimulus material as an effective learning strategy for words with high imagery content. Her findings suggest the use of imagery improves performance both in multiple-choice (recognition) and completion-type (recall) tests (Harrison, 1984). Jamieson and Schimpf (1980) found that self-generated images may be the most-effective mnemonic devices in the recall of word-pairs. In their experiments, subjects were presented with word-pairs and one group was asked to create an image of the interaction of the two words; the other group was instructed to image a specific interaction. Subjects who used internally generated images scored significantly higher in recall

(Jamieson & Schimpf, 1980). This finding supports the view that personalized images have greater meaning for the subject than externally-imposed or suggested images.

#### Images as Mnemonics

Solari (1977) investigated the potential of music as a mnemonic device in an experiment which utilized complex and simplex melodies as retrieval cues for word-melody pairs. Solari used synthesized melodies based on the suggestions of the psychologist D.E. Berlyne who proposes a synthetic approach to art that better isolates particular variables or factors which play a part in aesthetic appreciation. Solari based his research on a modified imagery mnemonic technique developed by Paivio (1971). Findings of this study suggest words paired with complex melodies were remembered significantly more often than words paired with simplex melodies. Solari finds that a complex melody generally serves as a better stimulus for imagery, accounting for greater recall of the paired word. These findings suggest that certain forms of musical melodies can be used as effective mnemonic devices in paired-associate learning (1977).

Richardson (1983) focuses on the use of the memory image as a voluntary aid to learning and performance.

Richardson sees the voluntary (or controlled) memory image as one of many self-management techniques which can be used deliberately to improve learning. The use of any mental aid can be valuable when the material to be learned is either extensive or not well-organized. Richardson distinguishes between the nature of different types of material to be learned and suggests that some material may be modality-specific (visual or olfactory, for example). Richardson also deals with individual imaging capacities and differentiates between visualizers and non-visualizers. Visualizers are more likely to attend to their internal imaging capacities than those who are non-visual (Richardson, 1983).

Richardson suggests some possible applications of voluntary memory imagery. Images may be useful as mnemonic devices in remembering words, events, or things that must be done. Images may also aid in the learning and performance of perceptual motor skills. Richardson feels that mental rehearsal can be a particularly effective strategy for those who have developed the ability to form vivid and controllable images. He also suggests that the most-effective imaging strategies are those which are self-chosen (Richardson, 1983).

### Imagery and Skill Development

Another area of potential for mental imagery in artistic performance is the area of skill development. While little research has been done concerning the use of imagery strategies in the development of performance skills in music, some seemingly relevant research has been conducted in other disciplines. The role of imagery in the development of motor skills has been considered by a number of writers. Edmund Jacobsen first studied physiological responses to imagery in the 1920's (Samuels and Samuels, 1975). Jacobsen successfully measured minute muscle activity during imagery experiences. The significance of this finding lies in the feasibility of using imagery in the development of motor skills.

### Imagery in Athletic Development

The greater part of current research in this area has been conducted with athletes. Suinn (1983) outlines significant research in the use of imagery strategies in a variety of sports. Suinn has successfully used imagery rehearsal (which he calls "visuomotor behavior rehearsal") with ski racers, golfers, basketball free-throw shooters, and football players. Suinn reports on the use of VMBR techniques with individual athletes and also with groups of

athletes participating in experimental studies. Kolonay, in an unpublished 1977 study (reported in Suinn, 1983), compared the effectiveness of VMBR with traditional training methods in 72 collegiate basketball players and found a significant improvement in shooting percentage as a result of VMBR. Suinn (1983) conducted a 1980 study of the effectiveness of VMBR training in promoting relaxed performance in a university cross-country team. Physiological and self-report measures were used in this study. The findings of this study support Suinn's hypothesis that "running relaxed is more efficient and that VMBR can aid in the acquisition of this style" (p. 525). Another application of VMBR training is reported by Gray et al (1984). These researchers used various forms of imagery rehearsal and relaxation with a collegiate football player preparing for a major bowl game. These studies suggest that imagery holds great potential in improving motor skill performance in sports and that similar strategies could be beneficial in other areas of endeavor as well.

#### Imagery in Artistic Development

The particular relevance of research in imagery and skill development to the creative arts is made apparent by representative studies which base



approaches to arts education or training on mental imagery strategies. Fleshman (1984) has developed an imagery-based approach to movement training which he feels is appropriate for mime or theatrical movement. Fleshman describes two different approaches which use imagery in different ways. One approach ("The Sea as Metaphor") stresses general involvement, while the other approach ("The Human Machine") stresses concentration on images in specific detail. These approaches evolved through Fleshman's actual teaching experiences and have not been empirically tested. This study is significant in identifying imagery as a potentially-effective strategy for the development of skills in movement training.

The "Rutgers Imagination Method" (Rosenberg, 1987) is an example of research leading to the development of an arts method which is particularly relevant to the present study. The Rutgers Imagination Method is an imagery-based approach to teaching creative drama. This approach uses the "iii Framework" (Rosenberg & Pinciotti, 1983) as a theoretical grounding for drama activities. The first stage of the approach concentrates on the acquisition of a storehouse of images which can later be used in dramatization. The approach moves from these "Starter" activities which involve imaging real-world objects and events to

"Transformations", where imagination is connected to action in transforming internal imagery events into observable drama activities. The final stage of the Rutgers Imagination Method is "Mastery Level" which involves fully developed drama and imagery skills. Through imagery and drama, the Rutgers Imagination Method also develops the participants' metacognitive skills - ways of knowing about themselves, other people, and the world (Rosenberg, 1987).

### Imagery and Creativity

Creativity in the arts has been considered from many different viewpoints. Major writers on creativity have realized the importance of imagery and have included an imagery component in their theory of the creative process.

### General Creativity Theories

Sidney J. Parnes (1967) sees creativity as a function of knowledge, imagination, and evaluation. He credits the imagination with the function of manipulating bits and pieces of knowledge into new patterns. Parnes suggests that "teleidoscopic action" is important to creativity and that it involves getting the structure from within the individual (like the kaleidoscope) but getting the materials from the outside. He stresses the importance of balance between

judgment and imagination, between awareness of the environment and awareness of inner processes in creative development. Parnes' model of creative behavior certainly depends on imagery in helping to bring about a novel solution (Parnes, 1967).

Silvano Arieti (1976) treats the image as a major element of primary process mentation. Arieti feels that "images constitute the foundation of the inner reality. . . . Imagery not only helps the individual understand the world better, it also helps him to create a surrogate for the world" (p. 45). Arieti suggests that imagery plays an important role in the creative process: "Images liberate us from a punctilious reproduction of reality and introduce something new: the first elements of creativity" (p. 48). Arieti also comments on the importance of imagery because of its possibilities in producing an associative or combining effect:

In some images there is a "salient part", and that salient element may lead to other images which have the same salient part...in other images there may be no salient element, but rather a concatenation of parts that can easily displace one another. And in other images there is a condensation, or fusion, of previous images that were separate in the real world. (1976, pp. 48-49)

Arieti further suggests that by not faithfully reproducing reality, an image can be "an innovation, a

state of becoming, and a force of transcendence" (1976, p. 49).

In The Act of Creation (1964), Arthur Koestler identifies imagination as a key component in the creative process. Koestler develops his theory of "bisociation", which is the "perceiving of a situation or idea in two self consistent but habitually incompatible frames of reference" (p. 31). The discovery of alternate frames of references or "matrices of thought" occurs through the imagination which may function at the unconscious, preconscious, or subconscious levels. Koestler states: "in most truly original acts of discovery, the 'seeing' is in fact imagining; it is done in the mind's, and mostly the unconscious mind's eye" (1964, p. 200). Koestler also speaks of a mental scanning process which screens memories, images, and associations which rise to consciousness to produce the novel, bisociated image.

Albert Rothenberg (1979) proposes a theory of creativity which also uses imagery as a central process. Using the tenets of Freudian dream analysis, Rothenberg identifies two specialized mental processes which drive the creative act. Janusian thinking consists of "actively conceiving two or more opposite or antithetical ideas, images, or concepts simultaneously. These antitheses are conceived as

existing side by side or as equally operative, or equally true" (p. 55). Imagery is important here both as a generator of stimulus material and as a process useful in manipulating material in Janusian thinking. Homospatial thinking consists of "actively conceiving two or more entities occupying the same space, a conception which can lead to the articulation of new identities" (p. 69). Homospatial thinking usually consists of visual images, but it can also involve any of the sense modalities. Certainly, imagery is the primary process for this specialized mode of thinking.

J. C. Gowan (1978) suggests that "right-hemisphere imagery is the vehicle through which incubation produces creativity" (p. 23). For Gowan, right-hemisphere imagery is a continuously on-going phenomenon and that once left-hemisphere interference is removed or suppressed, the right-hemisphere imagery is allowed to come into consciousness. Gowan cites the importance of learning how to attend to this imagery and facilitate its occurrence is a new educational challenge. He presents various anecdotal reports in the arts and in science where noteworthy individuals have cited imagery experiences as part of the creative moment. "Incubation is the process of metamorphosis, and right-hemisphere imagery is the vehicle through which incubation produces creativity" (Gowan, 1978, p.

30). Gowan (1977) relates this thinking to the creative process for composers and credits "divine inspiration" as an important part of the process.

Joe Khatena has credited imagery with a major role in his "Multidimensional Interactive Creative Imagination Model" (Khatena, 1984). In brief, the model functions in the following manner. Images are the natural language of humans. Thinking first occurs with images as content. These images can come to the individual through the cosmos (divine inspiration) or from the environment through the senses. Through the process of assimilation - accomodation, synthesis - destructuring - restructuring, and analogy, images may be used for transformation and productivity. Intellectual abilities operate on images or their language referents to bring about understanding which starts a storage-retrieval process. Mental activity functions on several levels of awareness (conscious, preconscious, subconscious). The product of these interrelated brain activities is an "emergent image" which may be communicated directly in an artistic product (Khatena, 1984).

#### Creativity Research

Barbara Forisha is one of a number of researchers who have found positive relationships between mental

imagery abilities and creativity. In 1975, she found significant correlations between measures of imagery vividness and controllability and Torrance's measure of figural creativity (Forisha, 1983). In further studies, she has sought to find relationships between imagery measures, creativity and development; mental imagery, creativity and maturation; and mental imagery, creativity, and cognitive style. Her studies consistently suggest that a positive relationship between creativity and imagery ability exists (Forisha, 1983).

Shaw and Belmore (1982) studied the relationship between visual imagery, visual memory, and three measures of creativity. Creativity abilities studied included systematic convergent search, common divergent response, and novel divergent response. In this study, imagery vividness was found to be the second most important variable in accounting for variance in all three creativity measures. The first most important variable in each case represented the dominant mode of thinking required for the test. These researchers feel "it may be necessary to specify operational definitions of different forms of creativity which depend on the specific forms of measurement, e.g., verbal creativity and visual creativity" (Shaw & Belmore, 1982, p. 122).

Robert Kunzendorf (1983) expanded the study of creativity to include visual and auditory imagery. He identified various "grammatical" patterns, both visual and auditory, and sought to correlate preference for these patterns with scores on tests of visual and auditory imagery. Visual patterns included the "golden rectangle", isoceles and scalene triangles, and various matrices. Auditory rhythm patterns and melodic rows were also presented to the subjects. Kunzendorf found a positive relationship between preference for grammatical visual patterns and visual imagery ability, but found no similar relationship in the auditory domain. Kunzendorf suggests that his knowledge of auditory patterns may not have been sufficient enough for him to choose a "grammatical" pattern. This may have been a factor leading to a failure to reveal a correlation in the auditory modality (Kunzendorf, 1982). Kunzendorf also identifies three important implications for the creative process which deal with grammatical patterns:

- [1] Grammars should allow artists and scientists to (re)construct nature from idealized shapes and other grammatical primitives,
- [2] grammars should allow creative persons to image artistic universals and scientific analogues and to transform them...into various levels of meaning and various predictions for scientific discovery,
- and [3] mastery of the grammars of different imaging modalities should enable people to translate from a structural relationship



within one modality to a structural relationship within another modality. (p. 195-196)

Kunzendorf concludes that "visual, auditory, and other grammars serve both to direct our construction of images and to return us to the origin or grammatical essence to which the natural world is creatively reduced in science and in art" (1982, p. 198).

E. Paul Torrance, a well-known authority in the field of creativity, conducted a study of the creative talent of music students (1969). He tested students at the Westminster Choir College in Princeton, New Jersey to determine if imagery ability as measured by Sounds and Images (Torrance & Cunningham, 1967) was related to musical experience and achievement. Torrance found that imagery ability did correlate with students' musical achievement. Musical composition experience was found to be the most significant variable. This study is significant because it establishes a correlation between imagery ability and musical achievement and suggests Sounds and Images as a predictor of creative talent in music (Torrance, 1969).

These writers and researchers have sought to establish the importance of imagery in the creative process. Their findings suggest that mental imagery should be considered a major component of creativity. This implies that mental imagery may also hold great

potential for the creative aspect of artistic performance.

#### Research in the Arts and Art-Making

Research in the arts and art-making can be naturally divided into several categories. Empirical research has been conducted to measure and describe specific phenomena which are involved in artistic creation. Empirical research has also sought to compare different methodologies or approaches to artistic creation. Qualitative research has been conducted to explore the artistic process in various populations of artists and non-artists. A review of relevant research in each of these areas is essential in identifying an appropriate methodological approach to the present problem of investigating the role and function of mental imagery in brass playing. The following review will be divided into three sections - descriptive research, comparative research, and qualitative research in the arts.

#### Descriptive Research

One branch of empirical research in the artistic process has focused on describing aspects of the artistic process through measurement of various phenomena. The thrust of this type of investigation has been to identify relationships between various

phenomena or abilities and artistic behaviors. Much of this literature falls into the realm of psychology, linking mental processes with artistic performance. Some research into physiological phenomena is also relevant to artistic ability.

#### Imagery Experiences in Musicians

One of the earliest studies which measured the phenomenon of mental imagery in music was conducted by Betts (1909). In Experiment 11, Betts investigated the use of imagery in music through three separate experiments. The subjects were undergraduates in the class of Ear-Training and Public School Music in the Teachers College, Columbia University. The first experiment was designed to determine if the subjects used auditory imagery in an ear-training exercise. Betts found that 14 of 18 subjects reported using auditory images for every trial item. Betts also found that "the percentage of accuracy is greatly in favor of those who reported auditory imagery accompanying their judgments" (p.85). The second experiment was designed to determine occurrence of imagery in the reading of music. Each subject was presented with an excerpt of musical notation which they were instructed to read. Subjects were then asked to report on the different kinds of images evoked in reading through the musical

passage. The majority of subjects reported the incidence of auditory imagery (15 of 19), kinesthetic imagery (16 of 19), and visual imagery (10 of 19). A third experiment measured the experiencing of imagery while listening to music. Of 19 subjects, all but one reported either visual or kinesthetic images while listening to a passage played on the piano. Betts cautions that his experiments measured the incidence of imagery in relation to music, but could not determine how these images functioned in the interpretation of the music (Betts, 1909).

Marie Agnew (1922a) conducted another early experiment in music and imagery. She compared the auditory images of musicians, psychologists and children. Her testing method involved asking each group to hear in their imagination the first phrase of America and to grade the strength of their image. The musicians also took a second test in which they were instructed to compose a short original melody in their imagination and grade the strength of the imagery on the same scale. The significant finding was that the group of musicians consistently graded themselves very highly for auditory imagery on both tests. Anecdotal remarks offered by the musicians indicated that they felt this ability was a natural prerequisite for being a musician. The first test was also administered to

groups of psychologists and children. The psychologists generally gave very low ratings for their auditory imagery. The results for children fell roughly in between the musicians and the psychologists. Agnew noted that the tendency to over-estimate imagery ability may have been greater for musicians than the other groups (Agnew, 1922a). Agnew's concern seems to be centered around the issue of social desirability in the self-report of imagery abilities and experiences by musicians. It is possible that because auditory acuity and inner hearing are deemed important by musicians, reports of auditory imagery may be inflated by musicians because of the desirability of these traits.

John Bergan (1965, 1967) continued to study the importance of auditory images for musicians. He looked to discover a relationship between imagery ability and pitch perception. In his 1965 experiment, Bergan tested subjects on measures of imagery, pitch discrimination, and adaptive regression. Bergan focused on adaptive regression because of the similarity between an extremely vivid auditory image and an auditory hallucination. Bergan explained this phenomenon as an example of regression in the service of the ego. He based this idea on the work of Ernst Kris, who viewed certain kinds of regression to primary processes as adaptive. Bergan measured imagery by a

description of each subject's dreams which was rated by a panel of judges, a self-report imagery questionnaire, and an auditory image matching test. He chose the quality of intensity (volume) as the characteristic to be matched. Bergan found significant gender-related differences in this study. For women, significant positive relationships were found between imagery rating and imagery questionnaire, between image matching and imagery questionnaire, and between all imagery measures and pitch judgment. For men, the only statistically significant relationship (negative) occurred between pitch judgment and the imagery questionnaire. The results of this study showed that for women, the ability to make accurate judgments of pitch is related to the capacity to form vivid auditory images.

Bergan's 1967 experiment studied relationships between auditory imagery, pitch judgment, and musical memory. Bergan used an auditory imagery questionnaire of 151 items to measure each subject's auditory imagery. He used an interesting method for treating the results of this questionnaire. Of the 151 items included on the questionnaire, only 25 pertained to musical imagery. He treated the other items on the questionnaire as baseline data and rated each subject's auditory imagery for musical sounds based on that data.

This statistical procedure was used to account for each subject's variability in self-report. Statistical analysis confirmed the hypothesis that positive correlations exist between pitch judgment and imagery, and between pitch judgment and musical memory. Bergan states:

the significance of the relationship between accuracy in pitch identification and musical imagery with respect to musicianship is that it suggests that the critical function of being able to make judgments concerning the pitch of sounds does depend on adequate internal representations of the sounds being judged (p. 109)....the correspondence [between imagery and pitch judgment] suggests that whether the musician be composer or performer, his artistic behavior is directed in part by an internal representation of musical sound, that is by imagery. (1967, p. 108)

#### Imagery in Response to Music

Osborne (1981) conducted two experiments which measured subjects' responses to various musical stimuli. Two groups of subjects were given Jacobson-type relaxation exercises and then presented with electronically synthesized compositions. For both groups of subjects, imagery was the primary response mode to the music. Osborne suggests that "when subjects respond to music, it appears to be predominantly through the use of imagery....The data also suggest that musical education/appreciation based upon the use of imagery is appropriate" (p. 136).

Quittner and Glueckauf (1983) also studied the formation of visual images in response to music. In their experiment, subjects were divided into groups based on their imagery ability. Each group received three different treatments: Control, relaxation, and music. Subjects were asked to record their imagery experiences in various ways. They used rating scales of imagery vividness, estimations of time spent imaging, ratings of ease of evocation of images, actual time spent imaging as measured by an event recorder, and proportion of time spent in Alpha rhythm as measured by a brainwave analyzer. For all groups, music seemed to be the most powerful facilitator for visual imagery.

Bilotta (1977) conducted a study to determine the effect of music and art on imagery experiences of an audience. Bilotta presented various artistic and non-artistic stimuli to groups of subjects who then answered a questionnaire about their imagery experiences during the presentation. He found that music aroused more imagery in the audience than did art and hypothesized that musical stimuli brought about more active participation on the part of the audience. Bilotta suggests that musical imagery might be a powerful tool in therapy situations.



One very specific type of imagery response to music is chromesthesia which can be defined as "colored hearing, a particular form of synesthesia in which color images (photisms) are evoked by auditory stimuli" (Polzella & Kuna, 1981, p. 165). The phenomenon of chromesthesia is well documented throughout music history. Perhaps the prime example of attempts to capitalize on this form of synesthesia as a compositional device occurred in the works of the Russian composer, Scriabin. The score of Scriabin's Prometheus (1908-1910) calls for the use of a color organ which would project colored light on a screen according to the progression of tonalities in the composition. Scriabin intended this work as a precursor to a philosophical opera, "Mysterium" (which was never written) which would more fully explore the fusion of the arts and the senses (Macdonald, 1980). Other composers, including Rimsky-Korsakov and the French impressionists also emphasized the importance of of color images in response to music.

Several studies have been conducted to investigate the phenomenon of chromesthesia. Polzella and Kuna (1981) studied chromesthetic reactions to the music of Handel and found that specific color photisms were linked to the tonalities of the examples. The predominant associations occurred between major

tonalities and yellow and minor tonalities and blue (Polzella & Kuna, 1981). Donnell & Duignan (1977) stress the individualized nature of chromesthetic reactions and document a wide range of sound-color associations made by artists and musicians. These associations occur between tonality and color and timbre and color (for a historical treatment of the significance of key characteristics and relationships, see Steblin, 1983). Donnell and Duignan (1977) suggest that synesthesia holds important implications for aesthetic education which involve the free use of the imagination.

#### Effects of Music on Imagery

Bae (1984) conducted an experiment which measured the effects of various kinds of music on imagery. Bae chose "stimulative" and "sedative" music as potential facilitators for the production of original verbal images. Other factors included time press and order of presentation. Stimulative music (excerpts by Stravinsky) was found to be significantly better as a facilitator than sedative music (Debussy's Afternoon of a Faun). According to Bae, this result contradicts earlier research which suggests that music having a sedative effect would promote greater relaxation thus facilitating focused attention on the imagery task.

Bae feels that stimulative music may have caused greater emotionality in the subject thus resulting in higher creativity scores (Bae, 1984).

Another study dealing with the investigation of music as a facilitating factor for imagery was conducted by Mahoney (1981). Mahoney used both music and guided imagery as factors in her study of "hemispherical dominance and imagaic [sic] writing". She found that a combination of music and guided imagery treatments led to significantly higher achievement with respect to fluency, flexibility, originality, quality, and attitude (Mahoney, 1981).

#### Imagery and Musical Memory

Two studies explored the effects of title on the memory for music. Delis, Fleer and Kerr (1978) devised an experiment to measure the effect of different kinds of titles on musical memory. They based this study on Leonard B. Meyer's theory of musical meaning. They theorized that the nature of the title of a musical work could have an effect on the "designative meaning" (Meyer, 1967) that the listener develops for the work. They also theorize that this "designative meaning" contains a significant imagery component. They selected six musical passages which were found to have low familiarity based on a pilot study. Six titles

(three abstract and three concrete) were randomly paired with the passages such that each title was paired equally with all six excerpts. After hearing each excerpt, the subject was asked to describe any imagery evoked by the passage. The experimenters found images were rated as significantly more vivid when associated with concrete titles. This suggests that concrete titles lead to richer, more elaborate designative interpretations of the passage. After all passages were heard, each subject was given a surprise recognition test. The experimenters found that significantly better recognition resulted when the passages had been given concrete titles. This experiment lends support to Paivio's dual-coding theory (1971) and the additional coding of a designative meaning or interpretation may provide additional assistance in recalling the passage from memory (Delis, Fleer & Kerr, 1978).

Hiroaka and Umemoto (1981) extended this experiment to include a non-titled condition and titles which were deemed adequate or inadequate for the musical passage. Adequacy ratings for various titles were provided by a panel of judges. Subjects were asked to rate the vividness of imagery in response to each passage. The results of this experiment support the findings of Delis, Fleer and Kerr (1978).

Significantly better vividness ratings were obtained by passages with concrete-adequate titles than for any other title condition. The subjects in this experiment were also asked to complete a surprise recognition test of the same design as the earlier study (Delis, Fleer & Kerr, 1978). Results of this test revealed significant differences between the various title conditions. Concrete-adequate titles were significantly superior in recognition over concrete-inadequate and abstract titles. An interesting finding of this study revealed no significant difference in recognition between the concrete-adequate and no-title condition. This finding suggests that subjects may have used personalized imagery in the no-title condition successfully for recognition of the passage. According to these researchers, the difference in results for adequate and inadequate titles may have been due to interference caused by the inadequacy of the title. This interference may have occurred when images evoked by the musical material clashed with imagery evoked by the title (Hiroaka & Umemoto, 1981). The finding that non-titled passages could be effectively recognized supports the results of the Jamieson & Schimpf (1980) study concerning the effectiveness of internally generated imagery in learning.

### Imagery and Musical Development

Serafine (1981) studied the nature of musical timbre imagery in pre-kindergarten students aged three to five. This study was based on the theory that developmental stages similar to those suggested by Piaget and Inhelder (for visual imagery) exist for auditory imagery. Serafine focused on measuring children's ability to combine various instrumental timbres imaginally. Serafine devised several tasks of varying difficulty and designed an interview method which would allow her to assess each subject's ability at combining and identifying timbres based on imagery. The results of Serafine's experiment support the notion that developmental stages do affect the operation of combination of musical sounds (auditory images). This experiment extends the findings of Piaget and Inhelder (1971) to auditory as well as visual imagery (Serafine, 1981).

The foregoing studies which measure imagery phenomena in music suggest that mental imagery has the potential to be a useful tool in response to musical stimuli, in the interpretation of musical meaning, and in musical performance. The next section of this review will focus on empirical studies which compare various approaches (some of which use imagery) in artistic creation.

### Comparative Research

In another body of research in the arts, researchers seek to compare various approaches or methods for their effectiveness in artistic creation or artistic instruction. The following section will present a review of some current research in the arts in general and in music in particular.

### Comparative Studies in Drama

Two recent studies have compared the effectiveness of approaches to creative drama in improving students' dramatic behavior and imagery ability. Chrein (1982) compared the "Rutgers Imagination Method" with a drama approach based on Winifred Ward. Subjects were elementary school students in intact class groups. The design of this study was a quasi-experimental pretest-posttest design. Students were tested for their imagery abilities and dramatic behaviors prior to intervention. Classes were randomly-assigned to one of two treatments. Ten drama lessons were given to each group. Testing for dramatic behaviors occurred at the midpoint of treatment and posttreatment. Imagery abilities were also measured posttreatment. Chrein found that both methods were effective in teaching creative drama. In analyzing the results between groups, she identified several characteristic

differences between the methods. This kind of research proves valuable for practitioners in educational settings in their choice of instructional strategies. In analyzing results of the pre and post treatment imagery measures, Chrein found that neither approach significantly improved the students' imagery scores. (The RIM group scored higher, but not significantly so.) She suggests that the self-report measures used may not have been able to pick up differences in the students' imagery ability, or that the students overestimated their imagery ability on the pretest measures due to the factor of "social desirability" (Chrein, 1982).

Pinciotti (1982) also compared the effectiveness of the Rutgers Imagination Method to another creative drama approach (Viola Spolin's "Theatre Games"). Pinciotti's design was similar to that of Chrein (1982). Pinciotti also found both approaches to be effective in teaching dramatic behaviors, with the RIM group showing a greater increase than the Spolin group. Pinciotti noted qualitative differences between the two groups in the nature of their dramatic behavior. Again, this is important information for practitioners of creative drama. This study also failed to show significant improvement in imagery abilities over the course of the treatment period. Pinciotti (1982)



suggests concerns similar to those of Chrein (1982) in the measurement of elementary students' imagery abilities. The significance of both of these studies lies in the empirical data that they provide educators and researchers in the arts.

### Comparative Studies in Music

A review of several comparative studies pertinent to musical performance follows. Apfelstadt (1984) compares the effectiveness of two approaches to teaching singing on the pitch discrimination and vocal accuracy of Kindergarten students. Apfelstadt divided her subjects into three groups. E1 received instruction in melodic perception which utilized kinesthetic and visual cues. E2 received instruction which stressed imitation and rhythmic structure within a melodic contour. A control group received traditional vocal music instruction without emphasis on melodic perception or conceptual development of musical elements. All groups received an identical orientation training period prior to pretesting. Significant findings showed that melodic perception instruction did not improve pitch discrimination or vocal accuracy in the singing of rote songs. However, this treatment did significantly improve vocal accuracy on pitch patterns. The researcher suggests that the melodic perception

treatment may have depended on the presentation of visual and kinesthetic cues. Since these stimuli were not present during the testing, this may have affected the students' performance (Apfelstadt, 1984). While this study did not explore the use of imagery in the teaching of singing, the results suggest that the melodic perception treatment may have benefited from the use of imagery as a substitute for the visual and kinesthetic cues.

Kramer (1985) explored this issue in his research of approaches which are designed to improve the singing ability of inaccurate singers. Kramer used third and fourth grade students as subjects for this study. Control groups received traditional instruction in singing over a ten-week period, while the experimental groups received an approach which was based on imagery and Gould's Specialized Program in Singing. Kramer suggests that a significant portion of the posttest singing scores were explained by the treatment condition. He also found a greater significance for fourth grade students than for third grade. Measures of imagery vividness and controllability did not reach significance in their effect on singing performance. Kramer suggests that imagery can act as a mediator in the acquisition of musical skills and recommends that

this function be the subject of future research in the area of imagery and musical learning (1985).

The importance of performance training has been underscored since the inception of music education in the public schools (Reimer, 1970). Marchand (1976) studied the relative effectiveness of two approaches to developing expressive performance. Marchand's study is grounded in a concern that the teaching of performance has been technique-oriented. Marchand divided his subjects, who were college non-music majors, into three groups - Control, Discovery Method, and Expository method. Marchand described the Discovery method as having "intrinsic learning motivation in subjects, self-initiated problem solving, and subject assessment of achievement" (1976, p.16), while the Expository method consisted of "authoritarian teacher behaviors in which students were told of the task, provided the content, drilled on the task, and subsequently assessed by the teacher" (1976, p.16). The control group received traditional instruction in music fundamentals. Expressive performance was measured based on each subject's achievement on a Music Performance Test which consisted of four songs - two which were sung and two which were played on the soprano recorder. These tests were rated by a panel of three judges who were not associated with the project. Based on the statistical

results, Marchand suggests that musical expressiveness may be learned and that either experimental method proved to be more effective than the control in teaching expressiveness. This study suggests that musical experience may be an important ingredient in the effectiveness of either method - the Discovery method being the preferred choice for those students with little experience, and the straightforward (expository) method favoring those students with experience (Marchand, 1976).

#### Qualitative Research in the Arts

Much can be learned about the artistic process through the careful study of individuals participating in that process. While informal individual interviews can provide some information, research that is more systematic and structured serves to uncover trends across a larger sample of artists and performers, to build conceptual models of the process, and to identify fruitful areas for further study. This section will review some qualitative research that has been conducted with various groups of artists and performers.

#### Interviewing Artists about their Art

Catherine Patrick (1937, 1938, 1939) was one of the first researchers to intensively study the creative

process in various groups of artists. In 1935, she reported on a study where she interviewed a sample population of poets and recorded their comments as they created a poem. These poets were presented with a painting of a landscape and asked to write a poem about it. She did a follow-up study (1939) dealing with the nature of good and bad poetry based on the reader's reaction to the poetry. In this study, she asked subjects to read and respond to examples which had been identified as good or bad. She recorded their comments in reaction to these examples. She found that a major characteristic of good poetry was that the poem was successful in transmitting an image to the reader. This characteristic was supported by the readers' comments about the various examples (Patrick, 1939).

Patrick conducted a similar study of painters and painting in 1937. Her purpose was to study the creative process of these artists as directly as possible. She asked a group of fifty artists to sketch pictures under experimental conditions. Each of these subjects was individually interviewed in their own home or studio. The interview began with a preliminary conversation to accustom the artists to talking aloud and to gather information on their methods of working. Subjects were presented with a poem and asked to draw a sketch or picture about the content or suggestion of

the poem. Subjects were asked to talk out loud during the drawing process. Patrick coded subjects' responses according to the four stages of the creative process as identified by Wallas - preparation, incubation, illumination, and verification. In speaking of the incubation phase many of the artists referred to imagery experiences. A characteristic remark follows: "I usually carry an idea around in my mind. I see the picture completely in my mind before I paint" (p. 77). The significance of these studies lies in their systematic study of various artists during the course of artistic creation. Patrick successfully tapped the rich resource of the creative artist in her studies of the creative process.

Ann Roe conducted a 1946 study of painters and the artistic process which took the form of in-depth interviews about various aspects of their artistic process, production, and personality. The content of the interview was a discussion of how each artist went about developing a painting. From the interview data, Roe was able to classify four broad approaches to the starting and development of a new painting. These areas included [1] internal stimulus, [2] external stimulus, [3] combination of idea or mood and a visual experience, and [4] effective use of both internal and external stimuli. Several of the artists mentioned the

importance of imagery experiences in their creative process. Several characteristic quotes from different artists follow:

I can't paint anymore unless I see it [the painting] finished before I start it. (1975, p. 163)...I usually carry a picture in my mind for a long time before I paint it, maybe for a year. (1975, p. 169)...The picture really exists in my mind complete before I start painting. (1975, p. 170)

Roe suggests some generalizations regarding the creative process of these artists. She feels that most of these artists "have a quite clear picture in mind of what they want to produce before they start, but this is sometimes only a rather vague whole, and the details remain to be worked out" (1975, p. 167). Roe continued the work of Catherine Patrick in her investigation of the artistic process using working artists as subjects.

Eindhoven and Vinacke (1952) conducted a similar study of painters but sought to study their work in a more natural setting. They asked these artists to produce an illustration to accompany a poem which the researchers supplied. The artists were given a choice of artistic materials and allowed to come to the laboratory with their work as many as four times. Subjects were asked to discuss their work with the experimenters who analyzed these discussions in order to understand the artistic process as practiced by these individuals. The researchers found great

individual differences in the process of these artists. They provided illustrative case histories of several of the subjects. The following passage from one of these case histories shows a clear use of mental imagery in manipulating the artistic material to produce a publishable work of art:

Each line drawing is a reproduction of a visual image which she had previous to painting.... Between each sketch, she paused, closed her eyes, and tried to review new imagery....To aid her imagery, she reread the poem and retouched some of her previous work between sketches. (1952, p. 155)

Another major finding of this study is that stages of the creative process which have been suggested by Wallas, and confirmed by Catherine Patrick's studies, were found to be interwoven throughout the artistic process. Eindhoven and Vinacke suggest "creativity might be thought of as one whole process consisting of all various aspects participating concurrently" (1952, p. 161). These researchers contributed significantly to the general understanding of the artistic process through their study of working artists.

Ficke (1964) devised a technique for studying the process of painting in children. Ficke, a professional artist who worked with young children in the Child Study Center at Yale University, developed this procedure to study relationships between the children's painting activities and their psychological well-being.



Ficke summarizes her reasons for choosing the study of painting as follows:

Painting makes use of several of the child's capacities and may especially engage his imagination and his power of expression.... The use of paint makes greater demands on the imaginative processes. (1964, p. 153)

Ficke's study involved the observation and recording of the drawing process of these children. Her technique of recording their process consisted of charting each brush stroke or part of the drawing as it occurred. One purpose of this technique was to detect early signs of artistic talent and, when used concomitantly with clinical studies, to reveal intellectual, emotional, and artistic development.

In 1985, Benjamin Bloom led a research team which utilized the interview method to investigate the nature and effect of early experiences on the development of talent. Bloom's study focused on individuals from three fields of achievement. These fields included the arts which were represented by concert pianists and sculptors; athletics, represented by tennis players and swimmers; and the sciences, represented by mathematicians and neurophysicists. Bloom devised sets of criteria for each field of endeavor to identify "world-class" performers in each field. Bloom's research team contacted and interviewed subjects in each of these fields. Upon the consent of the

subjects, their parents and significant teachers and other individuals were also interviewed. Bloom then utilized the results of data analysis to draw conclusions concerning the development of talent in young people. While Bloom's research did not specifically focus on imagery in relation to the early experiences of these individuals, this study further supports the effectiveness of gathering information from distinguished individuals in a variety of fields.

#### Interviewing Composers and Performers

London (1982) used an ethnographic design to study the relationship of music and language in various musical situations. She interviewed musicians at various levels of their development and observed musical interactions in a variety of settings. Her study focused on different types of language important in musical learning and musical interpretation. These included musical vocabulary (words and terms present in the musical score), and non-musical terms which were used as analogies and metaphors. London describes interpretation as a decision-making process that involves reconciling and synthesizing what performers know about the style or historical background of a piece with their personal feelings about it. Musicians of various ages and abilities were interviewed in an

unscheduled format. The length of these interviews varied greatly. London observed musical learning in two different settings - the private studio lesson and ensemble rehearsals of a university jazz ensemble and a professional four-hand piano team. Results of these interviews and observations were analyzed to develop categories and classifications of language use. London suggests twenty propositions which are pertinent to language use and provide information about basic rehearsal techniques, interaction between individuals in musical situations, transfer of knowledge, retrospective interpretation, differences and similarities between jazz and classical musicians, effects of musical background and experience on language and interaction, and procedural (structure of interaction) problems (London, 1982).

One of the major results of London's 1982 study was the development of a process for creative practice (Cycle of Comparisons). This model was based on information gained from the interviews and observations in the study. In brief, this process compares one's playing with one's conception of a piece of music. The formation of the conception is based on cognition and language development. London simply states the process as conception - experimentation - projection. While this process remains to be empirically tested, it may

have potential for other areas of the creative arts as well as for music education (London, 1982).

Bennett (1976) studied the process of musical creation by interviewing eight contemporary American composers. He used a semistructured interview format with a line of questioning devised to determine the details of each composer's first composition, their development as composers, the process that they used in composing, conditions that they deemed to be favorable for composition, mental or emotional states which seemed to facilitate composition, and the extent to which each used logic in their writing. Bennett devised a model of the process of musical composition based on the responses of these composers. This model consists of a number of stages which seemed to be representative of the composer's responses. The initial step for most of the composers was getting the "germinal idea". This most often led to a sketch and then to a first draft attempt. Bennett sees these first stages as oscillating back and forth prior to the next stage of elaboration and refinement. Final draft copying follows refinement with the possibility for revision as the last step in the process (Bennett, 1976).

Bennett suggests that the acquisition of the germinal idea is perhaps the most crucial step in the

process. Composers interviewed in this study identified various states and conditions which seemed favorable in the formation of germinal ideas for their compositions. Bennett distinguishes between internal and external events in the genesis of the idea. Internal events such as emotional states and "the monitoring of internal 'happenings' during a trance or altered state of consciousness" (p. 9) seems to facilitate the generation of ideas. External states such as environmental occurrences, other works of art, or musical improvisation may also generate ideas for compositions. Six of eight composers credited tranquility, security, or relaxation as having a facilitative effect (Bennett, 1976).

