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TRANSFER OF LEARNING IN CHORAL SETTINGS

A Document
SUBMITTED TO THE GRADUATE FACULTY
in partial fulfillment of requirements for the
degree of
DOCTOR OF MUSICAL ARTS

by
JOEL K PANCIERA
Norman, Oklahoma
1998

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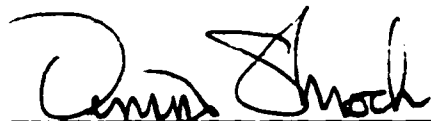
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TRANSFER OF LEARNING IN CHORAL SETTINGS

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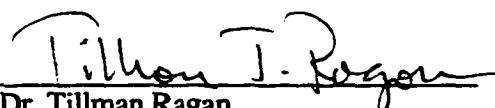
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ABSTRACT

Even when novice choral ensembles present performances of high artistic merit, singers may not acquire a form of conceptual knowledge that enhances future learning. Conductors who primarily focus on the upcoming concert employ rehearsal instruction that addresses *how* particular works should be performed. Their singers learn *what to do* without learning meaningful conceptual knowledge. Because they do not comprehend underlying musical and performance concepts, singers will only relate new musical tasks to existing knowledge when both are identical. New tasks that are similar, but not identical to existing knowledge, will probably not be directly influenced by past learning.

Effective choral pedagogy should be concerned with more than the next performance. Conductors who hope to enable the efficient development of performance skill must design instruction that induces transfer on a conceptual level. As singers develop meaningful conceptual knowledge, their ability to incorporate new learning into existing knowledge is enhanced. Moreover, conceptual understanding enhances the comprehensibility of new learning tasks. Conductors interested in transfer must implement short and long-term instructional goals designed to develop ensembles whose members can appropriately transfer existing knowledge to future settings.

This document examines the process of transfer and recommends an instructional approach with supporting rehearsal strategies that promote transfer of learning in choral settings. After important research findings are reviewed, the document explores transfer from the perspective of cognitive psychology and offers five fundamental principles that facilitate transfer in choral settings. In addition, specific rehearsal strategies that illustrate these transfer principles in two diverse choral settings (a mixed college choir and a mixed community choir) are suggested.

CHAPTER ONE

MAKING THE CASE

Those who cannot remember the past are condemned to repeat it.¹
George Santayana

THE PROBLEM

Santayana's warning is relevant for many choral conductors today who fail to foster a significant level of musical comprehension within their ensembles. Even when their ensembles produce convincing performances, singers often do not develop conceptual knowledge that enhances future learning. Consequently, these choirs are "condemned to repeat" inefficient learning cycles in which skills learned in one context do not transfer to future contexts that require similar skills. Transfer of learning can be understood as a "concern with the extent to which previously learned knowledge and/or skills influence subsequent learning, problem solving, and/or application."²

In order to stimulate attention and maximize rehearsal efficiency, choral conductors often create high energy, fast-paced rehearsals. They learn to keep verbal instruction brief and specific; experience soon demonstrates that excessive words from the conductor erode an ensemble's attentiveness and waste rehearsal time. Therefore, strategic verbal cues like the examples below are commonly experienced in choral rehearsals today.

¹George Santayana, "The Life of Reason, Vol. 1, Reason in Common Sense," in Bartlett's Familiar Quotes, 15th ed., ed. John Bartlett (Boston, MA: Little, Brown and Company, 1982), 423.

²Thomas Shuell, "The Role of Transfer in the Learning and Teaching of Music: A Cognitive Perspective," in The Crane Symposium: Toward an Understanding of the Teaching and Learning of Music Performance, ed. Charles Fowler (Potsdam, NY: Potsdam College of the State University of New York, 1988), 146.

Altos, you have the melody. Sing forte, all other sections should sing mezzo piano.

No, no, no . . . the final syllable of this word is not stressed. Repeat after me . . .

Sopranos, modify your 'e' vowel in that high passage. More 'ih' in your 'ee.'

Tenors, your pitch is fuzzy. Make sure to distinguish between half-steps and whole-steps before you sing.

Basses, your low notes need to be much brighter in this passage.

Most choir members come to rehearsals expecting the conductor to be the generator of their learning. According to this traditional model, singers provide the raw material that is shaped and molded by the conductor into a cohesive, artistic whole. This potter/clay relationship is necessary, it is argued, to ensure a unified interpretation. While artistic ensemble singing does require effort and concentration, the singer's primary responsibility is to respond to the conductor's "programming." Singers are not expected to actively participate in the learning process. This instructional approach promotes myopic and inefficient choral practice, especially when used by conductors who primarily focus on the needs of the next performance. As illustrated by the verbal cues above, learning within this environment is focused on the correction of surface details. Singers learn "what to do" without developing meaningful conceptual knowledge. They only learn how to perform specific tasks in a specific manner. Because they do not comprehend underlying musical and technical concepts, future musical tasks, even ones quite similar to those previously performed, will be approached by the ensemble as if they did not possess knowledge that could contribute to new learning. In essence, these conductors must often repeat past learning each time a new work is begun.

Conductors focused primarily on upcoming performances often fail to establish long-term instructional goals for their ensembles beyond the performance of good concerts. They worry that time spent on musical comprehension and technical development will reduce the time available to prepare quality performances. However, the potter/clay instruction method, though intended to enhance the speed of learning, actually increases rehearsal *inefficiency* by failing to support transfer of learning. Since singers do not

acquire conceptual knowledge that fosters transfer, conductors must repeatedly teach skills learned in past rehearsals. This problem suggests that performance goals that are not supported by appropriate instructional goals actually inhibit a novice ensemble's ability to learn. Therefore, conductors who desire efficient rehearsals that lead to compelling performances should establish clear performance goals as well as supportive developmental goals that promote transfer of learning.

This is not to say that transfer of learning cannot occur without an explicit attempt to enable it. Conductors who primarily devote their attention toward the perfection of a particular aspect of choral singing (such as tuning/blend or resonance) can enable transfer within this area. If their instruction is consistent and logically organized to promote the generalization of underlying principles, transfer of learning will occur. In addition, transfer can occur when ensemble members already possess an advanced level of training and experience. A group of experts will probably possess the internal knowledge structures necessary to apply previous learning to new situations. However, the vast majority of choral ensembles in this country are comprised of novice singers with limited degrees of musical proficiency. They do not have well developed conceptual knowledge and thus they lack the cognitive structures that facilitate the transfer of musical knowledge. Novice singers usually require instructional support to accomplish transfer of learning.

Whether or not conductors consciously advocate transfer of learning, virtually all seek positive transfer as they teach. The desire to arrange learning tasks in a manner that positively influences subsequent performance is fundamental to effective teaching. The following issues reveal common transfer concerns that conductors regularly address: How should students practice? Why spend valuable rehearsal time on warm-ups? How should rehearsals be structured? When should a particular work be programmed within the year?

Regardless of good intentions, however, research indicates that transfer occurs less frequently than most people imagine (see pages 24-26). Conductors often assume that

transfer occurs without providing the necessary instructional support. The most typical example of this problem involves the lack of transfer between skills developed in warm-ups and musical performances. Since transfer is governed primarily by what singers *actually comprehend* versus what conductors think or hope they comprehend, singers must discern not only how to perform a particular vocalise but also how and when this skill can be applied to “real music” situations. If the structural similarities between technical exercises and musical tasks are not clearly perceived by learners, transfer will not occur. Likewise, a novice choir that successfully performs two Renaissance works will not automatically grasp the style of an unfamiliar sixteenth-century work unless it has received appropriate instructional support. Moreover, frustrated conductors who lose patience with their choirs when long-standing technical deficiencies continue to persist most likely suffer from a faulty understanding of transfer.

Never before has there been such a wide array of instructional resources available that are dedicated to the training of choral conductors. However, an examination of rehearsal technique materials reveals that authors usually focus on *what* to teach and give little attention to *how* conductors should enable comprehension of this knowledge. Discussions of rehearsal methods typically suggest performance concepts, techniques, or strategies. Curiously, little information exists that addresses how concepts should be taught in light of educational research. The absence of this type of instructional support for conductors is regrettable. Most conductors develop rehearsal skills in an implicit fashion through personal experience and the observation of mentor conductors.

THE NEED

Effective choral leadership must be concerned with more than the next performance. Conductors interested in transfer must implement short and long-term instructional goals designed to develop ensembles whose members can appropriately transfer existing

knowledge to future settings. In order to build this type of choral instrument, choral conductors must understand the cognitive processes that govern the encoding, storage, and retrieval of knowledge.

Groundbreaking research by cognitive psychologists has shed light on how humans process and store information. This theoretical perspective has been the dominant force in American psychology for the past twenty years. Important insights concerning human learning and transfer have emerged from cognitive psychology:³ 1) Learning is viewed as an *active, goal-oriented process* that is governed by a learner's mental activity. It is cumulative in nature and strongly influenced by the activated knowledge a learner brings to a new task. 2) All new learning is shaped by a learner's *prior knowledge*. Effective instruction must enable accurate connections between new concepts and appropriate prior knowledge. Learning does not occur in isolation from existing knowledge. 3) Learners construct frameworks for comprehension called *schemata*. These organized, highly structured webs of knowledge determine how a new learning task will be interpreted and linked to prior knowledge.

Influenced by these insights from cognitive psychology, an appropriate image that illustrates a new instructional model for conductors could be the relationship between parents and their adolescent children. Parents who attempt to control adolescents by "sculpting" their behavior will fail to prepare them for adulthood. Instead, successful parents encourage development from within adolescents of the necessary knowledge, skills, values, and dispositions that will equip them to function as responsible adults. Under this model, adolescents receive the necessary support to learn according to their unique developmental capabilities.

³Thomas Shuell, "Cognitive Conceptions of Learning," Review of Educational Research 56 (1986), 411-416.

To enable efficient learning and high levels of artistic performance, conductors and ensembles must create choral environments which foster transfer of learning. Conductors need to acknowledge that personal familiarity with choral concepts should be accompanied by the ability to enable their development and generalization within ensembles. With high quality performances as their primary goal, successful conductors must support this goal by setting and accomplishing instructional objectives that promote conceptual understanding and transfer. These conductors affirm performance and learning: they view these goals as mutually supportive.

THE PURPOSE AND PROCEDURE

This document examines the process of transfer and recommends an instructional approach with supporting rehearsal strategies that promote transfer of learning in choral settings. Chapters One and Two review important research findings that enhance our understanding of ensemble learning and transfer. Chapter Three explores transfer from the perspective of cognitive psychology and offers five fundamental principles and procedures that facilitate transfer in choral settings. The final chapter suggests specific rehearsal strategies that illustrate these transfer principles in two diverse choral settings (a mixed college choir and community choir). Supported by the strategies, this application recommends an instructional approach to choral development that enhances an ensemble's comprehension, generalization, and performance of choral concepts. Rehearsal instruction for three diverse musical works that promote the transfer of two target concepts are offered for both choral settings.

THE LIMITATIONS

Issues of transfer and learning have received much attention from psychologists and educators throughout the century. This large body of work is complicated by a divergence

of terminology among these experts. In addition, much work in related subjects such as schemata, metacognition, and concept learning involve discussions of transfer as well. Given the breadth and complexity of this body of research, an inclusive discussion of the phenomenon would not be practical due to the limitations of this document. Instead, this document will focus on a select number of influential figures whose work is most suitable to musical applications. In addition, the following Related Musical Literature section will only include sources that address performance and music learning in ensemble environments.

This document is not designed to prescribe a set of rehearsal techniques in support of a particular choral philosophy. Instead, it will propose instructional principles that foster transfer of learning in choral settings. These principles can be applied to a wide variety of philosophies and styles of choral singing.

This document will specifically address the needs of college and community mixed choirs. Although many of the principles and procedures discussed could also be applied to children's and adolescent choirs, the document will not address the unique developmental challenges associated with these populations.

RELATED MUSICAL LITERATURE

Only a handful of published sources that combine the work of educational psychologists and music ensemble conductors exist today. None of these sources directly examine how the cognitive perspective of transfer can be enhanced in choral rehearsals.

The subsequent discussion of resources that address music learning and performance in ensemble settings is structured in the following manner: choral method texts, ensemble research, and general choral music sources. Given that a discussion of each source would be tedious and unnecessary, only representative works from each group are discussed.

Choral Methods Texts

Virtually all choral methods texts designed for undergraduate conducting or vocal music education classes contain chapters dealing with vocal production, conducting, score study, rehearsal technique, program administration, and musical style. Other topics include: the history of choral music in America, children's and adolescent choirs, choral resources, small ensemble formation, programming, and recruitment. Although these sources are filled with valuable information that include effective rehearsal concepts and procedures, they rarely address in any depth the manner in which conductors should foster the growth of conceptual knowledge. Of the methods texts that touch on the "hows" of choral rehearsal: John Hylton advocates a comprehensive approach to choral education.⁴ He underscores the importance of teachers developing a clearly defined teaching philosophy, setting measurable ensemble learning objectives, implementing a choral curriculum based on key principles, and developing critical thinking within ensembles. While Hylton offers valuable information that supports effective choral pedagogy in general, he does not directly explore transfer of learning.

Kenneth Miller advocates a variety of choral concepts that receive no supporting application strategies.⁵ However, Chapter Four, entitled "The Junior High Vocal Music Program," written by Miller's colleague, John Hylton, discusses how to develop and implement instructional goals and supporting lesson/rehearsal plans. Each lesson includes target concepts, behavioral objectives, and rehearsal strategies/activities. It is unfortunate that this approach was not developed further in the book's rehearsal technique chapter.

⁴John Hylton, Comprehensive Choral Music Education (Englewood Cliffs, NJ: Prentice-Hall, Inc., 1995).

⁵Kenneth Miller, Vocal Music Education (Englewood Cliffs, NJ: Prentice-Hall, Inc., 1988).

Sally Herman's approach comes very close to the objectives outlined in this document:

Because we often teach our students each piece, note by note, they do not develop a sense of musical understanding that will allow them to make judgments about shaping phrases in a new score. Once we establish this as our method of teaching, our students depend on us for all musical decisions, especially the young singer. Our task as a teacher is to give students the skills to make their own musical decisions. Robotics has a place in the automobile industry, but not in the choral performance industry.⁶

In her book, designed primarily for secondary choral educators, Herman encourages conductors to simplify their instruction and focus on a few simple, principles that will develop musicianship skills. After outlining the influence of learning styles on education, she suggests diverse presentation strategies that will enhance learning by all students. Although many educators advocate the importance of learning-style awareness, research data is mixed concerning the effectiveness of this approach.⁷ In addition, Herman's core principles are too simplistic and narrowly defined to guide a mature interpretation of complex art music.

Ensemble Research

The vast majority of relevant music ensemble research is focused on primary and secondary level educational settings. Issues studied by researchers include modeling, sequential teaching units, rehearsal strategies, and the development of perceptual skills. Although these concerns influence transfer of learning, none of the following studies directly examine transfer of learning or the key mechanisms that enable transfer.

⁶Sally Herman, In Search of Musical Excellence: Taking Advantage of Varied Learning Styles (Dayton, OH: Roger Dean Publishing Co., 1994), vi.

⁷Howard Gardner, "Is Musical Intelligence Special?" in Ithaca Conference '96 Music as Intelligence: A Sourcebook, ed. Verna Brummett (Ithaca, NY: Ithaca College, 1997), 17.

Modeling can be defined as the use of live or recorded musical performance in an instructional setting. Regarding beginning and intermediate level bands, Marc Dickey's research indicates that consistent teacher modeling improves student's imitative and kinesthetic responses.⁸ However, Judith Delzell finds that modeling does not significantly improve performance skills but does enhance musical discrimination skills.⁹ Michael Kendall's research indicates that modeling, supported by programmed music reading activities, greatly strengthens sight-reading and solfege skills within the ensemble.¹⁰

Cornelia Yarbrough and Harry Price recommend a three-step instructional sequence for rehearsals: task presentation, student interaction, and conductor feedback. This cycle of interaction is considered complete only after all three steps are successively completed.¹¹ Their research indicates that conductors often interrupt instructional cycles to correct musical behavior not related to the relevant task or to provide long, confusing strings of verbal cues. They demonstrate that conductors who successfully employ complete instructional sequences produce high quality performances while maintaining high student attentiveness and positive attitudes.

After identifying three commonly used rehearsal designs, James Cox evaluates each design through a survey of successful high school conductors, their students, and their

⁸Marc Dickey, "A Comparison of the Effects of Verbal Instruction and Nonverbal Teacher-Student Modeling on Instructional Effectiveness in Instrumental Music Ensembles" (D.Ed. diss., University of Michigan, 1988).

⁹Judith Delzell, "The Effects of Musical Discrimination Training in the Beginning Instrumental Music Class," Journal of Research in Music Education 37 (1989): 21-31.

¹⁰Michael Kendall, "Two Instructional Approaches to the Development of Aural and Instrumental Performance Skills," Journal of Research in Music Education 36 (1988): 205-219.

¹¹Cornelia Yarbrough and Harry Price, "Sequential Patterns of Instruction in Music," Journal of Research in Music Education 37 (1989): 179-187.

administrators.¹² Rehearsal design 'A' begins and ends with familiar, enjoyable works. Conductors introduce more demanding literature in the center of the rehearsal. Fifty-two percent of surveyed conductors prefer this design and students also rate this design with strong positive attitude factors. Design 'B' is governed by the golden proportion. This approach, while similar to design 'A,' features a well-planned "climax of intensity" approximately two-thirds of the way into the rehearsal. Twenty-two percent of surveyed conductors prefer this design. Although these conductors are viewed favorably by their students, student attitudes toward this rehearsal approach do not receive strongly positive attitude scores. Design 'C' proposes the alternation of familiar and unfamiliar works. Twenty-five percent of conductors prefer this design and students rate these conductors and the rehearsal procedure very highly. Cox does not find a significant performance outcome differential between each of the rehearsal designs.

Yarbrough and Price also measure how instrumental conductors utilize rehearsal time.¹³ Their research indicates that about forty-three percent of rehearsal time involves verbal instruction while forty-three to fifty-seven percent is devoted to ensemble playing. William Caldwell's study of high school choral settings asserts that conductors spend approximately sixty-five percent of rehearsal time rehearsing one or more voice parts and thirty-five percent on verbal instruction.¹⁴ He notes that more experienced conductors spend a higher percentage of rehearsal time (fifty percent) devoted to "tutti" singing. Harry

¹²James Cox, "Rehearsal Organizational Structures Used by Successful High School Choral Directors," Journal of Research in Music Education 37 (1989): 201-218.