While Bennett does not directly deal with imagery in his discussion, several of the composers' responses seem to indicate the possibility that imagery plays an important role in their compositional process. One composer mentions that "his ideas frequently occur just before going to sleep or just after waking" (p.11). This is suggestive of "hypnagogic" and "hypnopompic" imagery as described by Richardson (1969). Another composer mentioned that he once heard a melody in a dream, and upon waking, was able to write it down. Other composers mention melodies which came to them freely. These could well be examples of autonomous

imagery. Bennett (1976) suggests that further research into musical composition be conducted in order to gain a better understanding of its process.

A more recent study which does consider the importance of mental imagery use by composers was conducted by Martin Nass (1984). Nass interviewed twenty American composers to gain insight into their creative process. He conducted these interviews from a psychoanalytic viewpoint to explore the theory that the creative process in composers has ties to early separation trauma. This research is of interest in the present study because Nass reports on a number of findings about the importance of imagery use for these composers. Imagery modalities used by these composers ranged from auditory to kinesthetic and visual imagery.

Nass states:

What has been most impressive to me is the auditory acuity and sensitivity of the composers. For the most part the musical impulse is an auditory one and is given shape, time and dynamic value by the composer. (1984, p. 487)

Nass (1984) documents the use of tactile and kinesthetic images by composers in the generation of ideas for their compositions. Several composers report sensations of body movement as they work out ideas for a composition. Other composers relate how visual imagery plays a large part for them in the generation

of ideas. This visual imagery seems to be one of two types. Some composers report that they actually see a score page of a projected work as they compose it, while others report that for them, sounds seem to have a visual component. Some see the work in annotated form as they compose and others see a relationship between the pictorial contents of a visual image and the development of an idea for a work. Some of the composers have used a visual image of everyday experiences (the pattern of the lights of New York City or the image of a parched desert, for example) (p. 487). These composers use a variety of sensory styles during the inspirational stages of their work, and for some, the style varies from work to work (Nass, 1984). This study suggests the importance of imagery experiences in the compositional process of these composers.

#### Interviewing Artists about Imagery

The focus of study was narrowed to imagery by Martin Lindauer (1983), who interviewed a sample of working artists in a variety of artistic mediums regarding the importance of imagery in their artistic process. A total of nine working artists of national reputation were asked open-ended questions about their use of imagery in everyday life and in their artistic

process. Lindauer states that "the intent of the study was to establish the existence, use and importance of imagery in these artists' work" (p. 497). Characteristic questions included: "Can you picture (or hear) your spouse's (or child's) face (or voice)?...In your work as an artist, do you have and use imagery of the sort we've just described?" (p. 497). Subjects were also questioned about the frequency, mode, clarity, vividness, control, locus, and variability of their imagery. When asked if they used imagery in their work as artists, all but one respondent replied affirmatively. Lindauer reports that imagery use by artists was a foregone conclusion for several of the subjects. All of Lindauer's subjects reported a high degree of vividness and clarity in their imagery. The subjects also felt that imagery could be improved through practice and their current imagery experiences were different (more refined) than past experiences. The musicians who were interviewed reported imagery experiences in the auditory, visual, and kinesthetic modalities while performing. This study shows that information about artist's imagery can be easily obtained through the interview process and concludes with the assertion that "we [psychologists] have much to learn about imagery



from the arts, more than those in the arts can learn about imagery from psychology" (p. 499).

An even more comprehensive study of imagery use in the arts was conducted by Castellano (1983). She used an interview method to identify the nature and function of mental imagery in the artistic process of thirty prominent artists. The population studied included five working artists in each of the following areas: artists, composers, musicians, dancers, writers, and actors. The major premise of this study is that the best and most reliable source in understanding imagery use by artists is the words of the artists themselves. Their own reflections on imagery in the creative or interpretive process stand as the most compelling evidence to document the importance of mental imagery in the arts.

Castellano developed an interview format based on a pilot study on the imagery use of college arts students. The results of this study confirmed the importance of using working artists whose reputations were established. Castellano developed various areas of questioning and utilized probe questions in order to clarify the artists responses when necessary. Analysis of the data produced a total of sixty imagery properties which were identified by the artists. These fell into two categories of imagery - nature and

function. Castellano also differentiated between two types of imagery references - those that were generated (freely reported by subjects) and those that were confirmed (responses to direct questions). Castellano found pervasive imagery use by most of the artists in her study. Castellano sees this study as a significant point of departure for further research in mental imagery in the artistic process (Castellano, 1983).

Rosenberg (in press) further refined the design of studies involving working professional artists and their imagery. Rosenberg and her research team interviewed visual artists in New York City who were associated with the Guggenheim Museum's "Learning to Read through the Arts" Program. Rosenberg used Gorden (1980) to shape an interview guide which targeted areas of interest to the study. Probe questions from this guide were used to determine the extent to which these working artists experience and use imagery in their artistic process. Rosenberg found "that artists depend on their mental imagery in three essential phases of art-making: collecting and storing images, art-making itself, and response to completed paintings" (in press). Another important finding in this study is the oscillation between internal and external processes as suggested by Rosenberg's "iii Framework" (1987). Rosenberg speaks of this oscillation in terms of the

"painting in the head" and the "painting on the canvas". She identifies two groups based on the source of guidance - internal or external. For those artists who depend on internal guidance, the oscillation begins with the painting in the head and the mental work progresses in advance of the actual painting. Those favoring external guidance basically respond to the artistic materials. Rosenberg's work (in press) is significant in providing important design elements for the present study as well as further support for the issue of interviewing distinguished individuals about their artistic process.

These qualitative studies show the value of the interview method in gaining important information about the art-making process. This method taps the rich resource of working artists and their discussions about various aspects of their approach to creating or performing.

#### Summary

This review of research in the artistic process in various art forms points to the importance of conducting exploratory research into the role and function of mental imagery in musical performance. While a body of research literature exists which identifies the importance of the use of imagery in

various arts, including music composition, there is little research of any kind which has investigated the use of mental imagery in a specific population of musical performers. It is the purpose of this study to conduct this kind of research. Using the work of Nass (1984), Lindauer (1983), Castellano (1983), and Rosenberg (in press) as a starting point, this study will attempt to identify the role and function of mental imagery in a population of professional orchestral brass players through face-to-face interview.

## CHAPTER III

### METHOD

#### Overview

The purpose of the study was to tap the rich resource of professional brass players in order to gain information about their use of mental imagery in musical performance. The general goal was to ascertain the scope, depth, and importance of imagery experiences for these respondents and to determine the role and importance of these imagery experiences in their musical preparation and performance. Brass players were chosen as subjects for several reasons. First, references to mental imagery use were identified in a variety of brass method texts. Second, the population of professional orchestral brass players was available to the researcher through various professional contacts. Third, the researcher, a trained brass player, was able to draw on expertise in both the fields of mental imagery and brass performance in discussing the process of artistic performance with these subjects.

Major areas for discussion were identified through a study of the literature on mental imagery and brass methodological texts. An interview guide based on Gorden's (1980) model was developed to assist in exploring these areas. Subjects were identified and contacted, and interviews were scheduled and conducted. Each of the interviews was tape recorded and transcribed. Responses were classified and sorted into general topic areas based on the interview guide. Specific responses in each topic were analyzed to search for trends of imagery use and to identify novel imagery strategies which are unique in this sample.

The interview design allowed the researcher to obtain intensive data from a small, specialized population. In this type of study, the researcher focuses on a problem through the eyes of a few subjects. The crucial aspect of this design is depth rather than breadth. Using a moderately scheduled interview design to study mental imagery and brass playing, the investigator was able to explore the topic through face-to-face interviews with twenty-six distinguished performers from five major American symphony orchestras.

The following sections will deal with the pertinent aspects of method, interview design, data

collection, and data analysis in proper chronological sequence. These aspects include identifying areas for discussion, developing the Interview Guide, identifying the subjects, description of the sample, quality of the sample, the interview process, and data analysis procedures.

### The Interview Design

The following sections of this chapter detail two important aspects of the method used in this study. The first of these describes the process used in identifying topics or areas of discussion targeted for the interview. The second section details the development of the interview guide for this study which is based on Gorden's (1980) model. The actual interview guide used is also included in this section.

### Identifying Areas for Discussion

Broad topics for discussion were identified through a review of the literature in mental imagery and brass methodology and modeled after Rosenberg's interview process used with visual artists (in press). Major areas of discussion included various aspects of each player's background, his approach to performance, and specific strategies used to deal with potential performance problems. The area of training and experience focused on a wide array of issues including

early musical experiences, formal training in music, influential teachers and performers, and professional performance experience. Each player's approach to performance was targeted because of the potential for imagery use in areas such as tone production and musical interpretation. Specific strategies such as mental rehearsal were identified as having potential in the solution of various performance problems such as performance anxiety. The player's reaction to imagery use by conductors was also identified as an area of interest in this study.

#### Developing the Interview Guide

Unlike the questionnaire and the interview schedule, the interview guide emphasizes the goals of the interview rather than the actual means. The questionnaire and the interview schedule specify actual questions to be asked and the sequence in which these questions are asked. The interview guide is like "a conceptual map of the areas to be covered and a convenient way of recording the progress of the interview" (Gorden, 1980, p. 360). The interview guide consists of a set of topics and possible probe questions which may be used during the course of the interview. The interviewer selects appropriate questions from the guide as the interview progresses.



Each performer was questioned about the same topics, however the exact questions and sequence varied according to the individual's responses to the line of questioning.

Major topics targeted for this study included Background and Training, Mentor(s), Warm-Up, Development of a Sound Concept (Tone Production), Musical Expression and Interpretation, Mental Practice, Reduction of Performance Anxiety, and Conductors' Imagery. Biographical data on each player was also collected as part of the interview. Various types of probes were used during the course of the interview. These included descriptive questions, structural questions, and contrast questions (Spradley, 1979). Descriptive questions ask the informant to describe events or situations. Structural questions seek to discover information about various topics. Contrast questions are used to discover deeper levels of meaning in some area or topic. An outline of the interview guide follows:

### The Interview Guide

#### Background and Training

Training. Possible Probes - Tell me about your musical training. [OR] Where did you study?

Professional experience. Possible Probes - Would you briefly outline your professional playing experiences? What orchestras? etc.

Mentor. Possible Probes - During your musical training, did you have an individual who served as a mentor or who was particularly influential on your artistic growth?

Warm-up

Warm-up for practice or rehearsal. Possible Probes - Do you use a specific regimen when you warm up? Would you describe this regimen? Do you use any mental strategies when you warm up? (Several writers speak of mental rehearsal or mental warm-up, do you use any of these sorts of strategies?) What goes through your mind as you warm up? Do you focus on sound or feel? Please describe your warm-up process.

Warm-Up for Performance. Possible Probes - Do you have any specific ritual that you use when preparing for a performance with the orchestra? Are there any differences in your warm-up just prior to a concert? What goes through your mind as you prepare to play? Do you use any specific mental strategies as part of this ritual?

Tone Production

Mental "concept". Possible Probes - A number of brass playing texts mention the importance of a mental concept of timbre in developing tone production. Can you hear the sound of your own instrument in your mind? Describe this sound. Do you hear your individual sound or the sound of the orchestra as a whole? Does this sound exist in your mind as a verbal representation or as an actual sound which you can [almost] hear (auditory image)? Explain. Do you use this "concept" (or image, or idea) of sound in any way to guide your playing? Please describe any mental or cognitive activity that occurs while you are actually practicing or rehearsing some specific passage.

Tone production in performance. Possible Probes - What guides your tone production as you perform? Do you think about this? How? Do you ever experience any imagery while performing? What is the nature of this imagery? What sense modalities? Spontaneous or controlled? Do you have specific strategies that are helpful to you? How do you monitor your performance as it is happening? Do you ever "see" yourself or "hear" yourself mentally as you perform? In Gallwey's "Inner Game" theory, he speaks of losing oneself in the performance. Do you ever experience this sort of

altered state of consciousness as you perform? Please describe this experience.

### Musical Expression and Interpretation

Musical expression in practice. Possible Probes - Many composers report that they work out musical problems in their mind prior to writing anything down (Mozart, Schumann, Tchaikovsky, Cowell). Do you ever do this sort of thing when you are working on phrasing or dynamics or interpretation? (OR) Do you ever "try out" a passage in different ways in your mind before playing it? Do you ever work out interpretive problems in your mind when you are not actively practicing or performing? (AND) Do these experiences seem to happen spontaneously or do you try to control and manipulate their occurrence? What goes through your mind as you practice mentally? What are the predominant sense modalities? (Auditory, visual, tactile, kinesthetic, etc.) How do you use what you have learned through mental practice when you actually play the passage? What guides you? What kinds of strategies help you do this? Do you ever hear the sound of the whole orchestra in your mind as you practice your individual part?

Musical expression in performance. Possible Probes - Do you ever use mental strategies to guide

musical expression or interpretation as you perform?  
What do you think about or focus on while playing?  
What strategies do you use to help build consistency in  
your playing?

### Mental Rehearsal

In practice and training. Possible Probes - Recently there has been a trend toward the study of mental processes and their potential in practice and training. Some athletes have been known to use these methods - Greg Lougainis, for one. Do you use any mental strategies which help you in your practice sessions? Please explain or describe. How do these strategies help your performance? What kinds of playing problems or situations seem to benefit most from these mental practice strategies?

In performance. Possible Probes - Do you ever rehearse a passage in your mind just before playing it? Do you ever actually hear yourself playing before making an important entrance? Are there any other strategies that help you, say during a long rest prior to an important passage? Please describe.

### Reduction of Performance Anxiety

Rehearsal strategies. Possible Probes - Do you ever experience any form of performance anxiety when you prepare for a major performance? What is the

nature of this anxiety? How do you deal with it? Are there any mental strategies which you utilize during your practice that help you deal with this anxiety in the actual performance? Have you ever counseled other players (students or colleagues) with regard to this problem? What do you suggest? Are there any strategies which seem to work for them? Do you ever have imagery experiences which are connected to an upcoming performance? Please describe or explain. Do you ever see (or hear) yourself performing a particular passage with the orchestra in preparation for performance? Are there any other methods that you use to deal with undue tension or performance anxiety?

Performance strategies. Possible Probes - Do you ever experience tension or anxiety while playing? How do you deal with this? Are there any mental strategies which help you lessen the tension or anxiety? Do you know of any other players who use these strategies?

#### Conductor's Imagery (Shared Imagery)

Possible probes - In the theatre, acting ensembles are known to use group images to guide the ensemble in enacting the drama. Have you ever played for a conductor who uses imagery to convey his interpretation of a musical passage to the orchestra? Do you find this is a successful means of communication? Would you

describe this experience? Does your brass section ever use any mental strategies as a group in order to refine their performance or interpretation of a passage? What are the nature of these strategies? Who decides on the image to be used (the conductor or a player)?

### General Information

Other areas. Possible Probes - Are there any other mental strategies that you find useful in the practice situation or in preparation for performance? Please describe or explain.

Recommendations. Possible Probes - Could you recommend any other members of the brass section who you feel would be good for me to interview about this subject? I would truly appreciate your recommendations.

During the actual interviews, the use of possible probes from this guide depended on the exact nature of each interview. Appropriate questions were used according to the conduct of each interview. Some questions seemed to be unnecessary considering the responses given by the subject. Some subjects needed more probes than others. It was the interviewer's task to clarify the subject's responses by choosing appropriate questions from the guide. This guide

proved to be a useful resource in covering the necessary material with each of the respondents.

### Data Collection

The following section of this chapter will detail various phases of the process of data collection. These phases include indentifying the subjects, a description of the sample, comments on the quality of the sample, and a description of the actual interview process.

### Identification of the Subjects

The targeted population for this study consisted of professional brass players from five major American symphony orchestras. The following orchestras were sampled: the Baltimore Symphony, the Boston Symphony, the Chicago Symphony, the New York Philharmonic, and the Philadelphia Orchestra. These orchestras were chosen because of their excellence and reputation in performance and their accessibilty to the researcher.

Brass players from each orchestra were identified through the researcher's network of professional contacts. These individuals were telephoned and asked to participate in the study. The researcher also asked players who agreed to participate to recommend other players in order to fill out the quota of respondents from each orchestra. Several respondents were quite



helpful in this area. Contacting possible respondents through this type of network was deemed to be superior to contacting players through the management of the orchestras. This personal touch contributed to the unexpectedly high response rate in the study. Twenty-six of the twenty-seven people contacted actually participated in the study. The twenty-seventh player was unable to schedule an interview because of a heavy schedule of professional commitments. Interviews were scheduled at the convenience of the respondents and conducted either at their home or the orchestra's concert hall. The twenty-six subjects who participated in the study represent approximately one-third of the brass players regularly employed by these orchestras.

#### Description of the Sample

The sample consisted of a representative selection of players on each of the orchestral brass instruments. The breakdown, by instrument, is as follows: nine trumpets, five horns, seven trombones, and five tubas. The sample was made up of twelve principal players, six associate or assistant players, five second players, and three bass trombonists. The selection of players gave a representative view from various positions of responsibility within the brass section. Five players

were interviewed from each of the following orchestras: Baltimore, Boston, New York, and Philadelphia. Six players were interviewed in Chicago. A list of subjects who participated in this study appears in Figure 1.

#### The Quality of the Sample

The major strength of this study is that the subjects are among the most distinguished brass players in the world. By virtue of their tenure in responsible and competitive positions in major orchestras, the group represents the highest echelon of the entire population of brass performers. These players are highly regarded by the consensus of the brass-playing community and are well known through their large number of fine performances and through the many recordings their orchestras have made. In addition, the players are regularly invited to give master classes, lectures, and clinics at major conferences on brass playing. As a group, they have played under most of the leading conductors who have had active conducting careers during the second half of this century. Most of the players are internationally known for their excellence in performance. Several are generally considered to be among the finest in the world.

Baltimore Symphony Orchestra

Donald Tison, Trumpet  
Peter Landgren, Horn  
James Olin, Trombone  
David Fetter, Trombone  
David Fedderly, Tuba

Boston Symphony Orchestra

Charles Schlueter, Trumpet  
Richard Sebring, Horn  
Norman Bolter, Trombone  
Douglas Yeo, Bass Trombone  
Chester Schmitz, Tuba

Chicago Symphony Orchestra

Adolph Herseth, Trumpet  
Vincent Cichowicz, Trumpet (Retired)  
William Scarlett, Trumpet  
Dale Clevenger, Horn  
Edward Kleinhammer, Bass Trombone (retired)  
Arnold Jacobs, Tuba

New York Philharmonic

Philip Smith, Trumpet  
Vincent Penzarella, Trumpet  
L. William Kuyper, Horn  
Donald Harwood, Bass Trombone  
Warren Deck, Tuba

Philadelphia Orchestra

Seymour Rosenfeld, Trumpet  
Donald McComas, Trumpet  
Randy Gardner, Horn  
Glenn Dodson, Trombone  
Paul Kryzwicki, Tuba

Figure 1. List of respondents by orchestra.

An important assumption in this study is that the subjects have thought about their playing to the degree where they can clearly articulate details of their personal approach to performance. This assumption is met by the wealth of musical experiences of the group as well as the fact that most are artist-teachers at major universities and conservatories. In their work with student performers, they are accustomed to articulating various aspects of their approach.

This sample represents two generations of brass players. This characteristic of the sample allowed for a comparison of approaches to playing between the two generations as well as the study of the influence of mentors on their students. These relationships will be analyzed in greater detail in Chapter IV.

#### The Interview Process

All interviews were conducted face-to-face and were tape recorded for further study and analysis. A consent form for use of the interview material was obtained from each respondent. A copy of the Consent Form appears in Appendix A.

The actual interview was patterned after a moderately scheduled standardized interview as described by Goetz and LeCompte (1984). The interview consisted of a series of standard open-ended questions

designed to draw on the performer's past experiences for an answer. Short, specific questions were generally avoided since these kinds of questions tend to generate short, impulsive answers. As Spradley suggests, "expanding the length of the question tends to expand the length of the response" (1979, p. 85). The nature of the interview was informal in the sense that a discussion between the investigator and the performer would be likely to generate more thought-out answers and deeper insight into the use of imagery. The interviewer followed Spradley's suggestion by "asking questions, listening instead of talking, taking a passive rather than an assertive role, expressing verbal interest in the other person, and showing interest by eye contact and other nonverbal means" (1979, p. 46).

Key words and phrases which allude to imagery content were identified through a study of the brass methodological literature. For example, key words for the term image would include image, idea, concept, mental picture, "mind's eye", and "inner hearing". When one of the performers used a key word or phrase, then a questioning sequence was used to discover the exact meaning of the phrase for the individual performer. Also, the researcher attempted to differentiate between responses concerning the internal

image and the external sound among other imagery-related notions. In some cases, in the course of the interview, the respondent expressed difficulty in understanding some aspect of mental imagery, so the interviewer gave a few short imagery examples to clarify the respondent's understanding. These interview techniques were refined by the investigator through a pilot study in which free-lance brass players in the New York metropolitan area served as subjects. In conducting the pilot study, the investigator worked to refine interviewing techniques and to modify the content of the interview guide.

A major concern during the interview and analysis process was the question of researcher bias. The researcher, as a trained brass player having expertise in the field of mental imagery, brings a unique understanding of these two fields into the study. This background, while an asset in conducting the study, also suggests the problem of investigator bias. Through the study of mental imagery literature and brass texts, the investigator identified potential areas for imagery use in brass performance. Throughout the interview process, every attempt was made to control possible bias created by the review of pertinent literature and the researcher's own use of imagery in performance. The attempted controls

included taking a passive stance during the interview process, allowing the respondent to freely draw on personal past experience in answering the questions. Leading questions were avoided and probe questions were used to encourage the respondents to elaborate on their statements so that exact meanings could be determined. The investigator also emphasized the exploratory nature of this study and avoided taking a side on the issue of imagery use. Every effort was made to present a balanced view of the study to each subject. Despite these efforts, the question of investigator bias can never be totally eliminated from a research design of this type. The use of the moderately scheduled interview design allows, by its nature, the freedom to explore an issue which is not available in a totally standardized design.

The interviews were conducted over a period of five months according to the schedule which appears in Figure 2. The interviews lasted from twenty minutes to an hour and a half. There were several reasons for the variability in length among interviews. The scheduling of some of the interviews limited the time available for discussion. This happened because of the respondents' commitments to performances, rehearsals, recording sessions, studio lessons and the like. The detail of response was also a factor in the differences

|     |                                          |          |
|-----|------------------------------------------|----------|
| 1.  | Donald Tison, trumpet, Baltimore         | 7-19-86  |
| 2.  | David Fedderly, tuba, Baltimore          | 7-19-86  |
| 3.  | David Fetter, trombone, Baltimore        | 7-19-86  |
| 4.  | Peter Landgren, horn, Baltimore          | 7-20-86  |
| 5.  | L. William Kuyper, horn, New York        | 7-28-86  |
| 6.  | James Olin, trombone, Baltimore          | 8-10-86  |
| 7.  | Paul Kryzwicki, tuba, Philadelphia       | 8-23-86  |
| 8.  | Randy Gardner, horn, Philadelphia        | 9-04-86  |
| 9.  | Warren Deck, tuba, New York              | 9-06-86  |
| 10. | Donald McComas, trumpet, Philadelphia    | 9-11-86  |
| 11. | Philip Smith, trumpet, New York          | 9-12-86  |
| 12. | Seymour Rosenfeld, trumpet, Philadelphia | 9-18-86  |
| 13. | Vincent Penzarella, trumpet, New York    | 10-10-86 |
| 14. | Charles Schlueter, trumpet, Boston       | 10-25-86 |
| 15. | Norman Bolter, trombone, Boston          | 10-25-86 |
| 16. | Richard Sebring, horn, Boston            | 10-25-86 |
| 17. | Chester Schmitz, tuba, Boston            | 10-25-86 |
| 18. | Douglas Yeo, trombone, Boston            | 10-26-86 |
| 19. | Glenn Dodson, trombone, Philadelphia     | 10-30-86 |
| 20. | Arnold Jacobs, tuba, Chicago             | 11-10-86 |
| 21. | Edward Kleinhammer, trombone, Chicago    | 11-10-86 |
| 22. | William Scarlett, trumpet, Chicago       | 11-11-86 |
| 23. | Adolph Herseth, trumpet, Chicago         | 11-11-86 |
| 24. | Dale Clevenger, horn, Chicago            | 11-11-86 |
| 25. | Vincent Cichowicz, trumpet, Chicago      | 11-12-86 |
| 26. | Donald Harwood, trombone, New York       | 11-20-86 |

Figure 2. Interview Schedule



in length between interviews. The greatest variability occurred in the detail of the description of background and training. Some of the subjects started with their earliest musical experiences, while others chose to begin with their formal collegiate or conservatory training. Others gave detailed accounts of specific experiences from childhood which they felt were relevant to their use of musical imagery. Some players chose to describe some aspect of their playing in great detail using musical examples from the orchestral or solo repertoire while others spoke in a more theoretical manner about these issues. Other players chose to recount anecdotes from their many years of orchestral experience. These kinds of choices, which were left to the individual subject, accounted for differences in the overall length of the interviews.

#### Data Analysis Procedures

Each of the twenty-six interviews was tape recorded and then transcribed for further study. The length of the transcripts ranged from twelve to fifty pages. Representative excerpts from some of these transcripts are included in Appendix C. Analysis of the transcripts was accomplished in four major stages and was based on parts of the scientific model offered by Goetz and LeCompte (1984). The components of the

analysis process are Typological Analysis, Analytic Induction, Theorizing, and Enumeration. Procedures used in each of the four stages are detailed in the following sections.

### Typological Analysis

The first level of analysis was based a model of "Typological Analysis" described by Goetz and LeCompte (1984). In this analysis procedure, data is separated and organized based on a pre-existing set of propositions or on common sense:

Typological analysis involves dividing everything observed into groups or categories on the basis of some canon for disaggregating the whole phenomenon. Such typologies may be devised from a theoretical framework or set of propositions or from common-sense or mundane perceptions of reality. (pg. 183)

In this study, the initial typology for the separation of data was derived from the framework of the interview guide. These groupings were identified as important topics of discussion through a study of mental imagery literature and brass methodological literature.

Data analysis began with the identification of statements of interest to the study. The researcher studied each transcript to identify relevant statements. A second rater independently scanned the transcripts to confirm the identification process. There was a high (88.6%) percentage of agreement

between raters on this task. The number of statements per transcript ranged from seventeen to sixty. A total of 849 statements were identified from 743 pages of transcript. Each statement was then coded with the respondent's initials, a statement number, and a page notation from the original transcript. An example of this coding process is "DT#6:14". This identifies the statement as the sixth statement identified in Donald Tison's interview which is located on page fourteen in the original transcript. The use of this coding system facilitated the referencing of data throughout the analytic process. Once statements were identified and coded, they were entered onto individual file cards for ease of handling.

Since each interview was unique, based on different lines of questioning according to the nature of each discussion, statements from all parts of the interview were scanned to determine their subject matter. This was not always a straightforward process because some respondents spoke about interpretation in connection with a question pertaining to auditory images. Statements about mental rehearsal were made in connection with questions about performance anxiety. The influence of a mentor may have figured prominently in some aspect of interpretation. Once the exact subject matter of each statement was determined, they

were separated based on their subject matter and placed under appropriate topics from the typology. For example, all statements containing information about performing some particular piece of music were placed in the topic dealing with musical expression and interpretation. All statements which mentioned lack of confidence, confidence-building, nervousness, stage fright, or strategies used to deal with them, were placed in the topic dealing with performance anxiety. Once all statements were assigned to topics, a master listing of statements from each transcript was made so that all coded statements and their subject matter could be easily accessed. Topics considered in this study include Training and Experience, Mentor(s), Warm Up, Tone Production, Musical Expression and Interpretation, Mental Rehearsal, Performance Anxiety, Conductor's Imagery, and Miscellaneous Statements. The topic "Miscellaneous Statements" included statements of possible importance to the study that were difficult to place in a specific topic. These statements were considered at a later stage of data analysis. This preliminary breakdown and assignment of statements served as a starting point for a more detailed study of the responses during the next level of analysis.

An anecdotal summary of each interview was written to assist in the organization of the data. These

anecdotal summaries were structured according to the topics from the interview guide. These summaries provided the researcher with a representative record of the general course of discussion in each interview and they were used as an organizational tool instead of a primary analysis procedure. A copy of the Interview Summary form is included in Appendix B.

### Analytic Induction

The next phase of analysis centered on a process of "Analytic Induction" (Goetz and LeCompte, 1984). Analytic induction "involves scanning the data for categories of phenomena and for relationships among such categories" (p. 179-80). Categories were generated through analytic induction for each topic in the typology. These were discovered through a study of the range of statements. Key words and phrases were used to reach a finer discrimination between responses and to help in placement. For example, within the general topic of tone production (TP), when a subject commented that he could hear the sound of his instrument in his mind, this was taken to indicate the presence of an auditory or sonorous image. All statements alluding to mentally hearing this sound were placed in the same category, in this case, "TP-C1". Statements which mentioned a "sound ideal", "superior

sound", "imagination of excellence", and the like were considered in a single category (TP-C3). Further, statements which included words and phrases such as "monitoring", "use as a guide", or "comparison between image and actual sound", were categorized together (TP-C4). Similar strategies were used to reduce each topic in the broad typology into discrete categories. Through this inductive process, the range of statements and approaches suggested an organization of material into logical categories of responses effectively subdividing the larger topics into more manageable segments. At this stage, the researcher scanned the data once again to confirm the placement of statements into discrete categories within topics.

### Theorizing

Goetz and LeCompte (1984) use the term "theorizing" to describe a major part of the analytic process which includes perceiving, comparing, contrasting, aggregating and ordering the data as well as establishing linkages and relationships among categories through inference. They suggest that these cognitive activities are the fundamental tools used by researchers to "develop or confirm explanations for how and why things happen as they do" (p. 167). Goetz and

LeCompte summarize the objective of theorizing at this stage of the analytic process:

Properties of a category are discovered by listing how all units are alike and how they differ systematically from units outside the category. Core properties are then used to develop an abstract definition of the category....Once items have been identified, raw data may be reduced to quantifiable form by scanning, listing, coding, and scoring. Linkages then may be established by simple comparing and contrasting, by identifying underlying associations, by inference, or by statistical manipulation. (p. 170-171)

By studying all statements within discrete categories, the researcher was able to determine the basic properties of statements in each category. Additionally, this allowed statements in these categories to be separated into types of responses where appropriate. For example, in the category called "School Music Experiences", a study of statements suggested a division of responses into two types - statements mentioning influences resulting from participation in a public (or private) school music program and statements mentioning an influential individual in school music. This further organization of information within categories allowed for greater precision in comparing statements and greater clarity in reporting the findings.

The last phase of the theorizing process consisted of a synthesis of relevant data into a summarization of

the role of imagery within each category. This was accomplished through a deductive process based on the study of individual statements and responses. The discovery of unique uses of imagery was also an important goal in this study. For the purpose of analysis, "unique strategies" were defined as strategies described by only one individual in the sample. These strategies were also classified within each category. Representative statements, unique strategies, and divergent views of imagery use were selected for use in reporting the findings of the study.

#### Enumeration

The final stage of analysis involved a process which Goetz and LeCompte call enumeration:

Enumeration functions to provide supportive evidence for the existence and validity of research categories and hypotheses and comes after such categories have been developed in the study at hand. (1984, p. 185)

Enumerative information was gleaned by scanning individual responses within categories. The frequency with which a specific kind of response appeared among respondents could be determined once similar statements were grouped together. This kind of information proved to be important in discovering the extent to which a given approach, strategy, or experience applied across the whole sample. For example, knowing that



twenty-five of twenty-six subjects reported having the ability to hear the sound of their instrument mentally indicates that for this sample, the majority of players deal with an auditory image of their sound in some way.

#### Summary of Analysis Procedures

The process of data analysis in this study served to organize the wealth of raw data collected through the interview process into more manageable segments. Through the four phases of analysis, the process moved from an inductive to a deductive one. Once the broad typology was inductively segmented into logical categories, the focus shifted to the discovery of important properties in each category through deduction. The process concluded with a study of the frequency of responses to reveal more pervasive views of the role of imagery in musical performance. Since another objective of this study was to focus on the individual approach of each artist, unique strategies and divergent views were also identified to gain balance in the reporting of the findings.

#### Summary

This chapter presented the method chosen for this study of mental imagery and brass playing. The identification of areas of discussion, the development of the interview guide, identification of subjects,

description of the sample, the interview process, and data analysis procedures were also detailed. This study of the role and function of mental imagery in brass performance was conducted through the interview of distinguished orchestral brass players. Areas of discussion were identified and included in an Interview Guide (based on Gorden, 1980). Informants for the interviews were drawn from the brass sections of the Baltimore Symphony, the Boston Symphony, the Chicago Symphony, the New York Philharmonic, and the Philadelphia Orchestra. Individual subjects were identified and contacted. Face-to-face interviews were scheduled and conducted. These interviews were tape recorded for further study. Tapes were transcribed and responses were coded for further analysis and study. Data analysis was accomplished through a four-stage process which was derived from a model described by Goetz and LeCompte (1984).

## CHAPTER IV

### RESULTS OF THE STUDY

#### Overview

The major purpose of this study was to explore the role and importance of mental imagery experiences and strategies in artistic musical performance based on the views of twenty-six distinguished brass players from five major American orchestras. Data was collected from these subjects through face-to-face interview. Topics of discussion were identified and an interview guide was developed based on these topics. Each interview consisted of an informal discussion about each of these topics. Questions were designed so that subjects would base their responses on prior personal experiences. Analysis of these responses is intended to yield insight into the role of mental imagery in the artistic process of these performers.

Generally speaking, mental imagery was found to be an important ingredient in the performance process of these players. Perhaps the most striking finding was the frequency with which players reported the ability

to form or recall an aural image of the sound of their instrument in their minds. Twenty-five of twenty-six players reported having this ability. These players also spoke of having an ideal conception of the sound that they strive to produce. This ideal is also stored as an aural image.

Beyond possessing this mental representation of instrumental timbre, the majority of players in this sample also use imagery strategies in a variety of playing situations. Their general approach is congruent with the theoretical model proposed by Rosenberg and Pinciotti (1983) which explains the role of imagery in the arts. This model involves the acquisition of specific images, their manipulation, and recombination in novel ways to produce an externalized artistic product.

These musicians are also quite familiar with mental rehearsal as a tool which can help to promote consistent performance. Mental rehearsal was found to be applicable to many aspects of practice and performance. Players utilize images in a variety of sense modalities in connection with mental performance. These images, while primarily aural, also included the visual, kinesthetic, and tactile modalities. Players in this sample associate pictures, colors, movements,

and touch sensations to the sound of particular musical compositions and use images based on these associations in terms of tone production and musical interpretation as they practice and perform.

Sources of images used by these players are quite varied. They range from specific responses to the particular musical contents of a work to everyday experiences which they find to be relevant to performance. Players use images from these sources in a variety of ways to enhance their performance.

Chapter IV will present a detailed discussion of these findings based on the order of major topics in the interview guide. In addition to a general discussion of responses across the whole sample, representative statements will be presented in each category to illustrate the role and function of imagery in musical performance for these artists in their own words.

### The Findings

The following sections of this chapter will present the findings of the study relevant to each of the major topic areas in the Interview Guide. The discussion of each topic will be organized according to the categories generated through the analytic process and will present general findings across the whole

sample, specific statements, representative responses, strategies unique to individuals in the sample, and divergent views where appropriate. The following topics will be covered: Training and Experience, Mentors, Warm-up, Tone Production, Musical Expression and Interpretation, Mental Rehearsal, Performance Anxiety, and Conductors' Imagery. Each of these topics will be discussed in turn.

### Training and Experience

This topic was included in the discussion in order to ease the respondents into the interview process and to provide information which would help to group respondents. Also, discussions about training and experience held potential in identifying imagery-related phenomena. From an imagery standpoint, the early training and musical experiences of these performers seem to be important because of the profound nature of some of their remembrances. When asked to describe their musical training and experiences, many of the respondents began by relating some of their earliest musical experiences. These responses are significant because they attest to the importance of the storehouse of memory images available to the performers which extend back to their youth. In addition, the mental imagery literature underscores the

significance of childhood experiences on imaginative development (Singer, 1981). Rosenberg (1987) cites the importance of a significant adult influence in facilitating the imaginative process in the arts. An examination of responses in this topic area generated several categories of imagery-related responses which deserve mention and analysis. These categories include parental influence, experiences in school music, listening experiences, formal musical training, and professional playing experience.

#### Parental Influence

Parents can serve a potentially important role in both personal and artistic development by serving as models, guides, or facilitators. Parents can also be an important source of encouragement for their children in achieving success in any endeavor. Six respondents of the twenty-six in this sample made specific mention of remembrances of their parents as role models or guides in their early musical development. Some remembrances were vividly recounted, substantiating the importance of these events in the lives and memories of the players.

In five cases, the parent in question was a musician and had an important impact on the early musical attitude of the respondent. In two cases, the

parent played the same instrument as the respondent and contributed directly in some way to their musical advancement. In three cases, the parent played piano or organ and had a more generalized musical effect on the respondent. This analysis does not suggest that the parents of the other players in the sample failed to exert an influence, but rather that the others did not choose to mention specific recollections of this influence. The following excerpts document the importance of parents in early musical training.

Arnold Jacobs of the Chicago Symphony speaks of his earliest musical experiences in learning to play the bugle under the guidance of his mother, a professional pianist:

I was fortunate to have a very excellent musician for a mother. She was a pianist who was well trained - very well trained....she guided me. She played the bugle calls on the piano and I, of course, played by ear and learned them.

Jacobs' mother served as a model as well as a guide for him as he learned to play. By learning to play by ear, Jacobs not only modeled his mother's playing, but also had to develop a strong auditory image or concept of the sounds he set out to produce on the instrument. Jacobs carried this approach with him as he learned to play the trumpet:

[I had] just the trumpet - no book, So I learned the fingerings by the bugle system,



and my mother would play [the notes] and I would write down whatever fingering worked. And I remember playing a solo in a school assembly just after playing a short time....and then I started to take lessons and I remember trying to play the same solo a year later and I couldn't do it!

Jacobs' anecdote about one of his earliest solo appearances is significant because of his apparent dependence on learning from his mother's example. In Jacobs' case, the focus was on the musical line as much as a tonal concept of the instrument. Philip Smith of the New York Philharmonic speaks of trying to imitate the tone quality of his father, a superb cornet soloist and conductor in the Salvation Army:

I was constantly under his tutelage in a band practice....basically just an aural study - hearing what he said, listening to what he played, and trying to put it into perspective and practice. When we practiced together, it was always a practice together where he played and he would say "listen, it's got to sound like this" and I would try to copy.

Smith mentions that he can still hear the sound that his father made and that he uses this sound as part of his present approach to playing. He mentions that he still uses this sound as a guide, especially when he plays the cornet. Smith's father was obviously an important model in developing a tonal concept of cornet sound. Smith mentions his father's tone quality and musicality rather than his technique as being something he wished to emulate in his own playing.

Donald Harwood of the New York Philharmonic mentions the effect of his father's influence in building his enthusiasm for trombone playing during his youth:

My dad was really interested in what I was doing so we just really grew together. He wasn't a very good player but he seemed to have a lot of music inside of him and so he was very influential and we had a good time together playing in different musical groups around the community.

Even though his father was just an amateur trombonist, Harwood sensed his innate musicality and used that as a model during his early musical development. Harwood's father also played the role of a facilitator in providing encouragement and comraderie through direct involvement in his son's musical interests.

James Olin, principal trombonist of the Baltimore Symphony, speaks of the effect of his parents and particularly his mother who was a pianist and choir director in creating a "strong musical environment - as strong as any could be". During Olin's early musical development, he depended on his mother as a counsellor for guidance and advice. Glenn Dodson, principal trombonist of the Philadelphia Orchestra, also mentions his mother's role in his early beginnings as a trombonist. Dodson holds fond rememberances of his early playing experiences with members of his family. Peter Landgren mentions that his parents encouraged the

musical activities for him and his brother, who also played the horn. Landgren recounts a characteristic example of his parents' influence:

I remember my dad waking my brother and me up at one time to hear a Dennis Brain "Mozart Horn Concerto" on the radio - and that was one kind of image in my mind that goes way back.

For Landgren, the significance of this anecdote encompasses not only the experience of hearing Dennis Brain, but also the support and influence of his father.

It seems that for these six respondents, a parent or parents filled the role of model, counselor, guide, or facilitator through their early artistic development. These are positive cases in support of the importance of a positive adult role model on imaginative and artistic behavior in childhood.

#### School Music Experiences

Positive musical experiences in school seem to be another influential source on the development of these players in terms of building a storehouse of experiences and memory images to be used in musical expression. Of the twenty-six respondents, sixteen make some direct mention of school music in describing their musical training and experience. This category was divided into two major types of influence. The

first of these deals with the nature of the music program and its goals in inculcating an attitude toward musical excellence. The second type of response deals with a more direct relationship with an individual teacher who was influential.

L. William Kuyper, who plays horn in the New York Philharmonic, makes a representative comment concerning the importance of a high quality school music program in developing a sense of dedication to musical excellence:

I always think of myself as a product of public school music education. I was very active and very happy in a very good school system in instrumental music, playing in the band and orchestra, and my high school band director was one of my teenage heroes....That early training in school - I look back at that as being really fabulous because, at an early age, we were impressed with the idea of high standards and good rudiments of music.

Nine other respondents make similar comments which attest to the importance of a high quality school music program in their development. It seems that vital experiences such as these have been stored for later use by these players.

The second type of response which deals with an influential individual is characterized by a comment made by Edward Kleinhammer, a retired member of the Chicago Symphony, about the effect that his high school band director had on his training:

He was a real, real, real fine musician besides being a taskmaster. He was like Vince Lombardi was in football and I learned so many things - how to make a scale interesting - how to make any two notes interesting. What I learned most from him was the art of balance and the art of rhythmic interpretation, which is very, very important.

Kleinhammer is unique in the sample because he never attended a university or conservatory. Kleinhammer credits his high school band director as a major influence in preparing him for a professional playing career. After high school, he won the audition for the All-American Youth Symphony under Leopold Stokowski and began his forty-five year tenure in the Chicago Symphony soon after. Six other players also make similar comments about the effect of a public school music teacher on their development. These teachers also served as models and guides for their students, facilitating their advancement in music.

One respondent in the sample reports that his earliest approach to learning music was essentially imagery-based. Vincent Penzarella of the New York Philharmonic comments on his beginnings in music without an actual instrument:

I was not brought into music the way most people were brought into music. I learned music, I did not study the trumpet. I studied solfeggio, dictation, aural harmony, theory and harmony, and all the arts away from the instrument....and if I understood what I was reading - if I could read music as

well as I could read a newspaper, then I would be using my imagination - my brain would not be working in the form of what did these words mean, but what is being said to me, and then I would formulate my own opinion.

This approach depended on developing the ability to conceptualize the printed page in terms of sound before acquiring playing skill on a musical instrument. Here a direct effort at transferring the visual image of the printed page into a mental representation of its auditory content provided the foundation of Penzarella's approach to music. This background directed him to focus on the content of the musical message - to develop a sound image of what the composer was trying to say - rather than to be concerned with the technical demands of the passage. When Penzarella decided to study the trumpet, he was given only a mouthpiece and a valve casing to practice the fingerings. He feels that this approach intensified his image of the sound and added to his security on the instrument:

All I could do is pick up the mouthpiece and buzz "do-re-mi" as my eye took the information from the page. So what did that do? It certainly didn't make me the greatest trumpet player in the world - but it did make me feel very secure about what I was doing and it certainly cut down my trial-and-error and trial-and-repetition, you know, because I knew exactly what it should sound like.

By buzzing notes on the mouthpiece without the trumpet, Penzarella had to make the connection between elements of his early training in solfeggio and dictation and the production of exact pitches on the mouthpiece. For Penzarella, this connection was the concept or mental image of the sound to be produced.

Penzarella also speaks of the importance of childlike imagination in his early musical experiences. He comments that he always found it easy to pretend "as if". The mental imagery literature suggests that this "as if" behavior in childhood facilitates the use of the imagination in later life. Penzarella states that "music was a by-product of those early years of being exposed to the right things that made you use imagery." His willingness to pretend as a child meshed well with his teacher's imagination-based approach to music leading to his early success on the trumpet and forming the basis for his own approach to brass performance.

### Listening Experiences

Twelve of the twenty-six respondents make direct comments about specific listening experiences during their early musical training. This finding tends to support the impression that these experiences are also stored mentally for future use. The fact that twelve respondents made unsolicited comments about

remembrances from their youth confirms the apparent strength of these memories. The primary types of listening experiences mentioned include radio broadcasts of orchestral music, recordings, and live performances.

Kleinhammer spent his early years listening to many orchestras on the radio and this experience gave him the impetus to pursue a career as an orchestral musician:

I knew I wanted to be a trombone player in a symphony orchestra. I don't have a formal education. When I got out of high school, I had to go to work. But I practiced all weekend and I practiced every night. I listened to all the orchestras. I listened to NBC every Saturday night. I listened to the Philharmonic on Sunday and Philadelphia on Monday. It was in my blood pretty well.

Penzarella also mentions the importance of "listening to the radio and using my imagination". Penzarella speaks of being able to identify specific orchestras based on their "signature of sound." He obviously got a very clear tonal image of these orchestras as he listened. Norman Bolter of the Boston Symphony also mentions the effect that listening to various orchestras had on his approach to brass playing. Bolter speaks of specific tonal characteristics of the sound produced by various orchestras around the country. These two players clearly focused on the



tonal qualities of these early listening experiences and have them stored in their minds.

Richard Sebring, a horn player in the Boston Symphony, speaks of using listening experiences in making critical judgments about issues of musical interpretation. His first horn teacher recommended that he listen to the "great recordings" as examples of expressive horn playing.

Finally, I started listening to some these old recordings that [my teacher] had told me about and started hearing some things I really liked and started making some decisions for myself as to what I did like and I tried to incorporate that into my playing.

Sebring mentions that he can still hear the sound of some of these great recordings and that he still tries to emulate some of the musical qualities that he heard in them.

Several other players talk about the effect of listening experiences during their early training. Dale Clevenger, principal horn of the Chicago Symphony, speaks of listening to orchestral recordings constantly while in high school. Clevenger comments that to this day, he will be reminded of some great performance or solo that he heard during his youth and yet, when he now listens to the same recording, he finds that he has idealized that performance in his own mind. Clevenger's experience is congruent with the concept of

the "imagination image" (Richardson, 1969) where certain memory images may serve as the basis for some new image which is enhanced or modified through the imagination.

Adolph Herseth, principal trumpet in the Chicago Symphony, speaks of the profound experience of hearing orchestral playing in his youth and its effect on his approach to the instrument. Herseth uses remembrances of these experiences to build his "concept" of a piece of music. Herseth relives these early experiences as part of his musical interpretation every time he performs.

Warren Deck, who plays tuba in the New York Philharmonic, sums up the importance of having a storehouse of experiences in building an approach to performance and pedagogy. Deck asserts that through his memory, he can hold onto an idea or experience for later use:

I just have a good memory...Even if I couldn't process or understand that information, I could remember it and just kind of hold onto it until, later on, it would fit into the puzzle.

Deck's comment is important because all of these early experiences can exert an important influence in later life. The ability to hold onto these experiences through imagery or simple memory seems to be important for at least twelve members of this sample and may have

played an important part in the formulation of their approach to musical performance. Arnold Jacobs summarizes the overall importance of his own diversity of musical experiences on the development of his approach to artistic performance:

I'm a product of a great variety of musical experiences....I have played the treble clef, the tenor clef, and the bass clef instruments in terms of brass, I have insight into singing, I have insight into the motor activity of the string and the accoustical patterns of it, so my particular background involves many phases of tone production and many aspects of musical interpretation. ....in other words, when you speak of imagery, I was getting this in many, many ways..

#### Formal Musical Training

The formal musical training of the subjects is rather evenly divided between university and conservatory training. Several institutions are well represented in this sample. Four of the subjects studied at the Curtis Institute in Philadelphia, three at the New England Conservatory, and two at the Juilliard School in New York City. Of the subjects who studied at universities, three studied at the University of Michigan and three studied at Northwestern University.

For many of the respondents, the university or conservatory was their first major contact with the orchestral literature. Aside from the obvious

importance of solidifying their instrumental technique, the performance of this literature laid the foundation for their careers as orchestral musicians. Actual high-level performance experiences in the conservatories and universities were considered to be important to their training. Also studying with artist faculty members served to crystallize their approach to the instrument and acquaint them with important orchestral excerpts.

For the majority of the players in this sample, some sort of mentor relationship developed during their years of formal study. Many players chose the institution they attended because they wanted to study with specific members of the artist faculty there. A detailed study of the effect of mentors appears in a separate section of this chapter.

#### Professional Playing Experience

The musicians in this sample have had a wide range of playing experiences. For the sake of analysis, categories of experience have been set at ten years or less, ten to twenty years, twenty to forty years, and more than forty years of orchestral playing experience. The following is a breakdown of orchestral experience in this sample: Four players have had less than ten years' experience, seven players have had between ten

and twenty years of experience, twelve players have had twenty to forty years experience, and three players have had over forty years of experience. While most of the players have played with more than one professional orchestra, some have had long careers in a single orchestra. Adolph Herseth is presently in his thirty-eighth season as principal trumpet of the Chicago Symphony. Edward Kleinhammer has just recently retired after forty-five years as bass trombone of the Chicago Symphony. Seymour Rosenfeld has completed forty-one seasons with the Philadelphia Orchestra and Arnold Jacobs is presently in his forty-third season in Chicago. David Fetter of the Baltimore Symphony has also performed in European orchestras. This diversity of experience makes this sample representative of a variety of influences and approaches to orchestral performance.

Nearly half (11) of the respondents were members of bands in the United States Armed Forces. Seven played in Army bands, two in the Navy, and two in the Marine Band. Several players mentioned having the opportunity to study with orchestral musicians during their years of service. Four players established relationships with individuals who they considered to be their mentors during this period and gained valuable orchestral training.

### Mentors

The importance of a mentor relationship was underscored by many of the subjects in this study. Twenty-two of the twenty-six players interviewed named at least one teacher or colleague as a mentor who was particularly influential on their artistic development. Mentors are individuals who serve not only as teachers, but as trusted counselors or guides. Sosniak (1985) states that the mentor relationship has fundamental importance in the artistic development of young musicians:

The most critical step in the transition from being a talented teenage pianist to becoming a professional performing soloist seems to be that of moving to a master teacher. (p. 59)

The mental imagery literature also underscores the importance of behavior models and goal images or "ideals". A number of mentors mentioned in this study fulfilled that role for their students. The literature on creativity suggests the importance of imitation as a beginning to true originality. These clues point to areas where the mentor's influence has been significant for the musicians in this study. The mentor relationship was also studied to determine if the mentor's approach to the instrument had any effect on the subject's use of imagery.

### Types of Mentors

Mentors are usually individuals who have reached a high standard of expertise in their chosen field. The subjects in this study named mentors who were their teachers, distinguished orchestral players, or colleagues at some point in their training or professional playing careers. Of the twenty-two respondents who named mentors, twenty named brass players as their mentors. Of these twenty, eighteen named players of the same instrument. The other two players in this group named players of an instrument other than their own. Two respondents named mentors who were not brass players. These mentors were musicians who had a more generalized influence on their artistry. The four subjects who did not name a mentor did mention individual performers or teachers who they respected, however, they did not seem to feel the closeness and trust that is usually involved in mentorship.

In twenty-one cases, the relationship between student and mentor was a direct one. In the majority of these cases, the student actually studied some form of music with the mentor, usually in the setting of the private studio. In other cases, the mentor relationship developed in the classroom setting. Several respondents named orchestral colleagues as

their mentors. For these players, the relationship was not a student-teacher one. Rather, the mentor led by example as a role model in orchestral brass playing. One respondent named players whom he had heard on recordings as his mentors. Dale Clevenger of the Chicago Symphony speaks of the effect of listening to orchestral recordings while still in the public schools:

My band director used to come up here to work with VanderCook College of Music and he'd come to concerts and bring records back of the Chicago Symphony and that's practically all we ever listened to and so in terms of being inspirational, being men that I wanted to play like musically and emulate and just guides all the way up...Herseth and Jacobs were my mentors.

An interesting facet of this particular relationship is that Clevenger actually had the opportunity to study with these men later in life and now sits in the Chicago Symphony as principal horn player with his mentors Herseth and Jacobs. Clevenger also comments on the influence of these men even though they play trumpet and tuba respectively rather than the horn. Clevenger focuses more on their musicianship rather than specific technical considerations of the instrument - the "art" rather than the "craft" of playing.



### Types of Influence

Mentors seemed to exert a diversity of influence on their students or colleagues ranging from very specific musical issues to more generalized attitudes about music. Sosniak (1985) suggests some ways in which a mentor could influence an aspiring student:

The [master] teacher's presence alone motivated, inspired, and instructed...the teachers provided role models of the highest order....The pianists learned attitudes and habits and ways of working that they often were not even conscious of learning, simply by being in the presence of the master (p. 61).

The most prevalent types of influence reported by these respondents dealt with instrumental timbre and musical interpretation. The significance of the mentor's influence on sound quality is substantiated by the fact that students have stored aspects of their mentor's sound in their minds. For some, this sound is clearly present as a vivid auditory image. Nearly half of those naming mentors reported having the ability to recreate the mentor's sound through imagery. Other players report that they mentally hear their mentor playing specific orchestral passages and use this as a guide in their own playing of these excerpts. Five of the mentors were credited with having a more generalized effect on the development of attitudes and approaches to musicianship. In these cases, much of

the teaching was done by example with the student internalizing the values and attitudes of the mentor and using these in his own approach to performance.

### Imitation

Several subjects in this sample mentioned the importance of imitating the sound of their mentor in developing their own concept of sound. A clear mental image of this sound seems to be a necessary point of comparison in this process of imitation. The player uses the image of the mentor's sound as an ideal or goal to work toward in actual playing. David Fedderly of the Baltimore Symphony speaks of imitation with regard to his mentor, Arnold Jacobs:

No matter how hard I try to imitate - which is, as far as I'm concerned, the first step in creativity - to become a great creator is to become first a great imitator. No matter how hard I try, I don't have Jake's sound. I come fairly close - closer than a lot of people do, but it's not Jake's sound.

Fedderly reports having a clear visualization of his mentor as well as an aural image of the mentor's sound. He holds this in his memory and obviously uses it as part of his approach to performance. Fedderly confirms this in his response about Jacobs:

I can imagine, after all this time, Jake sitting in his gray chair with the arms on it, next to me, saying "This is what I want" or taking my horn. I have that picture that will never leave - nor when he actually took

the horn out and played will that mental picture ever leave.

This passage exhibits a certain vividness of detail in Fedderly's visualization that suggests the clear presence of this image in his mind's eye.

Douglas Yeo of the Boston Symphony can also create a clear image of his mentor's sound. He views Ed Kleinhammer's approach to bass trombone playing as an ideal for which to strive:

I can hear his sound and I can hear his voice... I can hear it vividly...I consider aspects of his sound and playing to be sort of the Holy Grail that you're trying to reach for.

Yeo displays pictures of Kleinhammer in his practice studio and gets the feeling that "he's always looking over my shoulder." Yeo seems to use these pictures of Kleinhammer as a stimulus to recall his experiences with his mentor.

### Modeling

Another way in which these players have learned from their mentors is through modeling. The mentor is used as a model in some aspect of approach to playing which is followed by the student or colleague. In the case of modeling, the student may not be seeking an exact copy of the mentor's approach, but chooses aspects upon which to base his own playing. David

Fedderly speaks of modeling some aspects of musical interpretation after Arnold Jacobs:

I still to this day think "how would Jake play this thing" and I want to play it that well, and there again, comes the visualization and having worked with him for ten years like I did, I know what he plays things like and I just have to sit down and that's how I'm going to play it.

Fedderly's image of Jacobs playing specific passages is clearly influential on his musical interpretation and he uses Jacobs as a model in his orchestral performance.

Vincent Cichowicz, formerly of the Chicago Symphony, speaks of the influence exerted on him by Adolph Herseth, the principal trumpeter in Chicago:

Another person who I think was a strong influence in earlier years was Bud Herseth who came to the orchestra and was a sensation almost from the very beginning and, in a sense, really sat as a model for all of us to see the potential of the instrument.

Cichowicz experienced Herseth's playing on a daily basis as a member of the same trumpet section and regards Herseth as a model in his own approach to orchestral playing. Philip Smith of the New York Philharmonic bases much of his own aural concept of trumpet playing on models set by his two mentors, his father and Adolph Herseth. Smith mentions the importance of sitting in the trumpet section of the Chicago Symphony alongside Herseth in his preparation

for the position of principal trumpet in New York. Smith uses aspects of his father's cornet sound and Herseth's orchestral trumpet sound to build his own individual approach. Smith can recreate these sounds in his mind as auditory images:

In regard to my dad - when I play cornet, I can always hear his mellowness of sound...his sound is still something that I would strive to achieve. So when I'm on cornet, I hear that sound. When I'm on trumpet, there are times, especially when I first came to New York, when I would very much try to sound like I thought Bud [Herseth] would sound on something. I would have an image of him playing Mahler Fifth or something and try to do the same thing....I think as the years have progressed, I'm developing more my own aural concept at this time which is a combination of everything I've heard.

Smith makes an important illusion to building an individual approach to sound based on models and past musical experiences. This process depends in part on using a storehouse of personal musical images and experiences in matters of interpretation and expression. Randy Gardner of the Philadelphia Orchestra elaborates on this point by suggesting that each individual must draw on a variety of experiences in building an approach to brass performance:

I think that each of us has to develop an individualized and very specific image of how we want to sound...I think that each person needs to take a little from here, a little from there and wrap things up into an individualized package that says "this is the way I would like to hear my horn playing".

Gardner also speaks of using a variety of listening experiences as models in building an individualized image of how a horn should sound.

### Mentors as Exemplars

Some players use images of their mentors as exemplars for their own behavior as professional musicians. In this instance, a more generalized approach or attitude toward music manifested by the mentor serves as an example for the player. These players use auditory images of their mentor's voice, visual images of the mentor's appearance, and specific imagery approaches learned from the mentor in various aspects of performance.

David Fetter of the Baltimore Symphony seems to use his mentor's general approach to trombone playing as an example in his own approach:

Emory Remington was quite influential on most people that studied with him. He had a strong personality and was always called "teacher and friend." He had a very simple approach to the instrument - that is, you just play it in an easy manner....He had a raspy voice and he sang more for the musicality and inflection...and that's how he got what he wanted out of somebody - by influencing him with his singing.

Fetter also mentions that he can still hear the sound of Remington's voice in his mind and that Remington's relaxed approach to playing was at the core of his own approach toward performance. Cichowicz also speaks of

the example set by another of his mentors as far as developing an attitude toward musicianship:

Renold Schilke obviously was a very strong influence particularly from the standpoint of his enthusiasm and his dedication to the instrument and to music. He had a way of instilling a sense of enthusiasm for playing...I could never take away that strong influence and love for the instrument and dedication to music which, I feel, was a very strong part of it.

Cichowicz' remembrance of Schilke focuses more on a feeling that he got from the man rather than from a specific musical issue or technique. Cichowicz seems to be able to feel these qualities that Schilke exuded to this day.

Another aspect of exemplifying the mentor's approach is the use of actual imagery strategies which were suggested by their mentors. Bill Kuyper of the New York Philharmonic speaks of the effect of his mentor, Ward Fern, in suggesting the use of images in musical interpretation. The following response offers an example of this kind of thinking:

He was constantly using images - "the downbeat was like a bird landing on a telephone wire." And we would walk together and it was just an active and vivid mind that this guy had.

Warren Deck of the New York Philharmonic comments on the use of images in interpretation that he learned from his mentor, Abe Torchinsky, at the University of Michigan. Deck offers a specific image that Torchinsky

used for a tuba passage in Richard Strauss' "Till Eulenspiegel". The image was one of Till awakening with a yawning sound. Deck comments that Torchinsky was always using these sorts of images in his teaching and that, as a result, these have been a resource in Deck's own playing.

Another interesting aspect of mentorship in this study is the fact that both students and their mentors were interviewed as part of the sample. This allowed for the study of similarities in approach and in attitude which were actually handed down from the mentor to the student. This direct influence is substantiated by the use of similar turns of phrase by both the mentor and his students. For example, Arnold Jacobs comments that professional players have less of a need to warm up "because they never cool down." Two of Jacobs' students use this exact phrase when they speak of warming up. Another example of direct influence from mentor to student is exhibited in Adolph Herseth's approach to music as "telling a story". This same view is expressed by other players in this sample. Specific cases where the mentor has had a direct influence on the student will be mentioned in appropriate sections of this chapter.



### Warm-Up

The reason for beginning the discussion of actual playing processes with the warm-up was to determine the approach that each player takes from the time he picks up the instrument each day. Players were asked if they used a regimented warm-up and what they focused on mentally when they picked up the horn. The following sections will discuss these two aspects of the warm-up process for these players.

#### The Warm-Up Routine

The question about the use of a routine was asked in order to determine the possible importance of a regimen or sequence of activities in the mental preparation of the player. Weast (1979) cites the importance of using a "patterned routine" in the warm-up so that the player can "measure his condition against a constant" (p. 34). This particular sample of players is divided in their approach to the warm-up. Some players advocate the use of a warm-up regimen that, in the words of Vincent Cichowicz, "reacquaints them with the instrument everyday." The nature of these routines varies. Some players use the same daily exercises while other players use the same order of exercises but vary the actual musical material on a day-to-day basis. The important point for these

players is the sequence involved in their preparation for playing (see Weast, 1979). By using this sequence, they maintain continuity in their playing from day to day. The other sentiment regarding warm-up is advanced by twenty-two of the respondents who use a non-standardized approach to warming up. These players base their initial daily approach to the instrument on day-to-day requirements or an ongoing assessment of needs in their own playing. The extreme view of members of this group is that there is no need for a professional player to warm up at all because they do such a volume of playing that they never really "cool off" (Jacobs). The following discussion will summarize both standardized and non-standardized approaches to the warm-up.

The standardized warm-up. Six of the respondents spoke of some form of standardization in their warm-up routine. A specific sequence of exercises seems to give these players a point of reference for their preparation which builds continuity in their playing. Peter Landgren offers a representative response regarding regimentation in the warm-up:

I'm a warm-up fanatic...I have a regimented warm-up - I alter it every now and then just to give myself freshness, but I always have the same ingredients in it.

His word "ingredients" suggests this sequence of preparation. Landgren uses this sequence of ingredients as a warm-up for practice, rehearsal, and performance to help insure consistency in his playing. Vincent Cichowicz responds in agreement with these comments concerning the mental aspect of a standardized warm-up. Cichowicz cautions that a ritualistic warm-up without conscious or "subliminal" thought can turn into ritual for ritual's sake:

The initial stages of playing are kind of a review process...And I feel that that process goes through my mind very briefly - maybe subliminally...taking care that observation is taking place while we're playing - and you're not just going through the ritual to have this group of exercises without that much active, connected thought to it.

Cichowicz' comment is particularly revealing in that he mentions the need for "observation". This observation and monitoring allows the routine to build continuity by allowing players to compare the actual state of their playing with a mentally-held constant or ideal. For Cichowicz, this ideal is an image of the sound to be produced since that is his primary mental focus.

The non-standardized warm up. The large majority of players in this study utilize a non-standardized warm-up in their own playing. Twenty-two of the twenty-six respondents fall into this category. Two different views of the non-standardized warm-up prevail

among these players. The first view represents those players who base their daily warm-up on the particular demands of playing. These players use some sort of warm-up, but the sequence and content of the materials varies greatly depending on either the state of their playing or the repertoire under rehearsal. Decisions about these requirements are also based on some point of reference or comparison between "what is" and "what should be". The second view is advanced by players who do not believe in warm-up per se. Five players downplay the need for professional players to warm up at all. Arnold Jacobs states:

Being professional players, full time players, we never cool off. Warm-up is coupling ourselves to the instrument at the start of the day. My philosophy is to always return to the norms...and search out my finest quality of tone based on conceptual thought, but I try to sound my very best at the very first note....in my brain, I have worked for very high standards of musical concepts and sounds and I start with the norms and maneuver them into the extremes.

Jacobs mentions "norms" in terms of "musical concepts and sounds" which he utilizes to help him search out his very best sound on the first note. Jacobs defines "musical concepts" as mental images of the sound or the song in his mind and he uses these images for comparison as soon as he picks up the instrument. For Jacobs, concentration on these "norms" allows him to maintain continuity in his sound. Dale Clevenger and

David Fedderly echo the sentiments of their mentor, Arnold Jacobs, as they speak about the warm-up. They both use the phrase "we never cool down". This is one instance of a direct influence from mentor to student in shaping an approach to playing.

Clevenger and Penzarella speak of using tunes or melodies in warming up. The importance of using these tunes and melodies is to activate the connection between the stimulus of the song in the mind and actual playing. Fedderly also speaks of "working tunes on the mouthpiece" when he first picks up the instrument to play. The concept of mouthpiece playing as explained by Fedderly deals with the cultivation of musical concepts (tunes), and by playing the mouthpiece alone without benefit of the accoustical properties of the instrument, the player must use an auditory image of the melody to guide the production of sound. Fedderly also speaks of looking for a specific and distinct sound in mouthpiece playing. He has stored this exact sound in his mind as a clear auditory image.

#### Mental Focus in the Warm-Up

Another crucial aspect in the warm-up process is the mental focus of the players as they begin to play. One question in the guide addressed this issue - "when you first pick up your instrument, what do you attend

to or focus on in your mind?" This line of questioning brought about some interesting results which were unexpected prior to conducting the interviews. A dichotomy of responses began to emerge as more and more players were interviewed. The prominent areas of mental focus seemed to be sound and feel. This is an issue about which some of these players have given a great deal of thought. Some players seem to focus on the feel of the embouchure and the instrument while others attend principally to the sound that they wish to produce. A third group of players tries to balance their focus on both of these perceptions. Other interesting points of focus include the use of air and the importance of the player's frame of mind during the warm-up.

The mental focus of these performers in the warm-up process can be summarized from the standpoint of the mental imagery literature. Imagery seems to play an important role for these players regardless of their individual point of focus. For those that base their approach to the instrument on feel, there must be some kinesthetic sense or awareness that can be used as a point of comparison. This reference interacts with the sensory cues felt during actual playing giving valuable information to the player so that necessary adjustments can be made. For those who focus on sound,

there seems to be an ideal sound in the form of an auditory image which serves as a reference to be matched by the player. Those players who focus on the airstream must still be able to access some kinesthetic sense or image of what a proper airstream feels like. Still other players use certain imagery-related strategies to prepare mentally for playing. These rely on the imagination to place the warm-up in the context of an actual performance. The following sections include representative remarks about mental focus which illustrate the potential of imagery use in the warm-up.

Feel. Players who focus on physical sensations or "feel" seem to be concerned with finding a comfortable or relaxed approach to playing as they warm up. There are many references in the mental imagery literature which attest to the importance of relaxation as a precursor to imaginative performance in various fields (Samuels and Samuels, 1975, for one). Ristad (1982) and Grindea (1979) apply these same principles to musical performance. These players cater to the physical aspect of playing a brass instrument and focus on a generalized physical feeling as well as the area where they connect with the instrument - the embouchure (the muscles of the lips and facial mask). They seem to compare the physical feeling as they begin to play

with some optimum sensation based on their past playing experiences. Kinesthetic imagery can be important here in giving the player a viable point of comparison. Recalling this kinesthetic image could serve as a guide in achieving the proper feel or "groove" in the embouchure. Donald McComas tells of the importance of feel in his initial approach to the warm-up:

I try to start with a relaxed feeling and try to listen very carefully to the attack, the sustained part of the tone, and the release of it....I try to think about my air flow, try to breathe deeply and achieve a comfortable feel while I'm playing.

McComas also speaks of "listening" for certain aspects of sound, but his primary focus is on the feel of playing. He goes on to state that the two principles - sound and feel - are almost synonymous and when a good feeling is achieved, the sound will usually be good as well. Richard Sebring speaks of a process of assessment which is associated with the feel of playing the horn:

I warm up to a certain point and think how does my lip feel? How does it feel today?...Are things flowing easily or does it feel stiff from a hard concert the night before or something like that.

He alludes to the problem of stiffness in the embouchure which is mentioned by a number of other players. Sometimes a period of demanding playing can cause the embouchure to be unresponsive. Some players



focus on aspects of the physical sensation of playing to regain flexibility. Several players regard the warm-up as a loosening-up process to produce responsiveness in their playing. Seymour Rosenfeld and Warren Deck speak of the importance of loosening up in preparation for any eventuality in playing. Once they have established their lip flexibility, however, their primary focus moves to the sound that they are making.

Sound. The majority of players in this sample fall into the category where sound is used as the primary focus. There seems to be two important categories associated with the use of sound as the mental focus. Some players seem to react to the sound as they are producing it. Glenn Dodson concentrates on the sound he is producing, taking a single note and making as "pleasant" a sound as possible. Dodson seems to react to the actual sound, listening for various "ingredients" to make it as good as he "technically and conceptually can." Others utilize some kind of ideal sound as a guide in their playing. William Scarlett focuses on "the end result - what's going out to the audience - the tone is the first thing that you think of."

A number of respondents detail their perception of differences between sound and feel in their playing.

James Olin offers a representative perspective on the question of sound and feel in warming up:

It's important to feel good, of course, but really from day to day you have ups and downs. You can't expect to feel good everyday....You need to bypass the feeling when you play...and think "how do you want to sound"....What I try to do is to visualize or auralize or whatever what I want to hear coming out of my horn.

Olin mentions a mental process which he calls visualization or auralization that he uses to focus on a sound ideal as a guide in his playing. He uses an auditory image of the sound that he wishes to produce to guide him in playing the instrument. He also downplays the importance of feel based on the rationale that one must play well no matter how one feels. Olin refers to "feel" as associated with the mechanics of the embouchure and production of sound on the trombone. Arnold Jacobs elaborates on this point with the following comment:

It doesn't have to feel good to sound good. ...You get it to sound good, and then it will start to feel good. You don't go for the feel, you go for the actual musical product.

Jacobs' comment presents a different approach than that used by players who work to achieve a proper sound by focusing on the physical aspects of playing. Jacobs contends that by focusing on a musical "product" or ideal, a good sound is established leading to the proper feel. It is quite possible that players can use

either a kinesthetic sense or an auditory one to prepare them for playing. Edward Kleinhammer supports the idea of going for a musical product or ideal by focusing not only on sound and tone production but also on the musicality of the playing:

[I focus on] the end result - being a fine presentation of music - of creating something...to make poetry - to make a beautiful sound.

Sound and feel. Some players balance their mental focus on both sound and feel. These players look for the optimum sound with the greatest efficiency or ease. Randy Gardner speaks of the importance of achieving the appropriate sound in a relaxed manner during the warm-up period. When asked "what goes through your mind as you warm up", he replies:

The type of sound that I'm producing and the ease with which I can get it. If I'm having difficulty getting a pure sound, for instance, I'll spend a great deal of time just getting my lip to produce that kind of sound.

Gardner also mentions the importance that he places on sound in his practice. He uses a specific strategy to develop his tone production which involves the use of imagery. This strategy will be discussed in greater detail in the section on concept and tone production later in this chapter.

Donald Harwood also stresses this balance between sound and feel when he says "I have a concept of sound in my head, but feel is very important." Philip Smith starts his focus on the feel of playing but moves quickly into the area of the sound that he is producing:

I know the first thing I'm conscious of is the feel - how it's feeling. Do I need to take it easy or slow here...just trying to make the muscles feel physically comfortable? I try to listen to hear if there's any fuzz or tenseness in the sound, and if there is, trying to pinpoint where it is and trying to relax the sound and open it up and flatten it out.

Smith monitors the sound he is making, compares it to his concept of what it should be, and uses relaxation to adjust the sound quality as well as the feel. Even during the warm-up, Smith is focusing on the demands of his position as principal trumpet and works to establish or maintain his ideal of the proper sound for orchestral playing:

I get into the sound, constantly trying to think in terms of a bigger sound all the time. One of the dangers of being a first trumpet player is that your sound tends to get thin and edgy. You're constantly trying to stay on top of a loud section and you're being pushed and you tend to start forcing things sometimes. And to try to keep that open and keep playing it back - that's basically what I'm trying to do. The imagery is just trying to think as big a sound as I can.

Smith creates a mental image of the sound that he wants to produce and uses that to guide him as he warms up.

Air. Another important point of focus during the warm-up is the use of air. This is a crucial aspect of brass playing and gets deserved attention from a number of players in this sample. Paul Kryzwicki offers a representative comment about the importance of air:

I think a great deal about air when I play - whether it's moving, whether I'm taking it in properly, whether I'm exhaling properly, whether I'm using it efficiently on the instrument.

Peter Landgren comments on a strategy that he uses to combat the negative aspects of feel:

I'll say, as a performer, the most important thing is air. If I don't have the airstream, I'm not going to have the performance - no matter how my lips might feel that day....So basically, what I think of in the warm-up is just having a relaxed air column, a relaxed structure.

Landgren focuses on the various aspects of breathing to facilitate all aspects of his performance. He uses this focus to help him downplay the way that his lips feel and to build consistency in his playing.

Warren Deck focuses on the use of air to promote a linear approach to playing. He feels that by blowing through notes he can achieve his best sound:

I try to think in a linear fashion - not vertically, but horizontally and blow through things...I definitely think of an airplane trying to get off the ground and if it

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doesn't get off the ground, there's something wrong. And I usually find that the thinking is vertical rather than horizontal.

He uses the visual image of an "airplane trying to get off the ground" in order to crystallize this thinking.

Frame of mind. Some subjects in this sample speak about mental warm-up. They cite the player's frame of mind as an important aspect of preparing for performance. Donald Tison states:

Warm-up, I think for me, is more mental now - or psychological, you might say - than physical...I can come in to a concert a half hour before and my mind is on other things. ...I finally nurse myself into the frame of mind of playing a concert...You almost psyche yourself up, and by the end of my warm-up, I'm playing a little more bravura and with confidence - like what you've got to present when you go out on stage.

It seems that Tison uses his imagination as his warm-up proceeds to simulate conditions of the actual concert and this is reflected in his playing. David Fetter supports Tison's statement by commenting on the importance of "clearing the mind" in the warm-up process in order to think about the music.

Adolph Herseth goes even further in describing his frame of mind as he warms up when he uses his imagination to put his warm-up exercises into the context of actual performance:

I do play some scales, but I try to play them as if they were out of the context of a solo presentation rather than just a mechanical

turning of the crank....as if it were a cadenza out of a Herbert Clarke solo... you've got to be trying to communicate to an imaginary listener or audience out there. You're telling a story.

Herseth imagines himself to be before an audience communicating a musical message as he warms up. This kind of imagery is a powerful tool for Herseth as he prepares to play.

Douglas Yeo offers a novel approach to the warm up process in speaking about the importance of warming up the mind as well as the instrument. Yeo stresses the importance of reading music during the warm-up in order to establish the connection between the printed page and the actual sound.

These varied responses to the mental aspect of the warm-up process set the stage for a detailed account of the use of imagery in tone production.

### Tone Production

One of the major objectives of this study was to explore imagery-related phenomena experienced by these players in the area of tone production. A review of brass texts (Johnson, 1981; Severson and McDunn, 1983; and Weast, 1979) pointed to potential uses of imagery in the refinement of tone production in brass performance. The following summarizes the general view

of the present sample regarding this aspect of performance.