¹³Yarbrough and Price, "Sequential Patterns."

¹⁴William Caldwell, "A Time Analysis of Selected Musical Elements and Leadership Behaviors of Successful High School Choral Conductors" (D.Ed. diss., Florida State University, 1980).

Price¹⁵ and Robert Erbes find that feedback from elementary and high school conductors is mostly disapproving.¹⁶ These conductors rarely utilize positive reinforcement. Lucille Alexander and Laura Dorow demonstrate a significant relation between positive reinforcement and student achievement in beginning bands.¹⁷

Donald Hamann's research compares classroom environments with contest ratings among successful high school performing ensembles.¹⁸ Using an assessment tool called the Classroom Environment Scale Rating (CESR), he discovers significant differences in classroom scores relative to contest ratings, teacher/student status, and gender. This document evaluates nine areas: student involvement, student friendships, teacher support, task orientation, student competitiveness, class order and organization, clarity and consistency of rules, teacher control over environment, and innovation. The ensembles achieving the highest contest ratings scored significantly higher CESR scores in teacher support, order and organization, involvement, and student friendships. Students with the lowest contest ratings score their directors most highly in task orientation.¹⁹ The ensembles that receive the most performance success are distinguished by frequent

¹⁵Harry Price, "The Effect of Conductor Academic Task Presentation, Conductor Reinforcement, and Ensemble Practice on Performers' Musical Achievement, Attentiveness, and Attitude," Journal of Research in Music Education 31 (1983): 245-257.

¹⁶Robert Erbes, "The Development of an Observational System for the Analysis of Interaction in the Rehearsal of Musical Organizations" (D.Ed. diss., University of Illinois at Urbana, 1972).

¹⁷Lucille Alexander and Laura Dorow, "Peer Tutoring Effects on the Music Performance of Tutors and Tutees in Beginning Band Classes," Journal of Research in Music Education 31 (1983): 33-47.

¹⁸Donald Hamann, Charlotte Mills, John Bell, Elza Daugherty, Robin Koozer, "Classroom Environment as Related to Contest Ratings Among High School Performing Ensembles," Journal of Research in Music Education 38 (Fall 1990): 215-224.

¹⁹Primary emphasis placed on achieving planned activities.

opportunities for student input, maximum levels of teacher support, and diverse, well-structured musical instruction.

Researchers also examine the effectiveness of various instructional approaches designed to promote the development of perceptual skills, conceptual understanding, and enhanced technical development within ensembles. Studying two beginning junior high school bands, William Whitener compares a comprehensive musicianship rehearsal approach with a more traditional performance-oriented approach.²⁰ Although both groups develop approximately equivalent performance skills, the band receiving comprehensive musicianship training demonstrates more developed skills in the areas of interval discrimination, meter discrimination, mode discrimination, and auditory-visual discrimination. Floyd Hedberg compares the learning and performance outcomes of a specially designed instructional curriculum with a traditional performance-oriented program.²¹ Students from the instructional curriculum demonstrate significantly better sight reading skills. However, all other discrimination skills and performance skills of familiar music remain unaffected by the two strategies. Applying Bruner's "spiral curriculum," Jacquelyn Boswell designed a series of lessons to be taught in beginning instrumental music classes. These lessons were intended to "aid in reflecting upon certain concepts in the context of learning to manipulate the clarinet."²² Gary Bangstad offers a series of creative teaching strategies that promote an awareness of form and musical style

²⁰William Whitener, "Comparison of Two Approaches to Teaching Beginning Band," Journal of Research in Music Education 31 (1983): 5-13.

²¹Floyd Hedberg, "An Experimental Investigation of Two Choral Rehearsal Methods: Their Effect on Musical Attitude, Music Discrimination, Music Achievement, and Music Performance" (D.M.A. diss., University of Northern Colorado, 1975).

²²Jacquelyn Boswell, "An Application of Bruner's Theory of Mental Growth to the Teaching of Musical Concepts in Beginning Instrumental Music" (D.Ed. diss., University of Illinois, 1969), 91.

within a choral setting.²³ Because Whitener, Hedberg, and Bangstad's studies lack a clearly defined evaluation procedure, their outcome findings are often challenged by other researchers.

A review of the above-mentioned ensemble research indicates that conductors should: utilize modeling to improve psychomotor learning, employ complete teaching units, use well-planned rehearsal designs, maximize attention and learning by eliminating excess verbal instruction, actively involve students in all aspects of learning and performance, and maximize positive reinforcement.

General Choral Music Sources

While there are many general choral sources that include extended discussions of various rehearsal techniques and choral concepts, few devote significant attention to *how* these concepts should be taught. Jameson Marvin suggests a plethora of valuable information for the choral conductor.²⁴ He organizes the rehearsal process into logical, comprehensible units and offers specific "principles and tendencies" in each area. However, Marvin does not address how conductors should implement these principles. Daniel Moe provides an equally valuable collection of hierarchically arranged choral concepts that reflects his personal conducting philosophy.²⁵ Both authors do not expand their identification of core principles with a discussion of application strategies. This situation is true of virtually all the sources in this category.

²³Gary Bangstad, "Developing a Choral Rehearsal Program Designed to Increase Perception of Form and Style in Choral Music" (D.Ed. diss., Arizona State University, 1975).

²⁴Jameson Marvin, "Mastery of Choral Ensemble," in Up Front!, ed. Guy Webb (Boston, MA: E.C. Schirmer Music Co. Inc., 1993), 95-120.

²⁵Daniel Moe, Basic Choral Concepts (Minneapolis, MN: Augsburg Publishing, 1972).

Many articles address rehearsal issues. Interviews with master conductors often disclose glimpses of their rehearsal philosophies.²⁶ Other sources address motivation in the rehearsal,²⁷ special techniques,²⁸ rehearsal structure,²⁹ rehearsal communication,³⁰ and vocal skill.³¹ These sources, while offering many creative ideas, focus only on "parts" of the rehearsal process.

While they do not directly address transfer of learning, the following sources approach ensemble learning in a more holistic fashion. Douglas Reahm encourages conductors to stimulate critical thinking during rehearsals.³² He asserts that conductors

²⁶See Jennifer McClure, "Erwin Ortner Speaks about his Arnold Schoenberg Chor," Choral Journal (March 1994): 15-20; Doreen Rao, "Training Young Voices: An Interview with Sir David Willcocks," Choral Journal (October 1985): 29-33; and Dennis Shrock, "An Interview with Weston Noble," Choral Journal (December 1991): 7-15.

²⁷See Val Hicks, "Attention, Effort and Motivation in Rehearsal and Performance," Choral Journal (May 1986): 11-16; and Lawrence Kaptein, "Motivation Takes Form in the Choral Rehearsal," Choral Journal (November 1987): 15-20.

²⁸See Charles Robinson, "Choral Performance: Do You Hear What I Hear?," Music Educators Journal (December 1990): 47-51; and Herbert Henke, "Rehearsing with Dalcroze Techniques," The Instrumentalist (May 1993): 46-50.

²⁹See Steven Demorest, "Structuring a Musical Choral Rehearsal," Music Educators Journal (January 1996): 25-30; Victoria Meredith, "Reaching New Peaks in Choral Rehearsal," Music Educators Journal (May 1995): 20-22, 61-62; and Jerry Ulrich, "Conductor's Guide to Successful Rehearsals," Music Educators Journal (March 1993): 34-35, 68.

³⁰See Jeffrey Cornelius, "The Use of Metaphor in the Choral Rehearsal," Choral Journal (September 1982): 13-14; and Joseph Casey, comp., "Communicating in Rehearsals," The Instrumentalist (April 1992): 21-27, 49-50.

³¹See Gary Wilson, "Three Rs for Vocal Skill Development in the Choral Rehearsal," Music Educators Journal (March 1991): 42-50; and Lynn Corbin, "Practical Applications of Vocal Pedagogy for Choral Ensembles," Choral Journal (March 1986): 5-9.

³²Douglas Reahm, "Developing Critical Thinking Through Rehearsal Techniques," Music Educators Journal (March 1986): 29-31.

should involve students in regular analysis of performance options, experimentation, conducting, and critical analysis of the conductor's interpretive decisions. According to Reahm, conductors must convince ensemble members that performance requires creative approaches to many complex problems. He offers numerous practical applications. Robert Cutietta warns music educators that ensemble environments are not conducive to a "comprehensive" approach of music learning.³³ After establishing the inherent environmental limitations of ensemble learning (students join ensembles to perform, not learn; rehearsal settings and ensemble sizes do not support non-performance learning), he suggests a modest pedagogical approach that promotes performance-centered learning. According to Cutietta, all rehearsal instruction should enhance quality performance. Donald Zentz proposes an approach to music teaching that is guided by gestalt psychology.³⁴ He convincingly demonstrates how a gestalt approach could effectively enable the understanding of musical principles and procedures and warns educators to avoid the tendency to focus only on teaching specific skills. Zentz advocates an approach that uses "part" learning to support holistic, unified educational experiences. These unified experiences sensitize musicians to infinite varieties of musical interpretation.

Lyle Davidson and Larry Scripp discuss the implementation of the Arts Propel approach to arts education.³⁵ Ensemble members in this program "do not function solely as a cog in the machine of the ensemble. Instead, the student is invited and guided by the director to assume greater musical responsibility as the focus expanded from learning an

³³Robert Cutietta, "Performance isn't a Dirty Word," Music Educators Journal (September 1986): 18-22.

³⁴Donald Zentz, "Music Learning: Greater Than the Sum of its Parts," Music Educators Journal (April 1992): 33-36.

³⁵Lyle Davidson and Larry Scripp, "Tracing Reflective Thinking in the Performance Ensemble," The Quarterly, 1 (1990): 49-62.

instrument toward the skill necessary for directing the ensemble.”³⁶ This approach is based on the assumption that “the core of artistic experience is contained in the activity of making the art.”³⁷ Teachers create four levels of domain projects to stimulate the development of written and aural reflection skills: rehearsal critiques (students evaluate rehearsal), rehearsal comparisons (students evaluate and compare with recordings), ensemble coaching (section leaders analyze and critique), and ensemble directing (section leaders assume leadership responsibility). Students advance after demonstrating satisfactory cognitive reflection in a domain. Davidson and Scripp view rehearsals as “a learning environment where concepts, planning, and multiple perspectives increasingly become a measure of participation in the ensemble.”³⁸ The program utilizes an assessment device that measures growth in cognitive skills, performance/reading skills, and reflective thinking skills. Its goal is to support the growth of each “novice” ensemble member toward an “expert” level.

Summary

This survey of related literature uncovers four distinct content areas:

1. Works suggesting creative ideas and techniques that enrich the rehearsal process.
2. Works that portray the inner relationships inherent in a well-organized scheme of choral concepts.
3. Research designed to evaluate ensemble behavior, learning, and performance.
4. Applications of learning theories and designs to ensemble settings.

The first two content areas address *what* to teach while the third area evaluates the effectiveness and influence of various techniques and settings.

³⁶Ibid., 50.

³⁷Ibid., 51.

³⁸Ibid., 52.

This document represents the final content area: studies that recommend *how* to implement rehearsal instruction. Although similar sources have received significant attention during the previous discussion, they represent a very small portion of the related literature available today. There is a significant need for more research in all areas of ensemble learning and performance. This body of research should include studies that recommend rehearsal approaches synthesizing knowledge derived from the fields of music and educational psychology. Interested choral conductors can find helpful studies in this regard that develop the application of learning styles (Herman), Bruner's "spiral curriculum (Boswell)," critical thinking (Reahm), gestalt theory (Zentz), and reflective thinking (Davidson and Scripp, Whitaker³⁹).

This study of transfer of learning in choral settings enriches an important, but neglected, area of research. It begins by examining the most significant avenues of transfer research of this century.

³⁹Nancy Louise Whitaker, "Reflective Thinking as Exemplified in Musical Decision Making" (D.Ed. diss., University of Illinois at Urbana-Champaign, 1989).

CHAPTER TWO

DIFFERING VIEWS OF TRANSFER

*What experience and history teach us are - that people and governments
have never learned from history, or acted on principles deduced from it.¹*
George Hegel

Hegel's pessimistic view of human behavior raises important questions regarding transfer of learning. He implies that learning is wedded to individual situations, lives, cultures, and generations. If humans have never learned from history, then do we also lack the *ability* to learn from past experience? Is this skill beyond our capability or do generations fail to pass on important knowledge? Perhaps this condition does not reflect an inability to learn but simply the influence of personal choice. Nevertheless, when supported by extensive evidence of past transfer failures, Hegel's assertion challenges the popular belief that humans can effectively transfer knowledge.

Many people would dispute this assertion. Common sense dictates that experience in learning fosters the development of more advanced learning skills. For instance, learning to play the saxophone is simpler for a student who already plays the clarinet. Undergraduate seniors taking Music Appreciation 101 are expected to perform better than freshmen in the same course. Both examples seem to provide support for the existence of transfer. In his influential book *The Process of Education*, Jerome Bruner asserts, "the first object of any act of learning . . . is that it should serve us in the future. Learning

¹George Hegel, "The Life of Reason, Vol. 1, Reason in Common Sense," in Bartlett's Familiar Quotes, 15th ed., ed. John Bartlett (Boston, MA: Little, Brown and Company, 1982), 703.

should not only take us somewhere; it should allow us later to go further more easily.”²

In contrast to Hegel, Bruner’s characterization of transfer’s role in learning reflects the mainstream of contemporary thought. In fact, our entire educational system is built on the hope that what is learned in school will have a beneficial effect on later learning and performance.

What is the relationship between learning and transfer? Are they distinct phenomena or are they closely related? Psychologists and educators have struggled throughout this century to determine the precise nature of these capabilities. Unfortunately, universally accepted definitions have not been developed. While some experts view transfer as distinct from learning, the large majority affirm that transfer is an important form of learning. A few experts even doubt the viability of transfer as a meaningful concept altogether.³

Most of the disagreement between experts centers on the extent to which learned behavior must “travel” before it can be classified as transfer. For instance, some may interpret seniors outperforming freshman in Music Appreciation 101 and clarinetists excelling at the saxophone as advanced *learning* skill (the amplification of existing knowledge) instead of transfer. Clearly, the simple notion of transfer as “the application of old knowledge in new situations,” does not meaningfully distinguish transfer from learning. Some experts believe that transfer must involve the spontaneous development of new knowledge in a separate content area (“far” transfer) while others affirm the existence of “near” (the application of prior knowledge to a related context within a content domain)

²Jerome Bruner, The Process of Education (Cambridge, MA: Harvard University Press, 1960), 17.

³See Douglas K. Detterman, “The Case for the Prosecution: Transfer as an Epiphenomenon,” in Transfer on Trial: Intelligence, Cognition, and Instruction, ed. Douglas K. Detterman and Robert Sternberg (Norwood, NJ: Ablex Publishing Company, 1993).

as well as “far” transfer. For example, “far” transfer occurs when a learner uses a linguistic concept to solve a math problem while “near” transfer occurs when a musician uses insight learned from one work to enrich the performance of a different work. Experts that only recognize the “far” variety of transfer interpret “near” transfer as a type of learning.

Robert Gagné defines *learning* as “a change in human disposition or capability that persists over a period of time and is not simply ascribable to processes of growth.”⁴ *Transfer* has already been defined by Shuell as “a concern with the extent to which previously learned knowledge and/or skills influence subsequent learning, problem solving, and/or application.”⁵ More specifically, transfer involves the spontaneous application of prior knowledge to a previously unencountered learning challenge. Learners who exhibit transfer actually generate new knowledge when existing knowledge is applied to new problems. For example, while singers may *learn* a particular musical work, interpretative concept, or technical skill, “*near*” transfer occurs when they spontaneously apply this knowledge to a different musical context. They can *learn* a specific vocalise that is designed to promote well-formed vowels and fluid, legato singing. “*Near*” transfer occurs when they discover a similar pattern in a musical work and apply knowledge learned from the vocalise to their performance of the work. Though not from lack of trying, experts have not developed effective learning tools that consistently enable far or general transfer (see pages 24-26).

In order to appreciate why some psychologists view learning and transfer differently, we must first understand the larger philosophical context from which transfer

⁴Robert Gagné, Leslie J. Briggs, and Walter W. Wager, Principles of Instructional Design, 4th ed. (New York: Holt, Rinehart and Winston, Inc., 1992), 4.

⁵Shuell, “Transfer in Learning and Teaching Music,” 146.

theory has evolved in the twentieth century. Two perspectives, the behaviorist and cognitive viewpoints, have dominated psychological research during this time. Understanding the central characteristics of these orientations will also enrich the discussion of transfer theory found in the following sections of this chapter.

The behaviorist perspective was the dominant view during the first half of this century. Behaviorists believe that human behavior is determined more by environmental factors than by internal thought processes. As a result, they focus their research on outward, observable behaviors. When studying learning, they employ the scientific method to observe and interpret how subjects respond to external stimuli. This connection between *stimulus* and *response* is called *association*. In fact, proponents of this perspective are also called “associationists.” To effect learning, they manipulate stimuli and offer positive reinforcement to encourage correct responses. The use of positive reinforcement to influence learning is called *conditioning*. Behaviorists primarily conducted their research on animals, believing that an understanding of the simple forms of learning exhibited by animals would enhance their understanding of more complex human behavior. For instance, one of the earliest and most well-known behaviorists, Ivan Pavlov, conditioned a dog to salivate at the sound of a bell by ringing a bell as the dog salivated at the smell of food. Other significant behaviorists were John Watson, E. L. Thorndike, Kenneth Spence, and B. F. Skinner.

Skinner was an influential proponent of *programmed instruction*. This instructional method carefully controls each step of the learning process. In order to advance to the next learning step, learners are required to accomplish all preceding tasks. Since each response to programmed stimuli is considered to be an *operation*, this method is often called *operant conditioning*.

Not all leading psychologists from the first half of this century supported the behaviorist approach. Sir Frederic Bartlett, Jean Piaget, and the *gestalters* focused their

attention on the inner workings of the mind by emphasizing the perceptual organization of knowledge.⁶ Their foundational work inspired the later development of a new, cognitive perspective that has dominated cognitive science (a discipline which seeks to explain the nature and function of the mind⁷) in America for the past thirty years. Cognitive psychologists found that behaviorist theories failed to account for complex forms of human learning. Instead of focusing on external behavior, they study the learner's internal mental representations. Unlike behaviorists, who treat learner response as "automatic," cognitive psychologists explore the mental activity that shapes behavior. They view the learner as an active processor of information who possesses a variety of knowledge capabilities. Notable proponents of this approach are John Anderson, David Ausubel, Jerome Bruner, Robert Gagné, and Howard Gardner. Chapter Three discusses the cognitive view of transfer.