"Concept" is a term that is used pervasively by brass players to denote some kind of mental representation of the sound character or timbre of their instrumental performance. It seems that this "concept" is made up of an image of the sound, verbal descriptions that refer to certain sound qualities, musical knowledge, and musical experiences which include training (or "craft") as well as listening and performing experiences. The sound aspect of this "concept" is represented as a sound in the mind's ear. This sound could be called an auditory, aural, or sonorous image which approaches the actual sound in vividness, clarity, and detail. Verbal descriptors which are representative of actual sounds are also stored as part of this "concept". Rememberances of past experiences including training, listening, and performance experiences as well as real-life experiences which associate with specific musical experiences or occur in response to musical experiences also make up an important part of this "concept".

"Concept" functions in relation to actual playing in the following ways. Auditory or sound images are used as a guide in producing a desired tone quality or effect. These images may also be used to bypass



mechanical or technical aspects of playing. Reliance on the image allows the player to focus on the musical content rather than the methodology of playing. Images can be used to create an "ideal" or goal which the player strives to attain in actual playing. In this case, the image of the goal itself drives the process of refining actual playing in attempting to match the ideal.

Imagery can also be used to assist in changing tone quality or effect in playing. Players store and recall different images for different sounds they wish to produce. The rationale here is that a change in imagery can be used to guide the change in sound in actual performance.

Various strategies may be used in the creation or manipulation of this "concept". Some players deal entirely in terms of sound with few associations in other sense modalities. Other players use visualization to assist in conceptualizing sound. These visualizations include pictures or graphic representations of the sound. Others use aspects of color which they associate with certain sound qualities. Kinesthetic associations are also made with certain qualities of sound. Some of these are related to spatial aspects of the sound or to shapes that the sound can take. All of these strategies are

imagery-related in the sense that some form of image is used to make a connection between the sound quality and perceptions in the other sense modalities. The following discussion offers representative statements from players in this sample regarding the salient features of their "concept" of tone production.

#### Sound as an Auditory Image

The first issue associated with "concept" that was considered in the interview was the respondents' ability to recreate their instrumental sound as an image in their mind's ear. Twenty-five of the twenty-six subjects reported having this ability. These players reported having this ability rather matter-of-factly. Few players even equivocated about this issue. Vincent Penzarella refers to a player's individual sound as part of the person. He states:

The sound - that's your personality. That's the way you walk into a ballroom with all those beautiful women, you know. If you look well-dressed and well-groomed, you're going to attract attention...I like to think gorgeous sound right away - that's the first thing that occurs to me.

James Olin and William Kuyper agree that a personality is part of their sound and also reflected in it. Kuyper's remark points out the close attachment between a player and his concept of sound:

When a conductor interferes and says "No, that's the wrong sound", that's a tough

moment for the performer - the musician - because the sound we come up with is something that is very personal and special to us.

Because of this close association with the sound that they make, it is not surprising that these players can hear this sound so readily. Also, tone production is something that these artists have focused on since their early training so they are very attuned to hearing it.

The degree to which individual players were able to "hear" this image of their sound varied. This finding is congruent with Richardson's (1969) assertion about imagery abilities in the general population. Variations in clarity, vividness, and detail of imagery can be expected with any group of individuals. Some of the players in this sample reported that their sound image was present in complete detail, while others reported hearing a more generalized image which lacked some of the features of the actual sound. Vincent Cichowicz includes many aspects of playing in the sound that he hears. He states that "it's not simply just the color or beauty, it's the clarity of attack, the evenness of slurs, and the ability to change registers and dynamics." Charles Schlueter, principal trumpet in Boston, also conceptualizes the sound as "not just the pitch of the note, but the dynamic, the intensity,

the length - all the things that are involved." Donald Tison states that while he can hear his own sound, "it doesn't have all the details there."

### Verbal Descriptors

Players seem to store certain verbal descriptors which are associated with or "tagged" to images of the actual sound that they make. As players discuss their "concept" of sound, they use certain terms to describe it. These descriptors often relate sound qualities to characteristics from sense modalities other than the auditory. Players in this sample mention "dark" sound (Fedderly and Harwood), "open" sound (McComas), "warm" sound (Rosenfeld and McComas), and a sound that has a "glow" (Kryzwicki). Kuyper uses onomatopoeic descriptors for qualities that he looks for in his sound:

[It is a] matter of liveliness [in the sound]  
- the "ring" or the "ping" or the "ding" -  
those kinds of things - to get away from  
anything that's dull or muffled.

One telling feature of using descriptors to convey a sense of instrumental tone quality is the fact that several of these players seem to fall short, by their own admission, of being able to find the right words to describe an aural sensation of the sound. Peter Landgren states:

I would consider it more of a sound than a description, because to describe it then - I can't! I could say full, rich, yet focused - but that's not how I have it pictured in my mind.

Landgren goes on to say that his mental representation of the sound is present as a sound:

I have a concept in my mind of what I want to sound like and I can hear it now - I can hear it if I take a week off....the concept is always there and even after a week off, I can come back and sound exactly the way I want to.

Donald McComas makes a similar statement about the difficulty of translating characteristics of sound into words:

I think it's important for all of us to have a concept, but it is difficult to be able to verbalize something that is a physical feeling and a way of producing sound....To try and find words that will fit is difficult for me - in describing myself and in teaching.

These comments seem to support Weast's (1979) assertion that a musician must "come to know in an aural, nonverbal sense, what he wants to sound like" (p. 3). The difficulty expressed by these players in articulating their concept through words is an indication of the importance of holding onto a strong auditory image of tone production in their minds.

#### Creating an "Ideal" Sound Image

Another important feature of a player's "concept" involves the creation of a mental "ideal" to be used as

a goal in performance. Donald Tison speaks to the importance of this issue:

I do think it's important to have some kind of superior sound in your mind that you're striving for. That's the whole way to develop as a trumpet player - or as a musician. You always have to have something better in your mind than you can actually achieve. As soon as you don't you're not going to go anywhere.

Other players also support this view in their responses about the nature of "concept":

You've got to hear the ideal sound - the ideal sound in your head that you want... You've got to keep hearing that and if other thoughts come in, you've got to try to push those out and concentrate on what it's going to sound like. (Richard Sebring)

I think when I play something there's a way I would like it to sound - I'm not going to tell you what it is, but it's a very strong auditory image. (David Fetter)

I was guided and still am guided very much by what I have in my inner ear as an ideal horn sound. (Randy Gardner)

You know what the end result is supposed to be when you're playing a solo or when you're playing in the orchestra. (Glenn Dodson)

Dale Clevenger talks about ideal in his discussion of the "art" versus the "craft" of playing. Clevenger sees "craft" or technique as the means through which the player conveys the "art" to an audience. Clevenger uses the "craft" to communicate his "ideal" to others:

The art form - musicality - the music - the line - the effect - the end result - the ideal that's up here in my mind - dictates what I do with the craft and not vice versa.

The acquisition and refinement of this "ideal" of sound comes from a variety of musical experiences. These experiences include influences from others - mentors and other musicians - and personal musical experiences as listeners and performers. The subjects in this sample have stored a variety of these experiences as part of their "concept" of brass playing. Seymour Rosenfeld relates the following anecdote about acquiring his "ideal" in trumpet playing:

I got your "concept" way early - one day - one Sunday afternoon. I used to take lessons from Schlossberg...One day during a lesson, Harry Glantz walked in - Harry was playing first trumpet in the New York Philharmonic at the time - I was twelve or thirteen years old - he picked up my cornet and he played it and I'll never forget it...he practically straightened out the cornet and there was nothing held back and it was the concept that I try to follow to this day.

Adolph Herseth also remembers an experience from his youth which contributed to his early concept of brass playing:

All of us play to a concept - an aural mental concept, of course - and my first concept was a high school band director I had who was a good cornet player...[and when he played for me, I said] "Ah, that's how I should sound when I play that march, okay". It's very important to have those in your mind, you know. This is before picture images might come to you - although even at that time you get some feeling of that.

James Olin speaks of a variety of influences in developing an ideal concept of sound on the trombone:

I think where I get the mental image is from my experience in my lifetime of hearing because I can still remember a concert that I heard by the Chicago Symphony, say, that impressed me. I can still hear something that I'm trying to produce. The same with teachers. If a teacher plays for you, that can be the best example in the world. No words can describe it.

Sebring comments that hearing other players in the Boston Symphony is an inspiration in developing his concept of an ideal sound. He tries "to follow their lead" in terms of "sound, musicality, and feeling."

Once an "ideal" is acquired, it is subject to constant refinement. This refinement takes place as performers add to their inventory of musical experiences. Warren Deck speaks of the process of constantly upgrading one's ideal in performance:

The problem is that as soon as you get it to the point where you can produce your ideal, after a while, you think "hey, this is great, I'm really playing well."...You'll go to a concert and you'll hear somebody do something, a little aspect of something...and you'll go back and you can't do it - the ideal just went up!... This is a mental process - it's the nature of progress.

Randy Gardner agrees with Deck in realizing that his ideal regarding sound is "always open for rennovation" based on his current musical experiences.

Because of the personal nature of these varied musical influences and experiences, the resulting ideal



becomes an individualized concept for each player. Herseth states that "everyone must have this in a personalized way in their playing." Other respondents comment on this aspect of concept. Donald Harwood states:

I feel that it's important for each player to have their own individual sound...I hear many players - many trombone players especially - they seem to come off an assembly line - they all sound alike and that's what I think we have to be careful of as far as the art of music is concerned.

Donald Tison brings up an important point about ideals and individualization. Tison realizes that each player also has specific physical structures which may affect the musical outcome, no matter what the concept is:

My conception of how a trumpet should sound is the way Bud Herseth sounds in the orchestra or the way Maurice André plays. Now I can hear their sounds in my mind, but I'll be damned if I can get them because they're them and I'm me.

Tison's concern takes issue with the view that all one has to do is to "think" a beautiful sound and it be reflected in actual playing. Certainly this process is much more complex and requires coordinated training in all aspects of playing before even the most highly developed concept can take effect.

#### Use of Concept as a Guide

A major point in this discussion involves the question of how a mental image or concept functions in

the actual playing process. Players in the sample suggest that the concept or ideal serves as a guide for actual playing. Arnold Jacobs is quite articulate on this issue and calls his concept "musical products". These products are detailed images of the musical message that he wishes to impart. He considers these products as stimuli for actual playing. The following response details Jacobs' philosophy on this issue:

We have to be very very musical in the head. The ability you call imagery is the ability to conceive sound that has to come out in terms of - instead of vocal chord activity in the larynx, we do it by vocal chord activity in the trumpet.

Jacobs refers to the process of cultivating an ideal sound in his mind and using that sound in a near automatic fashion on the instrument. He compares this process to the process of singing. Jacobs suggests that the conception of sound serves as a stimulus for a conditioned response on the instrument:

This is a source of stimuli and a very definite reflex follows that. You have to go to the end product...we work based on products, not methodologies. In other words, you want the sound (He sings) - that's a product...You definitely have to have motivations or products of what you want your body to accomplish - not methodologies in terms of tissue activity.

Jacobs feels that the two most important ingredients in tone production are the development of an auditory image of the sound in complete detail and training or

conditioning in bringing that sound into reality on the instrument. These are the two elements of Jacobs' approach to musical performance, which he calls "Wind and Song":

The brain is constantly being trained in patterns of recognition and recall and the ability to conceive sound...we always keep the study of sound and phrase dominant over the study of tissue and brass.

Jacobs uses his concept or "musical product" as a direct source of stimulus for a conditioned reflex which is manifested as sound. Jacobs asserts that through repetition and conditioning, the body is able to produce the musical product which is represented in the mind as an image of the sound:

I set standards for sound - I set standards for phrase - for musicianship - the ability to be a storyteller in sound...I play up the ability to have psychomotor activity - to be able to have a story or a message that you deliver to an audience. It's always based on a conditioned response in the embouchure of stimuli in the brain.

Jacobs also monitors this process continually. He feels that this monitoring is actually a low-level awareness which manifests itself when something goes wrong:

You see the great joy of making music - talking with your horn and so forth - this [monitoring] is something that goes on - let a little mistake come in there and boy, the little red light goes on in your brain, you know.

Jacobs recounts his experiences of coming back to orchestral playing after surgery and dealing with differences in his physical capabilities in his playing:

...all my physical awareness had changed and all the red lights were going on in the brain all the time - so I learned to lie a little and cheat to make the audience think that I felt great...I just flooded my brain with concepts as though I were a well person.

These "concepts" that Jacobs used were images of the music that he was trying to produce. He feels that these concepts have the power to direct the physical side of performance and can transcend the feel of actual playing:

I took charge of my music and there's a tremendous ability to influence your physical structure based on how you think and so I had very positive musical thoughts - very positive thoughts of what I was trying to do as an artist based on my memories of the past and based on whatever potentials I had left.

In this passage, Jacobs offers a unique view of what he considers to be the power of the musical concept. He relied on this sound image to carry him through a very traumatizing illness without a significant effect on the music he was making with the orchestra.

Other players in this sample follow Jacobs' lead in their view of the use of "concept" as a guide in playing. Randy Gardner puts the whole issue into a more succinct framework:

I like to use the slogan - "The music plays me." The music that I have inside of my head is what plays the horn and that's what guides the product that comes out.

James Olin states that he uses his ideal concept, the sound in his mind, as a guide and explains it's function in the following passage:

Figuring out what I want to do musically with something really helps me to bypass the mechanics of how I do it...what matters is that you do it - that it sounds great. The end product is all that matters.

Olin speaks to the importance of using the image of an ideal sound as a goal - using the desired end product as a model to strive for. He also downplays the importance of the technical aspects of playing in doing this. Norman Bolter also speaks of subordinating the manipulation of physical aspects of playing in favor of the musical content. He states that this process has become automatic for him:

They will happen naturally because - if all of a sudden the feeling of the music goes like this, the physiological aspect to create that takes place and the mental image is taken care of with the musical image.

This approach puts musical performance into the context of "natural learning" - where goals are used to guide the learner to a desired end. Karl Pribram, a neurosurgeon who has pioneered the study of brain function at Stanford University, substantiates this notion of using goal imagery to guide physical

performance, while declaring that the use of imagery to direct discrete muscular actions would be an impossibility (Pribram, personal communication, August 14, 1986)

Randy Gardner reports on the use of a strategy for matching actual playing with an image of an ideal instrumental sound. Gardner used this strategy both as a college student and a professional orchestral musician to guide his playing into an approximation of his ideal:

I would find a room in the music building - and I generally liked to do this work late at night when no one was around...I would turn the lights off and I would just play single notes in going for the sound I had in my head...I would listen for the characteristics that I considered ideal in my ear and gradually, without trying to force it to happen, get closer and closer to that.

Gardner actually made an effort to eliminate distractions in other sensory domains in order to focus completely on trying to match his actual playing to the "ideal horn sound" that he heard in his mind.

Vincent Penzarella describes the process that he uses in matching his playing to his ideal concept:

Taking the time to sing a passage - valve it while singing - know that there is no mental hesitation - know that you like what you're going after and you can hear that trumpet - then making the attempt when the horn is actually in your hands - and then putting it down and asking yourself a simple question - "Could you hear it as well when the horn was in front of you as you did when it wasn't?"

Then it kind of becomes a game of comparison because you can only have three answers - "Yes, you did" - "No, you didn't" - or there's a question mark. And the question mark is always the best one because I think that's the tightrope that we all walk.

Penzarella works very diligently at refining his concept of the ideal and then puts a great deal of trust in the concept to manifest itself in his musical performance:

When we play our best, we don't know how we really did and you have to learn to trust... I've been schooling myself in enough trial-and-repetition that I know it's there.

Peter Landgren makes a remark that illustrates the strength of his ideal of sound regarding the use of different types of horns and attempts to guide tone production on these instruments:

I got a horn that's different and I'm just so uncomfortable on it because I can not produce the sound I have in my head...I find that I'm even doing things with my embouchure or my airstream to change the sound to get it to my concept. And then I realize that obviously, with this equipment, I can't.

This comment also speaks to the strength of Landgren's concept of ideal sound. He even tries to alter fundamental aspects of his playing to make up for deficiencies in the instrument in an attempt to match his concept of ideal sound.

Concept in terms of Other Senses

Kinesthetic and visual images are also used to represent aspects of tone production by members of this sample. Chester Schmitz associates a kinesthetic image with his concept of tuba sound. He stores a kinesthetic memory of his playing along with an aural image of the sound he wants to produce:

Almost more than hear it, I can feel it. I can feel the frequencies and the response and such. I can feel what it's like - what it does to my body and especially to my cranial cavity which I know vibrates....There's a certain feel and also a certain sound.

Schmitz makes a remark that may be peculiar to tuba players because of the size and volume of their instrument:

I've trained myself so that I want to produce this particular sound - or if it's very loud playing in the orchestra and you really can't hear that well, you can still feel it...the vibration of the lips, the way you're feeling your body vibrate because it's a large instrument and it will make the whole body respond, especially in loud passages.

The importance of Schmitz' remarks is that when the primary sense modality becomes unavailable, he is able to switch to another modality for guidance in his playing.

Other players experience certain visualizations as part of their concept of sound. These visual images occur in the form of actual pictures or graphic representations of some characteristic of tone



production. Charles Schlueter reports that he can almost see aspects of sound. He begins with a basic graphic representation of the sound in order to establish a specific kind of sound that he wants to produce:

I think of sound as being sort of triangular or pyramid-shaped and the broadest part of that pyramid or triangle is the resonating point of the instrument...For me, the concept of that triangle or pyramid - depending on whether you're looking at it two dimensionally or three dimensionally - establishes getting the sound to be a broad and focused on as much fundamental or overtones or what have you in the sound.

Schlueter tries to play from that broadest point - "the resonating point of the instrument - to play the instrument where it wants to be played." David Fedderly shares Schlueter's view of sound as a pyramid. This is also mentioned by Penzarella in terms of "highs, lows, and middles" which make up a "total sound." These players are basing this visualization of sound on a picture they have of the fundamental and overtones of the harmonic series.

Schlueter also thinks of a specific image in terms of adjusting certain qualities of his sound to blend with other instrumental colors:

It's like a 35mm camera and you can, depending on the type of lens you put on the camera, you can adjust the depth of field and have whatever you want in focus or out of focus...that's what you have to do in order to blend with the strings or the woodwinds or

with the brass section or even to change color within.

While Schlueter mentions this changing of color in passing, two respondents speak more directly about the relationship between sound characteristics and color. William Kuyper perceives sound in terms of colors. His response to sound is in some ways congruent with the phenomenon of "chromesthesia" which is documented in the mental imagery literature. Chromesthesia involves "colored hearing, a particular form of synesthesia in which color images (photisms) are evoked by auditory stimuli" (Polzella and Kuna, 1981, p. 165) Kuyper reports his experiencing of color images in connection with the expression of musical passages. Kuyper also focuses on characteristics of color which he associates with his horn sound. The following passage describes this experience for Kuyper:

I'm big on colors - I love the idea - the thought of color. First of all, there's the shadings of colors from vivid to pastel to opaque. And then the different colors seem to have different kinds of reactions. Red is extremely aggressive and purple is fairly warm....There's all kinds of things going on mentally while I'm playing. I would say that it's not uncommon that I would think of colors and actually see them [while playing].

Kuyper clarifies this issue even further by relating a strategy involving the connection between tone production and color images that he would use when teaching students:

"When you play that way," I can tell a student, "that has such a vivid color to it. Do you hear it? Do you see it as a color?"

By using this kind of prompting, Kuyper asks his students to make their own color associations based on their reaction to the sound they are making. Norman Bolter also sees his ideal trombone sound in terms of colors. He states:

Sounds do have actual colors....the ideal trombone sound, you know, that nice shiny bronze or a shiny gold - not too gold - not a dull gold...it has to have that shiny edge which will be the projection that I have.

These players seem to actually respond to sound in terms of images of color. They use these colors as another point of reference in achieving the sound quality that they want.

Several players in this sample attach spatial attributes to aspects of their tone production. Schlueter uses an image which gives shape to his ideal trumpet sound in terms of projection of sound to the audience:

I try to spread the sound out following the contour of the bell so the sound is as broad as the concert hall.

Schlueter uses this visual image which attributes a certain shape to his sound as a guide in his orchestral playing. Kuyper also thinks in terms of projecting his sound through space. Because the horn is the only orchestral brass instrument with a bell that faces

behind the player, Kuyper thinks of "throwing" the sound so that it doesn't stay behind him. He realizes that this is "not accoustically accurate, but that's the thought, the concept" that he uses to do this.

Norman Bolter reports on a strategy that he and his brother, a horn player, used in their youth to develop tone production. This strategy utilized imagery related to spatial qualities of sound which gave it a three-dimensional shape. Bolter and his brother used specific imagery-related strategies to develop each aspect or dimension of the sound. The following excerpt describes their approach to building center, periphery, and height in their tone production:

We'd get out in the field - and maybe five or six hundred feet away, you'd see one tree - We'd get out there, take our instruments, and play a note to hit the tree....First, try to put a bullet in it - "Bop" - ...it is an exercise in projecting yourself forward, which any artist has to do...we could really start to feel "Yeah, it's getting there!" - you would start to feel it was going in that direction.

Bolter and his brother used visual and kinesthetic imagery to enhance the directional quality of their sound in order to develop articulation and projection. They modified this exercise to add another dimension to the sound:

Then we would try to cover the next line of sound which would be peripheral - feel our periphery and then make a sound that was more like "Ah-h-h-h-h-h-" (He sings) - try to

cover the width, feeling the side widen over this way, going to the sides...you do that for a while and you could really feel it.

They worked to broaden the sound by adding another spatial dimension. Bolter connects these different dimensions of sound to different tonal qualities or colors. They continued the exercise by using a kinesthetic image of the space around them to build depth in their sound:

The next one was kind of an introverted one ...going in for depth...you would have to start feeling the space in back of you and start to play a sound. That's a real interesting one for concept. After that was feeling like it was kind of happening, we would add the next one - which is the vertical line - height - and we would try to play very tall. And of course, the next step beyond that was combining all of them to get a three dimensional figure of sound.

Bolter's description of this technique shows a use of vivid imagery in guiding tone production through a visualization of space and shape in the sound.

Peter Landgren makes an important comment regarding the interaction between his mental image of ideal horn sound and the feedback that he hears when his sound is affected by different performing environments. Landgren states:

It's upsetting when we play in less than adequate auditoriums or something like that when you know you're putting out the same kind of sound, but what you're hearing is not.

Landgren's image of his sound is so strong that when he plays in an inferior environment, he finds it difficult as he monitors what he actually sounds like.

These players have a very strong aural concept or image of the sound they wish to produce on their instrument. This aural concept is important in guiding tone production and may be associated with sensations or perceptions or images in other sense modalities. The players in this sample hear this sound in their minds and use it regularly as part of their playing process.

#### Musical Expression and Interpretation

The role of imagery and imagery-related strategies in musical expression and interpretation is another important area of interest in this study. The brass methodological literature points to the potential of using imagery strategies in developing or refining the interpretation of a musical passage (see Weast, 1979; Johnson, 1981; Severson & McDunn, 1983; Ristad, 1983; Green, 1986; for examples). The majority of players in this sample (twenty-four of twenty-six) report that they use imagery or imagery-related strategies in dealing with various issues involved in musical expression and interpretation.

Statements made by these players relevant to interpretation fall into three distinct categories. Included are statements concerning a fundamental approach to musical interpretation, statements concerning imaging strategies, and statements describing the sources of specific images used for particular works. Images of sounds, sights, or movements are used to guide performers in producing a particular sound or effect in actual playing. Other images could be said to be tagged to feelings or emotions and are used primarily to evoke a specific atmosphere which becomes part of the substance of musical expression for the performer. The following section will present the findings of this study in the area of musical expression and interpretation.

#### Building Interpretation in the Mind

Donald Tison mentions having "a conception of perfection" for every piece that he plays. Tison's statement extends the concept of mentally hearing an ideal sound to hearing an ideal interpretation for a complete work in the mind's ear. This ideal serves as a goal to be matched in the actual playing of a particular piece of music. Like the image of an ideal sound which seems to be an important reference in developing tone production, the aural image of an ideal

interpretation seems to be an important guide in musical expression. The mental imagery literature supplies a theoretical foundation for this approach to musical expression in the form of the "iii Framework" (Rosenberg, 1987; Rosenberg and Pinciotti, 1983). This theoretical framework offers a structure for understanding the responses of these players regarding their fundamental approach to musical expression and interpretation.

The iii Framework describes the role of imagery in the arts as a three-stage process. These stages include image, imaging, and imagination. In the image stage, images are recalled or formed based on real world objects or past personal experiences. Imaging involves the manipulation of an image or images - altering some aspect of the image. For example, an imaging strategy which might be useful to a musician might involve hearing an aural image of a musical phrase in a louder dynamic in the mind's ear. In the imagination stage, images may be manipulated, combined, or transformed through imaging to create an imagination image which may be externalized in an expressive artistic product. The imagination stage can include both internal and external products. The internal product can exist in the form of an image which represents an ideal interpretation in the mind's ear.



The external product is the actual performance of the passage as guided by the internal image. The following section will present the responses of the sample in terms of the three stages of the iii Framework.

Image. The players in this sample use a variety of sources for the images that they recall or form in connection with specific musical works. The primary source of images is the musical content of the piece to be interpreted. Players form an auditory image of a passage in their mind's ear and manipulate it through imaging strategies. Auditory images of specific passages may be formed as the player is looking at the printed music or they may be recalled as memory images from previous encounters with the piece. These auditory images are concrete images which are present for the players in varying degrees of detail, vividness, and completeness.

Players in this sample also report the use of images of past personal experiences - both musical and non-musical - to guide aspects of their interpretation. The content of these images ranges from abstract to concrete and is used in different ways to assist in performance. A specific auditory image may be used as a reference in matching actual playing to the content of the sound in the mind. A visual image may be used

to create a sequence or order to be used in interpretation. Images of personal experiences may be recalled to evoke a mood, feeling, or emotion which is tagged to the content of the image in the mind. These sources of specific images will be detailed later in this section.

Imaging. Imaging strategies - involving the manipulation of various aspects of interpretation including phrasing, dynamics, shape, nuance and inflection - seem to be important to these players in building and refining their ideal interpretation in orchestral and solo playing.

James Olin reports that he works on issues of interpretation in his mind: "I think of it mentally and I vocalize to myself...I can hum, or whistle, or sing, or I can just think it through in my mind." Olin manipulates an auditory image of the passage by "vocalizing" it in his mind. This vocalization of the passage crystallizes his ideal of how he wants the passage to sound when he actually plays it.

Paul Kryzwicki also uses imaging strategies to arrive at his interpretation of certain passages. He goes through a piece of music in his mind:

to clarify a phrase sometimes. I'll go over it and I'll think about it many times and then I'll get to the instrument and it will change a bit. But, at least, I'll try to

realize [on the instrument] what I've arrived at in my mind.

Kryzwicki builds aspects of his interpretation beforehand in his mind and then uses that image of the passage as an ideal (which he seeks to match) when he actually performs the passage. Dale Clevenger also works on aspects of his interpretation mentally: "I plan phrases and cadenzas and so forth in my head." Clevenger uses an image of the sound of these passages in planning what he wants to do interpretively with a certain piece of music.

Several players report that this mental imaging process gives them the opportunity to try out different ideas in building an interpretation. Randy Gardner speaks of trying out ideas in his mind while he is actually practicing the horn. He comments on hearing differences in dynamics, or phrasing in his mind as a form of interaction with or feedback from his actual playing of the passage:

That's essentially what I'm doing between playings too. With the horn on my lap, I'm hearing the phrase and thinking about doing it in a different fashion.

Gardner uses an approach which oscillates between imaging the passage in his mind and actually playing it on the horn. This is a dynamic process for Gardner where the imaging affects the actual playing and the actual playing suggests further possibilities for

manipulating or revising the image. This approach, which involves a feedback-feedforward oscillation between mental strategies and actual physical rehearsal is used by other players in this sample.

William Scarlett also uses imaging strategies to try out different aspects of his interpretation in his mind's ear. He speaks of looking at the music and going through it mentally, "trying different ways - experimental ways - seeing what works and what doesn't" and then trying them on the instrument and comparing what actually comes out with what he mentalized beforehand.

Donald McComas relates an experience which required him to use imaging strategies to prepare for performance. He found himself in the position of filling in for an ailing principal player without much warning so he developed his interpretation mentally, hearing in his mind "what I would do, how I would do it, and what it should sound like." Through necessity, McComas put his imaging powers to full use in building his conception of a large quantity of orchestral literature in a short period of time.

Imagination. The imagination stage of the "iii Framework" involves the creation of a new imagination image in the mind's eye as well as a possible

externalization of this image through artistic expression. The crucial point here is that this new image is formed as a result of the manipulation, combination, and revision of other images. The following passage is representative of a case where one player in this sample (Warren Deck) utilizes imagining strategies to create some new image which serves as an ideal in his playing:

I'll put the horn down and look at the notes and try to visualize. We're working on the horn in the head, or better yet, hearing an instrument that that's no problem to play this on. I'll imagine that [other] instrument playing that [passage] and forget the limitations and problems of the tuba - the fact that you have to breathe every other note and still make it sound like it's not hard for you to do...I sit and try to conceive of the pure music - just as music.

Warren Deck uses imagery to help him surpass the limitations of his instrument in developing an ideal in his mind. The significance here is that Deck creates an image which may not be possible to produce on his instrument. Deck's use of this strategy allows him to build an imagination image of the interpretive possibilities of the phrase or passage which he strives to externalize in actual performance.

These statements describe a fundamental approach to interpretation which involves the image - imaging - imagination process in developing an ideal image of how the player wants an orchestral excerpt to sound. The

following section will investigate strategies used by the players in this sample to externalize the inner image ideal in their performance.

### Strategies for Externalizing Images

Players seem to react to music in different ways and this reaction has an effect on the approach that they use in expressing themselves musically through performance. Some players react more or less spontaneously to the musical content of a passage and their approach to expression reflects this. They use matching or sequencing strategies which are primarily based on images of specific sounds, pictures, or movements. Other players make a more conscious effort at depicting some aspect of the musical content in sound. They are more likely to use images to establish a mood or feeling which they associate with the musical content of the work. They use aural, visual, and kinesthetic images which relate to the programmatic content of the music or to past personal experiences. The players interviewed in this study speak about a variety of strategies which they use to externalize their ideal concept (aural image) of a work through their playing. Strategies range from general to specific and they encompass many aspects of playing. The following section will describe some of the more

prevalent approaches as reported by this sample of musicians

Guidelines and outlines. Six players speak of working from some sort of a guideline or outline of how they want the piece to sound. This strategy involves sequencing or ordering the musical events in a piece of music. Players capitalize on the realization that music can never be played the same way twice. By developing a general guideline of what they want to do in a particular passage, they are organizing their interpretation in a loose enough fashion to account for spontaneity in actual performance. Schlueter describes his process as viewing the musical score as a roadmap and travelling the same route with different scenery:

The notes on the page are like a roadmap and you just give an aural representation of that - how the map looks. You have lines in different colors and it shows the roads and where they curve and all that.

Schlueter sees musical form and phrase structure as the route that a composition takes. He also realizes that in performing a piece of music, nuances of expression are likely to be different just as the scenery changes along that route on the map:

And everyday, you make the same trip though it may take longer sometimes, it may take less time. The scenery is always going to be different depending on what time of year it is...Sometimes, the cows are out in the field, sometimes they're next to the fence.

So you have to report, you know, as you're driving.

Schlueter's comment is important in that it acknowledges the essence of expression for the orchestral musician who must play the written part, but must also add his own viewpoint to it as a part of a personal interpretation of the work.

Vincent Cichowicz explains his process of arriving at an interpretation which is based on some general images that he gets as he responds to the piece:

I would look it at just for general outlines - tempos, dynamics, that sort of thing. Then I would play through it. And I think that within that initial reading, it would suggest certain things to me and I would go back and try it again and perhaps keep some particular image in mind - "Is it martial? Is it a dance kind of thing? Is it song-like?" - and at that point, try to form some kind of picture of what the piece is all about.

Cichowicz begins with a very general impression of the musical content and finds some aspect of the music which suggests some image of the work. He then builds his interpretation on that image. Harwood, Bolter, Kleinhammer, and Sebring also speak of working from some "guideline", "outline", or "frame" in developing interpretation.

Music and reading. Six players in this sample view musical interpretation as telling a story. Herseth, Jacobs, Penzarella, Clevenger, Schlueter, and



Kleinhammer all speak about some aspect of storytelling in connection with musical expression. Vincent Penzarella explains this approach by drawing parallels between music and reading. This approach is an extension of the idea of using guidelines or outlines to sequence interpretation. He compares musical interpretation with a father reading the story of "Little Red Riding Hood" to his child:

If the father is really into reading that story and does it well enough, the child is going to say "read that story to me again"...because the father is not just into reading the words, but also being different [in inflection] with the same sequence of words that the child doesn't know when the wolf is going to jump out from behind that tree. And I think that's what we have to do with our instruments.

The issue behind Penzarella's analogy between music and reading is that the player (or reader) must move from image to image in recounting the story - not from note to note (or word to word). In musical interpretation, the issue here involves the sequencing or ordering of phrases. These players use images associated with the actual sound (or musical message) in moving from phrase to phrase to order their approach to the work. Penzarella believes in the importance of developing "the tools that enable me to listen to what the masters have to say" and to use his imagination in expressing

that story to an audience. He calls this use of the imagination "reaching that magic door".

Modeling vocal qualities. Four players use a general approach to musical expression where they emulate certain vocal qualities in their playing. Their statements describe two ways of thinking about this issue. One way deals with emulating aspects of phrasing, sound, or interpretation. The players who utilize this approach model vocal sounds and phrasing. The other way of thinking about this involves bypassing the technical demands of the instrument and thinking of the instrument as an extension of the player. This involves transcending the technical demands of the instrument - visualizing the playing process as singing through the instrument or even without any instrument at all.

Donald Harwood looks at this issue in terms of modeling the individualized stylistic approach to musical expression of great singers which he experienced as a member of the Metropolitan Opera Orchestra:

I learned so much about music and sound and singing on your instrument by playing in the Metropolitan Opera Orchestra and picking up really good qualities from various singers.

Harwood models certain qualities such as projection, feeling, intensity, and excitement that singers can

generate. Harwood uses an aural image of these vocal qualities and tries to emulate these qualities in recital or solo playing. Adolph Herseth also recommends that instrumentalists try to "imitate their favorite singer" by modeling the stylistic qualities of their expression. Herseth cites the importance of listening to singers to crystallize vocal qualities in the mind's ear.

Vincent Penzarella supports this view of modeling vocal sounds and he also sees a more direct link between singing and playing an instrument. Penzarella feels that the player must develop the tools to be able to express themselves as well in playing as in singing:

some people will sing [a simple song] real happy and the moment you give them their trumpet or trombone or whatever instrument they play...they can't put down what the brain hears in the form of what they're getting aurally. So I find that a lot of people can sing things the way they would like them to go [expressively], but can't make the connections as to where it is on their instrument.

Penzarella focuses on a problem that some players experience in externalizing the song in their heads in actual playing. Penzarella feels that the tools must be refined to be able to transcend the mechanical aspects of the instrument. Arnold Jacobs expands on the issue of the song in the mind as a stimulus for musical expression:

There's a singing that goes on constantly [in the mind]...The instrument is like an extension of the person...the sound of what you want your audience to hear is just like singing but instead of the message going to the larynx, it goes to the vocal chords of the instrument...So we're much closer to a singer when you play a trumpet...you train the brain in singing because I want a specific stimuli for each note.

In these comments, Jacobs explains the nature of his musical philosophy - to develop a vivid and accurate concept (image) of the music to be expressed down to each individual note and use that to bypass the mechanics of playing thus making the instrument an extension of the mind. Jacobs sees this concept or aural image as a flow of specific stimuli which is externalized note-for-note in playing. Jacobs cultivates a clear image of the sound of each note of a passage in his mind and matches each note that he plays to the requisite note in his mind. He states "if you want the function [music], you must think the thought [image] that's going to allow that to take place and it is very specific - that's the thing that you have to understand."

Using images of others in matching. The two second trumpet players in the sample speak of the demands of matching the first player in terms of interpretation and expression. Seymour Rosenfeld and Vincent Penzarella make specific comments about having

to know how the first player will interpret a certain passage so that they may agree stylistically with that interpretation. Rosenfeld speaks about using an image of the first player's sound as he practices a specific passage. He uses this sound as guide in terms of tone quality as well as interpretation. Penzarella speaks of having to practice as if he were "Phil Smith playing second to Phil Smith" in order to effectively match his style of playing. These players obviously have a high metacognitive sense of their colleagues and use the resulting image to help them fulfill their responsibility as second trumpet players.

Changing sound qualities. Another issue in interpretation and expression which involves the use of imagery is the idea of changing instrumental tone color for interpretive reasons. Eight players in the sample mention some aspect of changing sound or style to fit the music of different eras or composers. Seven of these players use some sort of imagery strategy in making this adjustment in their playing. One way that this can be achieved is by storing a number of different images of these different sound qualities for use as a guide in making the change. Dale Clevenger speaks of storing a variety of different instrumental sounds in the form of mental images:

It's hard to think now about my sound, *per se*. I think about the sound that I want for a particular kind of effect. I always have a mental image of what I want to sound like - many different sounds...but I don't think of the same things, or the same kinds of sounds, or the quality of color, or whatever when I play Mahler as I do when I play Haydn.

Clevenger forms images of these different sounds and uses them as appropriate for the style of the music that he is performing. James Olin also uses an imagery strategy to effect this change in tone color. Olin models the sound of other instruments in changing his sound. He hears his sound as "smaller, or bigger, or brighter, or darker, or more blendy, or more centered - more like a french horn or more like a trumpet - the two opposite ends of the extreme." Olin has stored images of these other sounds in his mind and recalls these specific aural images to be used as models to be matched in actual performance. Kryzwicki and Fedderly also think of changing tone quality in terms of the sound of other instruments. They base this change on the function of the tuba within a specific piece of music. Fedderly states:

I see myself - yes, definitely as a part of the low brass - that's my main concept - but there are times when I have to be a fifth horn - but most of the time I have to be an add-on to the bass section. So I have to be able to work with these different sounds.

Both Fedderly and Kryzwicki strive to match a preconceived image of the sound of these other

instruments in blending with different sections of the orchestra according to their function within the piece. Harwood, Kuyper, and Schlueter make similar supporting comments about changing tone quality or coloring the sound as a tool to be used in interpretation.

Glenn Dodson offers a view which differs from the majority of the sample on the issue of changing sound qualities. Dodson states that the essential difference in interpretation and expression of various styles is not based on changing the tone color of the instrument:

I play the trombone. I want a trombone sound. Mahler heard a trombone sound. Brahms heard a trombone sound. I don't think Mahler heard one kind of trombone sound and Brahms heard a different kind of trombone sound.

Dodson makes the stylistic difference in his playing not by changing his sound, but by changing other stylistic variables in his playing such as accent and articulation for different composers or compositions.

Imaging strategies in the other senses. Five players in this sample talk about using imaging strategies based on kinesthetic, visual, or tactile images in musical expression and interpretation. Warren Deck often looks to discover a feel for a piece of music in terms of movement:

A lot of times, I'll think movement too - I mean, how would my body move to this, you know. If I were going to dance to this, how

would my body move? And therefore, I can see the movement before I play this thing.

Deck associates some kind of movement with the musical content of the passage and uses an image which may be both kinesthetic and visual in approaching the passage. Deck recalls a kinesthetic image which he associates with the motion of the phrase to serve as a guide when he plays. Norman Bolter also comments on using kinesthetic images to understand and interpret a musical phrase. He bases his comments on the teaching of Marcel Tabuteau:

He talked alot about up and down motion - meaning up-bow and down-bow...the feeling of going up and more lift, other things feeling that they're settling down, and other things climbing to the top.

Bolter uses these kinesthetic images ("going up", "climbing to the top") to attribute a specific shape to a musical phrase. Vincent Cichowicz uses similar kinesthetic images to add "momentum" to his phrasing. Cichowicz draws some analogies with sports - skiing and golf, in particular - in generating the feel of the phrase.

Donald Harwood also uses a number of specific kinesthetic images to aid his interpretation and expression. Harwood feels certain rhythmic aspects of interpretation in terms of a "swing" which he describes as an inner rhythm which guides him in phrasing and in



breathing. Harwood also uses the visual and kinesthetic image of "riding a bike off a cliff" to crystallize the feeling of carrying the ends of phrases "off into space." Harwood also uses this image to promote projection in his playing. Kuyper makes a similar comment and uses the image of "throwing" his sound into the audience to project not only his sound, but also his personality in solo and recital performances. Peter Landgren uses specific kinesthetic and tactile images with relation to different kinds of articulated passages in his interpretation. He gives the example of playing legato notes "sticky" - creating the image of the notes actually sticking together to create continuity and flow in a phrase.

David Fetter recalls the feel of playing certain passages and bases some aspects of his interpretation on these kinds of kinesthetic images:

It's as if the physical side of the body said  
"Okay, let's do this because this feels good"  
and I try to remember those things and  
sometimes certain ones have become useful  
over a longer period of time...that kind of  
thing may inform you as to what you can do.

Fetter seems to use a remembrance or image of the feel of playing a certain way in expressing himself musically.

These strategies which utilize visual and kinesthetic images are often associated with the

musical content of a work and serve to compliment the aural images that many of these players utilize in performance.

#### Sources of Imagery in Interpretation

The images that players report using in building an interpretation of a work come from a variety of sources. Aural images of the actual sound of a phrase may be formed while looking at the musical score or they may be recalled from memory. For example, James Clin reports that he will form a visual image of a score page to help him fit his trombone part into the entire texture of the work. Past experiences also serve as an important source of imagery for six players in this sample. Twelve players speak of recalling images based on the programmatic content inherent in a composition and using these images to guide their playing. Other players create a highly personalized program for a particular composition through their imagination. The personalized quality of the images that players form based on these extramusical associations seems to help them communicate their interpretation to the audience. Visual and kinesthetic images are used by these players in addition to auditory ones in bringing these associations to life in their playing. Charles Schlueter sums up this process

by saying "you have to try to paint a nonvisual picture and you have to tell a non-verbal story of whatever you're playing."

Images based on prior personal experiences. Six players give specific accounts of the effect of personal experiences on their musical interpretation. For the most part, images of these prior experiences recall some aspect of training, musical performance, or incidents in personal life that are deemed to be significant by the player. Adolph Herseth comments on the importance of prior personal experiences in his playing:

Every piece we play has got something like that - well, of course! And if you haven't had something definite like that in your background for it, you have to substitute something from your imagination...I don't think any of us would be playing in a group like this if we didn't have that kind of resource.

Herseth looks for some association from his own background which he connects with the piece that he is performing. He uses this to create a mood, feeling, or atmosphere associated with the piece which gives him an added level of inspiration in his performance. Herseth draws heavily on his long tenure as principal trumpet in the Chicago Symphony for remembrances which he associates with the music he performs. He recalls

first hearing the Boston Symphony when he enrolled at the New England Conservatory in 1946:

I think the first real aural image that would relate to what turned out to be my profession was when I went to Boston to enroll in the Conservatory...I went right away to hear the Boston Symphony. It happened to be Sir Adrian Boult conducting the Holst "Planets" suite. I could not believe what I heard... And so when I play that piece, all of that whole experience runs through my mind like a videotape - sound, sight, and all, okay. To me, that's a real source.

Herseth obviously has a vivid memory of this experience and relives it through imagery - "sound, sight, and all" - each time that he plays "The Planets." While Herseth mentions hearing and seeing this early experience in his mind, he speaks of other experiences which seem to put him in an appropriate mood or mindset for playing a particular piece of music. He recalls the experience of playing Mahler's "First Symphony" under Bruno Walter:

So when I play, for instance in the slow movement of the Mahler - [He sings] - all I'm thinking of is that marvelous feeling the very first time I played that with Bruno Walter up there...I can see that man up there and I can get back that feeling. If you don't have that, you're just turning the crank and the notes are coming out...but you're not telling a story. You've got to have something there to feed into you to tell a story.

Herseth also vividly recounts a real-life experience which has had an effect on his performance of the Sibelius' "Second Symphony":

Now a year or two back, my wife and I went to Finland...and we took a trip out to Sibelius' home. Both he and his wife are buried under a big copper plate about eight feet square which rests over both the graves with names on it, and as I walked down through the woods to that spot, all I could hear in my head was [he sings a theme from the "Second Symphony"] - I had tears in my eyes when I got there. We've played the Sibelius "Second" since then, and I want to tell you, that's a extra turn-on for me, alright?

The significance of this comment is that he recalls a vivid multi-sensory image of an experience which he connects to a specific musical work. The fact that this particular melody entered his mind as he walked to the gravesite is significant for him. He recalls the sound of that melody clearly when he recounts this anecdote and certainly uses these images when he actually rehearses and performs the "Second Symphony." He uses the memory image of this visit - in terms of the sound and the sight - to evoke a specific atmosphere which becomes the substance of his musical expression of this work. This places him in an appropriate frame of mind to "tell the story" of the symphony. Adolph Herseth is obviously deeply affected by all of these experiences and finds that the imagery he experiences in recalling these events is a vital resource in his playing.

Douglas Yeo expresses a unique view of the use of prior personal experiences in building his

interpretation. He speaks of using "scrapbook sketches" which are remembrances of notable moments in his performance career. He speaks of holding on to the memory of playing "the best low E-flat of his life" and using that memory in performance at a later time. He summarizes this process in the following passage:

I try to conjure up positive images of remembrance of past personal physical performance or even more importantly - trying to develop an image of what's on the page and trying to relate that into causing me to perform with a certain sound or style...it all has to do with my image of what that piece is saying and it may be different than anybody else's.

The significance here is that Yeo will intentionally recall a specific image of his playing to allow him to produce a specific musical effect. He speaks of a particular sound that he got playing a low muted passage in the Britten "War Requiem" which he will use in the future in playing Berg's "Wozzeck" - a piece which requires the bass trombonist to play many similar passages. Yeo uses images of his own past performances as a guide in developing his expression for future performances.

Images in response to music. Twelve players comment about their response to the content of music that they play as an important source of their imagery. These images are associated with programmatic content

intended by the composer in works that are meant to depict some story, event, or scene from nature, or to programmatic content that is supplied by the player's own imagination in response to the musical sonorities and textures. In performance, players recall these images to guide their expression and interpretation of the work.

Opera and other works which are based on texts, and tone poems which incorporate extramusical associations are clearly programmatic and leave little doubt as to the composer's intentions. In performing these works, players often form visual or kinesthetic images based on the story behind the work and use these to create an appropriate atmosphere or a specific sound quality that they wish to produce. The following three examples are representative of this approach to the use of imagery in interpretation. Seymour Rosenfeld recalls Harry Glantz' approach to Wagner's opera, "Parsifal" which is based on Glantz' response to the story of the opera:

If you had something to play like "Parsifal", [Glantz'] idea was to make it sound religious. So if you would say to Glantz "What do you mean? - How can you make it sound religious? - if it's in a religious setting, it's going to be religious." He would say "No - When you're in a church, and you're seeing sunlight coming through stained glass windows, you get a certain feeling and that feeling has to be in your playing."

The significance of this statement is that the "religious" quality which is tied to the story of the opera can be created by forming a visual image of sunlight shining through stained glass windows in a church. By recalling this visual image, the player can recreate the atmosphere of actually being in church which can impart a religious or ethereal quality to the playing.

Warren Deck cites another example from Wagnerian opera which has a high imagery content for him. He forms a specific image based on the story behind Wagner's "Ride of the Valkyries" to help him produce the proper expressive quality in his playing:

We're talking about big, heavy horses with these big women on them and they're flying! That's what we're talking about. I mean, that really changes the approach. It's heavy, but it's got to fly at the same time.

In this visualization, Deck associates the dimensions of size and weight as well as the mental picture of these warriors on horseback taking off and flying across the stage with a specific sound quality in a phrase. This imparts a momentum to the phrase - a rising dotted figure. These images guide him to an exciting performance of the work.

Philip Smith creates a specific image based on the programmatic content of "Pictures at an Exhibition" to



understand the rhythmic complexity of the "Promenade" solo:

You're teaching someone the repertoire and you put up an excerpt - the opening of "Pictures at an Exhibition" - and they don't know how to approach that. Here, they're looking at measures that rotate between five-four and six-four. Do they pulsate on the down beats? And in the five four, do they pulsate three and two or two and three? Are they pulsating threes or twos in the six-four? I mean, what are we talking about here?

Smith is referring to interpretive decisions involving accent patterns across the changing meters as well as divisions of the measures into smaller rhythmical units. He suggests that these rhythms can be understood by considering what the composer intended this passage to convey:

So my answer is "It's a promenade." It's a man entering a museum and this promenade appears as he walks through the museum - and he stops and looks at a picture - which each movement represents....He sort of goes, hands behind his back, strolling through the museum and every now and again, a picture catches his eye and he hesitates over three beats while he looks at that. And he keeps going until he sees a picture he wants to stand and look at and now that's the next movement. ...I've taken it out of the context of five-four and six-four...it's a starting point for someone to look at and try.

Smith circumvents the complexity of the rhythm of this piece by forming a detailed image of a man strolling through the museum. The irregularities in the rhythm represent the variation in the man's step as he

hesitates while glancing at a particular picture. Smith states that he finds these kinds of images important for him as starting points in building his interpretation of many pieces in the orchestral repertoire.

When the composer's intention behind the content of a work is unknown or unclear, several players in this study use their imagination to create a story in response to the musical content which can be used as the basis for interpretation. This process is congruent with Meyer's (1967) theory of a personalized "designative" meaning contained in a musical work. Douglas Yeo explains how he uses this process in interpretation:

In almost every piece you can find some extramusical programmatic influence...and even if you put one in that's not there [as intended by the composer], if it makes you project something of the piece, it's better.

Some of these visualizations serve to place the player in proper mood or frame of mind, while others may guide the player in recreating a specific musical effect. The following section offers some representative statements describing the use of a personalized image based on a player's reaction to the music as a guide in interpretation and expression.

Philip Smith describes his approach to interpreting the opening trumpet solo in Mahler's Fifth

Symphony. This description is made up of descriptions of actual sounds and musical effects as well as abstract images:

In the first movement [of Mahler's "Fifth"], you've got this hushed sound that I want to start with, and I want it to start out sort of hushed and fuzzy, but then to become very focused and frightening - oppressively frightening. And counteracting that later on - halfway through the movement - there is a very wailing sort of a "death has come and now the souls are wailing kind of sound. It's hard to describe what I'm thinking, but I hear the sounds in my head as I'm going through that.

For Smith, these emotions are tagged to images which are used to evoke the emotion in his playing. For example, the "wailing" quality that he mentions is vivid in both an auditory and a visual sense and "hushed" imparts a greater meaning than does the word soft. These words have a high imagery potential and can be associated with specific visualizations which serve as a guide in playing the passage.

Douglas Yeo frequently uses extramusical images in his interpretation of orchestral works. Some of these associations were intended by the composer and some were not. Yeo describes the visualization that he associates with Berlioz' "Hungarian March":

We have here [He sings] you know, the army is getting closer and closer, and the bass drum, and all of a sudden, you've got this little tune [He sings]. This is a battle scene and you win. That's enough image for me - you win - there are no prisoners - you win....you

have to approach that from the retrospect of knowing that you're going to win the battle. If you approach it simply as a fortissimo passage, it's going to sound loud and crass and everything. But if you play it in a victorious mode, that's it.... Conjuring up some kind of extramusical image makes me play better - it just does.

Yeo feels he can enhance his own performance of this work by forming an image of a battle scene which results in final victory. For him, this generates an intensity and a triumphant quality in the sound that goes beyond simply playing the passages at a high volume. He uses a similar approach with many pieces from the repertoire and offers another example from the works of Rimsky-Korsakoff:

Russian Easter Overture - big second trombone solo - if you don't imagine yourself in Russian Orthodox garb with the biggest fez you ever saw on your head, standing up there - all four hundred pounds of you - intoning these notes, you're just going to sound like a second trombone player.

In this example, Yeo exaggerates the features of the image that he has developed for this piece. This image is obviously very vivid in Yeo's mind judging from the descriptive detail that he uses in recounting the example. He uses this image to help him produce a broad and expansive sound on that passage - the sound that might be made by a huge Russian Orthodox Priest intoning this chant melody. He connects this visualization with an aural ideal of the sound he wants

to produce in this piece. By forming the visual image that he has created for this work, he evokes the aural image of the passage.

The following summarizes the role that imagery plays in musical expression and interpretation according to the players in this sample. By forming and manipulating various mental images of a phrase or passage in their mind's eye, players try-out various interpretations prior to actually playing these passages on their instruments. Players also associate specific images with particular passages to build their understanding of the musical content and guide their playing of the passage. These specific images often occur in various sense modalities. Some of these images deal directly with musical content, while others may be connected to extramusical associations which the players have developed for the passage or composition. Players also utilize various images for creating musical effects which can be applied to a variety of performance situations. Sometimes the images that players use have been suggested to them by conductors. The next section of this chapter will deal with the role of imagery as part of a conductor's communication with the orchestra.

### Conductors' Imagery

Another major issue in this study involves the possible effectiveness of the use of imagery by conductors as a means of communicating with members of the orchestra. London (1982) cites the importance of the use of allegorical or descriptive language in talking about music. The drama literature (see Chekhov, 1953 and Rosenberg, 1987 for examples) advocates the use of shared images in the enactment of works for the theatre. The rationale here is that a unified performance can be obtained through the use of a common or "shared" image among the performers (in music, in drama, or in dance). This image should reflect some crucial or central aspect of the work or an individual interpretation of the work and it should have relevance for the performers.

The subjects were asked if they played for conductors who used imagery to communicate aspects of interpretation to the orchestra. They were also asked to give specific examples of imagery use by conductors and to give their reactions to this form of communication. All of the subjects reported having played for conductors who use some form of imagery in communicating with the orchestra. Players spoke about basic approaches that conductors used in relating

images to the musical content of a work. The approaches described were similar to those that the players used themselves. These involved the use of either visual images or "word pictures" to describe the programmatic content or images dealing purely in the sound or musical materials of the work. Players also mentioned imagery that arises from nonverbal aspects of conductors' communication.

The sample is divided in their reaction to the effectiveness of imagery use by conductors. Their reactions seem to be based primarily on their general disposition toward imagery use and the content of the conductor's imagery. The following section of this chapter discusses the experiences and reactions of players regarding the use of imagery by conductors.

#### Imagery Approaches used by Conductors

The players in this study reported on three general types of imagery use by conductors. These types include images that are based on the programmatic content of a work, images that are related to sound, and images that result from nonverbal communication. The following sections will describe these general approaches and give specific examples of each type of imagery used by conductors.

Images based on programmatic content. The first of these types occurs when a conductor uses some kind of "word picture", story, or descriptive or allegorical language to evoke an image of the programmatic content of a piece of music. These descriptions seem to be drawn from a number of sources. If the piece itself is programmatic in nature (an opera excerpt, ballet music, tone poem, and the like), the description may be an elaboration on the program that the composer provided or intended for the piece. Philip Smith of the New York Philharmonic recalls playing Beethoven's "Leonore Overture No. 3" under Leonard Bernstein:

I will never again play the opening without hearing how he interpreted that beginning... where you have a chromatic scale coming down - it isn't only to denote the fact that the man is in jail - in the dungeon. It's also going down into the depths of the man's mind and his psyche and what he's thinking about - his dream of being saved.

Through Bernstein's interpretation, Smith has obviously developed a strong visual image which associates with definite feelings about the man's plight. Smith also comments on the importance of Bernstein's use of gesture in support of his verbal description of the imagery of the piece:

You see it when the man conducts this. You can see him pulling the notes of the call out which helps to get that feeling across and you feel it when you come in - here comes the cavalry. You just feel the whole story and it definitely helps your performance. It



takes it from a blasé, black-dot performance to a spirited, full-of-life performance.

Smith clearly connects to Bernstein's use of imagery and his supporting gestures in performance in conveying the essence of this piece to the audience. David Fetter describes another conductor's imagery with regard to the story of this same work. David Zinman, Music Director of the Baltimore Symphony, takes a slightly different approach to the underlying story. Zinman uses a more visual description of the story to convey a similar feeling to the orchestra:

The beginning is very slow and bleak. [Zinman] brings in the very strong image of the opera Fidelio which the overture depicts. It's note for note despair...he took it further when he said "now in the beginning, it is very soft and there's a fog over cold, dank ground and you're in the cellar and it's dark and despairing - that's what I want."

Zinman gives visual cues to the interpretation of the piece through the use of highly descriptive language. Words such as "bleak" and "dank" have high imagery-potential in evoking not only a vivid picture but also a clear feeling for the mood of the work. Fetter also brings up the value of humor in communicating with the orchestra:

We got to another spot in the overture between trumpet calls where it's again quite dark but there's some motion and [Zinman] says "You don't believe the first trumpet call. You're staggering in the dark, your eyes are crossed and you don't even know it!"

These images seem to be clearly etched in his mind as shown by his vivid description of this moment in rehearsal. Zinman's use of humor may have served to make his description of the work much more memorable for the players. Randy Gardner recounts a similar use of humor by Riccardo Muti, his musical director:

We were doing Prokofieff's "Romeo and Juliet" and [Muti] said "This is a love scene, not a slap in the face." You know, that immediately told us how to play the thing - what he wanted - how he conceived of it - and it clicked - we played it.

According to Gardner's account, the use of descriptive language based on programmatic content does not have to take the form of a detailed description of the story or the approach to the work. A short, well-chosen phrase can have high imagery potential in communicating the conductor's concept of the piece.

Paul Kryzwicki speaks of the imagery potential of just a few words of description in programmatic music. He gives the example of performing Smetana's "Die Moldau" where the conductor emphasized the composer's intent to portray certain scenes in the music:

There's the "St. John's Rapids" with the tuba and bass trombone on these long descending lines which make it sound like, indeed, you're in the middle of turbulent waters and there's the "Peasant Wedding". And so you hear those things.

Kryzwicki states that without knowing the exact intention of the composer, the player (or listener)

might come up with a different image of what the work is portraying but since the composer's intention is clear, "there is an image of something from nature or a wedding that comes to mind there because [Smetana] put it there." Kryzwicki also makes an insightful observation concerning the importance of a personalized image which results from these descriptive words. He makes the point that different people see different images which are relevant to them based on their personal experiences. When a conductor or a composer can evoke these personalized images in individual players, the work is much more likely to take on an added level of meaning for them.

If the piece is based on a libretto or text, the actual words might be used to evoke imagery. Philip Smith speaks from the perspective of both player and conductor in describing the importance of expressing the meaning of the text through musical interpretation:

You can't have a hymn tune that has the same dynamic markings four times through because each verse is different - the phrasing is different, where you take a breath is different, and the message of the verse is different.

Smith, who has had experience in conducting through the Salvation Army, uses this approach to interpretation as a conductor and as a player in the New York Philharmonic.

Another source for this kind of description might be historical background about the piece, the composer, or the era. The conductor may choose to mention particular situations or events surrounding the composer's life or he may focus on some aspect of the history of the era in which the work was composed. Charles Schlueter relates an anecdote describing Bernard Haitink's effective use of this sort of imagery in interpreting the beginning of Mahler's "Seventh Symphony":

...we played the opening two or three times - (he sings) - and that's pretty much what came out....So Haitink said that Mahler had a lot of trouble coming up with the beginning of the symphony. He had finished the other movements of the symphony. And finally it came to him. He was out rowing on a lake in the Swiss Alps or in Italy or wherever - and heard the sound of the oars (he sings). He told the story to the orchestra and from then on, they played (he sings). He didn't talk about changing the bowing or any of that. It was incredible - the depth of sound, the resonance - it was like a whole different orchestra - and all he did was to tell that story.

In this case, Haitink used his knowledge of Mahler's predicament in composing the work to conjure up a visual and auditory image which the players could use in creating the desired musical effect in the opening of this symphony.

Other sources of this type of imagery might be descriptions of programmatic content which the

conductor has created for the work or descriptions of the conductor's personal imagery with relation to the musical content. Richard Wagner, the German Romantic operatic composer, had definite views on the significance of developing "programs" for abstract works (see his essay, "On Conducting", 1869/1964). Peter Landgren of Baltimore comments on David Zinman's use of personalized images in relation to the musical content of a piece:

He uses the weirdest pictures sometimes. But the thing is, it works for him - it works with the full orchestra. He'll tell this story of the last time he heard this Tyrolean music or whatever and he can describe it in such a way that you really know what he is after.

From the reports of players in this sample, conductors use verbal description, text, and programmatic content effectively as imagery-evoking material in communicating with the orchestra.

Sound-related images. The second type of imagery used by conductors (as reported by this sample) was imagery directly relating to sound qualities or the musical materials of the work. In using this technique, the conductor might ask the orchestra to conjure up an image of another work in order to produce a desired musical effect. Peter Landgren recalls

images that Sergiu Commissiona used with the Baltimore Symphony:

If we were playing Mahler, but he wanted something light, he would say "it's Winter Dreams" - which is the first symphony of Tchaikovsky - and that's a very bubbly kind of thing - and you remembered how you played that symphony and so you just basically reproduced the same thing.

Commissiona drew on the common experiences of the orchestra in getting what he wanted out of a phrase by asking them to recreate a specific sound and approach. Kryzwicki remembers a similar example in working with Muti in Philadelphia:

During a Verdi overture, we came to a chorale and Muti said to think of it as a Bach chorale...It causes you to think of another composer in that kind of style. I think every great conductor does a certain amount of that.

Again, Muti depends on the players being able to conjure up a sound image of another piece or style of playing to express his interpretation of a particular passage.

Onomatopoeic words and phrases or descriptions of common sounds would also fall within this type of imagery approach (see Munch, 1955). Randy Gardner describes a conductor's use of imagery to evoke a certain kind of sound from the Philadelphia Orchestra:

In the Brahms "First Symphony" - the C's, the repeated C's in the timpani - feeling that this is a heartbeat and giving that sensation through the music. That kind of thing is

just more meaningful than any sort of calculated term that he could have used.

By asking the orchestra to conjure up an image of the sound (and perhaps the feel) of a heartbeat, this conductor was able to get an appropriate musical effect. Seymour Rosenfeld also reports on an experience with a conductor who asked a player to use the image of the sound of a mother preparing dinner in the kitchen:

We played a Spanish De Falla number and it had a big bassoon solo...and [the conductor] said it had to sound like the mother milling around in the kitchen getting dinner ready and shuffling and knocking things around and putting the plates down...and [our bassoonist] made it sound that way.

Edward Kleinhammer remembers an experience where a conductor asked him to use a visual and kinesthetic image of a common experience to interpret a particular passage:

Jake and I had this little thing and it was big loud B...and it was followed by a little short pause and then a soft B-flat (he sings). So the conductor stood up and said "This is what I would like to hear" and got an imaginary shovel in his hands and he pushes the shovel (he sings) - like he was shoveling a little dirt or snow.

In this case, the gesture used by the conductor made an impression on the players and communicated a sense of how the conductor wanted the passage to sound.

Douglas Yeo of Boston recounts an experience where an image supplied by the conductor added to the

understanding of how to play a particular passage in Brahms' "First Symphony":

[and the conductor said] "At letter Q, I want you to sound like a bear coming out of a hole." And right there, the image in my mind was a big sleepy bear that had just awakened. ...and I have this image of this bear just growing - each time getting further and further out of the hole and he finally breaks into the daylight...that has always stuck with me and always will. I'll always think of a bear coming out of a hole and that makes this sforzando and diminuendo mean so much more than just looking at notes on the page.

Yeo not only followed the suggestion offered by the conductor, but instantly elaborated on the image that the conductor offered. He made the image his own and personalized it and clearly intends to use it each time he has that part to play.

Imagery and nonverbal communication. The third type of imagery results from nonverbal aspects of the conductor's communication. Gestures, facial expressions, and body movements can serve to evoke imagery in the player. These nonverbal strategies are also used by conductors during performance to reinforce other forms of imagery or verbal directions which were used in rehearsal. Ten of twenty-six players in the sample recall instances where conductors effectively used this sort of imagery. Vincent Cichowicz makes a significant remark about this kind of imagery in performance:



A conductor can do a lot of this without even saying it. You get the sense of an experience over and above "do you want it louder or softer or faster or slower?" The quality of a performance with a great conductor - it just happens and not too much is discussed about it. So I would say in a sense, imagery is created in each individual mind as they're playing through that. If you play a great performance of a Mahler symphony, you can't sit there without these experiences - all kinds of images come to mind with that.

Cichowicz focuses on a personal imagery experience associated with participating in a "great performance" and alludes unspecifically to nonverbal aspects of the conductor's contribution to that experience. Other players in the sample comment on some of these nonverbal aspects. Donald Harwood remembers playing for Karl Böhm at the Metropolitan Opera:

He didn't talk about imagery. He didn't talk about poetry. He just got up there and portrayed to you with his hands and with his body and you just knew what he wanted. It was some kind of mental thing, or chemistry.

Adolph Herseth also mentions gesture and body language as an important communicator between conductor and orchestra:

They convey it to you by the look on their face. They convey it to you by the actual visual appearance of their motions - their bodily motions, their hand motions - all those things convey different things to an orchestra.

Richard Sebring makes a similar comment. He feels that "a good conductor can make a certain facial expression

and make you play something a certain way - it doesn't always have to be something that they've said." Sebring feels that the facial expression may serve as a visual image which portrays the feeling of the music.

David Fetter elaborates on the role that nonverbal imagery plays in reinforcing what a conductor has said in rehearsal:

Maybe [the conductor] has verbally invoked imagery in rehearsal but when you're playing, his only means is visual. He may close his eyes or he'll look down and look serious for the beginning of the Beethoven ["Leonore"]... He talked about the trumpet calls and that help was on the way and you didn't believe it the first time - the music is dark - and the next time the trumpet call comes, you believe in it with joy. So when you come to play the concert, he does his best to show "joy" to confirm what he's doing.

Fetter mentions specific facial expressions and bodily movements which convey aspects of the work to the players. Fetter sees these as important in recalling the imagery that was invoked during the rehearsal. Fetter feels that in the performance situation, the use of gesture and visual cues can be an effective means in bringing about an expressive performance:

There you have something that's more pure - in the way that music is pure. He can't use verbal imagery now in performance. He has to use a visual, kind of second-best communication and it's kind of vague in the way that music is more vague - it's like music. And there, I think, you have all kinds of imagery all evening that has a physical and mental effect that would stretch words quite a bit.

These comments are significant because the actual musical experience in performance can be affected by a number of factors - the player's personal response to the music and the playing of others, the conductor's contribution in terms of gesture and expression, and the overall ambience of the concert environment. This is a dynamic situation which is never quite the same. The interplay of these factors, which may be slightly different at each performance, leads to a certain amount of spontaneity which is the essence of musical performance. All of these factors can involve imagery experiences in the sound, sight, and feel of the performance - imagery experiences which may not be the same every time through.

Three players mention the importance of a conductor's singing as a communicator of musical expression. These players seem to use an aural image of this singing as a guide in understanding what the conductor is trying to communicate or express in the music. Vincent Penzarella states:

I'll say [to a conductor] "I cannot hear what's in your head. I cannot hear what's in your heart. There's only one way you can tell me what you mean - sing it for me!"...That's all they used to do. They would say "No, no, not that way" and they would sing it and you knew - you knew exactly.

Penzarella prefers to deal with actual musical materials in working with conductors. He uses the sound of their singing or an image of that sound to understand what they are communicating. Arnold Jacobs also mentions the value of hearing a conductor sing what he wants to express:

Many conductors will sing the parts even with poor voices and you can get a great deal of information out of that. I depend on that a great deal.

Seymour Rosenfeld recalls the effect of a conductor's singing on the interpretation of the opening of Mahler's Fifth:

It's written as an eighth note triplet (he sings) and he stopped and said "That's not right - it must sound with an intensity" (the conductor sings) - not perfectly in rhythm and it made all the difference in the world.

Rosenfeld's comment speaks to the importance of an actual demonstration, through singing, of some aspect of interpretation. This gives the player a specific aural image that can be used in producing the effect that the conductor desires.

#### Reaction of the Players

While the majority of players in the sample find imagery use to be an effective communicator between conductor and orchestra, they react differently to the various kinds of imagery used by their conductors. While these players realize that it is their job to

perform with excellence and to respond to the best of their abilities to the requests of the conductor, they do express a preference for different approaches employed by conductors. Their responses reveal a general tendency to prefer approaches which are consistent with their own uses of imagery in the playing process. Those players who deal primarily in sound and sound-related issues seem to favor conductors who give explicit directions in terms of what they want musically in a passage. They respond to verbal direction regarding dynamics, tempo, rhythm, and articulation in giving a conductor what he wants. They also look for some kind of clue with regard to the sound quality that the conductor wants. Donald McComas explains the importance of concise direction in the following comment:

If a conductor were to say that he wants a more round sound - that he wants less of a loud sound, but more cohesive or broader sound - or just the opposite - more biting, articulated, brassy sound - words like that really help. Those are basic simple words, but they mean something. You can affect that instantly.

Arnold Jacobs talks of an imagery strategy that he uses in reacting to this type of verbal direction:

I always convert what I think they want into what I think that should sound like before I play it... If you think louder, louder does not become a source of stimulus for the reflexes involved in playing louder. But, if

you hear it louder, then you'll have it right away.

Jacobs hears the sound that he wants to make in response to the conductor's direction and uses that sound image as a stimulus for his playing. David Fedderly, his student, uses a similar strategy:

If you say "what does that mean soundwise?", then you can simply create that sound. But what you're really doing is imitating a sound that you've probably already produced. You have all these different tools in your arsenal and when they want a certain tool, then you reach out and grab it.

Fedderly elaborates on Jacobs' point of using a memory of past playing experiences to satisfy a conductor's direction. These men can deal comfortably with conductors who use sound-related imagery. Fedderly and Jacobs also speak of converting "word pictures" (visual images) into sound qualities and hearing those sounds in their minds to guide their playing.

Adolph Herseth comments on the value of learning to play the "big pieces" under the direction of a variety of great conductors during his first years in the Chicago Symphony. Herseth appreciates both concise verbal direction and the use of other forms of imagery by conductors. He comments that he still visualizes rehearsal situations from those years:

I was delighted when a conductor would tell me "make that more legato" or "that should be a little more accented or a little more staccato"... So I still visualize some of the

rehearsal situations from the first year I was in the orchestra - those things still stay with and that is important feedback.

Herseth also uses imagery based on programmatic associations and past experiences as an impetus to his own interpretation of musical works. He appreciates conductors who also use these kinds of approaches to imagery:

I really prefer to have somebody put a little palette up there and say "look, this is what we're talking about." To me, that's helpful.

Herseth's choice of words in this response is significant. The word "palette" allegorically suggests that the conductor paints a picture for the orchestra.

Vincent Cichowicz appreciates conductors who use imagery because it can offer him a new or different perspective about a piece of music:

The great conductors have been able to present things which maybe the musician initially would not think of or visualize as doing. So it can be a revelation and I think the idea of musicality is the fact that it isn't always so ironclad.

Philip Smith also cites the importance of the conductor's contribution to his own imagery with regard to a new approach or change in perspective in musical interpretation:

There's no one answer for my interpretation of Bruckner or "Pictures at an Exhibition." That's what I'm thinking of - until someone's given me something better to think of....That happened with Tennstedt and Mahler's Fifth. I had a certain approach to it that I wanted

to take...and Tennstedt said something to me that affected how I finished each phrase and ever since then, I've appreciated what he said and it makes a lot of sense and I've put that into practice in every performance since that point.

Randy Gardner appreciates the added dimension in a musical performance led by a conductor who can use imagery effectively with the orchestra:

I think conductors who use terms that can evoke images from the performers get a much better response than those that don't. Conductors who simply say "shorter here" or "longer there" won't necessarily get the same quality of response as those that show something in their face or in their hands or in their gestures or by what they say that makes you feel what they are feeling... I think that performances that have the greatest depth are led by conductors who have the ability to get the performers to use imagery.

Five players make negative comments about the use of imagery by conductors. This group includes two players who report minimal imagery use in their own approach and, as a result, do not react favorably to imagery use by conductors. These players feel that the conductor's primary responsibility falls in the areas of tempo and balance and it is up to each player, based on their professionalism, to interpret the work. Chester Schmitz feels that the conductor must function as a facilitator in order to bring out the "personal artistry" of the players. Other negative comments focus on the difficulty of translating overdone, or



flowery imagery into musical concepts which relate directly to execution of the passage. Glenn Dodson offers another perspective about the effect of imagery use by conductors:

I can't say that helps me as a player. That kind of imagery will not affect my interpretation very much. It does affect how I feel about a piece.

Dodson separates his performance of a passage from how he feels about the work in general. While a conductor's comments may affect his feelings, he doubts that those feelings would have a significant impact on the actual execution of the passage in question.

Donald Tison makes an interesting distinction between comments directed at the orchestra as a whole and suggestions made to an individual player. Tison prefers clear and concise suggestions relating to specific musical matters when the conductor is addressing him alone, but finds that imagery can be effective in creating a mood for the whole orchestra:

Sometimes something the conductor will say will put the whole orchestra in a certain mood or atmosphere....When the conductor gives some imagery to the orchestra as a whole, you do notice more difference there, I think, than you do if he's just telling one player.

Warren Deck offers a unique comment about the interaction of player and conductor with regard to imagery use in performance:

Every once in a while, a conductor will let you play and encourage that kind of thinking and you find that you do it. And then, there are other conductors that come along - they just want to hear the notes.

Deck, who focused on using imagery throughout his training with Abe Torchinsky, finds that some conductors stifle that approach by their conservatism. He feels encouraged to use imagery for "an extra level of inspiration" when conductors focus on its use with the orchestra as a whole or with other players.

Based on these findings, the use of imagery by conductors seems to be an effective method of communication with members of the orchestra. The effectiveness of this communication depends on the ability of the conductors to choose an adequate image to convey what they want interpretively. These images may be drawn from the programmatic content of the work or the actual musical sounds of the passage. Conductors may evoke this imagery verbally during rehearsal or through gesture, facial expression, and body language. Another important factor in the success of this kind of communication is the receptiveness of the players to imagery use in their own playing.

### Mental Rehearsal

Mental rehearsal techniques are currently receiving a great deal of attention in many fields. Mental practice in athletics has been documented and researched in various situations (see Suinn, 1983 for an overview). Mental rehearsal has also been studied with relation to artistic performance. Ross (1985) studied the effectiveness of mental practice with university trombone students. Rosenberg and Pinciotti (1983) speak of the importance of "compressed rehearsal" for drama enactments. Lazarus (1977) applies mental rehearsal techniques to clinical therapy in the reduction of anxiety and phobias. The musical literature also suggests the potential of mental rehearsal for musicians (see Johnson, 1981; Ristad, 1982; Severson and McDunn, 1983; and Green, 1986).

The musicians participating in this study were questioned about their attitudes toward mental rehearsal and its effectiveness in musical performance. The majority of players (twenty-four of twenty-six) regard mental rehearsal as a useful and important technique in their preparation for performance. Their responses revealed several major issues regarding the application of mental rehearsal strategies in both practice and performance situations. These issues

include the type of mental rehearsal (spontaneous or controlled), the content to be mentally rehearsed, the strategy used, the imagery content, the nature of this imagery (memory or imagination images), the combination of real and imagined activity, the time frame for mental rehearsal, and special applications of mental rehearsal. The following sections will describe the view of these players about spontaneous mental rehearsal and controlled mental rehearsal in practice and in performance.

#### Spontaneous Mental Rehearsal

Three major types of mental rehearsal situations were mentioned by the players who used mental rehearsal in their playing. Some players report that they consciously controlled some sort of mental rehearsal either in practice or performance. Others report that some sort of imagery associated with their playing would spontaneously come into their minds while they were engaged in some activity other than playing their instrument. Of these players, some sought to control and manipulate the image in some way while others would simply let the image run its course.