The remainder of Chapter Two traces the development of transfer theory in the twentieth century. In addition to historical context, it summarizes important research objectives and methodology complexities inherent in the study of transfer. When studying transfer, experts address the following questions: What type of knowledge transfers? When does transfer occur? What are the internal mechanisms that control and enable transfer? How can transfer be accurately identified and measured? What are the proper conditions that enable transfer? How may instruction support these conditions? Can humans transfer knowledge across diverse content and learning domains?

⁶Three important gestalters were Kurt Koffka, Max Wertheimer, and George Katona.

⁷Howard Gardner, The Mind's New Science: A History of the Cognitive Revolution (New York: Basic Books, 1986), 4.

General and Specific Transfer

Is transfer inherently *specific* (near), possible only between related learning challenges within a discipline, or can *general* knowledge from diverse subject areas transfer as well (far)? Experts differ on this important issue. Proponents of general transfer and specific transfer provide the earliest substantive debate in transfer theory.

The classical curriculum of the nineteenth century was designed according to the premise that students should study challenging subjects like Latin, Greek, logic, and mathematics to develop general intelligence. The primary value of a subject was determined more by difficulty than by content. Proponents of this educational philosophy, commonly known as the theory of *formal discipline*, believed that the study of intellectually complex subjects would strengthen the mind in the same way that physical exercise strengthens the body.⁸ According to this philosophy, the study of logic would transfer in a general sense to help students solve problems in all subject areas. Although the philosophy fell out of fashion among educators during the first half of the twentieth century, remnants of the formal discipline approach still remain today in classrooms, rehearsal halls, and private studios. For instance, many private teachers still require students to follow rigorous “method” systems that often fail to improve their musical development. This failure typically occurs when teachers do not help students transfer learning from method exercises to “realistic” musical contexts.

The first psychologist to study transfer, Edward Thorndike, was an associationist. Thorndike challenged the theory of formal discipline during the first two decades of the twentieth century. His research demonstrated that transfer was more limited in scope than claimed by the proponents of *formal discipline*. While advocates of this earlier view

⁸See John Angell, “The Doctrine of Formal Discipline in the Light of the Principles of General Psychology,” *Educational Review* 36 (1908): 1-14.

asserted that the human mind was regulated by general faculties such as observation, discrimination, and reasoning, Thorndike maintained that the mind was governed by specific habits and associations that elicit a narrow range of responses according to specific stimuli.⁹ For example, his research demonstrated that human memory for numbers was not connected with memory for words. Similarly, he found that spelling accuracy was not related to accuracy in math.¹⁰ Thorndike's view of transfer, known as the theory of *identical elements*, asserted that learning transfers only in areas that share similar "elements." According to Thorndike,

One mental function or activity improves others insofar as and because they are in part identical with it, because it contains elements common to them. Addition improves multiplication because multiplication is largely addition; knowledge of Latin gives increased ability to learn French because many of the facts learned in one case are needed in the other.¹¹

According to his theory, learning time in a new area decreases only if this area shares many common elements with a learner's prior knowledge. For instance, if students learn the method of identifying from a given key signature the possible tonal center of all major keys with sharps (one step above final sharp), they might exhibit transfer by identifying the tonal centers of additional signatures that feature sharps. However, if they are presented with a flat key signature, and do not possess a specific stimulus-response pathway that reinforces this different learning task (the experience of correctly identifying flat keys), the theory of *identical elements* predicts that no transfer will occur. Although the theory has not gone unchallenged, *identical elements* remains the most influential transfer theory of this century.

⁹John Anderson and Mark Singley, The Transfer of Cognitive Skill (Cambridge, MA: Harvard University Press, 1989), 3.

¹⁰Edward Thorndike and Robert Woodworth, "The Influence of Improvement in One Mental Function Upon the Efficiency of the Other Functions," Psychology Review 8 (1901): 247-261.

¹¹Edward Thorndike, Principles of Teaching (New York: A. G. Seiler, Inc., 1906), 243.

However, Thorndike and the psychologists of his era never developed the means to specify what an element might be and in what sense two diverse elements could be identical.

Many educators and cognitive psychologists have criticized Thorndike's theory for lack of empirical support and for the inflexibility of his behaviorist, stimulus-response orientation. They reject the notion that learner response is automatic. In contrast, they assert that human minds possess the ability to adapt and transform existing knowledge to support new learning. Thorndike's theory of *identical elements* challenges the existence of transfer in all but the most narrow of applications. The requisite similarity between stimuli demanded by the theory precludes the application of prior knowledge in related but not identical contexts and limits learning to the magnification of existing knowledge.

Although the possible existence of an effective tool that could enable *general transfer* across all learning domains is extremely attractive, the evidence for such a tool is very weak.¹² Thorndike's early studies, along with the work of other associationists, convincingly demonstrated that learning in complex subjects does not enhance general intelligence more than learning in less complex, vocational courses.¹³ For example, the general intelligence of a learner studying advanced musical analysis would not be enhanced more than a student studying music fundamentals. Later studies in general problem solving have also failed to show significant evidence of general transfer.¹⁴

¹²See Herbert Simon, "Problem Solving and Education," in Problem Solving and Education: Issues in Teaching and Research, ed. David Tuma and Frederick Reif (Hillsdale, NJ: Erlbaum Lawrence Ass., 1980).

¹³See J. B. Carroll, "Knowledge of English Roots and Affixes as Related to Vocabulary and Latin Study," Journal of Educational Research 34 (1940): 102-111.

¹⁴See Robert Jeffries, "The Acquisition of Expertise on Missionaries-Cannibals and Waterjug Problems," (Ph.D. diss., University of Colorado, 1978) and Thomas Post & Michael Brennan, "An Experimental Study of the Effectiveness of a Formal vs. an Informal Presentation of a General Heuristic Process of Problem Solving in Tenth Grade Geometry," Journal for Research in Mathematics Education 7 (1976): 59-64.

Meaningful and Rote Learning

Thorndike's research was also criticized for ignoring the role of instruction in transfer. Since he believed that learning could be shaped most effectively through environmental manipulation and conditioning, he was not concerned with his subjects' inner thought processes. He instead evaluated their performance of *rote memory* tasks that could most effectively support objective analysis. Subjects were asked to memorize random strings of letters, words, and numbers without regard to their meaning or structure. In addition, subjects did not receive any form of instructional support.

Thorndike's critics claimed that his inability to document transfer was more the result of ineffective training than a limitation of transfer.¹⁵ They advocated an approach that emphasized the mediating role of *meaningful*, conceptual knowledge. To expand on the tonality example, teachers sensitive to the role of conceptual knowledge might instill an understanding of the "circle of fifths" principle within the learner. Given the presence of effective instruction, familiarity with this procedural concept could support the development of numerous levels of moderate and advanced knowledge.

In contrast to Thorndike, Judd's 1908 refraction experiment provided an early demonstration of the transfer of conceptual knowledge and the importance of training.¹⁶ In this experiment, young boys were asked to throw darts at an underwater target. Half of the boys received training on the principles of refraction (how water reflects light) during practice while the others simply practiced on their own. Following instruction, the depth of the target was altered and the boys were asked to attempt a second round of target throws.

¹⁵George Meredith, "Consciousness of Method as a Means of Transfer of Training," Forum of Education 5 (1927): 37-45.

¹⁶Charles Judd, "The Relation of Special Training and General Intelligence," Educational Review 36 (1908): 28-42.

While both groups were equally effective during the initial practice phase, the boys who received training in the “guiding principle” adapted to the target change very quickly. However, the boys who received no special training were confused by the change and failed to adapt. Judd claimed that this experiment clearly demonstrated how the understanding of a “guiding principle” could enable the transfer of appropriate action to novel settings.

Gestalt psychologists like Koffka, Wertheimer, and Katona made a clear distinction between what they termed *senseless learning* and *meaningful learning*. Senseless learning referred to the stimulus-response type of learning studied by associationists like Thorndike. *Meaningful learning* was distinguished by an attention to the structure of a problem. Unlike Thorndike, who did not believe that conceptual knowledge could transfer, gestalt psychologists asserted that *meaningful* conceptual knowledge could effectively enable transfer. They maintained that attention to the structural relationships within a problem would enable learners to transfer conceptual knowledge to a variety of knowledge domains. For instance, when comparing two similar melodies, the associationist determines the number of shared notes within each melody while the gestalter focuses on the functional relationships inherent in the lines. While the gestalt view identifies important structural relations such as sequence, inversion, or transposition, the approach governed by pure similarity misses these important relationships. To the gestalt psychologist, the perception of the *whole* is more important than the sum of its *parts*. In terms of transfer, the more deeply learners comprehend the inherent structure of a problem, the greater their ability will be to transfer this knowledge.

Experts now agree that any serious study of transfer must consider the strategies and knowledge representations used by learners. Researchers, instructional designers, and educators must always evaluate which strategies most effectively enable transfer for each type of knowledge. Although the gestalt psychologists attacked many aspects of the

associationist position, they agreed with the basic premise that similarity of elements encourages transfer. They primarily objected to Thorndike's advocacy of small-scale and meaningless "part learning." The gestalt focus replaced the associationists' small-scale similarity with an attention to large-scale structural similarity.

Lateral and Vertical Transfer

In contrast to Thorndike and Judd, whose research on human learning was centered in the laboratory, Robert Gagné directs his attention toward the analysis of classroom and "real life" learning situations. His primary interest has been to design curricula that effectively support learning and transfer through the use of research-validated techniques. Although Gagné's instructional theories focus extensively on external factors such as environment and behavior, they also demonstrate concern for the learner's internal mental representations. His sensitivity to the mediating role of prior knowledge and distinct types of learning have strongly influenced cognitive psychologists.

Gagné's curricula are designed to be used in combination with programmed instruction technology. Central to this instructional approach is the breaking down of complex subjects into sub-sections or *frames* of subordinate areas. In order to facilitate meaningful learning, students are required to master series of hierarchically arranged frames. Learners do not advance until all subordinate frames are mastered. In order to create such a program, designers deconstruct complex tasks by identifying all appropriate subordinate elements of skill and suggesting strategies that support the mastery of each *frame in their proper sequence* (see Figure 2.1).

Gagné distinguishes between *lateral* and *vertical* transfer.¹⁷ *Lateral transfer*, closely related to near transfer, can be understood as transfer between related problems of

¹⁷See Robert Gagné, The Conditions of Learning (New York: Holt, Rinehart, and Winston, 1966).

approximately the same level of complexity. Examples of lateral transfer include transfer between learning Latin and Italian, playing trumpet and clarinet, or solving different puzzle problems. *Vertical transfer* concerns transfer between simple, lower-level skills and more complex, upper-level skills that share a prerequisite relationship. For instance, before learners can effectively analyze a complex musical work, they must possess the ability to solve many lower-level problems such as reading musical notation, determining a tonality, identifying and classifying cadences, and performing harmonic analysis. Vertical transfer occurs when learners utilize lower-level skills to solve more complex, higher-level problems.

After noting in 1961 that learning rates in examples of programmed instruction varied widely, Gagné concluded that this disparity was attributed to differences in prerequisite knowledge among learners.¹⁸ Proposing that cognitive ability was most effectively represented as a hierarchy of related capabilities called *learning sets*, he claimed that a learner's ability to perform a particular learning set would depend on mastery of all relevant subordinate learning sets.

In 1973, Gagné described learning hierarchies as having the following characteristics:

- 1) they describe successively achievable intellectual skills, each of which is stated as a performance class,
- 2) they do not include verbal information, cognitive strategies, motivational factors, or performance sets,
- 3) they describe only those prerequisite skills that must be recalled at the moment of learning to supply the necessary "internal" component of the total learning situation.¹⁹

¹⁸Robert Gagné and N. Paradise, "Abilities and Learning Sets in Knowledge Acquisition," Psychological Monographs 75 (1961): 14.

¹⁹Tillman Ragan and Patricia Smith, "Condition Models of Instruction," in Handbook of Research for Educational Communication, ed. D. Jonassen (New York: Macmillan, 1997).

Figure 2.1 illustrates a learning hierarchy for determining the tonality of a given musical work. The process begins at the bottom with basic skills and moves upward through six levels of learning sets until the high-order instructional goal is achieved. Each successive level is impossible to achieve in a meaningful sense without mastery of all subordinate levels. *Arcs* between the various boxes or *nodes* indicate specific prerequisite relations. To construct a series of prerequisite learning sets, Gagné suggests that the designer ask: "What would the students have to know how to do in order to achieve this new task, when given only instructions."²⁰ Each learning set is represented as a procedure, not a general concept or unit of information.

Although most problems contain more than one solution path, as figure 2.1 indicates, Gagné stresses that learners should not attempt higher-level learning sets until all prerequisite skills are mastered. In his view, many educational problems are caused by the violation of this basic rule.

Research indicates that when students are required to perform tasks beyond their skill level, thus involving the omission of requisite sets, the variability of student performance increases. However, students of higher intelligence and advanced learning skills adapt more successfully than less accomplished students.²¹ In Gagné's words,

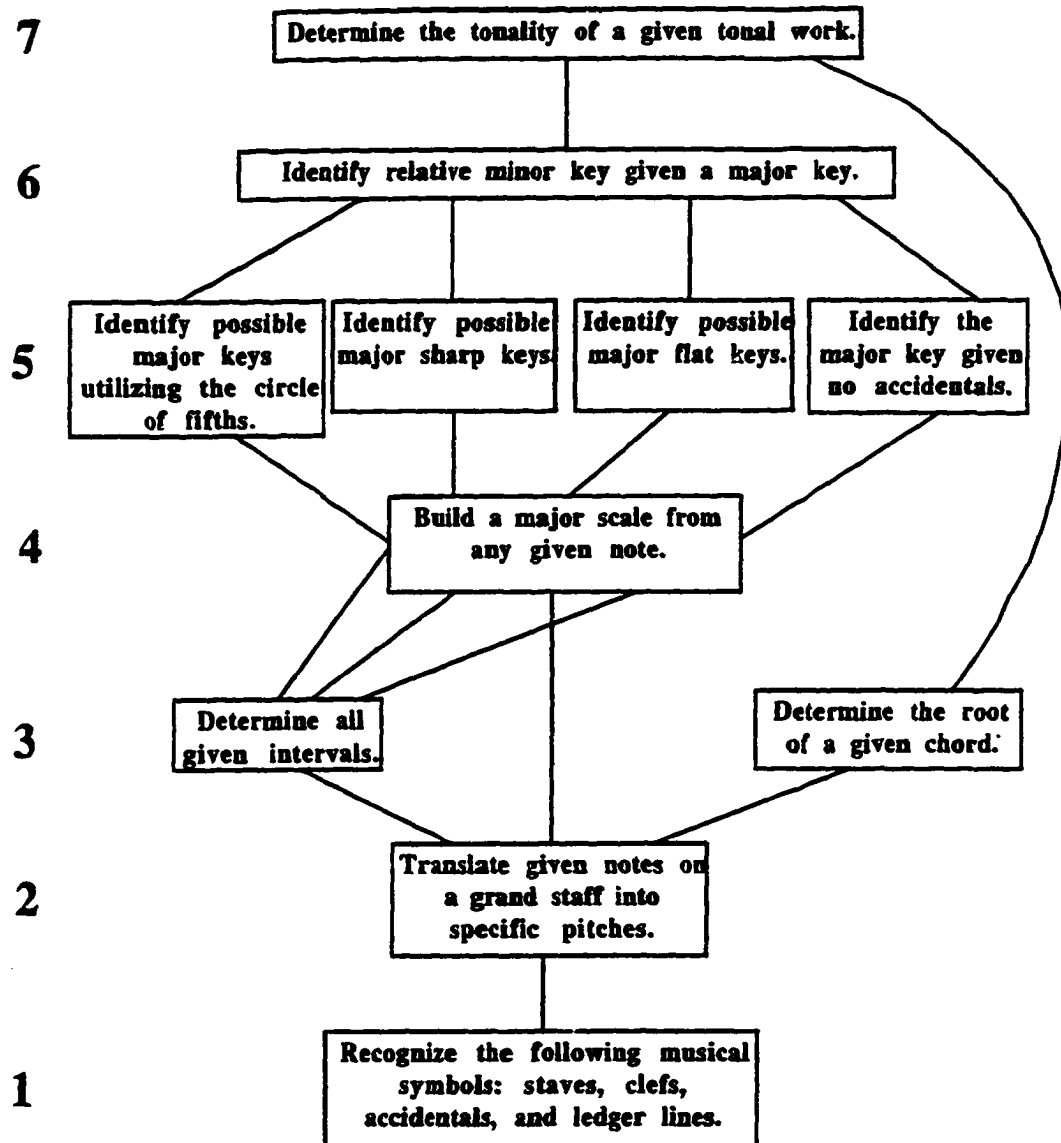
the learner may receive a problem which is beyond him in the sense that he must acquire all the subordinate principles himself before he achieves a solution. Solving a problem under such circumstances may happen on certain occasions and in particular individuals, but to advocate such an approach as a practical learning method makes no sense.²²

²⁰Gagné and Paradise, 4.

²¹Lauren Resnick, "Task Analysis in Instructional Design: Some Cases from Mathematics," in Cognition and Instruction, ed. David Klahr (Hillsdale, NJ: Erlbaum Assoc., 1976).

²²Gagné, Conditions, 165.

Figure 2.1

Learning Hierarchy for Determining a Tonality

Conductors often ask ensembles to perform tasks that will be difficult for some members due to the lack prerequisite knowledge and skill. For example, when performing a work that contains florid melismas, some ensemble members might lack the technical skill necessary to perform these passages. Although a few singers may develop this ability on their own, conductors should not assume that a significant number of singers will “pick it

up” without specialized instruction. However, they must first insure that singers possess fundamental breath support and phonation skills before attempting the performance of complex melismas.

In contrast to Gagné’s bottom-up orientation, David Ausubel’s concept of *advanced organizers* represents an influential formula for top-down vertical transfer.²³ This instructional theory is based on the premise that new learning, if it is to be meaningful, must share some type of relationship with existing knowledge and experience. Unlike Thorndike, whose theory limited transfer to virtually identical problems and did not account for the influence of instruction, Ausubel’s instructional theory is designed to foster the transfer of conceptual knowledge. He suggests that *advance organizers* should be introduced to learners before new material is presented. These advanced cues are designed to build a conceptual bridge between the learner’s existing knowledge and the new material. Advance organizers initially provide the learner with a conceptual background to frame learning on a more specific, lower level. For example, instruction to determine the tonality of a given work could be enhanced by the following advanced organizer: “to determine a work’s tonal center and mode is to discover the work’s harmonic/melodic epicenter.” The learner’s understanding of “epicenter” (the point from which the movement of the earth radiates and eventually comes to rest) represents a conceptual bridge that enhances their understanding of a musical concept.