Five players mention spontaneous occurrences of imagery while riding in a car, on a train, sitting quietly and resting, or while running. Peter Landgren

states "I do find myself going over things that I have to play, but it's really more by accident." David Fetter elaborates on these spontaneous imagery experiences:

I find that whatever I'm playing that's difficult is going on in my head constantly. I don't notice it unless I'm just resting or sitting or something and then I think of the tune.

Fetter alludes to something similar to a constant flow of spontaneous imagery which he attends to when his mind is more or less free to do so. Fetter believes that this is not actually a form of rehearsal, but really a form of worry:

It's a part of the problem of having to do something that's difficult...and a musician worries about it by running it through over and over in his mind. You wake up and there it is and there's no way around it.

Fetter believes that this sort of spontaneous imagery may be akin to the "haunting melody" mentioned by Theodore Reik (1953). Fetter does acknowledge the benefit of attending to this sort of imagery:

It is valuable to imagine through a thing - sometimes sort of half practicing - that is, by doing the articulation without the instrument or maybe doing some other movement - maybe moving the body like dance... something to help loosen things up and make it a little different in some way.

Fetter sometimes controls this spontaneous imagery and takes the opportunity to work mentally on some aspect or problem in the piece.

Two players mention having dreams which deal with orchestral playing. One of these players, now retired for a year and a half, still reports dreaming about playing in the orchestra. Richard Sebring mentions that he will run through an entire piece while riding in the car. He seems to simply experience the music rather than actively work on it in any way, but nonetheless, he finds this to be helpful in his performance. Edward Kleinhammer mentions working through a piece of music in his mind while commuting on the train in Chicago. Kleinhammer states:

I can mentally practice on a "L" train or driving a car. I wake up in the middle of the night - you are really in this business day and night, really. And sometimes, you'll take an exercise for a small bit of that passage and work on it for days at a time. ...I'm hearing it when I commute - I know how I'm going to treat this thing - treat, not just play the notes.

Kleinhammer's use of the word "treat" suggests that he works on interpretation mentally to "put the dressing on" a piece of music.

Donald McComas makes a similar comment about experiencing spontaneous imagery and working through music that he has to play:

At times, I've awakened in the morning thinking of some passage - the first thing I thought of was playing the passage and how to do it - the fingerings - and that stays with you during the day....Sometimes you get so wrapped up in it, but it does happen and it does help.

McComas may be experiencing "hypnopompic imagery" (between sleep and wakefulness) associated with the music that he is rehearsing. Paul Kryzwicki also speaks of experiencing this kind of spontaneous imagery in connection with his job as an orchestral player:

It will occupy my mind at almost any time. It could be going to bed, waking up. It could be eating, it could be driving, anything....It's my job. It's on my mind all the time.

While these five players deal with spontaneous occurrences of imagery and mental rehearsal in various ways, other players seem to use it in a more conscious and controlled fashion as part of their practice and preparation for performance.

#### Mental Rehearsal in Practice

Twenty-two players report instances where they consciously use some kind of mental rehearsal strategy during practice. The nature of these strategies is different for different players. They differ in terms of the aspect of playing that they practice mentally, in terms of the content of the imagery used, in terms of how the mental rehearsal fits with actual rehearsal, and in terms of what kinds of performance situations are rehearsed mentally. The following sections will describe these differences in greater detail.

Sound. Some players work solely on developing a specific aspect of sound in their minds. These players work on some aspect of tone or interpretation as part of their practice session. The strategies that they use are similar to the imaging strategies mentioned in connection with interpretation. One difference here is the nature of the images involved in mental practice. Mental practice can involve both memory images of past performances or imagination images of new possibilities in sound or in interpretation. Both of these types of images are utilized by players in the sample.

For Arnold Jacobs, mental rehearsal primarily involves a mental concept of what he wants to sound like on a particular piece. He downplays technical aspects of playing the passage and concentrates on the musicality:

My mental rehearsal is primarily the musical message, so fingering is put into perspective - it's played down...I always conceive a certain sound...what comes out of the bell should be a mirror image of your concept.

Jacobs feels that the actual content of mental rehearsal is the concept itself - the musical product. He runs that through in his mind and asks himself "do you sound like what you want to sound like?" His mental rehearsal strategy is this: "This is what I want my audience to hear, and then hearing that."



Adolph Herseth has a similar focus in mental rehearsal. He primarily thinks of interpretive aspects of a piece and runs that through in his mind. He also feels that it is important to conceptualize important solo passages in different tempos and styles because every conductor is different and may request a different reading of these passages. Herseth utilizes imagination images in discovering new possibilities for a given passage. By working through solo passages in this fashion, Herseth develops his flexibility to adjust to the wishes of the conductor.

Douglas Yeo mentions that he focuses on the musical content by knowing the score of a work and using that knowledge in preparing for performance. Yeo will utilize a full orchestral score to help him understand how his part fits in the piece. As bass trombonist, he feels he has to play as part of several different sections and as he studies the score, he imagines himself as part of these sections. James Olin also mentions the importance of getting a visual image of the musical content and how his part fits by looking at a full score. Olin can visualize a score page to help him in his performance of particular solo works or orchestral passages.

Developing a plan. Others approach the practice session with some kind of a plan or strategy for what they want to accomplish during the time they have allotted for practice. Sometimes this strategy involves developing an image prior to beginning practice and using that image as a guide. Randy Gardner remembers hearing Barry Tuckwell discuss practicing at a horn workshop and differentiating between the effectiveness of horn students and professional players in their practice. Tuckwell stated that professionals could accomplish much more in much less time. Gardner states:

It's not because of superior intellect - it's not because of any superior playing ability - it's not because of any superior natural gifts - it's concentration and knowing what it is that a person wants to accomplish... Going into a practice session with the image [of what you want to sound like and accomplish] in front of you and concentrating on that can make all the difference in the world as to what those hours mean.

Gardner focuses his practice based on his knowledge of what must be done as well as his image of what he wants to sound like on the horn.

William Kuyper also feels that practice is more effective if the player has a strategy. He works out things such as interpretation, technical difficulties such as pacing and breathing spots, and expressive aspects such as "agitation, calm, and humor" in the

piece prior to practicing. These strategies guide his progress as he works. James Olin also mentally develops a plan for his practice in terms of technical aspects of playing as well as issues of interpretation.

Douglas Yeo focuses his mental practice activities on plans for interpretation. He feels that "miming through" passages on the trombone does not do him much good. He mentally reviews his plan for interpretation of a piece prior to practicing or performing. He feels that this is an important aspect of his preparation because he wants to solidify these interpretive issues in his mind so that they will be ingrained by the time he actually plays the passage.

Conquering technical difficulties. Other players use mental rehearsal to conquer difficulties in fingering or intricacies in rhythm. Eight players mention applications of mental rehearsal which address problems such as fingerings, rhythmic patterns, and breath support. Donald Tison uses mental practice techniques when learning a new piece of music. He feels that mental rehearsal strategies are particularly useful in learning modern music such as Schoenberg, Webern, and Berg which are characterized by intricate rhythms and fingering patterns:

I usually do it mentally - I read through it,  
I don't play it on the trumpet....I study

through it a lot of times and just imagine the fingerings or finger it on my leg as I'm looking at the music... I work on that way in advance of playing it on the trumpet. That makes a big difference on that kind of music especially.

Tison uses mental practice as an introduction to a new piece of music. He builds a conceptualization of the part before actually playing it and feels that this approach is helpful in knowing what to shoot for on the trumpet. Richard Sebring uses a similar strategy in working on tricky fingerings or rhythmic patterns. He will mentally rehearse these passages and "sing it through in my mind to refresh my memory."

Edward Kleinhammer mentions the importance of using mental rehearsal to work on technical aspects of playing:

We can do the biggest part of our trombone playing while we're washing dishes or walking on the street - and that's the breathing situation. That's the biggest hangup on any brass instrument.

Kleinhammer works on techniques of breath support through mental and physical practice away from the instrument. Vincent Penzarella echos this sentiment and advocates the use of imagery in understanding proper breathing. Similar strategies are also mentioned by Gardner and Cichowicz. All of these players use specific images (such as garden hoses, windstorms, and marionettes) to crystallize proper

habits of breath support. In these cases, players overlay images from daily life on particular aspects of playing their instrument. In so doing, this new combination of images creates an imagination image which guides the player in the correction of the problem.

Warren Deck uses an image to guide his work on some specific technical difficulty. He remembers trying to break up a concrete sidewalk with a sledgehammer as a youth. He compares working on a technical difficulty with chipping away at one corner of the concrete until the difficulty starts to crumble. Deck isolates one small area of the problem and works on that until progress is made. He states:

It's just patience and cleverness and visualization and thinking of analogies from other experiences in life that you can learn from. All those other experiences are teaching you something.

Deck's comment about looking for analogous experiences is consistent with Weast's (1979) assertion that analogous experiences can serve as an effective guide in working out playing problems.

Two players mention another technical consideration which involves the use of trumpets of various pitch to play particular passages. Adolph Herseth and Donald McComas look at passages and imagine

them as played on trumpets in different keys. McComas states:

I try to envision, if I'm sitting there looking at something, how it would sound or how it would be technically on another instrument. So I would try to envision that on the printed page.

Herseth mentions his experience with a new piece by Michael Tippett which was characterized by some technically awkward trumpet solos. Herseth conceptualized these parts played on various trumpets to arrive at a strategy for performing this work. These players use a combination of aural, tactile, and kinesthetic imagery in imagining the sound and feel of these passages on different instruments.

Using listening experiences. Three players actively engage in listening and "aural rehearsal" (Smith) to build their mental concept of an excerpt or a solo work. Philip Smith mentions the value of using listening experiences to evaluate and conceptualize issues of interpretation. Smith compares "one style against another" in conceptualizing his own approach to a piece of music. Smith also mentions listening to recordings that he has made with the same critical ear. These listening experiences help Smith develop an aural imagination image of what he wants to sound like on a particular piece. He then uses this image as a goal in

his actual playing. Seymour Rosenfeld also mentions the importance of listening to recordings in order to crystallize his approach to a piece. He realizes that in professional orchestras, rehearsal time is at a premium and players must prepare mentally as well as physically by having their concept of a piece worked out prior to rehearsal.

Warren Deck mentions a unique strategy that he utilizes as part of his practice session. Deck plays along with a record in order to force himself to play the part through. Deck asserts that this experience is important in developing a conception of the piece as a whole. He later hears, in his mind, memory images of introductory phrases or accompanying parts to help him set the tempo, style, and interpretation of his own passage just prior to playing it.

Players also speak of imitating others by trying to recall the sound of others in their mind and using that as a guide in their own playing. Vincent Penzarella speaks of being able to imitate the sound of Harry Glantz, Bud Herseth, and Harry James when he was younger. Penzarella feels that the ability to recall these sounds is important. He encourages his students to practice hearing the sound of their favorite players in their mind and trying to imitate that sound in their playing. Arnold Jacobs relates a humorous, but

significant anecdote about working with students on their sound:

My students come here and they're having trouble, but they're still functional and I'll say "Well, how would Herseeth sound on this passage?" and they'll think a moment and they try to play it and they sound better every time and I'll tell them "you see how much better Bud is than you!" There's your imagery! If they can just conceive a much finer product in the brain...it will give it to you.

Hearing accompaniments. One important aspect of mental rehearsal is the value of hearing accompaniments or the whole effect of the work which is being rehearsed mentally. Some players feel that a practice session can be made more effective by supplying accompaniments or other significant features of the whole work in their minds. Twelve players make specific mention of hearing some aspect of accompaniment or introductions in mental or actual practice. Vincent Cichowicz comments that he always hears accompaniments when he practices:

I can't play a symphonic passage without hearing the orchestra - I just can't anymore. To me, the sound of what is going on in the rest of the orchestra is in my imagination.

Paul Kryzwicki also does this in his own practice and speaks of the importance of this aspect of practice for students:

When you're playing a lick, you hear all the other things with it. In fact, it makes it a



whole lot more fun. If you just put a kid who's never seen a Brahms symphony, or a Prokofieff piece, or a Bruckner symphony - just put those notes in front of him - I think that must be terribly boring - no depth to the musical experience at all. But if the kid has heard it a few times, he sees how it fits, and knows what kind of sound he wants to have for that.

The significance of this remark is that Kryzewicki uses some total aural image of the work to guide his playing of the excerpt as he practices. He feels that this gives the practice experience musical depth. William Scarlett agrees in saying that "if you don't hear that, you're just playing the excerpts, you're not playing the music." Philip Smith also hears this total aural image of the work as he practices an excerpt:

Hearing, while you're playing, all the other parts going on in your head so that you're not just listening to yourself, but you're training yourself to think of what else is happening...so you're hearing the whole picture and that would include, for pacing sake...continuing the piece so that you hear and come back in at the proper time.... You've got to play the interlude too - sing it through in your mind.

Smith points out the importance of hearing interludes and connecting passages in order to maintain concentration on what is happening musically in preparation for the next entrance. James Olin makes a similar comment about the importance of hearing the accompaniment during the rests as he practices for solo appearances with the orchestra. This allows him to

build "a concept in your mind of what it needs to be." Herseth, Cichowicz, Fedderly, Landgren, Sebring, and Fetter make similar supporting comments about the importance of hearing accompaniments in both orchestral and solo works.

Vincent Penzarella speaks of occasions when he had to depend on this ability in making last minute preparations for filling in for other players:

A couple of times, there were snowstorms and I had to play at the last minute without any notice - I put myself in a room and did visualization as far as sitting there and having to perform "Pictures at an Exhibition" - just keeping in my mind the first couple of sounds.

Penzarella also comments that he never practices alone:

If I played the opening to "Pictures" I would hear the opening couple of bars by myself, but then I would hear the whole brass section in the third and fourth bars. So I never played alone.

Penzarella also uses other practice strategies which involve hearing other sounds in his mind in addition to his own:

It's like if I were practicing octaves, I can remember and I do it to this day, I'll think "What would my notes sound like if I were playing them with Don Harwood and Warren Deck. That kind of imagery must offer something to my sound - hearing that bass trombone and that tuba.

All of these players use some sort of aural image to enhance the practice experience. Hearing these other aspects of the work tend to simulate the conditions

that they may expect to experience in actual performance. Many players in this sample speak of using imagination and pretend to create the performance environment in practice.

Making practice into a performance. Dale

Clevenger of the Chicago Symphony states "I never practice, I only perform". The significance of this statement is that the imagination can be used to make the practice session a surrogate for actual performance. Clevenger states:

My logic is this. I play my best, my most exciting, my most inspired, my most mature playing under the stress of big concerts and if I play my best when I'm performing...I decided a long time ago that I'm going to perform all the time. Whenever that horn is up to my face - it's a performance - I pretend that there's an audience out there.

Ten players in this sample make similar comments about using the imagination to simulate aspects of the real performance during practice. Basically, all these players use a strategy similar to Clevenger's - that is, to picture themselves playing before an audience while practicing. Herseth, Kleinhammer, Scarlett, McComas, Landgren, Schlueter, Kryzwicki, Deck and Rosenfeld are included in this group.

William Scarlett offers another representative and important comment about this aspect of mental rehearsal:

Some students have a tendency to get used to playing for the four walls of their practice studio and that's one of the hardest things for them to overcome - to suddenly realize that they're no longer playing for those four walls, they're playing for an audience...your thinking process has to be practiced the same as your music has to be practiced. If you think you're playing in a practice room, you're going to sound like it. If you think you're playing for a performance, you will.

Scarlett clearly advocates placing oneself in a performance situation while practicing. He feels that this will be reflected in a player's thinking once the actual performance comes.

Two of these players attempt to place practice in the mental frame of actual performance but speak of important differences between the two situations. Seymour Rosenfeld realizes that the sound in performance is totally different because of the effect of the concert hall and no matter how much he tries, the result is always different in the hall. Warren Deck also realizes that the practice session is different because he can allow himself to sound bad there - to work out problem areas in his playing. Deck also feels that the possibility exists for him to play even better in performance than he could possibly visualize in practice:

I think that the possibility exists, however rare, that in the concert it's possible to play even better than you ever imagined it up to that point because it's just a later point

in time and there are other inspirational things coming in [in performance].

Rehearsing mentally for special performances.

Many of the players who were interviewed are actively engaged in making solo appearances or taking auditions. These "special" performances seem to warrant special practice techniques. Nine players in this sample mention aspects of mental rehearsal that they use to prepare for recitals or auditions. These approaches range from visualizing the performance beforehand to playing through the performance and imagining it to be a surrogate for the real thing.

Douglas Yeo recommends that students preparing for auditions go through every piece mentally rather than playing these pieces on the day of the audition. He feels that using mental rehearsal crystallizes what the students want to sound like on each excerpt. David Fedderly visualizes himself playing through auditions in advance in preparation for the performance:

I think that the visualization is a very important thing before you ever go out on that stage and do it. Weeks before, you sit and you hear yourself playing those excerpts.

Peter Landgren uses this same approach in preparing for solo appearances:

I'll just kind of have a piece going in my head. For instance, I'm playing a Mozart concerto with the orchestra in a couple of weeks. I'll always sing the tutti passages -

I'll hear it going on like I'm actually standing in front of the orchestra rehearsing....I'll just go through the process of the whole concerto [in my mind].

Warren Deck uses a similar strategy in preparing for auditions. He often practices by playing along with recordings of orchestral works. When he gets to the actual audition he draws on that practice experience to play his best:

It would be almost like a needle would drop in my head and the record would start going four bars before I come in, and what that would do for me is to give me correct tempo, correct style, and correct dynamic. You would be all set and ready to go and you'd just drop in.

Deck feels this is an important strategy because all of the members of the committee are also hearing the whole piece in their minds as the player goes through the excerpt.

William Kuyper uses a mental rehearsal strategy combined with actual practice to prepare for solo appearances. In his studio, he practices walking out onto the stage and bowing to the audience before he runs through the concerto or solo work in his practice. He feels that pretending in this fashion helps him to get the "feel" of the actual performance in practice.

Donald McComas turns this strategy around a bit when he finds that he is playing too much in a routine. He will pretend that he has an audition coming up to

get himself "back in the groove." He provides himself with this added challenge to instill freshness in his playing and allow him to break out of the routine.

The use of guided imagery. One player in this sample has cultivated a specialized approach to mental rehearsal which is drawn from the mental imagery literature. Randy Gardner uses guided imagery to prepare for solo appearances and auditions. Guided imagery involves visualizing a real-life experience in complete detail in a controlled manner. Gardner sets aside "one or two twenty minute sessions daily for a period of time leading up to the performance." He tries to be "extremely specific in every detail of this imagery" as he visualizes himself in the performance:

I try to do it as realistically as humanly possible. I try to feel everything that I would be feeling, but I do it in a very positive sense. I will try to feel very at ease playing the instrument. I'll try to feel extremely comfortable going over the more difficult passages - like having them float out exactly the way I want them to happen musically - hearing it - hearing the sound.

Gardner also mentions that he will carry these visualizations into the practice room when he plays the piece to allow him to picture himself on stage performing the concerto. Gardner mentions that he got the idea to use guided imagery to prepare for solos and auditions from his mentor, Philip Farkas. Gardner

reports that he also utilized another imagery technique when he was auditioning for orchestral positions. He would make up a "dummy contract" which included all the particulars of the job he was auditioning for. He would sign it and use the image of this contract as a goal in his guided imagery and in preparing to take the audition. Gardner advocates the use of these mental rehearsal strategies by his students.

#### Mental Rehearsal in Performance

Eleven players make specific comments about mental rehearsal strategies that they use during performance to help them play a passage well. In most cases, these strategies are consistent with those used in practice as described in the previous section. This section will detail some variations in mental rehearsal that seem to be appropriate for use during actual performance.

One important variable seems to be when the mental rehearsal is used relevant to the actual playing of the passage. Some players mention that they run through a passage in their mind just before they play it. Others speak of going through an important or tricky passage just before the concert or at intermission. Others seem to use a strategy similar to "compressed rehearsal" (Rosenberg & Pinciotti, 1983) an instant



before they play. Some players take more time to rehearse a passage during performance. Donald Tison might take time during rests to use a mental rehearsal strategy to prepare to play a difficult passage:

I can sometimes finger through a passage and imagine myself playing it five or ten times - as long as I can come back from that and know right where the orchestra is....I've never seen it harm my playing - it always makes it better.

Tison uses this form of mental rehearsal in performance to solidify some technical aspect of playing a passage. He also reports an experience he associates with doing this:

I believe that it's almost like your mind imagines - it's like all your muscles and everything involved in playing the trumpet imagines that they're doing it or something. ...It always seems easier to play after I do that.

Tison uses this strategy as a sort of conditioning exercise to insure that he will play the passage correctly. In addition, the conditioning aspect of this exercise makes it almost seem as if he is doing it without conscious control. Other players mention going through tricky spots or complex rhythms in their minds just before playing them. Fetter, Gardner, McComas, Olin, Rosenfeld, and Fedderly mention this aspect of mental rehearsal.

Adolph Herseth concentrates on the image behind the sound that he wants to produce for particular

orchestral works. He mentions that he will run the story of a piece like "Pictures at an Exhibition" or "Til Eulenspiegel" or "Don Juan" through in his mind to reassert his approach and crystallize his concept of the piece. He mentions that he sometimes will have these things in his mind from when he gets to the hall - or even during the day:

Everybody rehearses these things mentally. That's half of preparing the music, you know. Get yourself in the right frame of mind before you play.

Donald McComas also goes through passages at various times relative to the concert. He feels it is important to have a clear image of what he should sound like in his mind before he plays the passage:

Before I play, I try to envision what I intend for it to sound like...I try to imagine sounding just a certain way and then try to play it that way...I'll do this before playing a concert or at intermission. If there's a particular passage - without playing it, I'll just sit down and try to envision it. So this could be like minutes before, or seconds before, or in terms of intermission, like an hour or so before.

Peter Landgren mentions running through a part mentally as he plays it:

I'm almost reproducing what I'm playing in my mind - it's like I'm singing along...if I don't hear it or conceptualize it in my brain, there's no way I'm going to get it - especially on the horn.

Landgren speaks about the treacherous nature of the horn in terms of note accuracy. Three other horn

players in the sample make similar comments. Richard Sebring feels that he has to take a moment to prepare - in the breath - for what's coming. Sebring likes to focus on the ensemble and what they're doing in performance, but feels that he still must take that last moment before an entrance to prepare for the upcoming part. William Kuyper and Randy Gardner also focus on the music around them as a point of reference and then hear their entrances a moment before in the breath so that what they play "occurs as a natural consequence of what is happening [in the music] at that time" (Gardner).

Kuyper speaks of another use of mental rehearsal in performance which helps him deal with his position as Assistant First Horn in the New York Philharmonic. The difficulty with this position is that the player may have to play a small fragment of a passage to give the principal player needed rest. Kuyper feels that he is "running alongside a moving train" so that he can make the entrance:

I'll start fingering. I'll start using the valves somehow. Sometimes, I'll ventilate a little - breathe a little fast just to feel like I'm really into it.

Kuyper not only imagines that he is playing along with the principal player until he has to make his actual entrance, he simulates some of the physical aspects of

playing in order to get the feel of playing the passage.

From these varied descriptions of mental rehearsal strategies, it seems that the majority of the players believe in the concept of mental rehearsal and use it in some way in either practice or performance to improve their playing.

### Performance Anxiety

Another goal in this study is to explore the issue of performance anxiety with these distinguished brass players to determine the degree to which they experience this phenomenon and to discover what kinds of strategies they use to deal with it. Clinical psychologists have looked to the field of mental imagery for strategies to be used for the treatment of anxiety and various phobias (see Lazarus, 1977; Crits-Christoph & Singer, 1984 for examples). Athletes have also turned to imagery to lessen anxiety in physical performance and competition (see Suinn, 1983). Musicians have begun to realize the potential of using mental strategies to reduce anxiety and improve performance (see Grindea, 1978; Ristad, 1982; and Green, 1986).

According to the reports of players in this sample, anxiety is a phenomenon that the great majority of musicians experience in performance. In addition to the fact that twenty-four of twenty-six subjects reported experiences of performance anxiety, eight players in the sample voice the opinion that every player experiences some of the symptoms of performance anxiety at one time or another. These symptoms include nervousness, dryness of mouth, increased heart rate, and a feeling of excess tension or stress.

Some players feel that accepting performance anxiety as a natural human phenomenon allows them to put it beneath the surface of their consciousness to the extent that it is not a factor in their playing. By allowing themselves to experience the anxiety, they de-emphasize its effect on their performance. The attitude that these players have adopted supports the views of Ristad (1982) and Green (1986) with regard to allowing the anxiety to happen. They suggest that actively trying to suppress the feelings of nervousness or tension would only tend to amplify those feelings and make it more of a negative factor in their performance.

Many players utilize imagery in dealing with the anxiety so that it does not become a negative influence

in their playing. Some players stress the importance of relaxation as a deterrent to performance anxiety. They focus on relaxation in connection with a general feeling of well-being or relaxation in terms of the breathing apparatus required for wind playing. Imagery strategies are important here in promoting the relaxation that they feel is crucial to successful performance. Other players in the sample counter the anxiety by focusing on the music and downplaying how they feel. These players also speak of not dwelling on missed notes or mistakes. These points of concentration and mental focus allow them to use the anxiety positively in their playing or to place it beneath the surface of awareness. Positive imagery and visualization techniques are also used by some players to build confidence and to counteract the effects of performance anxiety. Players speak of the importance of confidence in their playing which they base on a number of factors. The most prevalent of these factors are preparation and experience. Players use imagery strategies to call on these prior experiences to dispell the anxiety.

The following section of this chapter will describe the experiences of the sample with regard to performance anxiety and the approaches that they use to deal with it.

### Relaxation

Custer and Trahan (1984) advocate to use of relaxation techniques in dealing with performance anxiety. They feel that relaxation exercises should be used as a precursor to "creative imaging" in dealing with the onset of stage-fright. Grindea (1986) speaks about the importance of relaxation techniques in creating physical balance as well as dispelling unproduction tension in performance. Grindea advocates the use of the "Alexander technique" in promoting relaxation. This technique involves the use of visual and kinesthetic images to put the body in a balanced and relaxed state. The mental imagery literature suggests the potential of various imagery strategies in promoting relaxation. Strategies include guided imagery, auto-suggestion, and autonomic control (see Samuels and Samuels, 1975 for an overview).

Twelve players in the sample use some sort of relaxation technique to deal with the effects of nervousness. These players use relaxation techniques in two different ways. Some use these techniques before a performance in order to establish a generalized feeling of relaxation and well-being. Other players focus their efforts on maintaining relaxation in their breathing apparatus while playing in order to diminish negative tension. Eight players

mention the importance of generalized relaxation, three players mention relaxation which is specific to the breathing apparatus, and one player mentions the use of both.

Warren Deck seeks a generalized feeling of relaxation before an important performance:

I've gone into a room, closed the door, closed the lights, and gotten all the people out of there, and it's just like you've gone to the beach - just sense some peaceful place, just clear the cobwebs out, and all this frenetic stuff that's going on - and I do feel it helps.

Deck uses imagery to recall the sense of a beach or some other peaceful place to clear his mind of tension and anxiety prior to performance. Deck uses self-generated guided imagery and auto-suggestion to travel to another time and place in his mind. This promotes relaxation and rids him of feelings of nervousness and tension before he goes on stage.

William Kuyper also hunts for a relaxed feeling when he needs to diminish the tensions of performance. Kuyper mentions "little physical tricks" that can be used to promote relaxation. He advocates the use of deep breathing to produce a sense of calm and a feeling of well-being. Arnold Jacobs offers an explanation of how deep breathing works to dispell the tension resulting from performance anxiety. His explanation is



based on the concept of autonomic suggestion and control. Jacobs states:

The brain influences the body and the body influences the brain. So if the brain is in turmoil, then put the body in a calmer situation. If we start with slow, measured inhalations...the pulse starts to slow up a little bit. Normally, in anxiety, breathing becomes rapid and shallow. Pulse goes up. Blood pressure goes up. So you try to create the conditions of the opposite and then the imagery comes in.

The effectiveness of autonomic suggestion has been documented in mental imagery research. In autonomic suggestion, the mind can control certain physical manifestations in body function. Jacobs suggests that this technique can be effective in dealing with the tensions of performance.

David Fedderly also believes in using a relaxed breath to quell feelings of anxiety. He employs visual images to promote an understanding of the physiology to the breathing apparatus under conditions of stress. He feels that many players respond to the feeling of tension brought about by the onset of nervousness by pushing harder on the airstream in exhalation. Fedderly suggests the image of blowing out a match with a relaxed column of air (similar to a sigh) as a positive replacement for the tendency to push the air harder. Fedderly uses this image as he plays to guide correct breathing function. Rosenfeld, Fetter, and

Landgren make similar supporting comments about their use of relaxation techniques to counteract unproductive tensions in performance.

These players count on imagery-related relaxation techniques either before or during a performance to help them deal with the onset of anxiety.

#### Concentration and mental focus

Other strategies for dealing with performance anxiety involve concentration or the mental focus of the player. Performers in the sample bring up two important issues with regard to mental focus and concentration in dealing with anxiety-producing situations. The first of these issues involves focusing on the musical rather than the personal aspects of performance. The second issue involves shifting the mental focus concerning anxiety in order to use it to advantage in playing.

Focusing on the music. A number of brass texts mention the importance of concentrating on the musical message rather than other personal aspects of performance (see Johnson, 1981; Bush, 1962; for example). Twelve players advocate using this type of strategy in dealing with nervousness and stress in performance. The essence of this strategy is to focus the mind on an image of what the passage or solo work

should sound like and to let this concentration transcend the anxiety associated with the performance situation. Vincent Cichowicz summarizes this approach in dealing with nervousness and anxiety:

Accept the fact that you're going to be nervous...Try to transcend the situation by getting so immersed in the music - again the imagery of making music - imagery of really performing...up there rather than being tested...say "This is the way I think this piece should go" and perform and let the chips fall where they may.

Cichowicz further explains how this concentration and focus can become a positive force in playing:

If you're really fascinated by the pieces that you're playing, if you're really fascinated about playing the trumpet, and if you get yourself excited there, you're going to override this [anxiety] and it's going to disappear because the brain can't concentrate on two things at the same time. It's got to be focused on one and I find that that is one of the ways to effectively deal with it.

James Olin also deals with anxiety by focusing on the music instead of nervousness:

I would say that the thing that helps me the most to alleviate stress is to actually think about how I sound and try not to think about how I feel - try not to think about how many people are in the audience.

These players utilize their concept or image of the way that they want to sound not only as a guide in playing, but also as a point of focus to alleviate stress.

A corollary to using the music as a point of focus is to downplay the importance of making mistakes.

David Fetter feels that it is much easier to avoid making the first mistake than the second. The rationale here is that once the first mistake is made, then the focus might shift from musical issues to mistake-making. Arnold Jacobs summarizes this view which is advanced by five players in the sample:

It should always be based on music where you're not afraid to do things wrong. In other words, if you're reaching for a high note and it doesn't come, so what! Bad sound can be made into good sound - silence can't!

These players certainly make few mistakes, but their general attitude is that mistakes do not necessarily ruin performances. This attitude allows them to aspire to greater heights of musicianship without undue self-imposed pressure.

Using the anxiety as a positive force. Vincent Cichowicz speaks of a friend who is a tuba player in Denmark who considers anxiety to be a form of "energy" which he uses to charge his performances with life. This player uses a shift in mental focus which allows the anxiety to be a positive force in his playing. Eight players in this sample take a similar approach in using the symptoms of anxiety as a tool in their playing. Adolph Herseth states:

I am concerned if I come to a concert where I have big things to play - I'm concerned if I'm not a little edgy - in other words - alert, on my toes, and ready to go. - because

that means I'm going to have to concentrate a little bit more to stay in there.

Herseth feels that this nervous energy helps him become involved in the performance and adds electricity to his playing. Rather than fearing the anxiety, these players focus on it to provide an additional level of involvement and inspiration as they perform. Dale Clevenger makes a similar remark:

If you use other words like anxiety, concern, care, the whole concept can be a positive thing. I get worried if I don't have to take a deep breath, have the heartrate faster, and either salivate or dry up - if something doesn't happen, I'm worried.

Randy Gardner connects performance anxiety with the excitement of performance:

You should be excited about what you're doing and the music should excite you and the performance situation should excite you. It should get a little shock of adrenalin going through your system.

One member of this sample uses imagery to induce the feeling of nervousness prior to an important performance. William Kuyper's experiences with anxiety have usually occurred during performances and not before, and he feels that by mentally focusing on nervous tension prior to the concert, it helps him give a steady performance:

I try to anticipate and almost get the energy going. I almost induce myself to fight nerves early - like half an hour or forty-five minutes before...I try to keep a little nervous tension going because I find

if I get too nonchalant that, all of a sudden, at the moment of truth, I may not be able to handle it.

Kuyper uses various strategies to induce this nervous tension. He will "pace around" to raise his heartrate and he will use his imagination to generate the feeling of nervousness based on his past experiences with anxiety in performance. It seems that he may recall images of past experiences and feelings in order to induce some of the physical manifestations or symptoms.

These players have gone a step beyond acceptance in terms of performance anxiety. They focus on the anxiety (and its physical symptoms) and use it to their advantage in playing.

#### Positive Imagery and Visualization

Another important approach to dealing with nervousness and stress in performance is the use of positive imagery and visualization. The literature suggests the potential of this approach in reducing anxiety and improving performance. Clinical psychologists use positive imagery and visualization in the treatment of phobias (see Lazarus, 1977). Green (1986) and Ristad (1982) apply these strategies for use by musicians. Thirteen players in the sample speak of specific uses of positive imagery and visualization in relation to the reduction of performance anxiety. For

the most part, these strategies are quite similar to visualization techniques which have been detailed in the section on Mental Rehearsal earlier in this chapter. Players visualize themselves performing successfully in stressful situations and use these positive images to dispell nervousness in important performances, solo recitals, or auditions. These players also draw on their storehouse of prior experiences in practice, rehearsal, and performance for support in dealing with anxiety. This section will present some specific applications of positive imagery and visualization in reducing performance anxiety.

Positive imagery. Philip Smith uses positive imagery to remove the "worry" from playing a difficult passage. He sees himself performing in a positive way to increase his chances of playing well:

I go through it and I imagine myself doing it and being right. You can't approach it from a negative point of view - worrying about the high note at the end - am I going to make it? Because if you worry about it, for sure you're going to miss it. You think positively in terms of going through it - that it's going to sound great - in a sense, sometimes being very egotistical about it.

Smith bases this egotism on a belief in his own ability as well as preparation and experience:

When it comes to your turn to play, you've got to believe that what you're going to play is going to be absolutely the greatest thing that anybody's ever heard. You've got to be

realistic about your performance, but at the time when it comes to performing it, you've really got to believe that it's going to be just great.

For many players, this positive approach comes from prior successful experiences in performance. These experiences are stored in their memories and recalled in the form of visual or auditory images when needed for support in building confidence in times of stress. These images come from a variety of sources including practice, rehearsal and performance.

Players in the sample use positive experiences in the practice room as a source of reassurance and support. They recall images of their playing in practice and rehearsal and use these images to build confidence in their ability to play well in performance. Donald Tison states:

You have the assurance of knowing that you have prepared yourself well...and you don't allow yourself to get so anxious about it when you go out on the stage to play. You know you can do it...and everything says you can do it if you just don't let your nerves go haywire.

Tison, among others in the sample, expresses a certain faith in his level of preparation. David Fedderly explains how this approach works for him. When on stage, Fedderly visualizes himself doing what he does in the practice room. He states that he "does not practice dull" - he simulates actual performance in



practice. When nerves begin to mount, he turns this strategy around using visual and aural images to replicate his practice experiences in performance.

Fedderly also mentions the importance of being flexible in his practice so that he is prepared to meet a wide variety of performance requirements. He will practice passages in a variety of ways so that he will be able to respond to a variety of performance situations. Adolph Herseth also underscores the importance of this practice strategy in artistic performance. Herseth speaks of practicing important solo passages in many different styles and tempos so that he will not be locked into any one way of performing the solo. These players feel that they can respond to the conductor's wishes by drawing on a wide variety of practice experiences in performing a difficult orchestral passage or solo.

Donald Harwood also puts himself "into all the various predicaments and situations" of performance during his practice. This allows him to practice dealing with stressful situations and to draw on this experience in actual performance by recalling images of his practice-room experiences. By simulating these potential problems in his practice, he feels he will be able to deal with similar situations when they arise in performance. Four other players support Harwood's

approach in recommending mock performances in order to supply a foundation of performance experiences which can be used in stressful situations. Landgren, Bolter, Sebring, and Cichowicz comment on the importance of building up a defense which can be used in auditioning or recital playing.

Warren Deck summarizes the view of these thirteen players about the importance of preparation in dispelling feelings of anxiety about performance:

Confidence is bought and paid for in the practice room. When you've done it eight hundred times right in the practice room, just before you come up on stage that brings more confidence than two out of three downstairs.

Another source of imagery for these players is previous successful playing experiences. Seven players mention the importance of drawing on successful past experiences in dealing with performance anxiety. Peter Landgren uses his "track record" of successful playing experiences to counter nervousness about performing. He runs this track record through in his mind before an important performance to quell any nervousness which arises:

I have to tell myself that I've played this passage dozens or hundreds of times and it shouldn't make any difference this time - that this time should be the same as any other time.

Landgren tries to remove the effect of other influences such as the audience or the orchestra by focusing on his past successes and this has a calming influence on his nerves.

Visualization. David Fedderly believes in taking a positive approach and uses visualization to bring that to reality. Fedderly speaks of using the "song in the head" as a positive replacement for anxiety. Fedderly also uses visualization techniques in various playing situations. He describes his approach with regard to orchestra auditions:

I simply visualized myself at the audition sitting with the orchestra, not trying to do anything special with the playing, just trying to do what I do in the orchestra.