As stated in the introduction of this chapter, Jerome Bruner believes that learning should “serve the future.” Toward this end, he vigorously defends the important roles of *specific* (the application of a learned concept to a new, but highly similar skill) and *nonspecific transfer* (the transposition of a general principle or attitude into future learning).

²³See David Ausubel, The Psychology of Meaningful Verbal Learning (New York: Grune & Stratton, 1963).

Bruner considers transfer to be “the heart of the educational process.”²⁴ Expanding on the gestalt approach to learning, he maintains that transfer is enabled by a thorough comprehension of the structure of a subject. This awareness of structure enables meaningful perception and guides future learning by relating it to prior conceptual knowledge that is “whole.” In his *spiral curriculum* model, Bruner suggests the presentation of general principles at the outset of learning. These guiding principles are then followed by specific content applications designed in spirals of increasing difficulty.²⁵ Like Ausubel, Bruner asserts that the presentation of fundamental principles at the outset of learning will make a learning task more accessible and comprehensible to the learner.

Programmed Thinking Models

During the late 1950s, scholars began to enhance the development of cognitive science with insight gained from artificial intelligence research. The founders of this new approach; John McCarthy, Marvin Minsky, Allen Newell, and Herbert Simon; developed research centers at the Massachusetts Institute for Technology, Stanford, and Carnegie-Mellon campuses. They designed computer programs that could solve problems, recognize patterns, play games, and demonstrate logical reasoning. As research psychologists discovered many logical similarities between human and artificial intelligence, they developed computer programs that were designed to model human cognition. Information gained from this work has played a significant role in the advancement of cognitive science and transfer research.

²⁴Bruner, Process of Education, 17.

²⁵See Jerome Bruner, Toward a Theory of Instruction (Cambridge, MA: Harvard University Press, 1966).

In an attempt to expand and redefine Thorndike's identical elements theory to account for instances of *general transfer*, some experts have identified certain general problem-solving strategies that could function as identical problem-solving elements across a variety of subject domains. Ernst and Newell designed a computer program called a *General Problem Solver* (GPS) that could separate knowledge used to solve problems in numerous subject areas from knowledge appropriate to only one area.²⁶ They suggested that this program could potentially solve problems in a large number of disciplines with the addition of only moderate amounts of domain-specific knowledge (i.e. specific knowledge relevant to learning within a particular subject area).

GPS can solve algebra and geometry problems as well as chess and simple puzzle problems. While its information-processing strategy is useful in many contexts, the program relies heavily on domain-specific knowledge to determine appropriate relationships between general problem-solving strategies and the particular elements of a task. Accurately defining the relationship and relative importance of general strategies versus domain-specific knowledge is the most central challenge facing designers of artificial intelligence thinking models who study transfer. They must consider what type of knowledge (general or domain-specific) most effectively enables transfer and also if general strategy knowledge gained from solving a problem in one area, such as a geometry, could enhance the solving of a diverse problem such as a word puzzle. Due to the unique and complex nature of music, any attempt to design a program that could solve musical problems would also rely heavily on domain-specific knowledge.

Influenced by the wide-spread failure of empirical support for *general transfer* (see pages 24-26) and the success of more limited, domain-specific approaches, most contemporary researchers now believe that familiarity with meaningful domain-specific

²⁶See George Ernst and Allen Newell, GPS: A Case Study in General Problem Solving (New York: Academic Press, 1969).

knowledge most effectively supports transfer. Researchers have been successful in designing programs that function as experts in a variety of highly complex disciplines.²⁷

The computer problem solver FERMI, developed by Larkin, Reif, Carbonell, and Gugliotta, "is a prototype system intended to elucidate the mechanisms of general strategies across domains in the physical sciences."²⁸ FERMI solves problems by combining domain-specific knowledge and general knowledge that is applicable to related domains. When presented with a physical science problem, FERMI combines its extensive collection of domain-specific knowledge with appropriate strategic knowledge such as the concepts of *decomposition* ("the process of breaking apart a complex object into simpler components, making computations on these components, and mathematically combining the results"²⁹) or *invariance* ("any complex quantity that is the same in two situations"³⁰). This combination of knowledge within a specific domain and general problem solving strategies appropriate to closely related domains enables FERMI to solve problems like determining the center of mass of a complex planar object or determining and comparing the level of pressure within a liquid filled beaker and an electrical circuit.

John Anderson is one of the most influential and well-known contemporary psychologists working in artificial intelligence research. Anderson's ACT* program (Adaptive Control of Thought) attempts to accurately model the flow of information within

²⁷See John R. Anderson, and Benjamin J. Reiser, "The LISP Tutor," *Byte* 10 (1985): 159-175 and Edward Shortcliffe, Computer-Based Medical Consultations: MYCIN (New York: American Elsevier, 1976).

²⁸Jill H. Larkin, "What Kind of Knowledge Transfers?" in Knowing, Learning, and Instruction: Essays in Honor of Robert Glaser, ed. Lauren Resnick (Hillsdale, NJ: Lawrence Erlbaum Ass., 1989), 289.

²⁹*Ibid.*, 292.

³⁰*Ibid.*

the human mind. According to his *Production System* theory, skilled behavior is determined by the transformation of declarative (factual) knowledge into related procedures or *productions*. Although the basic elements of production systems are simple, these small, cognitive building blocks can account for complex behavior.³¹

To apply this approach to a familiar example, Figure 2.2 illustrates a production system that could be used to determine a possible key of a given tonal work (see following page). It will be assumed that the learner possesses only a rudimentary understanding of music symbols and intervals. Although Anderson's system of production rules represents an artificial model designed to mimic human cognition, the following discussion will refer to these processes as if they were aspects of human cognition. Statements P1 through P8 are procedural steps called *production rules*. Each rule begins with an IF condition followed by a THEN action. This process clearly specifies the appropriate action for each condition. The tremendous versatility of production rules comes from their simple and narrow scope. When chained and governed by a few rudimentary rules, they can account for an infinite number of behavioral possibilities. Learners who possess these rules in their procedural knowledge can subconsciously process many rules without significant effort or attention. Problem-solving steps perceived in conscious awareness actually constitute many unconscious productions which have become automated through frequent practice. An experienced musician would process the productions in Figure 2.2 in a fraction of a second or perhaps a few seconds depending on the complexity of the musical work. Like the learning set illustration in Figure 2.1, the following example is offered to illustrate how a production system might work. It is not intended to indicate the proper method for identifying a tonal center.

³¹See Anderson and Singley, Transfer of Cognitive Skill and Anderson, The Architecture of Cognition (Cambridge, MA: Harvard University Press, 1983).

Figure 2.2 *Production System for Determining a Possible Tonality*

- P1** IF the goal is to determine the key of a given tonal work
 THEN the sub-goal is to determine the possible major and minor keys of a given key signature
- P2** IF the goal is to determine the possible major and minor keys of a given key signature
 THEN the sub-goal is to determine the possible major key
- P3** IF the goal is to determine the possible major key
 and no accidentals are present in the key signature
 THEN the possible major key is C
 and the goal is achieved
- P4** IF the goal is to determine the possible major key
 and one flat is present (B flat)
 THEN the possible major key is F
 and the goal is achieved
- P5** IF the goal is to determine the possible major key
 and more than one flat is present
 THEN the possible major key note will be the penultimate flat in the key signature
 and the goal is achieved
- P6** IF the goal is to determine the possible major key
 and one or more sharps are present in the key signature
 THEN the possible major key will be found one step above the final sharp in the key signature
 and the goal is achieved
- P7** IF the goal is to determine the possible major and minor keys of a given key signature
 and the major key is known
 THEN the possible minor key will be found three half-steps below the major key
 and the goal is achieved
- P8** IF the goal is to determine the key of a given tonal work
 and the possible major and minor keys are known
 THEN correlate the root and harmonic quality of the given work's final chord with the possible major and minor keys to determine a tonality
 and the goal is achieved

A key feature of production systems is the way rules make up a hierarchy of goals and sub-goals. In order to achieve the main goal of the example (P1), two sub-goals must

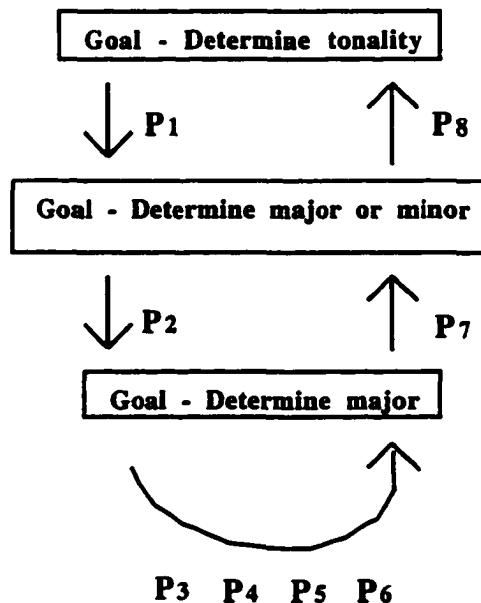
first be identified and accomplished (P2 and P3-P6). After all sub-goals are met, the learner passes “control” back to the primary goal. In a more realistic scenario, this learning task would itself be a sub-goal for a larger, more complex operation.

All production systems, complex and simple, contain *goal stacks*, or collections of hierarchically arranged goals. Sloboda likens this process to a spring-loaded plate holder found in many restaurants. In his words,

as more plates are put into the holder the base drops so that the top plate is always flush with the lip of the holder. When a plate is removed, the next highest plate pops back into view. In this analogy the primary goal corresponds to the first plate put into the holder.³²

As additional sub-goals are generated, the primary goal is pushed to the bottom. Subgoals are removed and forgotten when achieved until the primary plate returns to “top control.”

Figure 2.3 *Production System Goal Stack*



³²John Sloboda, *The Musical Mind: The Cognitive Psychology of Music* (Oxford: Clarendon Press, 1985), 221.

In order for learners to progress through a system, they must remember all higher goals while new subgoals are identified and processed. Although this challenge might not be significant in the tonality example, novice learners confronting a complex task will be more likely to experience cognitive overload and forget primary goals. A common example of this problem occurs when young performers lose sight of a work's large-scale form by allowing surface details to derail their attention. Although they might perform correct rhythms and pitch patterns, they fail to convey the shape of larger phrases and formal units.

Another critical attribute of Anderson's production systems concerns the *automatic* operation of each rule when the necessary "IF" conditions are present. If a cognitive search finds relevant evidence to satisfy a condition, the related action will automatically be carried out regardless of the number of related rules within the system.

According to production theory, production rules search for relevant conditions in the mind's *working memory*. Working memory, sometimes called conscious memory, can contain the following: observed elements from a learner's environment, declarative (factual) knowledge recently retrieved from long-term memory, current goal stacks, and an awareness of internal conditions (body, mind, and emotions). Of course, working memory does not contain everything that is known by the learner. For instance, if adults are asked to identify common shapes, they will immediately pull this information out of "long-term" memory. The retrieval process is immediate due to the learners' familiarity with the relevant declarative knowledge and its context for use. However, complex learning tasks that require awareness of less-familiar knowledge require more access time and often lead to retrieval failure. Experience teaches and research confirms that learners frequently fail to retrieve relevant knowledge that is stored in long-term memory.

Anderson's concept of "common elements," sometimes viewed as a modern version of Thorndike's theory of "identical elements," addresses the critical transfer issue of how knowledge is retrieved from long-term memory. Because production system

procedures are activated under very specific conditions, Anderson believes that procedures learned in different areas of a content domain can only transfer if the *conditions for their use are identical*. In other words, transfer is dependent on the sharing of common procedures or elements. This aspect of the theory results in a fundamental ACT* principle called the “use specificity of knowledge.” This principle asserts that “it is not *knowledge* that is acquired with training and practice, but a particular *use of knowledge*.”³³ In addition, this principle predicts that there will be little or no transfer between tasks within a complex skill domain, even if these tasks reflect the same body of factual knowledge, if the knowledge is *used* in different ways. For instance, novice students often fail to transfer insights learned in music history to enhance learning in music theory, or theoretical learning to enhance applied study. According to Anderson, these failures occur because the learner is required to use the knowledge in a different manner than it was originally acquired.

While supporting Anderson’s claim of positive transfer among tasks with common elements, the research of Pennington, Nicolich, and Rahm indicates that substantially more transfer may occur between related tasks employed in different contexts when learners are initially required to *elaborate* their understanding of declarative knowledge.³⁴ They assert that Anderson overestimates the extent to which knowledge is “use-specific” when learners receive effective instructional support.

Analogical Transfer

The study of transfer through analogy has received much attention from contemporary researchers. *Analogy* can be understood as

³³Anderson and Singley, Transfer of Cognitive Skill, 29.

³⁴See Nancy Pennington, Robert Nicolich, and Irene Rahm, “Transfer of Training Between Cognitive Subskills: Is Knowledge Use Specific?” Cognitive Psychology 28 (1995): 175-224.

a one-to-one mapping from one representation (the *base*) into another (the *target*) that conveys that a system of relations that holds among the base objects also holds among the target objects independently of any similarities among the objects to which those relations apply.³⁵

To solve a problem by analogy, a subject is initially presented or reminded of a problem whose solution is usually known. The subject is then required to compare the “base” (original) problem and its solution to a novel “target” problem. Some studies employ *isomorphs*, or problems that share structural similarity but exhibit contrasting surface features. In order to accomplish similarity-based analogical transfer, learners must first call to mind an analogy that appears to relate to the target problem (base analogy). They then compare similarities and differences between the base and target analogies and develop inferences that might be common to both analogies. After they examine the accuracy of each inference, they extract any common structural relations that might exist.

In general, analogical transfer research indicates that people do not readily notice similarities between related problems unless they are prompted with special training.³⁶

Gick and Holyoak introduced subjects to Duncker’s radiation problem:

Suppose you are a doctor faced with a patient who has a malignant tumor in his stomach. It is impossible to operate on the patient, but unless the tumor is destroyed the patient will die. There is a kind of ray that can be used to destroy the tumor. If the rays reach the tumor all at once at a sufficiently high intensity, the tumor will be destroyed. Unfortunately, at this intensity the healthy tissue that the rays pass through will also be destroyed. At lower intensities the rays are harmless to healthy tissue, but will not effect the tumor. What type of procedure might be used to destroy the tumor with the rays and at the same time avoid destroying healthy tissue?³⁷

³⁵Dedre Gentner, Mary Jo Rattermann, and Kenneth Forbus, “The Roles of Similarity in Transfer: Separating Retrievability from Inferential Soundness,” Cognitive Psychology 24 (1993): 526.

³⁶See Stephen K. Reed, George W. Ernst, and Ranan Banerji, “The Role of Analogy in Transfer Between Similar Problem States,” Cognitive Psychology 6 (1974): 436-450.

³⁷Mary L. Gick and Keith J. Holyoak, “Schema Induction and Analogical Transfer,” Cognitive Psychology 15 (1983): 3.

Prior to their experience with the target problem, subjects read a story about an analogous military problem and its solution. The common solution strategy to both problems involves dividing forces to converge on the “enemy” from multiple sides. Interestingly, only about 30% of the subjects were able to solve the radiation problem after reading the analogous military problem solution. This relatively small number of subjects was only slightly higher than the 10% who were able to solve the target problem without benefit of the source analogy.³⁸ A series of follow-up experiments in 1983 determined that the addition of a concluding statement portraying the common principle or a diagram depicting this principle failed to increase the source story’s effectiveness as an agent of analogical transfer. In other words, most subjects still failed to perceive the common principle between the two analogies even after they were given hints designed to disclose their conceptual similarity. This research clearly demonstrates that when confronted with two learning tasks that share conceptual similarity and contrasting surface features, most learners will fail to perceive the conceptual similarity.

Perfetto, Bransford, and Franks asked subjects to rate the truthfulness of a series of sentences such as “A minister marries several people each week.”³⁹ Following this task, subjects were presented with a series of problems, the solutions for which were strongly suggested during the initial sentences. An example problem was, “A man who lived in a small town in the U.S. married twenty women of the same town. All are still living and he has never divorced any of them. Yet, he has broken no law. Can you explain?”⁴⁰ Researchers found that prior contact with the initial sentences had no effect on the subject’s

³⁸See Mary L. Gick and Keith J. Holyoak, “Analogical Problem Solving,” Cognitive Psychology 12 (1980): 306-355.

³⁹George Perfetto, John Bransford, and J. Franks, “Constraints on Access in a Problem Solving Context,” Meaning and Cognition 11 (1983): 24-31.

⁴⁰*Ibid.*, 25.

ability to solve the problems. However, subjects did exhibit transfer and solve the problems with a higher rate of success when explicit instructional cues were provided.

Researchers who use isomorphs to study transfer found that even when subjects were informed of the similarity between problems, they had significant difficulty transferring the principle to a new context and solving the target problem.⁴¹ Reed, Ernst, and Banerji presented subjects with the following problem:

Three missionaries and three cannibals having to cross a river at a ferry, find a boat but the boat is so small that it can contain no more than two persons. If the missionaries on either bank of the river, or in the boat, are outnumbered at any time by cannibals, the cannibals will eat the missionaries. Find the simplest schedule of crossings that will permit all the missionaries and cannibals to cross the river safely. It is assumed that all passengers on the boat unboard before the next trip and at least one person has to be in the boat for each crossing.⁴²

After subjects diagrammed a solution to this problem, they were provided a new analogous problem which featured Jealous Husbands and their Wives. Researchers evaluated the accuracy of their diagrams and the amount of time subjects required to work out each solution. Three experiments were conducted: a) the Missionary-Cannibals problem followed by Jealous Husbands-Wives problem, b) the same problem two times in a row, and c) the Jealous Husbands-Wives problem followed by the Missionary-Cannibals problem with an overt disclosure of the structural similarity between both problems. In order to demonstrate transfer, subjects were required to solve both problems with a decreased solving time on the second problem. However, transfer was only observed during the final experiment when the structural relationship between the problems was revealed and the Jealous Husband problem was solved first.

⁴¹See Herbert A. Simon and Stephen K. Reed, "Modelling Strategy Shifts in a Problem Solving Task," Cognitive Psychology 8 (1976): 86-97.