He bases this visualization on his past experiences in practice and performance. He also makes a point of not putting extra pressure on himself as he goes into the audition. Fedderly also varies the details of his visualizations so that he can be flexible as he approaches an audition:

Weeks ahead of time, you visualize yourself walking out on stage - seeing a screen, maybe seeing several different kinds of screens - seeing a screen in front of you - maybe seeing a screen out in the audience...If you only visualize it one way and you walk in and it's different, that may throw you.

Fedderly also uses visualization in dealing with the anxiety caused by certain difficult passages in the orchestral repertoire:

A perfect example is the "New World Symphony" - you don't play the first movement, you play seven notes at the beginning of the second movement and you play seven notes at the end of the second movement and that's it. And to just visualize yourself playing those things and sitting there calmly - again, it's that positiveness - the visualization is becoming the positive act that is replacing this act of saying "Oh my God, what if I miss this note - what if I miss the entrance!"

Fedderly relies on these sorts of visualizations in many aspects of his playing and he emphasizes their importance as replacements for feelings of anxiety and stress.

Charles Schlueter uses a type of visualization exercise which was suggested by his friend, Eloise Ristad, to help in dealing with stage fright:

You have to be curious and you observe shapes, colors, and you expand your peripheral vision so that what happens in playing the trumpet is that the sound will expand to fill the environment that you're observing.

Schlueter mentions the use of this technique in the performance of a precarious solo passage with the orchestra. Just prior to playing the passage, Schlueter tried this form of visualization:

Just as we got to that spot, I was still looking at the music, but I saw both sides of

the balcony...and it was like I couldn't miss.

Schlueter feels that this technique not only had an effect on the way that he played the passage, but also on those that heard it. Schlueter reports that he uses this type of visualization with his students with effective results.

Performance anxiety seems to be a major issue for musicians at all levels, including the majority of these distinguished performers. Many of these players have used imagery strategies successfully in helping them to transcend that anxiety in order to give an artistic performance.

#### Summary

Chapter IV has presented the findings of this study of mental imagery and musical performance. These findings are based on statements made by distinguished brass players from five major symphony orchestras. These statements were analyzed, compared and contrasted, and used to substantiate the role and importance of mental imagery in the artistic process of these performers.

Mental imagery experiences and strategies were found to be important in eight major topic areas involved in musical performance. These major topics included Training and Experience, Mentor(s), Warm-Up,

Tone Production, Musical Expression and Interpretation, Conductors' Imagery, Mental Rehearsal, and Performance Anxiety. Findings were reported for each of these topics in the form of a summarization of the general view of the sample, representative statements from individuals in the sample, and unique strategies and divergent views where appropriate within each topic. These findings were also discussed within a theoretical framework based on the literature in mental imagery and the literature in musical performance.

## CHAPTER V

### SIGNIFICANCE OF THE STUDY

#### Introduction

Martin Lindauer suggests that "images to the arts enchant us for the moment; afterwards they enable us to see (or hear or feel) the world in a new way" (1983, p. 468). Artistic images can reach far beyond enchantment to become a vital ingredient in the process of artistic musical performance. The musicians who participated in this study experience imagery in response to music and have found ways to incorporate these images in their approach to performance. They draw on images evoked by everyday life as well as their broad spectrum of musical experiences which are gathered into a storehouse of specific and vivid memory images as an important resource in performance. These players respond primarily in terms of aural images, seeking a specific idealized sound (or sounds) that has become deeply internalized and personalized through years of listening, practice, and conditioning. But they also respond in terms of sensory experiences which are visual and kinesthetic, associating images created from

these extra-musical sensations with the actual or imagined sound and use them to recall a specific sound or to create a specific atmosphere as they perform.

Musical performance is outwardly manifested as a physical activity, but from the reports of these players, there is a vital mental component which has imagery at its core. This study has fulfilled much of its stated purpose in beginning to unravel and explore the mystery of some of the mental processes which are intertwined in many important aspects of artistic performance.

#### Overview of the Study

Chapter I presented the theoretical foundation for this study of mental imagery and musical performance which is based on the literature in mental imagery as well as methodological writings in brass performance. The study of mental imagery extends back to research in the late nineteenth and early twentieth centuries. Because of the rise and dominance of behaviorism in the field of psychology, interest waned in the study of internal cognitive processes and mental imagery research declined until the second half of the twentieth century. Interest in imagery research was re-kindled in the 1960's and since that time, another shift in the field of psychology (from behaviorism to



cognitivism) has contributed to an even greater interest in internal mental processes such as imagery. The theoretical foundation of this study was conceptualized in several parts. General theories concerning imagery were presented along with various experimental paradigms for quantifying imagery experiences. The importance of mental imagery in the arts was considered from the perspective of the artist, the art object, and the audience. Theoretical applications of mental imagery in music were reviewed in terms of the composer, the performer, and the theorist. Chapter I concluded with a review of a selection of current brass methodological literature which revealed potential areas of interest in this study. This theoretical foundation clearly shows the potential of imagery use in musical performance in general and brass performance in particular. This foundation led to a search for an appropriate method for the exploration of imagery-related phenomena in brass performance.

Chapter II presented a review of research which pointed to the need for an exploratory study into the question of mental imagery and musical performance. There are no clear models which could be used for guidance in conducting this study. Therefore, mental imagery research in a number of allied general areas,

as well as general research into the arts and the artistic process was identified to give some indication of direction in designing the present study. A line of research which focused on working professional artists was identified in the qualitative literature. This line began with the work of Catherine Patrick who studied the creative process used by poets, artists, and scientists (1937, 1938, 1939). Ann Roe (1946, 1951) continued this line of research with painters and scientists. Eindhoven and Vinacke (1952) and Ficke (1964) expanded on these studies of the artistic process in painting. Bennett (1976) talked with composers about aspects of the process they used in creating a new piece of music. Lindauer (1983) reported on more recent research into the artistic process which focused on the use of imagery. Rose Castellano (1983) talked with artists from different mediums concerning their use of imagery and Martin Nass (1984) spoke to composers about their imagery from a psychoanalytical perspective. Benjamin Bloom (1985) headed a research team which conducted interviews with eminent individuals to learn about their early development. Helane Rosenberg (in press) interviewed visual artists to further explore the role of imagery in their artistic process. This line of research pointed to the

potential of exploring imagery in musical performance through conversations with distinguished brass artists.

Chapter III describes the method and analysis procedures which were followed in this study. A moderately scheduled standardized interview format was used to gather data for this study. This format was based on Goetz and LeCompte (1984) and a current study of visual artists and their imagery by Rosenberg (in press). An interview guide based on Gorden's (1980) model was developed based on a study of imagery references in current brass methodological literature. A study of these sources as well as the mental imagery literature led to the identification of eight major topic areas which held potential for the use of imagery-related strategies. These topics included training and experience, mentors, warm-up processes, tone production, musical interpretation, use of imagery by conductors, mental rehearsal, and reduction of performance anxiety. Probe questions in each of these topic areas were included on the guide. This interview format was modeled after Rosenberg (in press) and field-tested in a pilot study using free-lance brass players in the New York Metropolitan area. Twenty-six performers from five major orchestras (Baltimore, Boston, Chicago, New York, and Philadelphia) were identified, contacted, and interviewed. These

interviews were tape recorded, transcribed and analyzed using a four stage process which was derived from Goetz & LeCompte (1984).

Chapter IV presents the results of this analysis according to the eight major topic areas considered during the interview. A brief summary of the major findings in each topic area follows.

Many players in the sample have stored images of early musical training and experiences. Parental influence and support, quality school music programs and influential teachers, and formal musical training continue to be a resource for many of these performers. Players in this sample have also stored specific and vivid memory images of experiences throughout their years of professional performances for future use.

Significant relationships with one or more mentors or master teachers were developed by the majority of players in this study. The mentors served as models and examples for their protégés. Aural and visual images of these mentors are consistently formed by subjects in this study and continue to have an effect on their performance.

Players speak of mental focus as an important aspect of their warm-up process as they prepare to play. Major points of focus include sound, feel, air, and mindset. Auditory, visual, and kinesthetic imagery

plays an important part in providing players with a mentally-held reference to be matched as they begin to play.

The great majority of the players can create an aural image of the sound they are striving to achieve in their mind's ear. This sound represents a mental ideal which is based on vivid and personalized images of various sounds. They use these images as goals or guides in comparing how they actually sound to their concept of what they want to sound like on their instrument. Kinesthetic and visual images are also used to crystallize certain aspects of tone. Some players attribute certain shapes to sound. The shape most frequently mentioned was the triangle or pyramid. Two players in the sample reported a response to sound in terms of color. These players seem to experience chromesthesia as documented in the imagery literature.

The most striking finding with regard to the role of imagery in interpretation is the congruency between the reports of the majority of these players and Rosenberg's theoretical model explaining the function of imagery in the creative arts (Rosenberg & Pinciotti, 1983). Players form images from a variety of sources - manipulate them in their minds through imaging strategies - and externalize these images in some way

in their playing. The data gathered in this study lends support to the applicability of this model for musicians. These players identify the primary sources of images used in interpretation to be the actual musical content of a passage, prior personal experiences, and extramusical associations based on the programmatic content of a work or on the player's imagination. These images are realized in performance in two primary ways. The image may serve as a reference to be matched in actual playing or the image may evoke a mood or atmosphere which becomes part of the substance of the musical expression for the individual player.

Imagery evoked by descriptive or allegorical language seems to be an effective means of communication between conductor and orchestra. All of the players interviewed in the study have played for conductors who used imagery as a means of communication with the orchestra. Players in the sample react to a conductor's use of imagery based on their own disposition toward imagery use. While the players realize that it is their job to respond to the best of their ability to accomodate a conductor's suggestions, they do express a preference for imagery use which is congruent with their own attitudes about using imagery in performance. The images that conductors use fall

into three types - sound-related images, images based on programmatic content, and visual images based on the conductor's use of nonverbal communication - body language, facial expression, and gesture.

The great majority of players in the study find mental rehearsal to be a useful tool in practice and performance. Perhaps the most significant finding is the way that these players use their imagination to make practice a surrogate for performance. Their ability to hear an aural image of the work as a whole (as well as introductions and accompaniments) adds depth to the musical meaning of a practice session. The use of mental rehearsal during performance also seems to be a significant factor in improving accuracy and consistency for many of these players. Some players report instances where mental rehearsal happens spontaneously for them as a melody enters their minds. These players simply attend to the sound as it runs through their minds or they take control of the imagery and use it to work on some aspect of their performance. Other players consciously work on musical problems using mental rehearsal techniques. One player in the sample uses guided imagery techniques to prepare for special performances such as recitals and auditions.

These players identify performance anxiety as a pervasive phenomenon which is experienced by performers

on all levels. Perhaps the most significant finding with regard to performance anxiety is that many of these players use positive imagery and visualization to reduce the negative effects of nervousness and tension in stress-producing situations. These players actually run the performance through in their minds, seeing themselves performing well in their imagination. This provides support and confidence in their ability prior to going on stage. One player uses a regimen of guided imagery prior to important performances and auditions to help him deal with the stress involved. Other important findings in the area of performance anxiety include the importance of concentration and mental focus and the use of relaxation techniques prior to performance.

Chapter V will present the conclusions, implications, and recommendations of this study. After a general discussion of the method used in this study, conclusions will focus on the respondents' reaction to the interview process and their variability of responses, their imagery experiences and awareness of imagery in their artistic process, and their use of imagery in practice and performance. Significant findings will be discussed in detail followed by important implications for musical performance, music education, mental imagery research, and psychology and



the arts. Recommendations for further research will be detailed along with some insights on the process of interviewing artists about their art.

### Conclusions of the Study

The following section will present some conclusions drawn from this research. This section will begin with some general considerations concerning the design and conduct of this study followed by some specific considerations and conclusions involving the interview process, the variability of responses, imagery awareness and experiences of the subjects, and the role of imagery in brass performance. This section will end with a discussion of significant findings.

### General Discussion

The major purpose of this study was to explore the role of imagery in brass performance through the experiences of twenty-six distinguished brass performers. These players proved to be ideal subjects in learning more about the potential of imagery in musical performance. One of the major strengths of this study is the quality of the sample of musicians who participated. These players hold positions of responsibility in some of America's finest orchestras and have gained a reputation for performance

excellence. These players are generally considered to be among the finest players in the world by their colleagues in the brass-playing community. These players are also accustomed to articulating details of their approach to performance. Their advice and opinions are generally sought by students and colleagues alike. Many of these players regularly give master classes and clinics at major brass conferences. Some players in this sample perform and teach internationally. It is the opinion of the researcher that this sample is of the highest quality - as high as one could ever expect to attain in conducting a study of this kind.

In the process of identifying and contacting subjects, an unexpectedly high percentage of participation was achieved. Of twenty-seven players who were contacted, twenty-six actually participated in the study. Two factors accounted for this high positive response. The first of these was the process used for identification. The researcher used his network of professional contacts to identify potential subjects for the study. This system of referral was quite effective in identifying participants and arranging interviews. The second factor was the researcher's background as a brass player. Potential subjects seemed to be more willing to discuss the

playing process with another musician. In several cases, when initial contact was made with potential subjects, their attitude toward participation was clearly influenced when they learned that the study was being conducted by another brass player. These two factors were primarily responsible for the high rate of response by potential participants.

One limitation of the selection of subjects is the fact that all of the brass players who were interviewed were men. The reason for this act of omission was simply that there are few women brass players in the orchestras selected for the study. During the period when this study was conducted, there were no women in the brass sections of Boston, New York, and Philadelphia. There was one woman brass player in the Chicago Symphony and two in the Baltimore Symphony. The researcher was unable to schedule interviews with these women through his network of professional contacts. While there are women who have certainly distinguished themselves playing brass instruments in American orchestras, they were unavailable to the researcher for this study.

While the results of the study can only be generalized with confidence to a small segment of the brass-playing community, this segment lies at the pinnacle of achievement in brass artistry. One can

assume that if these players of the highest stature find imagery to be an important ingredient in their artistic process, then their imagery strategies and experiences would certainly hold potential for other brass players as well. In an exploratory study, the prime objective is to shed new light on various phenomena as they exist in the population. By choosing a sample representative of the most elite group of brass performers, the researcher focused on the phenomenon of mental imagery and brass performance in those who have attained the highest levels of achievement in the field. This strategy is congruent with Bloom's (1985) effort at identifying and studying "world-class" performers in a variety of fields. While other segments of the brass-playing community may utilize imagery in different ways - or in different degrees - the players in this study are members of the group most likely to be emulated by less accomplished players. This fact leads one to believe that the findings of this study would be of significant interest to the musical community in general.

There are several concerns which bear on the results of this study. In any qualitative study, one must always deal with the issue of the interpretation of the data. The dual question of interpretation and introspection on the part of the subjects must be

considered as necessary limitations if data of this nature is to be collected and used to understand the phenomena of mental processes which affect the artistic process. Major concerns involving interpretation of the data lie in the areas of investigator bias and semantics. Through training in both mental imagery and brass performance, the investigator brings a unique understanding of these two fields into the study. This background was vital in allowing the investigator to understand and interpret the data while successfully overlaying comments dealing with brass methodology and performance onto a theoretical and practical structure which was derived from research in mental imagery. While this background was an asset in various aspects of the study, it also meant that the investigator had to take great care to control for possible bias through the interview and analysis phases of the study. The use of a second independent rater in identifying relevant statements helped to offset possible investigator bias. Also, questionable statements were not included in the final analysis. Despite these controls, the question of investigator bias cannot be completely discounted.

In the analysis process, another important concern was targeting the analysis on issues relevant to imagery. Imagery is but one of many components in the

process of artistic performance. Throughout the interview process, a great deal of data was collected which focused on other components of the performance process. While this data is certainly significant and important in gaining an understanding of the process of artistic performance as a totality, much of this information fell outside of the stated goals of this study and was not considered for analysis. As a brass player, the investigator found it difficult to discount much of this information and had to take special pains to remain focused on the issue at hand.

The question of semantics is an important one because imagery experiences are described differently by different people. For example, different mental representations such as images, concepts, ideas, and thoughts could all have an imagery component. The importance of this component was not always clear in the subject's initial responses to a given question. This issue of semantics was somewhat unraveled with various lines of questioning which were used to encourage the respondents to elaborate on the meaning of these terms. For the most part, this was a successful strategy leaving little doubt as to the nature of this representation for the subjects. Statements which were questionable were not considered for analysis.

The question of self-report and introspection is another important consideration which might be limiting in this study. In order to collect data about the mental processes involved in the artistic process of these performers, this potential limitation must be accepted. For this reason, the most elite group of brass players were sought for participation in the study. These players have already developed a reputation for excellence and have nothing to gain as a result of their participation. The researcher believes that these individuals were candid and forthright in their discussion of the mental side of their playing process and described aspects of this process as accurately and honestly as they could.

#### The Interview Process

The interview process used for this study proved to be an effective method of gathering information about the artistic process from individuals who are actively engaged in that process. These distinguished brass artists were generally articulate about their approach to performance and were willing to share their knowledge with the research community through their participation in this study. In conducting the interviews, it was obvious that most of these performers have given a great deal of careful thought

to the approach that they use in performance. This is so because so many of these players also serve on the artist faculty of major universities and conservatories. Many of these players also serve as clinicians at major brass conferences. As a result, they are used to discussing aspects of their approach. In addition, most of the players involved in this study have had prior interview experience. They have been interviewed for various magazines, newspapers, radio broadcasts, and symphony programs. While these interviews were more of the public interest variety, these players seemed to be comfortable with the process. For the most part, the subjects were open about discussing the topics which were targeted for this study. The informal nature of the interview - more like a conversation than a question-and-answer session - facilitated this openness on the part of the subjects.

The interview guide (based on the interview methodology of Gorden, 1980) proved to be a valuable tool in organizing the discussion. The development of the guide helped the researcher construct useable probe questions which could be selected as necessary during each interview. In addition, the identification of topics to be included on the guide helped to organize the whole interview process as well as the first level



of data analysis. The development of the guide also helped the researcher crystallize his own thinking on the phenomenon of mental imagery in brass performance. This process was quite valuable in preparing the researcher to conduct these interviews.

The guide underwent several modifications as the study progressed. The interview guide was originally designed to explore possible differences in approach for practice, rehearsal, and performance situations. During the early stages of the interview process, it became obvious that players used substantially the same approach for practice, rehearsal, and performance. One common finding was that players use imagery in making practice a surrogate for performance. As a result, the investigator did not pursue lines of questioning to explore these differences in later interviews. Also, the question concerning "altered states of consciousness" was generally misunderstood by respondents in both the pilot study and in the first few interviews. This question was not used in the majority of the interviews and not considered in analysis. Originally, the category for conductors' use of imagery focused more on shared imagery between small groups of performers - in chamber music or within the brass section. This line of questioning was found to be unproductive in comparison with the frequency of

imagery use by conductors thus the focus of this topic area was changed.

The ability of the researcher as an interviewer is another factor which impacted on the interview process. The researcher came into this study with some interview experience which was quite helpful in designing the study. In conducting the pilot study, the researcher gained additional experience which was focused on the actual guide used in this study. These experiences were vital to the success of this study. As the study progressed, the researcher further refined his ability in conducting interviews with distinguished individuals. In addition, the interviewer was able to draw on a greater repertoire of experiences as more and more interviews were conducted. The major point here is that the researcher was constantly building a storehouse of interview experiences which were available for use in improving each subsequent interview. All of these experiences added cumulatively to the investigator's grasp of the phenomenon of mental imagery in musical performance.

#### Variability of Responses

The interviews varied greatly in terms of length and detail of description. Perhaps the greatest variability occurred in the discussion of training and

experience. Some players chose to discuss events from their early childhood, while others began with their formal musical training. The questions in this topic were open-ended, allowing the respondent to decide where to begin the discussion. Other reasons for the variability of responses included the detail of the responses given in various topic areas. Some players chose to discuss imagery in interpretation by giving examples of the images that they associate with many works from the orchestral literature. Others spoke more theoretically about their general approach and the process that they used to arrive at their personal interpretation. Both of these kinds of responses were important to the study because when considered together, general approaches as well as specific examples facilitated a balanced understanding of the topic.

Since each interview was unique, the role of the interviewer had to be modified as necessary depending on the course of discussion. At times, the role of the interviewer had to be more active and directive. While some subjects needed little prompting, others required more direction. Some respondents were more verbal than others and were inclined to give longer, more detailed responses. The verbalizers in this study were also more inclined to get into tangential discussions and as

a result, the interviewer had to direct the discussion toward the targeted area. In other cases, when the subject gave short responses, the interviewer had to direct the discussion by encouraging elaboration by the subject. Ideal responses in this study were ones which were freely generated by the subject, drawing on past personal experiences, and to the point of the discussion. Clearly, the role of the interviewer was an important ingredient in encouraging these types of responses while assuming a stance that was predominantly passive rather than active and over-directive.

#### Imagery Awareness and Experiences

Another area of variability between subjects in this study was the degree to which these players showed an awareness of their imagery experiences as part of their process of performance. Some players reported a conscious use of imagery as an active ingredient in their artistic process. These players usually launched into a discussion of their imagery or "concept" without the need for many probe questions. For these players, imagery is something that they think about and use in specific ways in their playing. They have realized the value of the mental side of performance and actively listen to the song in their minds for guidance in

actual playing. Other respondents were less aware of imagery as a tool in performance. Most of these players do experience images connected with their playing, yet they have been less likely to take control of this imagery and use it in conscious ways. Some of these players began to realize the role of imagery in their approach to performance as the interview progressed. The interview process seemed to crystallize their thinking on this issue. These players simply gained a greater awareness of their own images as the discussion brought these experiences into focus. This variability of imagery awareness within the sample is representative of imagery awareness in the general population.

The imagery experiences of these players were also individualistic in terms of the nature and content of their images. A number of players in this sample experience spontaneous aural imagery while riding in a car or train, while resting, or between wakefulness and sleep (hypnagogic or hypnopompic imagery - see Richardson, 1969). Some simply regard this as a natural consequence of their job as professional musicians. Several players report that their musical imagery exists more as a continuous stream which flows under the level of conscious mental activity. They report that during periods of rest, they notice and

attend to this imagery as it rises to a conscious level. Others take the opportunity to control images which began spontaneously and use them in the form of some kind of mental rehearsal. Many of the respondents make a deliberate effort to use imagery in some way in their playing. These players intentionally evoke imagery in a controlled manner in order to deal with various aspects of playing including the warm-up, tone production, musical interpretation, mental rehearsal, or performance anxiety. Most of the players in this study experience imagery in at least one of these ways - spontaneous or controlled. The difference among the players in this study seems to be one of degree - how much and in what ways they choose to attend to the images that they normally experience.

The images experienced by these subjects also vary in terms of sense modality. Some players seem to experience aural images exclusively in terms of the music that they rehearse and perform. Others make associations that are visual, kinesthetic, or tactile. These differences seem to be linked to each player's personalized response to music. No clear trend is evident here, but the most important feature is that these images are personally-relevant for each individual player. It must be assumed that any image attains important status if a relevant association

occurs in the player's mind between the music being performed and some experience or event from the player's past.

#### The Role of Imagery in Brass Performance

Whether imagery is used consciously or not, it appears that imagery plays a vital role in brass performance. The fact that the great majority of players report the ability to form an aural image of the sound that they want to produce attests to the potential significance of aural imagery for these players. The majority of players in this sample also use various imagery strategies in the areas of musical interpretation, mental rehearsal, and performance anxiety. In addition, all of the players interviewed spoke of playing for conductors who use imagery in various ways in communicating with the orchestra. At least in this respect, these players deal with imagery on a daily basis in rehearsal.

The nature of sound production on the brass instruments also encourages the use of imagery in the sense of having to create a mental representation of a passage in order to ensure accuracy in pitch. Arnold Jacobs underscores this point with his comment about the similarities between playing a brass instrument and the process of singing. Brass players must rely on

their ability to hear the pitch to be played in their minds in order to produce the correct note. This study suggests that the role of imagery is far broader than finding the correct note for these players. They use it to refine and develop their tone production, to give life to their musical expression and interpretation, to rehearse mentally, and to deal with performance anxiety. For the majority of these players, imagery is integral to their process of artistic performance whether it happens above or below the surface of consciousness.

#### A Discussion of the Major Findings

The major findings with regard to mental imagery and musical performance will be highlighted in the following section. This discussion will focus on imagery abilities and strategies which seem to be of value to the majority of players in this sample. These abilities and strategies also cross the boundaries of topic areas and show relevance in many aspects of playing. These findings have been singled out because of their general significance in the performance process.

#### Creating an Aural Image

Perhaps the most conclusive finding in this study is the frequency with which these musicians draw on a



mentally-represented ideal in their playing. Twenty-five of these players reported that they could easily form an aural image of their sound, or an ideal sound in their mind. This finding is highly significant although not that surprising. Musicians constantly deal in sound. Their whole focus is to produce a beautiful tone quality on their instrument. They have lived with this sound throughout their musical lives and attend to it constantly. The fact that they can hear this sound mentally in the form of an aural image follows logically from all of their training, conditioning, and performing experiences. But simply forming this image is not the crucial issue here. The majority of these players have also managed to incorporate the manipulation of this image into important aspects of their approach to performance. In so doing, these players have given recognition to the mental side of performance and identified it - by their actual performance practices - as the guiding function behind musical artistry.

Consider the mind as a processor of information - information primarily gathered through the senses. For musicians, the greater part of information pertaining to their art is perceived in sound. The obvious way to process this information is in terms of sound. This leads one to believe that the primary processing occurs

in the form of aural images of the information presented through the senses. The manipulation of this information in the form of aural images follows logically from this assumption. If the mind is at all analogous to a computer system in terms of processing, storage, and retrieval of information, then these images would be constantly available for use.

The mental imagery literature suggests that everyone experiences images and that individual differences in imagery abilities lie in the areas of vividness, fluency, and flexibility (control). Research has also shown that individuals are pre-disposed to the use of different sensory modalities. These individual differences are clearly reflected in the responses of the subjects who were involved in this study. While individuals exhibit differences in imagery capacities, imagery skills can be learned and developed. This is an important issue for performing musicians because it suggests that through use and conditioning, the mental side of playing can also be developed and refined.

Another facet of the development of a strong aural image or concept is its potential for use by a group to unify aspects of performance. Looking at the data gathered in this study by orchestra, the greatest similarities of response occurred in the brass section

of the Chicago Symphony. All of the players interviewed from this orchestra employ a similar approach to brass playing. They seem to share a concept of a total brass sound as an ideal representing how the section as a whole should sound. While a brass section is comprised of many different individuals, the unanimity of concept displayed by the players in Chicago seems to be an important ingredient in producing the cohesiveness for which this section has become famous. If each individual member of the section cultivates a similar aural image of the sound of the section as a whole and uses that image as a guide in performance, then it stands to reason that the resulting totality of sound would benefit in proportion to the players' ability to match the imagined sound in actual performance.

#### Making Practice a Surrogate for Performance

Another convincing finding in this study is the potential of the use of imagery in making practice a surrogate for performance. The majority of players use their imagination to create the atmosphere of performance whenever they pick up their instruments. Dale Clevenger of the Chicago Symphony makes what is probably the most convincing statement about this strategy when he says "I never practice, I only

perform." Of course, what he means by this is that he plays his best when under the stress of an important performance so he views practice as an extension of the performing atmosphere. These players create the conditions of performance in a variety of ways. They see themselves performing with the orchestra via the use of visual imagery. They see the performing environment - the concert hall or the stage - and visualize themselves in that environment. They hear the piece they are practicing as a whole in their mind's ear. They supply introductions and accompanying passages. Some see the full score in their mind's eye as they practice to help them hear the other parts involved.

The significance of these issues and strategies lies in the fact that these players, who must maintain absolute consistency in their playing in order to hold these responsible orchestral positions, have learned to enrich their practice in terms of the depth of the musical experience and by simulating the feel of performance. This may well make a primary contribution to their consistency in actual performance. Repetition and conditioning is certainly an important factor in building consistency and endurance in playing, but the replication of actual performance conditions through the use of the imagination has the potential to make an

artistic contribution to the process that may not be available through repetition alone.

Paul Kryzwicki of the Philadelphia Orchestra makes perhaps the most important point on this issue when he suggests that by having a clear aural image of the piece as a whole as well as an ideal image of ones interpretation, real musical depth can be achieved in practice. This depth allows the player to constantly transcend the printed page and focus on issues of musicality in relation to the work as a whole rather than an isolated part. Many of these players admit that it is no longer possible for them to practice individual parts without hearing the whole effect of the piece. This results from their many years of orchestral playing experience. The significance here is that they almost automatically retrieve the aural image of the whole piece in response to the stimulus of playing or thinking about their own part. This happens because the whole effect is tagged to the act of playing the individual part. This also points to the importance of prior listening experiences and their usefulness in practice situations. Warren Deck of the New York Philharmonic actually practices along with recordings to cement the image of the piece as a whole in his mind. He can then supply the sound from his imagination when necessary. As a group, these players

capitalize on their performance experiences through imagery to obtain optimum effectiveness and efficiency in their practice.

#### Utilizing General Imaging Strategies

Another significant finding in this study is the identification of a trend in the general process of manipulating mental images in practice and performance. The approach used by many of the players involved in this study lends support to the theoretical model for imagery use in the arts advanced by Rosenberg (see Rosenberg & Pinciotti, 1983; Rosenberg, 1987; and Rosenberg, in press). Players form or recall images from a storehouse of past experiences, manipulate them through a variety of imaging strategies, and create new imagination images which become externalized in performance. This suggests that performers have at their disposal a wide variety of resources which can be used as tools in performance.

These players do not perform in isolation. They draw on a repertoire of experiences from everyday life as well as from their professional training and performing careers. These players find ways to use these experiences as part of their artistic process. Imagery experiences seem to play a significant part in making these experiences available and relevant to

performance. The mental imagery literature suggests that even the average person experiences various types of imagery in everyday life. One factor that separates these musicians from the average person is their propensity to attend to these imagery experiences (particularly those that are aural) and connect them to the externalized manifestation of their art. It seems that this connection occurs when the players take control of these images and manipulate them using various imaging strategies to address specific problems or concerns in their playing. From the reports of these players, imaging is a useful tool in developing a concept of an ideal sound, in changing sound qualities appropriate to different kinds of music, in refining musical interpretation, in solving specific technical difficulties, in building accuracy and consistency in performance, and in dealing with excess stress and tension.

The use of imaging strategies overlaps in a number of different areas of playing. There are essential differences, however, in the application of these strategies as well as the nature and content of the images used. Take, for example, the strategy of forming a clear aural image of a sound to be produced. This general strategy can be used in some way in every aspect of rehearsal and performance. Players create an

aural image of specific tone qualities that they wish to produce in a variety of performance situations. This image can exist purely in terms of instrumental timbre or it can be tied to specific solo lines or orchestral passages. When the imaging is tied to specific passages, it begins to involve issues of musical expression and interpretation as well as the issue of sound quality. If this passage is particularly difficult or treacherous, then players could hear an aural image of the passage in their minds to build accuracy or consistency in performance. Differences between these examples center around the player's focus while imaging. Another difference which is important to consider is the image itself. Players use memory images and imagination images as appropriate to the task at hand. Memory images may serve as adequate references when accuracy and consistency is the issue. When players work on developing an interpretation of a passage or a solo, imagination images may come into play. In this instance, players may look for new ways to play the passage which may involve a combination of ideas or images from prior performances or from listening experiences. If the problem with the passage involves the reduction of stress or nerves, then players may use positive imagery to visualize themselves performing successfully. In



this case, images may be multi-sensory to recreate the whole ambience of the performance experience in terms of sound, sight, and feel.

### Images in Various Sense Modalities

One would expect that musicians would be inclined to experience imagery in the auditory domain, but the musicians interviewed for this study also find relevance in visual, kinesthetic, and tactile images. Visual images can provide musicians with important information which is associated with several aspects of performance. Visualization can be used to represent sound qualities - many of these players visualize sound in the shape of a triangle or pyramid - or some extra-musical association or picture which may be related to the musical content of a work. The use of these visualizations operates to affect the result in playing in a number of ways. By conceptualizing sound in terms of a specific shape, players look to optimize some specific quality in their sound. They also may use visualization to fill a specific environment or project the sound in the concert hall. By forming visual images of a scene or picture suggested by a particular piece of music, players look to create a specific atmosphere surrounding a performance which may become part of the substance of their expression. This

issue is subject to debate, however, in that some players separate how they play a piece of music from how they feel about it. Others contend that their feelings about a piece impart a definite quality to their playing.

Kinesthetic images can also be used in association with the musical materials of a piece of music. Players look for a sense of the movement connected with the rhythmic flow of a piece. They recreate an image of this bodily movement in their minds as they play to evoke this quality in their performance. Kinesthetic images may also be connected with technical or mechanical aspects of playing. Kinesthetic images may serve as points of reference to help players gain the proper feel in playing. Tactile images also work in similar ways. Aspects of touch are important primarily in terms of articulation and accent.

The significance of this use of images involving visual, kinesthetic, or tactile sensory percepts serves to reinforce the primary referents to musical material which are auditory in nature. These images tend to supplement the player's aural sense of the musical message, enriching the experience, adding more dimension to the player's understanding, and ultimately affecting the final musical product.

### Sources of Imagery

The range of images that players find appropriate to their approach to performance is also a remarkable finding in this study. These musicians find relevance in all kinds of experiences and draw them into an approach to performance that could almost be called holistic. Players believe that a musician's performance reflects not only training, experience, feelings, and attitudes about the music, but also personality. These players seem to use any experience - musical or otherwise - that they can associate with performance. These associations are often made through imagery.

These players have built up an arsenal of tools which can be used as necessary in performance. Included in this arsenal are images of past physical performances (sound qualities or issues of expression) which can be recalled mentally and imitated in playing, images of personal experiences which individuals deem to be important in connection with specific pieces from the repertoire, visual images which are connected to the player's knowledge of particular pieces in terms of the composer's intent or drawn from the player's own imagination in response to the music, and specific examples of imagery used by conductors or their teachers in connection with the interpretation of

particular works. By developing the mental side of musical performance, players make these tools available resources in their playing. Perhaps musical artistry truly involves the imagination and intuition to be able to select the appropriate tool at the proper time to give a convincing and expressive performance.

#### Implications of the Study

With no clear prior models in the research literature, this study presents a novel approach to the study of imagery. This study crosses the boundaries of music, the arts, and psychology; therefore, the findings have wide-ranging implications in all of these disciplines. The following section will discuss some major implications that this study presents for musicians, music education, and psychology and the arts.

#### Implications for Musicians

The results of this study suggest certain implications regarding the role of imagery for musicians. If these distinguished brass performers view mental imagery as an important ingredient in their performance process, then the potential exists for all musicians to focus on their imagery experiences to a greater degree as part of their artistic process. The mental side of performance is certainly an important

part of the approach used by most of these subjects. They consider the development of the musical mind to be a crucial part of their overall development as players. They listen to the song in their minds using it to guide their playing and this may be a major contributing factor - above and beyond their physical abilities as brass players - which has led them to be artistic performers. They also use imagery as part of their approach to solving a variety of performance problems. Imaging strategies play an important role in the areas of musical interpretation, mental rehearsal, and the reduction of performance anxiety. These findings show potential for all musicians in the development and refinement of their performance practices.

The mental imagery literature provides support for the notion that imagery skills can be learned and improved (see Richardson, 1969 and Samuels & Samuels, 1975 for examples). Most of the players in this study report that they regularly experience imagery which comes to them spontaneously while driving or during periods of restfulness and relaxation, or between wakefulness and sleep. These spontaneous imagery experiences have the potential to become opportunities for mental rehearsal if the player chooses to take control of the image. The players in this study use

mental rehearsal to crystallize aspects of their tone production or aural concept, their musical expression and interpretation, to work on technically difficult passages, or to create positive visualizations of special performances such as auditions and solo appearances. This avenue is available to all musicians should they choose to attend to their imagery experiences. The major implication here is that all performers could benefit from bringing their imagery experiences up to the level of consciousness and using them to affect aspects of their performance.

Once musicians begin to attend to their imagery experiences and capacities, the findings of this study suggest some guidance in the utilization of these images as part of an approach to performance. The iii Framework (Rosenberg & Pinciotti, 1983) outlines a theoretical model which could guide musicians in the conscious use of their imagery experiences. Every musician builds a storehouse of images based on their early training, their formal musical education, and their performance experiences both as players and as audience. By recalling images from this storehouse and controlling them through various imaging strategies, these experiences can be brought to bear on actual performance. For example, players can use imagery to synthesize their past listening and performing

experiences with a particular work into a new interpretation. By mentally combining relevant aspects of these previous experiences, players may come to know and understand the work in a new way. Strategies such as this could be beneficial in the development of the mental side of musical performance which, in turn, could have a positive effect on the physical side and the musical product.

While this study has focused on orchestral brass players, the findings should be of interest to all players. While it is true that brass players - because of the requirements of pitch production on the brass instruments - may find imagery to be particularly important, these strategies are applicable to performance on all instruments as well as in singing. Perhaps singers have the most to gain from their imagery experiences. Vocal production is perhaps the most personalized and individualized of all musical approaches. Vocalists must rely on their own physical structure and its manipulation for every aspect of their tone production. This focuses even more importance on the development of a vivid aural image for singers.

Mental rehearsal strategies are also commonly used by players in this study. These strategies are appropriate in the solution of a wide range of playing

problems. For example, players could run through a difficult passage in their minds to crystallize the technical demands as well as the sound of the passage prior to actual performance. All musicians could easily spend some of their practice time using mental rehearsal to refine their mental concept and to solve technical or mechanical difficulties in their playing. Research has shown mental rehearsal to be an effective and efficient supplement to actual practice in many areas involving skilled physical activity. The utilization of mental rehearsal holds much promise for all musicians.

The use of positive imagery and visualization has also been used effectively in coping with the reduction of performance anxiety by many musicians. The use of guided imagery as practiced by one member of this sample also holds potential for more widespread use by musicians. Other players visualize upcoming performances in complete detail using positive imagery. Still others use imagery to promote relaxation in order to reduce excessive levels of tension in performance. By the reports of several members of this sample, the use of mental imagery strategies to reduce the anxiety connected with high-level performance is not only effective, but grows stronger with use. This finding suggests that the use of imagery may be a desirable



alternative to other methods of coping with stress in performance.