⁴²Reed, Ernst, and Banerji, "Analogy in Transfer," 437.

Gentner, Rattermann, and Forbus claim that the mind processes *surface* and *structural* similarity in different fashions. They believe that memory retrieval is primarily governed by the perception of surface details while the perception of structural similarity or “soundness” (common inferences between different sources) is based on the degree a common relational structure is present between problems. They believe that our minds functionally disassociate these types of similarity. Their research also demonstrates that surface similarity consistently overpowers a learner’s ability to recall structural relations. Because humans tend to focus on surface details, they often miss the structural relations between problems to enable conceptual knowledge.

The study of analogical transfer indicates that people do not readily perceive analogical similarity without instructional support. Research utilizing isomorph problems shows that subjects tend to place too much importance on the superficial qualities of a problem and often fail to notice meaningful, structural relationships unless they are explicitly identified. This tendency to focus on surface details especially characterizes the novice learner. Although these gloomy findings can be interpreted as support for the findings of associationists who question the viability of conceptual transfer, cognitive psychologists counter that empirical support for conceptual transfer is evident when effective instruction is applied. This research does not necessarily diminish the powerful role that analogy can play in learning. However, it does indicate boundaries for the use of analogy and suggests strategies that will maximize their instructional potential.

This research also provides a message of caution to conductors. Too often conductors assume that their singers will automatically perceive similarity between conceptually related musical tasks that have only slightly diverse surface features. While the similarity between pieces is obvious to the conductor, novice learners will probably focus on their diverse surface features and thus fail to transfer appropriate knowledge. As a result, novice learners must develop the ability to recognize the structural content of

musical tasks. Those that develop this ability will be more likely to exhibit transfer. Many of the rehearsal strategies found in the final chapter of this document are designed to address this instructional necessity.

Situating Learning and Transfer

Proponents of “situated learning” or “situated cognition” believe that the traditional focus placed by cognitive psychologists on the mediating role of mental representations (the gestalter’s focus on the perception of structure, Gagné’s learning hierarchies, Anderson’s production systems) fails to address a vitally important component in the transfer equation: the *situation* in which learning takes place. According to this alternate view,

learning is considered to be essentially situated, an adaptation of a person or group to features of the situation in which learning occurs. Knowledge - perhaps better called *knowing* - is not an invariant property of an individual, something that he or she has in any situation. Instead, knowing is a property that is relative to situations.⁴³

Although similarity exists between this perspective and Anderson’s “use specificity of knowledge” principle, situated learning advocates focus more directly on how learners interact with their environment while Anderson focuses totally on the learner’s procedural thought processes.

An attentive listener’s perception of a Classical sonata form recapitulation provides an analogy of this principle. Even though the recapitulation typically brings back a literal repetition of exposition material, listeners perceive it differently due to its situational context within the formal structure. While the exposition originally exposes the main themes and tonal areas of the movement, the recapitulation’s release of accumulated tonal and harmonic tension creates a different effect. Any meaningful view of both sections will be influenced

⁴³James G. Greeno, David R. Smith, and Joyce L. Moore, “Transfer of Situated Learning,” in Transfer on Trail: Intelligence, Cognition, and Instruction, ed. Douglas Detterman and Robert Sternberg (Norwood, NJ: Ablex Publishing Co., 1993): 99.

more by their function and formal situation than by their quantitative make-up. Situated learning advocates assert that it would not be meaningful to characterize a person's knowledge apart from situations in which the person uses this knowledge.⁴⁴ When studying transfer, they focus on how learners interact with their environment and how their ability to participate in one activity affects their ability to participate in a different activity. For instance, singers will probably use markedly different singing techniques when performing on stage in concert dress as compared to singing camp songs in a bus. Thus, conductors should always consider the rehearsal environment. It would probably be counterproductive to rehearse camp songs on the concert stage or concert literature in the bus. A situational interpretation of Judd's previously discussed refraction experiment (see page 26) would focus more on the subject's interaction with the elements of the task as they attempted to solve the problem. Instead of being guided primarily by abstract conceptual knowledge, as Judd claims, they hypothesize that the learners developed their own "linear representations" of effective throwing angles that were influenced primarily by their encounter with the space, water, and darts.⁴⁵

Summary

The transfer theories discussed in this chapter can be grouped in three categories that represent distinct orientations:

⁴⁴See John S. Brown, Allan Collins, and Paul Duguid, "Situated Cognition and the Culture of Learning," Educational Researcher 18 (1989): 32-42 and Barbara Rogoff, Apprenticeship in Thinking (New York: Oxford University Press, 1990).

⁴⁵Greeno, Smith, and Moore, "Transfer of Situated Learning," 114.

Figure 2.5

Important transfer theorists and related principles

<u>Behaviorist</u>	<u>Cognitive</u>	<u>Situational</u>
Thorndike Skinner	Judd Gestalt Psychologists Gagné Bruner Ausubel Anderson Analogical researchers	Lab of Human Cognition Lave Greeno
<i>What is external is more fundamental than what is not.</i>	<i>What is internal is of primary importance.</i>	<i>External conditions shape internal representations.</i>
<i>People are a collection of acts.</i>	<i>People are the source of acts.</i>	<i>People are shaped by situational contexts.</i>
<i>Only overt behavior can be measured by the scientist.</i>	<i>Underlying mental processes cause behavior and so must receive attention.</i>	<i>Social and situational context govern learning.</i>
<i>Learning is the accumulation of associations between stimulus and response.</i>	<i>Learning is the development of thought patterns. Knowing is more a process than a product.</i>	<i>Learning is shaped by interactions between thought processes and situational contexts.</i>

While behaviorists manipulate the *environment* to influence learning, cognitive psychologists advocate changing the *learner* with effective learning strategies. In addition, behaviorists define the results of learning in behavioral terms while the cognitive approach focuses on the development of internal knowledge structures. Although situational theory also focuses on knowledge structures, they view it within the context of social activities. For them, transfer is determined by how the learner participates in a learning activity and how the resulting knowledge representations have been socially defined.

Given this sampling of transfer research, what relevance does this body of information hold for the choral conductor? How might choral music educators apply these insights to enable transfer of learning in their rehearsals and performances? The answers to these important questions are explored in the following chapters.

CHAPTER THREE

TRANSFER IN MUSIC LEARNING

In an age when other professions are changing rapidly by applying science to their daily business, performance instruction is little different from what it was 100 years ago.¹

Roger Edwards

Music education today suffers from a lack of guiding principles that are empirically derived and widely supported. Although psychologists have conducted extensive research that would benefit music teachers, relatively little of this information has influenced instruction in ensemble and private studio settings. Most music educators rely on intuitive strategies borrowed from past instructors and molded by personal experience. Edwards' assertion that performance instruction has not changed significantly during the past century rings true. In fact, the eighteenth-century faculty development approach (see page 24) to learning, though totally lacking in empirical support, is still prevalent in performance instruction today. For example, voice students and choral ensembles spend countless hours practicing vocalises and warm-up drills that might have little relevance to real musical challenges. Collegiate music departments assume that the satisfactory performance of repertoire requirements by performance majors will foster the development of certain areas of knowledge such as stylistic insight, appropriate performance techniques, and language familiarity. In addition, conductors often assume that the performance of difficult masterworks will automatically increase their ensemble's technical and interpretive skill. While these formal discipline tasks may provide students with positive experiences that enhance physical and mental capabilities, they will not build meaningful knowledge without

¹Roger H. Edwards, "Transfer and Performance Instruction," in The Crane Symposium: Toward an Understanding of the Teaching and Learning of Music Performance, ed. Charles Fowler (Potsdam, NY: Potsdam College of the State University of New York, 1988), 120.

effective instructional support. The suggested problem does not lie with the musical tasks. In fact, vocalises, repertoire requirements, and masterwork performances hold tremendous artistic and pedagogical potential for the choral ensemble. However, conductors who value transfer must support these tasks with rehearsal instruction that enables transfer.

If the successful completion of valid musical tasks will not alone guarantee the support of future learning, how may conductors design effective rehearsal instruction that will meet this goal? Behaviorists would disagree with the premise of this question. They would assert that only musical tasks that share numerous *identical elements* will transfer. To them, the method of instruction would be irrelevant. For instance, they would claim that knowledge learned from the performance of a Bach chorale might enhance the learning of a similar Bach chorale. However, significant portions of this original chorale learning would not transfer to a Bach chorale prelude performance, even one based on the same melody, because many elements between the tasks will not be identical. For behaviorists, transfer is determined more by the objective nature of the learning task than by the method of instruction.

Unlike behaviorists, who focus on external, objective factors, cognitive psychologists focus on the internal mental activity of the learner. They view learners not as passive receptacles of information, but as active information processors that employ a variety of knowledge capabilities. Cognitive psychologists have produced much research that shed light on the mechanisms of transfer. For choral conductors who choose to foster transfer of learning within their ensembles, this research can support an empirical framework from which sound pedagogical principles may be designed.

Transfer: A Cognitive Perspective

If learners are active processors of information, then what they learn and transfer depends most significantly on their thought processes. Transfer is determined by what

takes place *within the learner's mind* and not simply by what occurs in his or her external environment. Human learning never occurs in isolation; newly acquired skills and concepts are always integrated into existing knowledge.

Expert musicians sometimes assert that “thinking too much” hinders effective, spontaneous performance. For them, an awareness of detail during performance inhibits their ability to shape large-scale musical forms. However, all levels of musical performance and perception involve cognition. If music teachers are to foster the ability within students to interpret and transform abstract symbols into convincing musical ideas, then cognition must play a crucial role in this process.

The cognitive view of learning and transfer is primarily defined by three basic principles: 1. All learning is cumulative and strongly influenced by *prior knowledge*, 2. Learners develop interconnected “webs” of stored knowledge, called *schemata*, that influence how they perceive and recall information, 3. Different *types of learning* can be distinguished according to the cognitive processes they involve.²

The Role of Prior Knowledge

If meaningful learning does not occur in isolation, a student's ability to perceive and learn new tasks will be shaped by the knowledge he or she already possesses. However, music students are often required to perform tasks for which they possess inadequate prior knowledge. In many cases the teacher or conductor is unaware of their student's previous knowledge both in terms of content and structure. In this circumstance, the conductor's understanding of the student's prior knowledge is based on an intuitive sense of what the student should know. While at times accurate, intuition rarely provides instructors with the comprehensive view of prior knowledge necessary to support well-designed instruction.

²Thomas J. Shuell, “Cognitive Conceptions of Learning,” Review of Educational Research 56 (1986): 412.

In addition, students may display correct surface behaviors that imply knowledge without comprehending the underlying concepts that enable them to repeat this behavior in a related context. Consider the following scenario:

After Sam instructs his ensemble to perform a passage within a madrigal refrain in a “light and detached manner,” he is pleased to observe that the ensemble correctly employs this performance concept, without a reminder, at each repetition of the refrain. However, his confidence in their understanding of the concept is shaken when later in the rehearsal they fail to apply the same strategy to an almost identical passage in a different madrigal. Although Sam recognized the conceptual similarity between both passages and expected his ensemble to show transfer, ensemble members lacked a clear understanding of *why* a “light and detached” articulation was appropriate in the original musical context. Since they did not adequately understand the performance concept nor anticipate when and how this concept could be utilized, they failed to demonstrate transfer.

Conductors often develop false perceptions of their ensembles’ learning when singers who possess inadequate conceptual understanding successfully perform musical tasks. Since transfer is governed by what a learner actually comprehends, behavior which seems to be correct will not transfer to appropriate situations. Too often conductors assume that the successful performance of a particular musical challenge indicates student comprehension. To avoid this potential miscalculation, conductors should always question and probe their choir’s understanding of key principles. This factor, perhaps more than any other, accounts for frustration when expected transfer does not occur.

Only a small portion of a learner’s stockpile of prior knowledge is active at any particular time. To prevent cognitive overload, our minds stimulate portions of knowledge that we *perceive* as most relevant at any given time. Only the portion of our prior knowledge that is currently active affects learning and transfer. Utilizing this activated knowledge, learners generate new understandings and perform new skills. However, sometimes learners possess the requisite knowledge but for some reason fail to activate this knowledge at the proper time. Since the appropriate prior knowledge remains *inert*, the learner does not have access to it and fails to apply relevant knowledge to a new problem. This example of retrieval failure is most commonly due to inaccurate or highly specific

representational encoding during initial instruction. As outlined in Chapter One, this problem is especially relevant for conductors whose rehearsal instruction primarily focuses on surface details. Given the absence of instruction that supports conceptual knowledge, this approach bonds the acquisition of new knowledge to highly specific conditions that will make this information difficult to retrieve in all but identical situations. As a result, instructional efficiency will be negatively effected in the future when performers fail to activate the relevant knowledge they already possess.

The following brief story problem illustrates the role that prior knowledge plays in comprehension.

Sally first let loose a team of gophers. The plan backfired when a dog chased them away. She then threw a party but the guests failed to bring their motorcycles. Furthermore, her stereo system was not loud enough. Obscene phone calls gave her some hope until the number was changed. It was the installation of blinking neon lights across the street that finally did the trick. Sally framed the ad from the classified section and now has it hanging on her wall.³

Due to a lack of requisite knowledge, most readers will have difficulty understanding this passage and remembering the various details contained in the story. For instance, given what you know of the passage, can you answer the following inference questions?

1. Where did Sally put the gophers?
2. Why did Sally want the guests to bring motorcycles?
3. Whose number was changed?
4. Who probably made the calls?
5. What did the advertisement say?⁴

The inability to comprehend meaning also negatively affects the reader's ability to recall details and make logical inferences. However, if the reader understands that Sally's goal is to *force her neighbor to move*, the passage immediately connects with existing patterns of

³John Bransford, Nancy Vye, Charles Kinzer, and Victoria Risko, "Teaching Thinking and Content Knowledge: Toward an Integrated Approach," in Dimensions of Thinking and Cognitive Instruction, ed. Beau Fly Jones and Lorna Idol (Hillsdale, NJ: Lawrence Erlbaum Ass., 1990), 382.

⁴Ibid., 383.

understanding and comprehension is enabled. The passage will read very differently a second time when this prior knowledge is understood. The inference questions now become easy to answer. In order to avoid the same type of confusion in rehearsals, conductors must develop a comprehensive view of their ensemble's prior knowledge and adjust their instruction accordingly. To guard against important prior knowledge becoming inert, conductors should relate the rehearsal of surface details with correlating interpretive concepts. These familiar concepts, when encountered in new settings, will trigger the activation of large strings of related knowledge.

The challenge of accurately determining prior knowledge is greatly magnified for the ensemble conductor in comparison with the private instructor. Ensembles often contain learners who possess a diverse array of knowledge. In addition to knowledge and skills, learners also bring prior dispositions and attitudes to the ensemble rehearsal that will play a pivotal role in learning. For example, some might choose to participate in an ensemble because "singing is fun" while others will expect to work on challenging musical tasks. Conductor's who wish to enable transfer must continually probe beyond surface indications to evaluate the core knowledge and disposition of their ensemble. Although difficult to determine in ensemble settings, the accurate assessment of prior knowledge will provide conductors with an invaluable tool to develop rehearsal strategies that enable transfer.

If "the knowledge a person already possesses is the principle determiner of what a person can come to know,"⁵ it will next be important to examine what actually is learned and how this knowledge is represented in the mind.

⁵Richard C. Anderson, "Some Reflections on the Acquisition of Knowledge," Educational Researcher 13 (1984): 8.

Schemata: The Structure of Knowledge

Although terminology among experts varies, the term *schemata* is widely used by cognitive psychologists to describe the structure of human knowledge. In Richard Anderson's words:

A schema is an abstract structure of information. It is abstract in the sense that it summarizes information about many particular cases. A schema is structured in the sense that it represents the relationships among components. The term schema is an apt one for characterizing knowledge, because the essence of knowledge is structure. Knowledge is not a "basket of facts." . . . A schema can be conceived as consisting of a set of expectations. Comprehension occurs when these expectations are fulfilled by the specific information that a scene, message, or happening delivers to the senses. Information that neatly satisfies expectations can be encoded into memory so as to "instantiate" the "slots" in the schema. Information that does not fit expectations may not be encoded, or it may be distorted so that the fit is better. Gaps in available information may be completed by inference in order to maintain consistency with expectations. Later, the same expectations that guided the encoding of information can be brought into play to guide retrieval and reconstruction.⁶

Anderson emphasizes two important characteristics of knowledge: its predisposition to cluster into relational structures and the governing role of related expectations. According to this view, the human mind automatically groups units of information according to patterns of perceived similarity. In fact, he asserts that every new experience is shaped by its perceived relationship to existing structures of knowledge. During encoding, units of knowledge are linked to a set of related expectations. These expectations govern the unit's relationships with other schemata as well as the conditions under which they can be retrieved.

For example, consider the introduction of a new musical work to an ensemble. As members scan the work, they stimulate internal schemata including notational symbols, stylistic context, technical procedures, and attitudes formed from past experience with similar works. The perception of this new material will be shaped by expectations

⁶*Ibid.*, 5.

generated from existing knowledge structures. To illustrate this process further, consider the challenge faced by an experienced driver who is asked to drive a new car for the first time. Although the driver is not acquainted with the driving console, his “driving schema” will have little trouble inferring the function of all crucial mechanisms. A series of well-defined expectations facilitate the “instantiation” of “slots” within his schema (for instance: the function, expected location and use of the steering mechanism, the function, expected location and use of the accelerator) and enable him to perform this task. Guided by the characteristics of the task, prior conceptual knowledge will shape the formation of new knowledge and new behavior. Of course, the depth and complexity of the driver’s schema will be governed by his prior knowledge. For a person familiar with the workings of an engine, the act of pressing the accelerator will carry a richer combination of sub-structures than a driver who simply understands “more pedal means more speed.”

The range and usefulness of a learner’s schematic sub-structures will be determined by past experience. Experts within a given domain, due to their experience with countless numbers of related problems, develop rich, interconnected “webs” of knowledge that enable them to perceive small units of knowledge in relation to structural principles. Familiarity with the role small-scale concepts play within a larger system is what separates an expert from a novice. Because novice learners lack the range of experience that generate richly complex schemata, they often perceive similarity in terms of surface features. For instance, novice musicians typically perform dynamic indications within contrasting works in a deliberately consistent manner while experts understand why and how a *forte* in Bach differs from a *forte* in Mahler.

In addition, experts use their multi-dimensional levels of understanding to guide the perception of new information. Upon hearing a Mozart piano concerto, the expert musician activates a vast array of related knowledge structures that might include the work’s influence on the evolution of the concerto, the use of instruments that are stylistically

appropriate, the work's operatic qualities, or similarities with other performances. In contrast, a novice musician might focus on the pianist's technical skill or the lyric quality of certain lines. The learner's ability to perceive and interpret the stimulus is controlled by his or her existing knowledge structures. The more developed a schema becomes, the more it enables the learner to perceive new, previously unavailable knowledge.

Since problem solving skill depends heavily on factual knowledge, most psychologists do not differentiate between schemata that contain declarative (factual, verbal knowledge) and procedural knowledge (implementation knowledge, problem solving skill). For instance, a learner who does not understand basic notational and interpretive symbols will have great difficulty performing a complex musical work.

Interestingly, John Anderson's ACT* production system model does distinguish between these knowledge types. Anderson asserts that learning can be divided into three stages: the declarative stage, the procedural stage, and the autonomy stage.⁷ In the initial stage, learners store "networks of propositions" or factual units of information. Learning in this stage moves slowly and is highly self-conscious. The second stage is reached when declarative knowledge is transformed into procedural knowledge or skills. This process is broken down by Anderson into a system of production units. As these units are employed more frequently, the ease and speed of their application is dramatically increased. An example of a production system that illuminates the procedure for identifying the tonality of a given work is provided on page 38. Finally, the most advanced stage of this learning cycle is distinguished by complete fluency of application resulting from extensive practice. Glover, Ronning, and Bruning view production systems as "schemata in action."⁸

⁷John R. Anderson, "Acquisition of Cognitive Skill," Psychological Review 89 (1982), 206.

⁸John A. Glover, Royce R. Ronning, and Robert H. Bruning, Cognitive Psychology for Teachers (New York: Macmillan Pub., 1990), 172.

Although attention to the development of knowledge structures within ensemble members is not a requirement for high-quality performances, conductors who seek to foster transfer of learning must help novice learners construct well-structured schemata.

Conductors will enhance the creation of these useful knowledge structures by: illuminating the conceptual links that undergird related performance techniques, providing multiple examples of a learning goal, and explicitly instructing students how to distinguish core similarities between diverse presentations of a learning goal. All of these strategies work together to enhance the novice singer's development of well-structured knowledge that can be transferred to new contexts. Only time and a considerable amount of effort can transform a novice learner into an expert.

Types of Knowledge

All types of knowledge and human learning are not similar. In fact, cognitive psychologists have identified several distinct types of knowledge. These "capabilities" are clearly differentiated by distinct mental processes and memory structures. Educators must always consider the influence of these capabilities when designing instruction.

Unlike most science and math problems, whose cognitive demands are well-defined and often involve a single type of learning, musical performance involves multiple learning capabilities. Although an extensive discussion of learning outcomes is beyond the scope of this document, the following types of knowledge are especially relevant to learning in ensemble settings: declarative knowledge, intellectual skills (procedural knowledge), psychomotor knowledge, and dispositions or attitude. A discussion of these learning types and related teaching strategies will disclose how they contribute to the development of musical skill.

Declarative Knowledge

Sometimes referred to as propositional knowledge, this type of factual knowledge can be stated in verbal form. It is represented by a systematic body of knowledge *about* something. Examples would include knowledge of notational symbols, interpretive directions, ornamentation rules, composer dates, stylistic characteristics, etc.. Although it is fashionable to eschew the learning of facts as an instructional goal, declarative knowledge supports the development of intellectual and performance skill. It provides the fuel that powers the development of these more “high-order” capabilities. The continued growth of performance skill depends on the comprehension of a requisite body of declarative knowledge. Learners who possess a rich collection of well-organized verbal information are better able to make meaningful associations between new learning and existing knowledge.

Since new learning is always interpreted by its relationship to existing knowledge, the acquisition of meaningful declarative knowledge depends on its integration with relevant areas of a learner’s prior knowledge. “Useful” knowledge is linked to a well-structured body of prior knowledge that contains access “cues” or pathways that enables retrieval at appropriate times. In contrast to rote memory structures which facilitate immediate recall of details, meaningful knowledge enhances conceptual understanding and problem solving skill: two essential requirements for transfer.

To support meaningful learning, conductors must advance their ensembles beyond simplistic comprehension. For example, the ability to memorize correct definitions will not ensure the existence of meaningful knowledge. However, the use of elaboration strategies such as questioning, paraphrasing, summarizing, analogy creation, and analogous imagery will better enable this goal. These techniques create connective pathways that integrate new verbal knowledge into existing knowledge structures. Research indicates that these

strategies enhance recall and transfer.⁹ For instance, to convey the concepts “monophonic, homophonic, and polyphonic textures,” a conductor might employ the following teaching strategies:

1. Introduce concepts by comparing three familiar works that illustrate each texture.
2. Ask individuals to summarize definitions and identify appropriate examples of a given texture.
3. Choose passages from other works and invite individual choir members to identify and describe their texture.
4. After illustrating each concept with an analogy or image (i.e. monophony-row of ants, homophony-flock of ducks, polyphony-pit of snakes), invite members to create their own analogies or related images for a given texture.

Learners who employ elaboration strategies are better able to convert inert strings of verbal information into meaningful knowledge structures.

However, in order for this knowledge to be useful to the learner, it must be transformed into a mechanism that will positively influence *performance skill*. The development of verbal knowledge within ensemble settings must always be used to enhance performance skill. Students should always understand how declarative knowledge instruction is related to the ensemble’s mission as a performing organization. Conductors who transform ensemble rehearsals into general music classes ignore the primary motivation of most ensemble members: to *perform* choral music.

Intellectual Skill

Intellectual skill (also known as *procedural knowledge*) differs significantly from declarative knowledge. While declarative knowledge represents knowledge *about*

⁹See Donald Dansereau, “Learning Strategy Research,” in Vol. 1 of Thinking and Learning Skills: Relating Instruction to Research, ed. Judith Segal and Susan Chipman (Hillsdale, NJ: Lawrence Erlbaum Assoc., 1985), 259-290 and A.S. Palinsacar and A.L. Brown, “Reciprocal Teaching of Comprehension Monitoring Activities,” Cognition and Instruction 1 (1984): 117-175.

something, intellectual skill represents the ability to *do* something. In comparison to direct recall, “the activation of procedural knowledge involves the operation and transformation of information.”¹⁰ Although the activation of declarative knowledge is often slow and self-conscious, well-learned procedural skills are accessed quickly and require little conscious effort. For example, consider the speed involved in participating in a conversation, improvising, or making spontaneous interpretive decisions while performing.

Cognitive psychologists typically describe the internal mechanisms of intellectual skill as a series of condition-action rules. Anderson’s production system theory (see pages 34-39) provides an excellent model of this process. This system utilizes two procedural mechanisms, *pattern-recognition* and *action-sequence* procedures. The pattern-recognition procedure enables learners to recognize specific conceptual patterns within their environment. An example would include a musician choosing to alter the performance of printed dynamics or articulation to account for tessitura extremes or stylistic concerns. Action-sequence procedures enable the implementation of pattern-recognition procedures. They are stored in long-term memory along with the conditional cues (the recognition of a specific pattern) that signal their application.

Although it is theoretically useful to separate these procedures, in practice, they function in tandem. According to Anderson, patterns recognized by pattern-recognition productions automatically signal a particular action-sequence into use. When a conceptual pattern is recognized, the mind automatically implements its corresponding action-sequence stored in long-term memory. When faced with a complex problem, many productions will be selected and chained much like the primary and sub-productions were stacked in Figure 2.2, page 38.

¹⁰Sharon J. Derry, “Learning Strategies for Acquiring Useful Knowledge,” in Dimensions of Thinking and Cognitive Instruction ed. Beau Fly Jones and Lorna Idol (Hillsdale, NJ: Lawrence Erlbaum Assoc., 1990), 361.

According to Klausmeier, the enhancement of *pattern-recognition* skill is based on the following abilities: to accurately *define* conceptual attributes or rules, to *discriminate* between similar and dissimilar patterns, to *generalize* the core attributes of a concept so that two related stimuli which do not share surface similarity will still be recognized as sharing the same underlying concept, to *hypothesize* a possible number of concepts given a complex pattern, and to *refine* conceptual understanding through the processing of explanatory information about the concept.¹¹ In addition, the development of pattern-recognition skill also enhances the learner's ability to transfer declarative and procedural knowledge. As familiarity with the core attributes of a concept deepens, learners more successfully retrieve this information from long-term memory at appropriate times.

How might a conductor convey the following procedural implications of the declarative concepts introduced above (*signifies a procedural implication)?

Monophony

- *To sing "as one voice" with a predominate focus on pitch, blend, and diction.
- *The natural inflection of the text guides melodic shaping.
- *The line's inherent melodic shape eclipses all regular patterns such as meter.

Homophony

- *A predominate focus on the tuning of simultaneous chords or clusters within the context of uniformly shaped lines.
- *The natural inflection of the text guides melodic shaping.
- *The treble and bass lines will most likely predominate.
- *Moments of harmonic tension and release should be heightened.

Polyphony

- *The relationship between primary and secondary material must be determined. In many cases, primary material will predominate.¹²

¹¹Herbert J. Klausmeier, "Conceptualizing," in Dimensions of Thinking and Cognitive Instruction, ed. Beau Fly Jones and Lorna Idol (Hillsdale, NJ: Lawrence Erlbaum Assoc., 1990), 105.

¹²Students should understand that the predominance of primary material will vary according to the style and context of individual musical passages.

*Articulation should become more detached when the texture thickens.

*Each line's inherent melodic shape often eclipses all regular patterns such as meter.

After basic comprehension is solidified on a declarative level using the strategies outlined above (see page 60), the conductor should introduce and conduct numerous similar and contrasting examples of each texture. The performance of these examples should be combined with brief periods of questioning designed to highlight the key procedural implications of each texture. When students are compelled to analyze and elaborate their knowledge, they develop the ability to discriminate and generalize the core attributes of target concepts. Continuous guided encounters with these textures provide students the opportunity to refine their pattern-recognition skill and thus enhance their ability to appropriately transfer this knowledge.

Providing learners with multiple examples that differ in all but their most relevant attributes encourages the development of discrimination and generalization skills. In addition, learners strengthen discrimination skills when comparing multiple examples of a concept to non-examples. Educators often underestimate the number of examples that will be necessary to portray the core attributes of a new concept. Since novice learners typically focus on the surface qualities of unfamiliar material, educators must utilize many examples to help learners perceive the underlying, core attributes of a concept. The ability to discriminate and generalize on a conceptual level is an essential component of transfer. In order to transfer relevant knowledge, learners must be able to recognize familiar "patterns" in unfamiliar settings. However, if conceptual understanding is encoded during initial presentation according to a task's surface features, this knowledge will remain inert in the learner's prior knowledge until the exact features are encountered.

The most effective means of developing *action-sequence* skill is frequent practice. When practicing, students should always utilize "part" practice (focusing on small sections or units) in combination with "whole" practice (rehearsing large-scale units). "Part"

practice allows learners to focus on specific subskills while “whole” practice enables the smooth integration of all subskills into a continuous unit. In addition, “whole” practice during initial learning provides learners with a valuable cognitive outline of the key attributes and challenges of a “new” work. Experiencing the entire task as one complete unit is especially important during the initial and final stages of learning.

Psychomotor Skill

The development of motor skill represents an essential form of human learning. Its role in musical performance is self-evident. Interestingly, the amount of psychomotor research on musical performance is relatively small in comparison to the large body of research that exists in physical and vocational training. Increased musical research in this area would significantly enhance our understanding of the unique challenges faced by performing musicians. The following quotations illustrate differing approaches to psychomotor learning:

The Natural Learning Process is the same process we used in first learning how to walk and talk. It involves use of mental imagery, imitation and trial-and-error practice as primary methods of learning. It also involves the use of body feedback for detection and correction of performance errors. . . . When we were children, learning was relatively easy, natural and simple. . . . Ultimately [however,] we were misled into thinking that perceptual-motor learning required mastery of highly complex skills that could only be acquired through mental and physical effort.¹³

If one major point has evolved from the formulation of contemporary conceptual models, it is the emphasis on the role of cognitions and perceptions in the learning and performance of complex motor skills. . . . Many strategies related to the learning of cognitive materials are similar to those involved in the mastery of motor skills. . . . A thorough analysis of the cognitive aspects of motor skill learning with implications for learner strategies and training programs is now needed.¹⁴

¹³Daniel Kohut, Musical Performance: Learning Theory and Pedagogy (Englewood Cliffs, NJ: Prentice Hall, 1985), 8-9.

¹⁴Robert N. Singer, “Motor Skills and Learning Strategies,” in Learning Strategies, ed. Harold O’Neil, Jr. (New York: Academic Press, 1978), 81, 86.

While Kohut decries the encroachment of “complex” mental and physical learning strategies into a process that should be “easy, natural, and simple,” Singer expresses the need for more study of cognition’s role in psychomotor learning. In general, experts on this issue can be divided into three basic categories: the naturalists,¹⁵ the methodologists (represented by a large number of technical method systems), and the internal processors.¹⁶ Experts from the methodologists category typically focus on *what* to teach versus *how* to teach. Roger Edwards suggests that

how you use such materials is probably more important than what you use. Lacking good instruction, a ‘name’ technique book and an instrument guarantee musical success to roughly the degree that a baseball and Jim Palmer’s jockey shorts guarantee a baseball career.¹⁷

The discussion below will focus on how the naturalist and internal processor approaches concentrate on the *utilization* of psychomotor instruction.

Psychologists have identified four categories of motor tasks: *self-paced* activity, *externally-paced* activity, *open-loop* tasks, and *closed-loop* tasks. *Self-paced* activity is initiated and directed by the learner while *externally-paced* activity requires an immediate response to unexpected stimuli.¹⁸ A tennis player serving, then participating in a volley, illustrates both types of motor tasks. A solo musical performance would provide an example of self-paced activity and ensemble performance would represent externally-paced

¹⁵See W. Timothy Gallwey, The Inner Game of Tennis (New York: Random House, Inc., 1974) and Shinichi Suzuki, Nurtured by Love (Smythtown, NY: Exposition Press, 1969).

¹⁶John Adams, “Issues for a Closed Loop Theory of Motor Learning,” in Motor Control: Issues and Trends, ed. Charles Stelmach (New York: Academic Press, 1976); Robert Sidnell, “Motor Learning in Music Education,” Psychomusicology 6 (1986): 7-17; and Singer, “Motor Skills.”

¹⁷Edwards, “Transfer and Performance,” 133.

¹⁸Singer, “Motor Skills,” 89.

activity. Effective practice of self-paced activity requires the maintenance of accurate and consistent responses through many repetitions. Learners practicing externally-paced tasks work to improve the adaptability of their responses to unpredictable stimuli. They accomplish this by developing familiarity with a large number of related situations and stimulus cues.

Open-loop tasks are characterized by extreme immediacy that impedes feedback until the task is complete. A commonly cited example of this type of task is the execution of a rapid trill. However, most skilled instrumentalists are capable of perceiving and adjusting their performance during a trill. Perhaps a more accurate example of an open-looped motor task would be the execution by a wind instrumentalist of a difficult starting note. *Closed-loop* tasks proceed at a slower pace and allow the learner to interpret feedback and adjust their performance accordingly. *Virtually all aspects of ensemble performance are externally-paced, closed-loop tasks.*

Advocates for the Natural Learning Process and Suzuki's Mother Tongue Approach recommend that students should develop motor skills in essentially the same way that children learn to talk. They suggest a three-step procedure: 1. Developing a mental image through listening, 2. Imitation of a model through trial-and-error practice, 3. Fluency through frequent practice. Of course, the success of this approach is heavily dependent on the quality of the learner's performance model. In order for learners to engage in effective imitative behavior, they must have access to a model that fosters a strong mental image. This model functions as a "guiding light" through the early and intermediate stages of imitative learning. During instruction, teachers are encouraged to avoid lengthy verbal explanations and rely primarily on modeling. According to W. Timothy Gallwey, the creator of the Natural Learning Process, "images are better than words, showing better than telling, too much instruction worse than none, and conscious trying often produces

negative results.”¹⁹ He stresses that successful motor skill development depends on frequently practiced repetitions. According to Shinichi Suzuki, “we simply have to train and educate our ability, that is to say to do the thing over and over again until it feels natural, simple, and easy. That is the secret.”²⁰

Singer, an advocate for the Internal Processing approach, also stresses the importance of an accurate “goal-image” and the use of instructional modeling in psychomotor learning.²¹ Landers and Landers found that subjects who were regularly exposed to an expert model performed better on a motor skill task than subjects who were not exposed to a model.²² They also discovered that positive results were not adversely affected if the model was not present during the entire learning cycle. Occasional appearances by the model at the beginning and middle of learning were sufficient to improve performance. Singer warns however that learners must exhibit a sufficient level of concentration and attentiveness for modeling to be effective.

Beyond these similarities with the naturalists, internal processors suggest the use of cognitive strategies to help learners direct and control their behavior during the intermediate and advanced stages of psychomotor learning. They suggest that learners demonstrate comprehension of all key performance concepts before they advance to more complex performance challenges. As psychomotor skill develops, they recommend that learners reshape their reliance on external cues toward behavior that is self-directed and internally

¹⁹Gallwey, Inner Game, 19.

²⁰Suzuki, Nurtured by Love, 51.

²¹Singer, “Motor Skills,” 92.

²²Donna Landers and Daniel Landers, “Teacher Versus Peer Models: Effects on Model’s Presence and Performance Level on Motor Behavior,” Journal of Motor Behavior 5 (1973): 129-139.

motivated. In order to prepare students for this transformation, they suggest that teachers should require learners to engage in reflective thinking and self-directed problem solving. They recommend this transformation to be a gradual process beginning *early* in the learning cycle. Finally, they stress that learners should be taught to selectively perceive and respond to only the most essential requirements of a task. When confronted with a new task, novice learners are often baffled by a vast amount of surface details. In comparison, experts use their richly developed performance schemas to perceive and ignore non-essential material and focus only on the most essential stimuli.

Attitudes

It would be difficult to overemphasize the important role that attitude plays in learning. This is especially true for the novice learner. To borrow Roger Edward's free translation of a Pavlov research finding, "Nothing works when the dogs ain't hungry." How students feel about music and the degree to which they view performance as an enjoyable, rewarding activity profoundly shape their ability to improve performance.²³

Individual ensemble members bring many conflicting predispositions to choral settings. Perhaps some are former members of accomplished ensembles and consider the pursuit of excellence their primary motivation while others harbor negative feelings about performance due to a prior history of disappointing experiences. Some expect rehearsals to be fast-paced and demanding while others prefer a more relaxed and recreational environment. Some expect to learn stylistic and musical information about choral literature while others only care to "sing the notes." Conductors must be sensitive to the governing role that dispositions play in learning. In addition to learning musical techniques and concepts, ensemble members also acquire affective and motivational outcomes. These

²³Edwards, "Transfer and Performance," 124.

affective outcomes possess a powerful capability to support additional forms of learning. Furthermore, they can transfer, or fail to transfer, to novel situations in much the same way as other types of learning.