Perhaps the most important implication that this study holds for musicians is the realization that imagery can bring a wide ranging collection of resources into the playing process - resources that are normally experienced by musicians in everyday life. Performers have the opportunity to utilize these resources more fully given that they follow the lead of these distinguished brass artists in responding to their imagery experiences in a more conscious way in their playing.

#### Implications for Music Education

These implications also hold true for music education. Imagery strategies could certainly be applied at all levels of musical learning. The majority of the players in this sample speak of the importance of listening experiences on their development as musicians. Certainly, music students should use every opportunity to enlarge their own personal storehouse of listening experiences in order to begin to develop an aural image of tonal qualities of their instrument. Music educators as well as studio teachers should encourage and facilitate the listening process. Weast (1979) speaks of the importance of

developing this clear aural concept as early as possible in a student's training. Johnson (1981) and Severson & McDunn (1983) also cite the importance of critical listening at all levels of performance. Statements by the players in this sample support this notion and cite the importance of listening and musical experiences in the dynamic evolution of their ideal conception of musical performance.

Educators can also encourage the use of imaging strategies which put this storehouse of experiences to use as an ingredient of the playing process. Bagley and Hess (1984) suggest ways that guided imagery can be used in the classroom. Randy Gardner of the Philadelphia Orchestra applies guided imagery to his own playing process and recommends that his students do the same. Imaging strategies are not limited to this kind of directed imagery. Aural images can be manipulated in a variety of ways to focus on the most minute aspects of performance. Imaging strategies can also be useful during the course of a performance to prepare for difficult entrances and otherwise guide the playing.

Various educational approaches which are based on imagery have been developed in various fields. Pinciotti (1982) and Chrein (1982) used an imagery-based approach to teach creative drama. Both

of these researchers found that the imagery-based approach was as effective as accepted traditional approaches to drama teaching. Kramer (1985) developed an imagery-based approach to the teaching of singing to elementary school students which was found to be an effective alternative to traditional approaches.

A major implication for music educators would be the incorporation of imagery strategies in their approach to musical instruction. This approach could utilize listening experiences, imaging strategies, and guided imagery along with more traditional aspects of learning to play an instrument to place a greater emphasis on the mental side of musical performance. This emphasis is evident in the approaches of several of the most distinguished members of this sample. Arnold Jacobs has stressed the importance of the development of a aural concept in his own playing and with his many students. Adolph Herseth bases much of his musical expression on images of his prior musical experiences and endeavors to recall from his memory or create through his imagination some special image to be used in the interpretation of every piece that he plays. Of course, one of the problems in implementing these strategies with student musicians is that their repertoire of personal musical experiences could not be as broad as players who have held responsible

orchestral positions for years and years. This presents a challenge to music educators to help these young players build their own storehouse of experiences relevant to performance. Performance opportunities - both as performer and audience - as well as mock auditions and mock performances could serve to give music students (particularly at the college level) important experiences on which to draw.

The significance of relationships with mentors or master teachers has been underscored by the findings of this study as well as by the work of Sosniak (in Bloom, 1985). Studying with a mentor or master teacher seems to be one of the most crucial steps in the development of artistic talent and ability. This implies that music students should carefully consider taking this step as soon as possible in their formal musical training. The members of this sample routinely use imagery- related approaches to brass performance which hold significant potential for the improvement of musical performance if applied by music educators at all levels of instruction.

#### Implications for Psychology and the Arts

The findings of this study are also important to the field of psychology and the arts. The artistic process, whether creative or interpretive, has the

potential to reveal much about human cognitive processes. Research by Kreitler and Kreitler (1972), Ahkter Ahsen (1982), Howard Gardner (1982, 1983), and Martin Lindauer (1983) among others has shown the important role of the artistic process in understanding various cognitive processes such as creativity, sensory perception, and human development as well as mental imagery experiences. This study provides further evidence that performing artists can be ideal subjects for study in building on the body of knowledge about mental processes. The subjects in this study proved to be willing participants in the quest to expand on the body of knowledge about the role of mental experiences and strategies in artistic performance.

This study also supports the suggestion made by Yuille (1985) that imagery be studied as a human behavior which is context-dependent. These players discussed imagery in the context of their experiences as musicians and performers giving personalized accounts of the imagery that they experience and the strategies that they use from day to day in connection with their jobs as professional musicians. This approach is also in line with Lindauer's suggestion that imagery be studied in "a select rather than random sample of subjects, one in whom imagery is more likely to be regularly evoked or consistently present" (1977,

p. 359). The major implication here is that eminent individuals in the fine arts can be an important resource for psychological studies as well as artistic ones.

Some specific findings of this study could also have important implications for the field of psychology. Two major areas of interest to clinical psychologists might be mental rehearsal and the reduction of performance anxiety. Mental rehearsal is a topic which is generating a great deal of interest in the research community. Mental rehearsal has been studied extensively in athletics (see Suinn, 1983 for an overview) and applications of these techniques are currently being documented in music. Ross has studied the effectiveness of mental rehearsal strategies for college trombonists (1985) and recommends the use of these strategies by all musicians (1987). The majority of participants in this study cite the effectiveness of these techniques in their approach to performance.

The findings of this study relative to the reduction of performance anxiety are also congruent with current research in the field of clinical psychology. The statements of the subjects in this study indicate that imagery can be one effective means of dealing with anxiety-laden and phobic situations. Imagery strategies commonly used by participants in

this study include guided imagery, positive imagery, and visualization. The use of imagery strategies in the areas of mental rehearsal and anxiety reduction suggests that researchers could focus on members of the performing arts community in furthering their understanding of these clinical applications of imagery.

Artists like these brass artists can serve as a rich resource to psychologists in understanding the cognitive and affective workings of the human mind by focusing on the mental process from within rather than from without.

#### Recommendations for Further Research

As is the case in any exploratory study, one of the most significant results could be the importance of this study as a point of departure for continuing research into the question of mental imagery in musical performance. As a cross-disciplinary study, the findings here could be an important stimulus to further research in music, the arts, mental imagery, and psychology. In this section, recommendations will be made for possible quantitative and qualitative research in these varied fields.

This study extends a line of inquiry which includes the work of Catherine Patrick (1937, 1939),

Ann Roe (1946, 1975), Stan Bennett (1976), Rose Castellano (1983), Martin Nass (1984), and Rosenberg (in press) in discussing aspects of the artistic process with individuals who are actively engaged and successful in that process.

The first recommendations that come to mind are those directly involving the design and conduct of the present study. The method used gleaned a wide range of information about potential areas for imagery use in musical performance. Because of limitations of this design, less data was collected about the actual content of the imagery of these players. In a replication of this study, there are several recommendations which might facilitate the exploration of imagery content for performing musicians. First, the researcher could present the respondent with a printed page of music at some point in the interview and ask the subjects to describe the method that they would use in approaching this new piece. This kind of question might be valuable in that subjects would have to respond based on an imaginal approach to the piece. This refinement of the design would probably glean valuable information by asking each respondent to work with a specific task related to the topic.

Another possible refinement in the design would be to involve listening experiences in the interview. It



might be possible to ask respondents to listen to excerpts from recent recordings of their orchestra and comment on the resulting sound in terms of imagery. A difficulty involved in implementing this aspect of the design is suggested by the finding that personalized imagery is perhaps the most relevant to artistic expression and performance. It would be quite difficult for the researcher to predict what recordings or excerpts would have personal meaning for the subject. One way to circumvent this problem would be to ask the subject to provide a tape or recording that has personal relevance for them. By including listening experiences in the interview design, a myriad of logistical problems are also introduced. The primary problem would be the availability of adequate playback equipment. If a study of this type were to be done with a single orchestra instead of a group of orchestras, then this problem might be solved through the cooperation of the orchestra management. Perhaps a single room in the orchestra complex could be used for all the interviews. This would account for variability in sound reproduction by conducting all interviews in the same environment with the same equipment. These are possible considerations which might be beneficial to future research based on the present design.

The study of mental imagery and musical performance also has the potential to be extended even further by other researchers in discussions with various groups of instrumentalists, singers, and conductors. For example, while this study focused on a specific group of orchestral musicians, further research could consider the role of imagery for jazz musicians. Jazz improvisation would certainly be fertile ground for the use of imagery in musical performance. The primary research questions here would involve the process of improvisation for various jazz performers. How do these musicians approach improvisation? Do they hear their improvised part prior to playing it? Do they hear it an instant before? Do they hear it in compressed fashion? Do they base their improvisation on a kinesthetic (and perhaps tactile) memory of patterns they have used before? Do they associate visual images with their improvisations? A study of this nature would certainly be valuable to the literature in extending our understanding of imagery in musical performance by looking at a skill that is more creative than interpretive.

Broader populations of musicians could also be studied using various research methodologies. For example, the present study could be extended by the

development of an instrument based on these findings which could be used to survey the brass faculty at major universities and conservatories. This kind of study would gather data from a much larger segment of the brass-playing community. One potential problem with this kind of research is that the investigator would have to design a survey instrument that was essentially self-explanatory because there would be no opportunity to elaborate on responses. In this kind of study, the question of semantics could be a highly limiting factor. If the researcher is willing to accept this limitation, then data on this question could be gathered from a much broader population of musicians.

Another possibility for extending the research started in this study could involve the development of an imagery-based approach to teaching brass performance which incorporates the strategies used by members of this sample. This approach could then be tested for its effectiveness in comparison with traditional methods of instruction with various groups of students. These kinds of studies would extend research into imagery and musical performance to experimental and quasi-experimental paradigms. For example, the development of an aural image could be studied experimentally. A study could be devised which would

measure the ability of players to identify their own sound out a group of players playing similar excerpts. The difficulty here is that subjects would have many different kinds of cues in identifying their own playing. Issues of interpretation would have to be considered as well as specific mishaps or mistakes which might be made in the performance during the recording process. This kind of study could also involve a training program utilizing an imagery approach to performance. The performance of an experimental group could be compared to a control group which would not be given instruction in imagery strategies. Research of this type could also focus on other topic areas uncovered in the present study.

The results of this study as well as the work of Rosenberg (in press) and Castellano (1983) suggest that imagery experiences are relevant and available to artists in all art forms. The success of this study leads one to believe that research should be continued in all artistic mediums. Rosenberg (in press) has conducted a similar study with visual artists which supports the importance of imagery as part of their creative process. Castellano's (1983) work suggests the importance of imagery use by dancers, actors, playwrights, and visual artists. The adaptation of the present study with any of these groups would reveal a

much broader picture of the role of mental imagery in artistic creation and performance.

Dancers and actors might be particularly valuable subjects in studies of this type. Because dancers must focus so carefully on the appearance and form of their bodies, they might use visual as well as kinesthetic imagery as a major component in their art. The ability to visualize themselves as they perform may be a significant aspect of their art. Actors have a history of using past experiences in creating a role. "Method" acting is based on this premise. As a result, imagery may be a pre-eminent skill for the theatre. Research with this population could be valuable in understanding the broad role of imagery in the arts.

Psychologists may also benefit from pursuing research questions which may emerge from the present findings. This study has shown that performing musicians can serve as willing and articulate subjects who involve a wide variety of experiences and processes in their artistic process. This suggests that psychologists may have a great deal to gain by involving persons who are engaged in the artistic process in psychological research. Possibilities for psychological research could involve specific topic areas identified in this study. For example, clinical psychologists could investigate the use of imagery

strategies for the reduction of anxiety in musical performance. The question of autonomic suggestion may be of particular interest here. Research could determine the effectiveness of relaxation exercises or guided imagery in reducing the physical symptoms associated with stage fright. Is imagery effective in lowering heart rate or blood pressure? Could imagery be used to counteract the dryness of mouth often associated with performance anxiety? Richardson (1983) spoke to this question in his study of gustatory imagery. It is possible that saliva flow could be increased by creating an image of a favorite food or some other specific taste. The study of these issues may prove to be valuable in understanding autonomic suggestion and it may uncover some helpful strategies for musicians as well.

Cognitive psychologists could study the use of mental rehearsal as a surrogate for actual performance. Study in this area has been prolific in recent years in many different fields. By studying the use of mental practice in accomplished performers in the arts, psychologists may be able to further understand this phenomenon. Two members of the present sample reported on experiences of chromesthesia in connection with their response to music that they perform. This phenomenon could also be studied from the standpoint of

the performing musician, conductor or composer to determine its effect in the artistic process of creative or interpretive musicians. While these recommendations represent just a few possibilities for further research into this topic, it is the hope of the investigator that this study will hold significance not only in terms of the specific findings of the study but also as an impetus for further interest in building an understanding of the role of mental imagery in the process of artistic performance.

One final recommendation must be stated in the form of a caveat. Conducting this investigation has shown distinguished performers to be articulate, informed, and willing subjects for research. By tapping this important resource, it becomes possible to understand an issue from an important perspective. In essence, two different worlds - psychology and music - become linked in an effort to understand the intricacies of the mind and its role in the world of the arts. By overlaying one discipline on the other, a deeper appreciation for this connection becomes apparent. The concern here is twofold. In order to benefit from both of these worlds, investigators must have access to relevant information and skills in each. While a rudimentary background in mental imagery and psychology may be a pre-requisite to constructing a

study of this nature, an artistic background may well be the prime ingredient in gaining access to willing subjects and in understanding them on their own terms. For further research in mental imagery and the arts to reach its fullest potential and highest level of meaning, a breed of researchers who have essential training in both disciplines must emerge and take the lead in spearheading the research effort. This is an important challenge to the research community in general as well as leaders in research in the arts and in psychology. This challenge must be met if a genuine understanding of the mental aspects of the artistic process is to become a reality.

#### Summary

This chapter has presented an overview of this study of the role of mental imagery in musical performance as reported by twenty-six distinguished brass artists from five major American orchestras. The overview summarized the theoretical basis for the study, relevant prior research, and the process of data collection. The findings in each topic area were also briefly summarized. Conclusions of the study were presented through a general discussion of the process used for the study focusing on issues such as the



quality of the sample and some limitations of the study including the nature of the sample, generalization, investigator bias, interpretation of statements, semantics, introspection, and self-report. Conclusions were drawn with regard to the interview process, variability of responses, imagery awareness and experiences, and the role of imagery in brass performance. Implications of the study were also considered for musicians, music education, and psychology and the arts. The chapter ended with recommendations for further research into the topic of mental imagery and musical performance. The researcher hopes that the value of this study will extend past the specific findings to the generation of further research into this topic.

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APPENDIX A  
INTERVIEW CONSENT FORM

THE RUTGERS GRADUATE SCHOOL OF EDUCATION  
DEPARTMENT OF LEARNING AND TEACHING  
CREATIVE ARTS EDUCATION

"MENTAL IMAGERY AND MUSICAL PERFORMANCE:  
AN INQUIRY INTO IMAGERY  
USE BY EMINENT ORCHESTRAL BRASS PLAYERS  
IN THE UNITED STATES."

BY WILLIAM H. TRUSHEIM

CONSENT FORM

I, the undersigned, consent to the use of the material gathered during an interview with William H. Trusheim, a doctoral student at the Rutgers Graduate School of Education, for his dissertation. I also give my consent for the use of this material in subsequent articles which may be submitted to scholarly journals in the future reporting on the results of this study.

Signature\_\_\_\_\_

Date of Interview\_\_\_\_\_

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Name\_\_\_\_\_  
(Please Print)

Address\_\_\_\_\_

\_\_\_\_\_

Telephone\_\_\_\_\_

Instrument and Orchestra\_\_\_\_\_

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APPENDIX B  
INTERVIEW SUMMARY FORM

MENTAL IMAGERY AND BRASS PLAYING  
INTERVIEW SUMMARY

RESPONDENT: \_\_\_\_\_ INT NO \_\_\_\_\_ CODE \_\_\_\_\_

INSTRUMENT: \_\_\_\_\_ ORCHESTRA: \_\_\_\_\_

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TRAINING: \_\_\_\_\_

MENTOR(S) : \_\_\_\_\_

EXPERIENCE: \_\_\_\_\_

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WARM-UP: \_\_\_\_\_

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TONE PRODUCTION (CONCEPT) : \_\_\_\_\_

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INTERPRETATION: \_\_\_\_\_

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INTERVIEW SUMMARY - PAGE TWO

MENTAL REHEARSAL: \_\_\_\_\_

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PERFORMANCE ANXIETY: \_\_\_\_\_

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CONDUCTOR'S IMAGERY: \_\_\_\_\_

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MISCELLANEOUS OR UNIQUE USES OR STATEMENTS: \_\_\_\_\_

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APPENDIX C

INTERVIEW EXCERPTS

Excerpts from Interview No. 11 - Philip A. Smith:

Smith: So those really I would say - my dad and Bud Herseth - were my two biggest mentors.

Trusheim: Can you hear the playing of those two people right now in your mind?

Smith: Yeah.

Trusheim: Do you hear it as a sound?

Smith: Yeah.

Trusheim: Do you ever use that in your own playing?

Smith: I would say most of the time unconsciously. In regard to my dad - when I play cornet, I can always hear his mellowness of sound. He was not, as a player, a great technician. He always said that as a kid, I could always double-tongue better than he could and that I could get around the horn in a sense better, but his sound is still something that I would strive to achieve. So actually, more when I'm on cornet, I hear that sound. When I'm on trumpet, there are times, yes, especially when I first came to New York, that I would very much try to sound like I thought Bud would sound on something. I would have an image of him playing Mahler Fifth or something and would try to do the same thing. I think as the years have progressed now, that I have ceased trying to be his sound, and tried to - basically because I could never come up to what I was expecting or what I was hearing in my mind of him - now, I just figure well I might as well go ahead and do my own thing and see where that goes. But probably, I'm developing more my own aural concept at this time which is a combination of everything that I've heard.

Trusheim: Speaking of that aural concept - that exists as a sound, not as a description?

Smith: Yes.

Trusheim: So you can actually hear whatever that aural concept is?

Smith: Yes

Trusheim: Do you use that in your playing in terms of using it as a guide or something? To let you know it you're on or to guide what you're doing?

Smith: Not so much to let me know if I'm on, but as a guide in how do I want - to take for example again, Mahler who's always a good example because you've got a mix of sounds that you can go after. In Mahler Fifth, the beauty of some of the lyrical lines - to give an example, in the third movement I guess it is, we've got these beautiful little bizzare melodic lines. In the first movement, you've got this hushed sound that I want to start with, and I want it to start out sort of hushed and fuzzy, but then to become very focused and frightening - oppressively frightening. And counteracting that later on, when you get into - halfway through the movement you get into the - there's a two-two section or a two-four section, I can't remember - where it's a very wailing sort of a "death has come and now the souls are wailing" mood and you want not quite the harshness of the opening, but a more open, yet wailing kind of sound. It's hard to describe what I'm thinking, but I hear the sounds in my head as I'm going through that and how I need to change and in that sense, I'm changing - in sort of a sweetness sense, I'm going probably towards what I conceive of my dad's sound and in the harshness, I'm going towards more what I've heard Bud do, and in the middle ground, I'm sort of in my own territory.

Trusheim: Do you generally think of music this way when you play? You use the example of Mahler Five, do you find you do that quite alot in most of the things you play?

Smith: Yeah, I try, I think, to get a mental image of what I want to say in this - what is the music saying here? - is it expressing tenderness, grief, happiness, sorrow, harshness, bitterness - these are the things I try to get and then to try to put that verbal description into a sound - into an approach....When you play Ravel and Debussy and some of the French things, you can hear the crashing of the waves and the mist and the colors that are in there. Again, it's finding aural sense - I think immediately of "Daphnis and Chloë" - it has a section in the beginning where the brass slowly comes in and builds up [he sings] on the second beat, the trumpets - and the third trumpet has a triplet going up, and the second beat, the trumpets come in on a chord and it dies down - for me, I don't know if it fits the story, to me at that point, that's

like the sun has just come busting through a window and it's got to have that explosion. Some of the things in "La Mer" - the crash of the waves and things like that - are definite aural and visual pictures that have to coincide.

Trusheim: You do use some of these visual pictures then in terms of interpreting a excerpt or a solo or whatever?

Smith: Yeah.

Trusheim: Do you find that that is a good guide for you?

Smith: It's a good guide for me, because it provides a starting point of how I want to play the piece. I'm not saying that it's always constant, but it gives you something other than just simply playing the black dots, and it's good for teaching kids who generally don't know how to approach it. You're teaching someone the repertoire and you put up an excerpt - the opening of Pictures at an Exhibition - and they don't know how to approach that. Here, they're looking at bars that rotate between five-four and six-four, and do they pulsate on the down beats? Where in the five-four - are they pulsating three and two or two and three? Are they pulsating threes or twos in the six-four? I mean what are we talking about here? So my answer to them is "What is it?" - It's a promenade." It's a man entering a museum and this promenade appears as he walks through the museum - and he stops and looks at a picture which each movement is. But I like to think of it as a pulsation of a step over two beats [he sings and taps table]. He sort of goes, hands behind his back, strolling through the museum and every now and again, a picture catches his eye. and he hesitates over three beats while he sort of looks at that and keeps going until - now he sees a picture and he wants to stand and look at that and there's the next movement. But you'll hear that as you go. So basically, when I do that, I've taken it out of the context of five-four, six-four and where the beats are on that and I've simply made a case for - there almost is no rhythm in the piece per se - it's starting point for someone to look at and try. If they like it they'll use it, if they don't, try to find another idea. But it's something that I'll use.

Excerpts from Interview No. 13 - Vincent Penzarella:

Trusheim: If I understand you correctly, what you're always going for is sound.

Penzarella: Oh yeah. The sound - that's you're personality. That's the way you walk into that ballroom with all those beautiful women, you know. If you look well-dressed and well-groomed, you're going to attract attention, but if you walk in there like a slob, no one's going to want to hear what you have to say. I like to think gorgeous sound right away - that's the first thing that occurs to me.

Trusheim: A lot of players talk about "concept". One of the things I'd like to find out through some of this research is what major orchestral players think that is, you know, what is concept? Concept of brass sound - concept of trumpet sound - or whatever. I just wonder if you would elaborate a little bit on what your concept is and how it's present for you?

Penzarella: Well, that's a good one. Well, I think a sound, first of all, should have the warmth like a good singer has. I tend to favor dramatic and lyric Italian tenors, you know. I liken the trumpet to that. I also liken it to a brass ensemble - a sound should have the spectrum of tuba to trumpet. It shouldn't just be a trumpet sound just offering the highs. I like to think of it that way. When I practice say, or when I was preparing a lot of auditions, I never played alone - I never practiced alone. It was always - if I played the opening to "Pictures", say - I would hear the opening couple bars by myself, but then I would hear the whole brass section in the third and fourth bars. So I never played alone. It's like if I were practicing octaves, I can remember -- and I do it to this day -- I'll think "What would my notes sound like if I were playing them with - in this case, with the Philharmonic - Don Harwood and Warren Deck. That kind of imagery must offer something to my sound - hearing that bass trombone and hearing that tuba. Jacobs always used to talk about the lows in the sound - the middles in the sound - and the highs. The best way, I find, to get that kind of concept is to hear the total sound, you know. So it's like when I practice a scale, I can remember when I was in the Army, the band would play warm-ups and they would play a scale - that's the way I kind of think of it in the room. I never think about what the heck is coming out of my horn. I really don't

have time to kind of examine that other than the time that I spend listening to play-backs - that sort of thing. So my concept is based on the way I feel a brass section should sound. That is one thing and I liken the concept of changing timbre with the use of voices - "What would Pavarotti sound like?" So it's like listening to delicate tonguing - Rossini tonguing or Mozart tonguing versus a Ravel tonguing - "Piano Concerto" - that kind of thing. So I liken it a lot of it to vocal quality.

Trusheim: If I understand you correctly, you use that if you want to change your approach to a piece? For example, "Pictures" versus a Mozart symphony?

Penzarella: Oh yeah. Yeah. It's like reading a new piece of music - if you can read the formula that's there, it's telling you - it is dictating to you what to do. It's transmitting - I have to be smart enough to be very receptive. So I have always seen myself as being very humble to the music. I'm always willing to listen to what the real geniuses have to say. So I figure, if I can have a good relationship with Mozart, Rossini, and Wagner, and Mahler, I'll be very happy because I'll be doing something that few people can do - I'm listening to what the masters are telling me to do. I find that easy.

Trusheim: Is that the seed of your interpretation or musical inspiration?

Penzarella: I would think that's it - to school myself in the tools that enable me to listen to what the masters have to say. And I would be very foolish not to listen to that.

Trusheim: That's a really neat approach.

Penzarella: I like it. It's like listening to the radio - you turn the page and they're telling you a story. And I had my first teacher - he was really great and he would always say "Vincenze, you listen to the music it's always telling you what to do, if you listen close enough." So I always say "If you listen to the music closely enough, it will always, without fail, always tell you what to do." You don't have to worry - but it's like giving up your own ego and some people find that difficult. I like people to tell me stories, you know. I'm happy to be in a field where I have all these geniuses telling me what to do - it's great! I had Puccini and Verdi tell me what to do

night after night - that's easy, you know. So you become - or you are, whether you like it or not - a tool for which something that is greater than you is operating through. That's fine with me....

Trusheim: Do you ever use mental rehearsal type strategies - in the sense that - in the orchestra? You talked about having this idea of a beautiful sound or a gorgeous sound. Does that operate while you're playing or is that just something that you do when you're working?

Penzarella: That's a good one. It's something - I'll tell you honestly - I have had more fun in a room by myself than, I think, anywhere I've ever played. I say that to students and they look at me like I'm crazy. But it's true. I find myself, in the orchestra, maybe it's not totally relaxed or whatever - I play second - I find playing second much harder than playing first. I'm never me - I never play the way I want to play - so it's a different perspective.

Trusheim: Yeah, I talked to Seymour Rosenfeld a couple of weeks ago and he said the same thing.

Penzarella: And it's like John Ware and Phil Smith are alternating and all of a sudden, I have a solo to play and I think - the first thing that comes to me is "What do I do - What do I do?" I mean really, it scares the hell out of me - I see my hands shake - "Oh my God, what do I do?" you know. I laugh about it here, but there are different times on that stage - I think "Oh my God, it's like I never played before." When I was playing Co-principal - that's the first place I've ever played second trumpet - at the Philharmonic. I never thought that way when I was playing first. I was always prepared - I always - in rooms by myself, I've always pretended I was playing with orchestras. God the hours I would spend playing with different orchestras - I've played with the greatest orchestras in the world [in my imagination], you know. As a kid, and to this day, I will read scores and play along and when I'm there I think I'm reacting differently. It's like what's going to happen on this play - what end are they going to run - you're almost like a linebacker - do I cover the deep pass? - what do I do? I'm more functioning as a person who's got to be multi-adaptable rather than have time to exploit what I would like to have happen for myself. As a principal player, my thinking would be different because it would be me. When I'm there, I'm not me. I'm really like Phil Smith



trying to play second to Phil Smith and the same with Johnny. So I really never give any consideration to myself regarding that. When I have a solo, I'll have to come home and work on it and then I'll think and even then - we just did "Alpine [Symphony]" - and the solos I had were continuations off of what Phil did - so I felt that the character of sound should be as close to Phil's as I could possibly do.

Excerpts from Interview No. 20 - Arnold Jacobs:

Jacobs: I'm a product of a great variety of musical experiences. I had studied voice while I was at Curtis. I was offered a scholarship in the vocal department and they wanted me to leave tuba go and just sing and after I - this was in my fifth or sixth year and I was anxious to get out and go to work, so I turned it down. But I did study voice and sing for quite a number of years - early years. I worked as a radio announcer for awhile and I had many varying insights and inputs, but I played a stringed instrument - I was a bass player, actually I was a pretty good bass player, well I've always loved jazz and everything else - I had to eat and I used to do that. I sang - and I'm getting to this because I want you to understand that I have played the treble clef, the tenor clef and the bass clef instruments in terms of brass, I have insight into singing, I have insight into the motor activity of the string and the acoustical patterns of it, so my particular background involves many phases of tone production and many aspects of musical interpretations. A great deal of jazz, a great deal of improvisation, seeing many things that would make you want to cry and laugh, and in other words, when you speak of imagery, I was getting this in many, many different ways and I'm a firm believer in this study incidentally.

Trusheim: Thank you, thank you. If we could talk a little bit about your playing process and then get back to some of the imagery things involved in it - Do you have a regimented warm-up?

Jacobs: A warm-up? No, I don't. Warm-up to me - first of all, being a professional player - a full-time player - we never cool off. Warm-up is coupling ourselves to the instrument at the start of the day.

My philosophy is to always return to the norms - whatever it may be and I usually like to start midrange in pitch and midrange in dynamics and I search out my finest quality of tone based on conceptual thought, but I try to sound my very best at the very first note. My philosophy is if you come late on the job, and you have to be on the stage, you have no time for a warm-up. You must produce and you must produce well. So in my brain, I have worked for very high standards of musical concepts and sounds and I start with norms and maneuver them into the extremes. But I always somewhere - I just warm up according to the music that I'm going to play. But it's like balancing a diet - there has to be certain ingredients and all - in other words, during the course of a day you must play a great deal of music and there had to be a great concept based on - what will I say - your sound being at it's best, your ability to phrase being there, and we have to guard against things slipping out of your playing. We can get into a can worms here if you want to - if you've got a couple of days - because playing brings about certain physical challenges according to where you're playing - in other words, on any brass instrument that will tend to bring out three to four octaves of range, there are large physical changes. We have to make sure that we stabilize musical output, not physical input. In other words, if I'm playing up in the trumpet's low range, I still have to play with great musicianship and great sound, but my physical inputs are going to be far different than what I'm going to have if I'm in my low register. So I set standards for sound - I set standards for phrase - for musicianship - the ability to be a storyteller in sound - but I don't much care how it feels. I play down the feel phenomena - sensory perception as felt through tissue - lips or whatever - but I play that down and I play up the ability to have psychomotor activity - to be able to have a story or a message that you deliver to an audience. It's always based on a conditioned response in the embouchure of stimuli in the brain. So I protect the stimuli - I don't protect the tissue. I protect the brain. The tissue has a wonderful ability, in other words, to be very - well let me demonstrate, for instance [he buzzes three different ways] - it's amazing how you can get an embouchure to function under the - you can't see this, this is not television - but by - the signals going from the brain are going across the entire mouth. In other words, every neuron in the brain will fire up every nerve ending across the whole mouth and not differentiate it based on connected tissue and muscles being bundled into groups and so forth. I mean,

there's a tremendous leeway about function in the lips. But I do protect my musical message. I like to train a student very, very much into being able to provide the source of stimuli for the source of conditioned reflex in his outer tissues. In other words, we have to be very, very musical in the head. The ability you call imagery - the ability to conceive sound that has to come out in terms of - instead of vocal chord activity in the larynx, we do it by sometimes I like to say vocal chord activity in the trumpet - [he sings and buzzes] - this of course is not scientific measurement or anything of this type. This is a source of stimuli and a very definite reflex or conditioned reflex which follows that. [he buzzes] where I never play - you see what I'm driving at - [he buzzes again] - these are certainly not orthodox embouchures I'm presenting here and yet you still hear the same music. When you study structure and function in a human being, you go into a study that is extremely complex and extremely involved. I started these studies in 1944 and I'm still at it today in 1986 - I'm still on this study. And I don't expect ever to stop - I don't know all the answers. The answers aren't all in yet in terms of what we are as human beings and how we function. You have to take the simple road. In other words, the people who study meat - who study embouchure and study tissue function - are missing a tremendous part of it - you can be a tremendously ignorant person - I have people who come to see me - some of them can hardly read or write - but they can blow up a storm on their horn - very musical. And think of the complexity of walking, and what we do with our body language, and dancing, and athletics and so forth. You don't need a PhD, but you definitely have to have motivations or products of what you want your body to accomplish - not methodologies in terms of tissue activity, but very definitely of what you want your body to do for you. And you have to go to the end product - this is one of my philosophies - is always - we work based on products not methodologies - in other words, you want the sound [he sings] - to me that's a product, and when I teach a student or when I'm working with myself - it's just as valid there - I always work for the music, not the instrument. If I'm starting a beginner, I start always with the sounds that he has to make. He wants to know how to play the trumpet. I let him know how the trumpet should sound. I'll take his mouthpiece and his trumpet and I'll play a note - one note - and I'll get him to listen to that note and then we stop and I'll get him to have recall of the sound of that trumpet so we're starting to challenge the recall instantly - and recognition of sound. I play with a

bad quality and then with a good quality and I'll discriminate a little. But I challenge him into that and I don't ask for success right away. In the study of physical skills, you'll start with crudities and out of crudities, you'll develop skills. I don't ask for skill right away, but I want the thought processes to start in a productive manner right away in the art form. So as he's learning the music, he's learning the trumpet. I don't have him learn the trumpet in order to play the music. We start right away in the art form so the art form thoughts are dominant. The brain is constantly being trained in patterns of recognition and recall and the ability to conceive sound. And we get later into the emotions of music and into the sonorities and rhythms and so forth. But we always keep the study of sound and phrase dominant over the study of tissue and brass.

Excerpts from Interview No. 23 - Adolph Herseth:

Trusheim: Mr. Herseth, if we could start off this afternoon by your telling me briefly about your musical training and experiences that have led you to these many years as principal trumpet in the Chicago Symphony.

Herseth: Well, that could take a long time!

Trusheim: That's why I said briefly!

Herseth: Okay, well, I started playing the trumpet when I was in the second grade. My father, who was a high school music person as well as an administrator, bought me a trumpet when I was seven years old and I loved it right from the start. So I played all through grade school, high school, and college, the U.S. Navy during World War II, and then I was fortunate enough to go to the New England Conservatory after the War on the G.I. Bill. And when I left the conservatory, I came here as first trumpet and I've been here ever since. And I'd have to say that all of us play to a concept - an aural mental concept, of course - and my first concept was a high school band director I had named Lawrence Hansen who was a good cornet player - of the amateur high school music teacher type - and so this - "Ah, that's how I should sound when I play that march, okay" - it's very important to have those in your mind, you know. This is before picture images might come to

you - although, even at that time you get some feeling of that. And then, when I was in college, we had a band director by the name of Carlo Alberto Sporati - half Norwegian and half Italian - with some of the best and worst characteristics of both of those races, okay - I can say that because I'm Norwegian - and he was a grand old man who had a real sense of majesty and style about him. Again, this is in the band context - I had no real experience with orchestra playing at that point - and when I played certain things, I had a definite feeling that this man was conveying to me. If we would do an especially good march for instance - he had a way of doing that - he would snap on his drum sometimes, and play the drum with us and give us all a feeling that this was something special. And I think that the first real aural image that would relate to what turned out to be my profession was when I went to Boston to enroll in the conservatory after I got out of the Navy - that was in January of 1946. And I went right away to the first concert I could of the Boston Symphony. It happened to be Sir Adrian Boult conducting the Holst "Planets" suite. I could not believe what I heard - I could not believe what I heard. I thought "My God, those guys get paid to go down there and have that kind of a thrill" - really. And so when I play that piece, all of that whole experience runs through my head like a videotape - sound, sight and all, okay. To me that's a real source. And I'll tell you another one - one of the big pieces at that time in the Boston Symphony was - Serge Koussevitsky, he was the musical director and conductor - one of his big pieces there was the Sibelius Second Symphony - we happened to have an old 78 recording of that at home when I was in high school - I think it was done about 1935 - he later recorded it as recording techniques improved - probably about the early fifties, just before he died. At any rate, I knew that piece quite well and so when I went to hear that piece played by the Boston Symphony live, that was a very special experience and I had read one of the early biographical works about Sibelius and I had real feeling for that man. Every time we've played that piece since then, again, that's part of what turns me on. Now a year or two back, my wife and I went to Finland - I was working in Finland - Helsinki - coaching the brass section for a week - so we took a trip out to Ianola, which was Sibelius' home. Walking down from the house - both he and his wife were buried there under a big copper plate about eight feet square, right - rests over both the graves with their names on it - as I walked down through the woods to that spot, all I could hear in my head was [he sings] - I had

tears in my eyes when I got there. That's gonna be - we've played the Sibelius Second since that time, and I want to tell you, that's an extra turn-on for me, alright. Is this the sort of thing you're talking about?

Trusheim: Sure is.

Herseth: I mean, everybody has this in a very personal way in their playing. I came in here as a totally green person. I mean, I played a few things with the conservatory orchestra when I was in school there, but basically, all of the main literature I learned on the job here. And I learned it from marvelous conductors because the first two years I was here was guest conductors - all big names - and some of them, really, in a sense shopping for the job. So they all came in with their big programs. So to this day, when we play like a Mahler symphony - Mahler Number One - which we did a few weeks ago with Maazel - I played that first with Bruno Walter, who was a personal friend and colleague of Gustav Mahler - now that has to have an effect on you and it becomes a benchmark by which you really measure everything else after that, you know. So when I play, for instance in the slow movement of the Mahler - [he sings] - all I'm thinking of is that marvelous feeling the very first time I played that with Bruno Walter up there - almost a direct link to the composer - I mean, that has to tell you something about how you should play those things. So, every time that comes, I can see that man up there and I can get back that feeling. If you don't have that, you're just turning the crank and the notes are coming out - they may be all accurate - they may be all in the right place - they may be good - I mean a good sound - but you're not telling a story. You've got to have something there to feed into you to tell a story. You've got to - you've got to.

Trusheim: So it's your past experiences with the music that do it?

Herseth: Absolutely, there's no question about it. I could give you - every piece we play has got something like that - well of course! And if you haven't had something definite like that in your background for it, you have to substitute something from your imagination. You play a Beethoven Symphony - you have to, in a way, think back to the time that Beethoven wrote that - what kind of an orchestra he was writing for - what kind of trumpets they played on in those days which, of course,

were the natural ones as opposed to what we have now - and you have to instinctively incorporate some of that into the way you approach it - musically and stylistically and everything. Yeah, really. So, yeah, I don't think any of us would be playing in a group like this if we didn't have that kind of resource, you know.