While some psychologists characterize attitude in cognitive terms as a system of beliefs, other experts focus on the affective emotions that accompany this type of knowledge. Robert Gagné, Briggs, and Wager define attitude as “an internal state that affects an individual’s choice of personal action toward some object, person, or event.”²⁴ They assert that attitudes contain cognitive, affective, and behavioral components that interact. This definition, which focuses on how attitude influences a *choice of personal action*, provides a concise and easily definable framework to examine this complex phenomenon.

They warn that an attitude cannot be defined by a single behavior. For example, an ensemble member’s decision to carefully memorize an assigned work in preparation for a memory test would not necessarily indicate a positive attitude toward memorization. This decision could reflect a love of the piece, a desire to avoid embarrassment, or perhaps a desire to function as a leader within the section. Therefore, the determination of an internal state, or attitude, can only be inferred after many related behavioral choices are evaluated. In order to assess the learner’s attitude, accumulated actions over time must be observed and measured. These observations can be made by the instructor or by the learner.

If attitude plays a crucial role in learning, how might educators affect the attitudes of their students? Evidence clearly indicates that sole reliance on persuasive communication will not effectively modify student attitudes. Frequent pleas from the conductor to “practice your music,” “stop talking,” or “sing with more energy,” does not enhance the development of constructive attitudes.

²⁴Gagné, Briggs, and Wager, Principles of Instructional Design, 86.

The experience of *success*, perhaps more than any other factor, can powerfully enable positive attitude growth. As ensemble members perform well, they are more likely to develop positive attitudes about future musical learning. Success stimulates the desire within learners to reproduce this positive experience in the future. Empowered by past accomplishments, their desire for more success motivates them to explore new learning challenges. Conductors who establish a “cycle of success” create a powerful motivational force that powers future learning and skill development.

For centuries educators have attempted to enhance learning by utilizing *contingencies of reinforcement*²⁵ According to this technique, the instruction of a new skill is associated with a rewarding activity. Learners understand that participation in the rewarding activity is dependent on adequate performance of the new learning challenge. When successful, this technique encourages learners to link the positive feelings associated with the rewarding activity, or *reinforcer*, to the new learning challenge. However, when employed in a clumsy fashion, this predictable combination of challenging-to-rewarding activities can be perceived by learners as movement from negative-to-positive activity. For instance, conductors who regularly highlight the contrast during rehearsals between “enjoyable,” familiar pieces and more challenging works run the risk of conditioning learners to perceive learning challenges in a negative light. For this reason, conductors should use this technique judiciously.

The influence of *human modeling* effectively establishes and reshapes attitudes. People observe and learn attitudes from a wide assortment of human models such as family members, teachers, peers, community members, or public figures. Inspired by these models, humans construct and alter their internal value systems according to those qualities that they perceive as desirable (kindness, responsibility, fairness, patience,

²⁵Ibid., 88.

honesty, etc.). Attitudes modeled by conductors powerfully influence ensemble dispositions. In order to influence the growth of positive attitudes, conductors must consistently “do as they say.” Their behavior should represent a living example of the attitudes they would like their ensemble to exhibit. “The more saliency the human model has for the learner, the greater the likelihood that the learner will adopt the choice behavior displayed by the model.”²⁶

Conductors sensitive to the influence of attitudes in learning will often establish attitude *goals* for their ensembles. However, due to the long-term and indirect nature of attitude instruction, conductors should choose only a small number of attitude goals that are complimentary. Too many “target” attitudes can be confusing and even contradictory for ensembles. For example, two groups of complimentary target attitudes are listed below:

Group ‘A’ Target Attitudes

- *Behavior that encourages a more thoughtful and supportive community.
- *Behavior that displays a commitment to attend and fully participate in every rehearsal and performance.

Group ‘B’ Target Attitudes

- *Self-critical behavior that enhances attention to detail.
- *Behavior that fosters and expects transfer of learning.

Similar attitude goals can be self-reinforcing while dissonant combinations often undercut the growth of each objective. The attitude groupings above are designed to compliment each other and minimize occasions when learners may perceive both goals to be in conflict. While mixing the above attitude groupings (“supportive” with “self-critical” and “full participation” with “expected transfer”) might not necessarily create dissonant combinations, these new groupings would diminish the level of similarity between goals and increase the probability that individual singers might perceive target goals to be in conflict.

²⁶Ibid., 91.

It is also advantageous to involve ensemble members when setting attitude goals. Existing attitudes are usually resistance to change and positive modification occurs very slowly. The more learners share a consensus of needed changes, the more readily they modify their behavior.

Conductors must *ensure that the rehearsal environment supports the desired choice behavior*. For example, conductors who seek to encourage an expectation for transfer within their ensembles must design their rehearsal instruction accordingly. Those who hope to build an attitude of self-reliance and initiative must avoid “spoonfeeding” ensembles with unnecessary instructional cues.

Ensemble members who consistently display choice behaviors and attitudes should be *recognized and rewarded* for their efforts. Research clearly indicates that meaningful positive reinforcement is one of the most effective tools that educators can use to modify behavior. Conductors must also be careful not to punish desired behaviors by rewarding achievement with greater amounts of work. This practice, though designed to encourage further development, often leads to resentment. Reinforcements should be designed to encourage learners to *choose* higher levels of responsibility at their own initiative.

Summary

Insights gained from the research of cognitive psychologists can significantly enhance our understanding of learning and transfer. These experts stress that all learners are active processors of information whose ability to transfer knowledge depends on their thought processes. When evaluating transfer, they emphasize the importance of *prior knowledge*, the development of well-structured knowledge (*schemata*), the use of *cognitive strategies* such as elaboration, questioning, summarizing, and analogous imagery, and the role of *different types of learning*.

Impediments to Transfer

How can these insights from cognitive psychology influence the implementation of rehearsal strategies that foster transfer? Before addressing this critical question, it will be useful to examine common behaviors that inhibit transfer.

Unfortunately, conductors often unconsciously construct impediments to transfer. When solely focused on upcoming performances, they inhibit systematic learning by failing to establish and meet long range instructional goals. In addition, the failure to foster conceptual knowledge and instruct how knowledge may transfer to a variety of contexts also inhibits transfer. This type of surface-oriented rehearsal instruction rarely facilitates transfer.

The lack of prerequisite knowledge within learners also impedes transfer. For instance, students unable to perform diaphragmatic-costal breathing will never accomplish more advanced vocal techniques that require this foundational skill. Inadequate familiarity with the ensemble's prior knowledge inhibits a conductor's ability to determine and convey all necessary prerequisite knowledge. This unenviable condition places conductors "in the dark" when designing rehearsal instruction.

Conductors must not assume that transfer, when it occurs, only operates in a constructive, positive manner. In fact, *negative transfer* frequently inhibits and interferes with learning. It occurs when learners inappropriately perceive two functionally dissimilar tasks as similar. For example, a young child observing a dog for the first time might encode the concept "dog" as a small, furry animal who walks on four legs. This procedure will inevitably lead to negative transfer when the child classifies all small, furry, four-legged creatures as "dog." Over-generalization of learning task attributes and misattribution of similarity are the two most common causes of negative transfer. Since the perception of similarity between tasks increases the likelihood of transfer, educators must focus

instruction on the *structural* components of a learning task so that learners do not encode and store knowledge according to irrelevant surface features.

Many conductors also inhibit the growth of their ensembles by “spoonfeeding” them with unnecessary instructional support. Once a concept is well-learned in multiple contexts, learners should be expected to transfer target concepts without relying on instructional cues from the conductor. Conductors need to exhibit an *expectation for transfer* at every stage of the learning process. Ensembles that develop this expectant attitude create a powerful motivational force that stimulates learning and performance.

Teaching for Transfer

While avoiding impediments to transfer, how may conductors use what is known about the phenomena to design rehearsal instruction that fosters transfer? The balance of this document addresses this important question. Five fundamental principles are introduced below that offer general guidelines for teachers and conductors who seek to foster transfer. These principles are not intended to be exhaustive or function as a prescription for transfer. However, they do represent a reliable collection of empirically sound procedural concepts from which educators can make informed decisions.

1. Identify, decompose, and communicate specific transfer goals

Research demonstrates that novice learners rarely exhibit transfer without explicit instructional support. Before meaningful instruction can occur, conductors must first decide *what* they will teach. The choice of repertoire is only a portion of this responsibility. In addition, conductors should identify a limited number of target concepts (interpretive and/or technical) that will guide rehearsal instruction. While these instructional goals need to be relevant to a wide variety of choral literature, they should be expressed in a form that defines what ensemble members should be able to accomplish at the conclusion of instruction. For example, goals such as “to become familiar with the Baroque style” or

“to sing more consistently with good intonation” are not effective goal statements because they do not precisely define a target behavior. The phrases “to become familiar with” or “to sing more consistently” are too vague to offer a meaningful standard from which an ensemble’s learning can be measured. On the other hand, the following performance objective taken from Chapter Four illustrates a well-designed goal statement; “when performing musical lines that move in stepwise motion, sections will accurately sing all whole and half steps (see page 82).” Unlike the earlier examples, this goal statement defines a specific behavior. It provides an objective “beacon” that guides the ensemble’s learning and the conductor’s ability to assess the ensemble’s performance.

After transfer goals are established, conductors must analyze and decompose these target concepts. This procedure should bring to light all prerequisite skills necessary for learners to accomplish the goal. After determining the types of knowledge involved in each target concept, conductors should reconstruct every step that learners would employ to complete the task. Because years of practice often generate automatic thought processes, experts easily forget the many intermediate steps involved in solving musical problems. That is why a carefully designed task decomposition plays an essential role in designing effective rehearsal instruction.

2. Identify a complimentary attitude goal(s) and support its positive acquisition through instruction

The influence of student attitudes plays a critical role in learning and transfer. Along with musical goals, conductors should also employ a complementary motivational goal or a small number of such goals. If more than one attitude goal is desired, conductors should insure that these goals complement each other and all additional musical goals. The accomplishment of well-designed attitude goals significantly enhances an ensemble’s ability to realize all additional goals.

3. Determine an accurate view of the ensemble's relevant prior knowledge

After target concepts are established, an accurate assessment of the ensemble's prior knowledge regarding these concepts will provide invaluable data. In order to meaningfully influence the design and implementation of instruction, this assessment must be as precise as possible. To meet this challenge, conductors should design effective assessment tools including audition evaluations, surveys, self-evaluations, and tests.

4. Insure that material is well-learned and presented in numerous contexts to promote generalization

In order for knowledge to transfer, it must first be well-learned. To support this goal, ensemble members must experience numerous contrasting examples and non-examples of target concepts. This process enables learners to recognize the core attributes of a concept when surface features are dissimilar. When presenting multiple examples, conductors should highlight the similarities and differences between examples and hypothesize future contexts where transfer would be appropriate. They should also suggest possible learning strategies that ensemble members could employ to facilitate transfer. Novice learners require explicit instruction that is targeted to improve their recognition of conceptual similarity within diverse contexts.

5. Design instruction to support the acquisition of well-structured schemata

Since the mind encodes and stores information according to patterns of perceived similarity, rehearsal instruction should be designed to support the construction of meaningful knowledge structures. In other words, the introduction of new material must always be appropriately related to existing knowledge. Learners shape the encoding of new information by filtering it through a set of expectations generated by existing knowledge. The more clearly they comprehend the context and relation between new and familiar concepts, the more effectively they will organize, recall, and transfer knowledge.

Transfer-Sensitive Instruction

Using these transfer principles as a guide, the following chapter discusses how transfer-sensitive rehearsal strategies may be designed and implemented. These strategies, along with the principles above, recommend an instructional approach that fosters musical comprehension, generalization, transfer of learning, and the efficient development of performance skill.

CHAPTER FOUR

REHEARSAL INSTRUCTION THAT FOSTERS TRANSFER

Many teachers are quite aware of the difficulty of getting students to think about and broaden their understanding of performance skills. As a result, performance classes and lessons often do not promote learning that becomes self-directed, enduring, or applicable to diverse contexts in the future.¹

Lyle Davidson, Larry Scripp, and Larry Fletcher

The pursuit of excellence in the choral art does not require conductors to cultivate transfer. In fact, successful conductors often favor short-term instructional techniques such as rote learning. This document does not contend that the use of “transfer sensitive” strategies will guarantee successful performances. Nor does it assert that this instruction is a prerequisite for success. Choral excellence is determined by a conductor’s preparedness, musicianship, and conducting skill. Ultimately, teaching strategies, and the pedagogical philosophies that undergird them, are only a *means* toward this end.

Although many conductors who primarily rely on rote teaching produce excellent performances, the singers within their ensembles often fail to acquire lasting knowledge. When conductors solely focus on the interpretive needs of the moment, novice learners do not generate the conceptual awareness that fosters transfer. Singers in this environment learn how to perform a specific task in a specific manner at a specific time. The narrow use and encoding of information insures that novice learners will fail to transfer this knowledge in all but identical contexts. Thus, conductors who utilize short-term, rote teaching strategies must repeatedly teach similar skills each time a new work is learned.

¹Lyle Davidson, Larry Scripp, and Alan Fletcher, “Enhancing Sight-Singing Skills Through Reflective Writing: A New Approach to the Undergraduate Theory Curriculum.” Journal of Music Theory Pedagogy 9 (1995): 1-30.

While rote learning can produce successful performances, it does not support the efficient development of performance skill. Researchers have demonstrated that most learners focus on the surface details of an unfamiliar task and often require instructional support to recognize underlying concepts. For this reason, conductors who hope to enable the efficient development of performance skill must carefully design instruction that induces transfer on a conceptual level. As ensemble members develop meaningful conceptual knowledge, their ability to incorporate new knowledge and skills into existing knowledge is enhanced. Moreover, conceptual understanding makes a subject more comprehensible. Students who place surface details into well-ordered structures of knowledge generate “useful” knowledge that enhances comprehension, recall, and transfer.

The development of conceptual knowledge and transfer skill also encourages learners to be self-reliant. As they become more actively involved in learning, singers do not expect conductors to provide “everything they need to know.” They develop a deeper sense of ownership of their personal goals and the goals of the ensemble. This type of instructional environment establishes vibrant, learning communities in which all members *choose* to amplify existing knowledge and performance skill.

Methodology

Chapter Four introduces and explores two familiar *choral settings*: a college choir and a community choir. These settings establish a context from which a discussion of rehearsal strategies that foster transfer is developed. After pertinent details of each choral setting are established, two *target objectives* are introduced and analyzed. A *task analysis* then determines the prerequisite skills necessary for learners to accomplish the goal and addresses the specific types of learning that ensemble members will utilize (Teaching for Transfer Principles #1 & #2 or TTP #1 & #2). Following the task analysis, methods for determining the ensemble’s *prior knowledge* are recommended (TTP #3).

Selected *rehearsal strategies* that promote the transfer of these objectives are then suggested. These strategies support the implementation of specific performance objectives to the rehearsal and performance of three contrasting works. However, they do not account for every aspect of learning experienced by ensembles performing these works. Instead, they illustrate how principles learned from transfer research can inform the use of traditional rehearsal strategies. The discussion of strategies is grouped into three functional categories: *Directing Attention*, *Guiding Thinking that Induces Transfer*, and *Assessment*. Each strategy is introduced by a concept label that illustrates its pedagogical function.

These strategies create brief “reflective moments” within rehearsals that encourage the efficient development of performance skill. Conductors must insure that these reflective moments are brief and narrowly focused toward the accomplishment of well-defined performance objectives. While the accumulation of general musical knowledge has value in some contexts, it will not enhance the development of performance skill in rehearsal settings. In addition, these activities, without careful management, could slow down and even derail well-paced rehearsals. To avoid this problem, conductors must focus their use of reflective strategies so that these moments are well-spaced, brief, and directly applicable to relevant performance challenges. If ensemble members appreciate how these activities enhance their performance, they will not interpret them as interruptions to the natural flow of the rehearsal.

Choral Setting 1: A College Choir

The first choral setting to be considered features a sixty-voice undergraduate choir. This select ensemble rehearses every day for one hour and prepares three complete programs each academic year. A challenging audition is required for entrance into the ensemble. Appendix I-A outlines the content of this audition. In addition, members are

required to demonstrate competency on a Basic Musicianship Exam (BME) found in Appendix I-B. Students who pass the audition but fail the BME will have a second opportunity to pass the exam during the second week of rehearsals. These assessment tools insure that every ensemble member demonstrates fundamental competency in the following areas: vocal production, pitch memory, sight reading (chorales, uncomplicated anthems, or carols), metric awareness, rhythmic performance, written identification of diatonic intervals, and familiarity with fundamental musical symbols and terms.

Music majors comprise thirty percent of the ensemble. The remaining members possess rudimentary music reading skills and moderately advanced vocal skills and performance experience. Although some ensemble members have more knowledge than others, all students within this ensemble are novice learners.

The choir performs two concerts during the fall semester: a program featuring Giacomo Carissimi's (1604-1674) *Jephtah* and a Choral Service of Lessons and Carols that includes *Nolo mortem peccatoris*, by Thomas Morley (1557-1603). The ensemble's memorized spring program includes a set of German part songs featuring *Abendlied*, by Johannes Brahms (1833-1897). The strategies below are applied to the rehearsal and performance of *Plorate filii Israel* (the final movement of *Jephtah*, Appendix II-A), *Nolo mortem peccatoris* (Appendix II-B), and *Abendlied* (Appendix II-C).

The ensemble and conductor have established four general goals for the academic year: a) to earn an invitation to perform at a regional convention of the American Choral Directors Association, b) to make a high quality compact disc recording, c) to "make a connection" with audience members by communicating the "dramatic essence" of every work they perform, and d) to raise the necessary funds to embark on an international tour the following year.

College Choir Target Objective #1: “Tuneful Steps”

A *target objective* is designed to specify a desired transfer behavior. It establishes a benchmark from which the ensemble’s performance can be assessed. In addition, each objective is supported by an associated *performance concept* and less formal *conceptual tag*.

Target Objective #1

When performing musical lines that move in stepwise motion, sections will accurately sing all whole and half steps.

Performance Concept: Widen all ascending steps and narrow all descending steps.

Conceptual Tag: “Tuneful Steps”

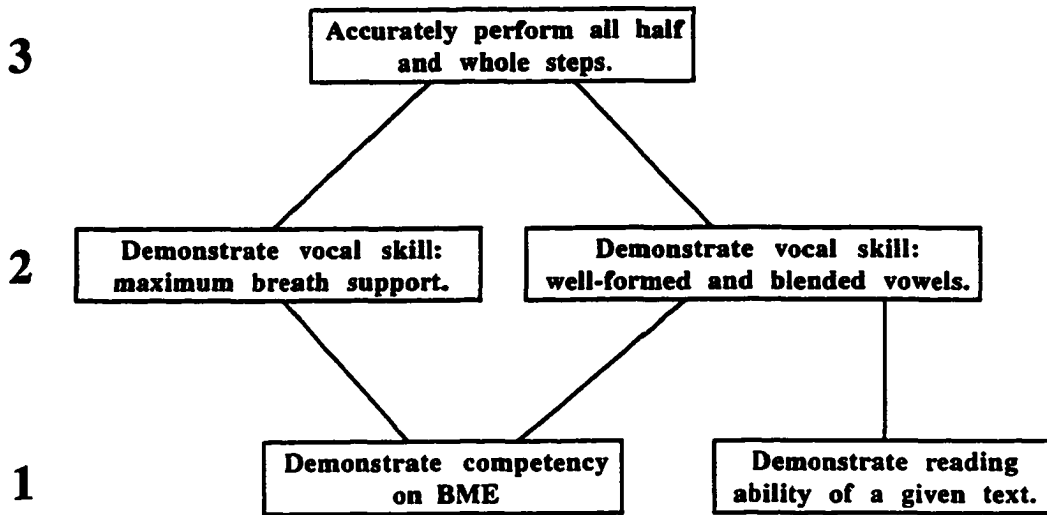
While the performance concept describes the objective in procedural terms, the conceptual tag represents the objective with a brief, memorable label. This label helps the conductor and ensemble members “call to mind” the objective at any given time. After a performance concept is well-learned, the invocation of this label immediately stimulates the relevant performance schemata within the learner.

Task Analysis

Figure 4.2 presents a *learning hierarchy* that charts the minimum number of learning sets necessary to accomplish the target objective. Each set represents a particular skill or collection of skills that learners must possess. The hierarchy is followed by learning set elaborations that amplify key elements of each set.²

²See pages 29 through 33 in Chapter Two for a more thorough discussion of vertical transfer and learning hierarchies.

Figure 4.2

"Tuneful Steps" Learning HierarchyLearning Set Elaboration

1. In order for learners to meet the objective, they must possess a rudimentary understanding of musical notation and correctly distinguish between notated steps and leaps and whole and half steps. Learners must demonstrate all of these skills to pass the BME. Learners must also be able to correctly pronounce each word of a given text. They must especially be familiar with all vowel sounds.
2. When singing, learners must demonstrate effective breath support and the ability to correctly shape and match vowels. Learners will not consistently sing "tuneful steps" without employing these foundational skills.
3. By imagining that ascending motion is widened and descending motion is narrowed, learners will more accurately sing whole and half steps.

Demonstrating transfer of this objective requires learners to use each of the learning types outlined in Chapter Three.

Declarative Knowledge - Learners must comprehend the following musical and technical concepts: meter, steps, leaps, rhythmic durations, accidentals, key signatures, vowels, and diaphragmatic-costal breathing.

Intellectual Skill - Learners must demonstrate competence reading, interpreting, and performing musical notation and a given text.

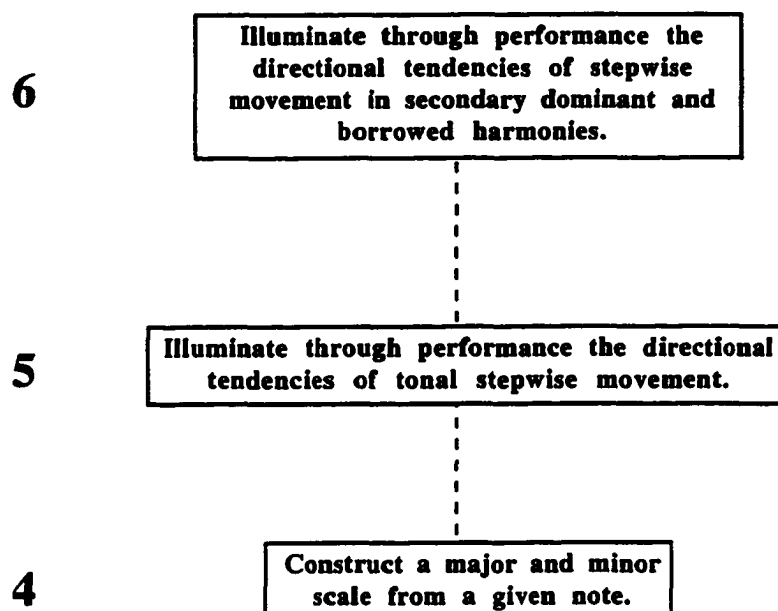
Psychomotor Skill - Learners must first acquire the ability to quickly perceive relevant notational patterns. In particular, the direction and length (whole or half step) of all stepwise melodic motion. In addition, they must demonstrate the necessary vocal skill to accurately perform stepwise notational patterns.

Attitude - Learners must cultivate a *passion* for precise intonation regardless of the ensemble's familiarity with the music, proximity to a performance, acoustical environment, or physical condition. Understanding that true intonation can never be taken for granted, they must expect to dedicate considerable concentration toward the accomplishment of this objective. This *passion for precision* will be fed by a desire to frequently experience moments of "pure" tonal and melodic beauty.

This example perfectly illustrates why psychologists refer to musical performance as a "complex" content domain. Learning in each of these outcome areas is interrelated and equally important. For instance, attitudes and declarative knowledge provide the essential nourishment that fuels both intellectual and psychomotor learning. The similarities between intellectual skill and psychomotor pattern recognition are self-evident. In fact, many psychologists treat psychomotor learning as a form of procedural knowledge. Due to the interrelated quality of each outcome area, conductors should simultaneously engage multiple types of learning during rehearsals by stimulating the development of factual, procedural, attitude, and motor skills. If well-coordinated, this multi-faceted approach will significantly enhance instructional effectiveness and foster transfer of learning.

After the ensemble consistently demonstrates competence on the target objective (level 3), conductors may choose to develop their ensemble's performance skill to a more advanced level by enabling harmonic understandings of melodic lines. An expanded learning hierarchy and learning set elaboration is illustrated in Figure 4.3. Since the level of prerequisite knowledge necessary for the accomplishment of level 6 would require advanced theoretical study beyond the means of most ensemble members, this expanded goal will not be developed in the following strategies. However, music majors within the ensemble could be challenged to meet these higher performance standards.

Figure 4.3

"Harmonically Tuneful Steps" Learning Hierarchy**Learning Set Elaboration**

4. Learners must first conceive of tonality as containing a “family” of notes which share functional relationships. These relationships are regulated by two stepwise patterns: major scale (1-1-1/2-1-1-1-1/2) and minor scale (1-1/2-1-1-1/2-1(+)-1/2).

5. The following scale degree patterns illustrate important harmonically influenced melodic tendencies: major scale 1«2, 3«4, 5«6, 7»8 and minor scale 1«2, 3«4, 5«6, 7»8. The learner’s performance should amplify these natural tendencies.

6. Once learners possess the ability to reflect melodic tendencies within diatonic contexts, they must then develop the ability to perceive these relationships when tonalities change and within chromatic and modal contexts.

Prior Knowledge

In addition to determining membership, a conductor should use the entrance audition and BME to ascertain *prior knowledge*. During the audition, a student’s vocal skill is evaluated in the following areas (see Appendix I-A): range, phonation, resonance, breath support, vowel purity, sight reading, pitch memory, and recitation. Their

performance in the sight reading, breath support, and vowel purity areas will most critically affect the conductor's understanding of relevant prior knowledge. Assuming that level four competence demonstrates adequate achievement in an area, the conductor tabulates student scores and determines where students need to focus their learning to become competent. As long as they evaluate with consistency, conductors who use an objective scoring system will learn more about their singers than conductors who employ a more informal procedure. These scores can be used to identify individual and ensemble weaknesses and strengths, assess prior knowledge, and chart skill development over long periods of time.

In addition to the audition, conductors can augment the BME with questions designed to elicit information in specific areas. While the general knowledge portion of the BME would remain constant throughout the years (unless conductors choose to raise or lower entrance standards), a Supplement Exam could reveal the ensemble's prior knowledge in a small number of relevant areas. For instance, a BME Supplement could require students to distinguish half and whole steps from a larger number of contrasting musical examples. The evaluation of certain statements designed to elicit learner dispositions (attitudes) could also be included such as:

A series of statements are listed below that represent various aspects of the choral process. Rate each statement according to personal *enjoyment* (5 to 1, 5 - maximum enjoyment to 1 - minimum enjoyment) and relative *importance* in the choral process (5 - very important to 1 - minimal importance).

	Enjoyment	Importance
a) Fun and fellowship of working together as a team	_____	_____
b) Rehearsing and "polishing" a piece until it is perfect	_____	_____
c) Performing from memory	_____	_____
e) Singing in sectionals	_____	_____
f) Performing with music	_____	_____
g) Performing at choral festivals	_____	_____
h) Touring	_____	_____

Of course, the number and type of statements to be used could be shaped in whatever manner that conductors would find appropriate. While this tool will not predict specific group attitudes, it can help conductors anticipate motivational challenges. For instance,

ensembles that have a predominance of members who rate statement 'b' very lowly in both categories will probably require encouragement to affirm the relation between the polishing of details and successful performances.

After an objective is established and analyzed and prior knowledge is determined, conductors should use this information to design rehearsal strategies that enhance transfer of the target objective. Conductors who identify certain areas of weakness during their evaluation of prior knowledge should plan to address these needs as they design rehearsal instruction. The following examples represent a collection of selected rehearsal strategies that foster transfer.

Strategies: Directing Attention

1. *Attitude: Link Concept to Primary Goals* - Introduce the target objective by describing how it will enhance the ensemble's ability to meet two of its general goals: winning an invitation to a choral festival and producing a "flawless" recording. The conductor should emphasize that he or she will expect the accurate singing and transfer of "tuneful steps" at every step of the learning process. In other words, singers will be expected to employ the concept during the initial, mid-range, and final learning stages of every work they perform. Singers must understand that "musical" singing should not be preceded by a "non-musical" period of note learning. Conductors should continually emphasize this expectation so that ensemble members gradually incorporate this attitude into their own value systems without relying on external cues.

2. *Visual Reinforcement* - Draw attention to an attractive poster containing the target objective, performance concept, and conceptual tag. This poster will remain in the choral rehearsal room the entire year to visually reinforce the concept and the conductor's expectation for transfer.

3. Vocalise “Base” Training³ - Perform appropriate vocalises that enhance the accurate performance of half and whole steps. Conductors must insure that ensemble members are constantly *thinking* when they perform these exercises. In order to foster transfer of learning during the performance of vocalises, conductors must foster *comprehension*, the perception of *relevance*, the development of accurate *mental images*, knowledge of *future applications*, and *musical consistency*. These characteristics are described below:

a) *Comprehension* - For transfer to occur, singers must comprehend the underlying performance concept(s) that a vocalise is designed to improve. If singers do not understand how a particular warm-up drill relates to the performance of a choral work, this learning will only transfer to future tasks that are essentially identical to the original vocalise.

b) *Relevance* - The vocalise must be relevant to challenges found in musical works performed during the same rehearsal. Negative transfer will occur when a vocalise does not relate to its “targeted” musical context. For instance, the performance of vocalises designed to enhance legato singing will probably not improve the performance of a work that involves mostly detached singing (unless singers clearly understand how certain aspects of the legato singing may enhance detached singing). In addition, too much elapsed time between the “base” vocalise and “target” musical context will inhibit transfer.

c) *Mental Image Development* - Learners must develop clear mental representations or mental images that correspond with the accurate performance of the target objective. Using Target Objective #1 as an example, they must develop distinct cognitive perceptions of each interval and directly link these perceptions to specific motor productions. Although conductors cannot create representations for learners, they can stimulate and guide their thought processes by presenting new material in relation to existing knowledge. In addition, they can solidify comprehension by questioning and prompting students to elaborate their knowledge. Since transfer of learning requires independent thinking, Ensemble members should engage in reflective thinking in all stages of learning. Even when students fail to respond to questions, conductors should not immediately provide answers for the ensemble. This practice will establish a disincentive for independent thought among learners.

d) *Future Applications* - As they perform vocalises, singers should understand when and how these representations will be employed in realistic musical contexts. Performing vocalises from notation effectively enables this process. Although rote

³Vocalise “Base” Training refers to vocalises that support the development of fundamental skills while *Vocalise as a “Base” for Transfer* indicates a more specific relationship between the “base” vocalise and later transfer applications.

learning facilitates an immediate vocalise experience and enhances pitch memory, singers should also “read” these patterns during warm-ups so that conductors can effectively instruct how the target patterns are imbedded into musical works. Linking the performance of familiar vocalises with notation will especially help novice learners establish a connection between notation patterns, appropriate mental representations, and musical performance.

e) *Musical Consistency* - Singers must perform vocalise patterns as if they were performing “real” music. They should perform vocalises with the same musical attitude (appropriate articulation, well-shaped lines, dynamics, etc.) that would be applied to the performance of musical works. When students perform vocalise patterns as mechanical, non-musical tasks, their corresponding “mental images” will encode this learning as distinct from “musical” learning. When this occurs, singers will probably fail to transfer vocalise skills to similar and relevant musical contexts because both types of learning are distinctly encoded. However, when singers make no musical distinction between vocalise and musical performance, barriers to transfer are avoided.

Conductors must never assume that singers will intuitively perceive how and why a particular vocalise will benefit later learning. In order to demonstrate transfer, novice learners require explicit instruction designed to meet this goal. If the above principles are present during instruction, the following vocalises will support the transfer of the target objective.

a) *Scalar Patterns* - Sing ascending and descending whole-tone, chromatic, and diatonic scales utilizing closed vowels such as [u] or [e].⁴ Singers should immediately experience how “widening ascending steps and narrowing descending steps” helps them perform accurate patterns. During initial instruction, conductors should avoid lengthy verbal instruction and instead utilize modeling. Learners who first develop an accurate “goal image” will more quickly and effectively perform the target concept. Conductors should utilize their own singing as well as model singers from within the ensemble for this purpose. Attention should be focused on the development of vital breath support, “free” phonation, and the use of vowels that are pure and highly placed in the “mask.”

b) *Breath Support* - To insure that all singers adequately support their singing, conductors should also employ vocalises that enhance breath energy and control. The examples below represent a brief sampling of vocalises that enhance the development of breath support and require singers to distinguish between half and whole steps.

⁴All letters in brackets represent International Phonetic Alphabet symbols.

simile

[hu - - -]
[ho - - -]
[hi - - -]

simile

[hi - - -]
[ho - - -]
[he - - -]

simile

c) Vowel Clarity - Singers should also perform “tuneful step” vocalises that promote the singing of well-formed and well-blended vowels. These vocalises share a prerequisite relationship. Singers should not progress until the performance of the initial vocalise is virtually flawless.

simile

[ni] [ne] [na] [no] [nu]

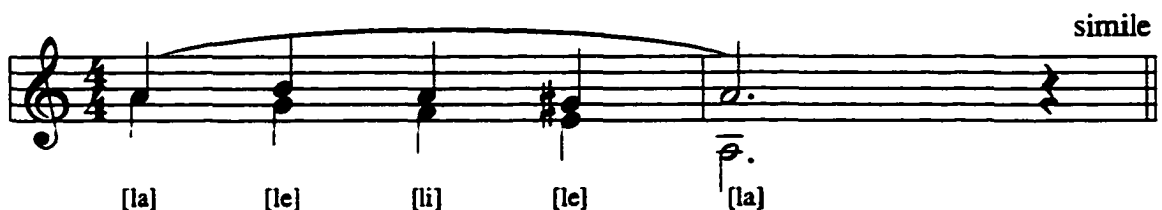
simile

d) *Scalar Elaborations* - After ensemble members can perform unison scales flawlessly, singers should perform two-part parallel scales in seconds, thirds, fourths, and fifths. Conductors may also experiment with three and four-part textures that utilize contrasting motion. The performance of these scalar elaborations will require learners to think vertically as well as horizontally. Conductors who employ these vocalises must not derail the ensemble's attention away from the target concept by switching the learner's attention to the tuning of simultaneous intervals larger than a second. While these vocalises may also enable the development of this skill, their utilization in the given context distracts the learner's attention away from the target performance concept. Conductors who break systematic instructional cycles inhibit the learner's development of well-defined mental representations and thus inhibit transfer.⁵

Strategies: Guiding Thinking That Induces Transfer

Plorate filii Israel, by Giacomo Carissimi (Rehearsed and performed during the first half of the fall semester)

1. Vocalise as a "Base" for Transfer - Precede the introduction of this work by performing a vocalise that utilizes a melodic minor pattern. Encourage students to listen carefully to the lowered sixth and seventh degrees upon descent and the raised leading tone that precedes the ascent to tonic.



2. Pattern Recognition - Draw the ensemble's attention to the alto part, measures 12- 23, and call on individuals to identify every half-step in this line.

3. Transfer Application: Unison Segment - Perform this line (alto mm. 12-23) in unison on a pure [u] vowel (perhaps [du]) instead of the text. When focusing on the "tuneful steps" performance concept, it will be absolutely essential that novice learners first demonstrate the ability to accurately sing lines on a single, well-shaped vowel before

⁵See Yarbrough and Price, "Sequential Patterns."

attempting to sing multiple vowels in an unfamiliar language. Immediately correct all inaccurate stepwise motion and insure that singers perform a legato, well-supported line. Conductors may choose to transpose the line so that sopranos and tenors will be in a more comfortable tessitura. Continually reinforce how widening ascending steps and narrowing descending steps enables precise intonation. The progression between the performance of the vocalise and this line should be smooth and immediate. Both tasks should receive identical treatment in terms of musical and technical expectations.

4. *Transfer Application: Tutti Segment* - Draw the ensemble's attention to the opening eleven measures and ask them to locate each half step within their lines. Probe their understanding by calling on individuals to locate half steps. Perform this section in six parts on [lu] making sure that all steps are accurate and lines are well-shaped. Remind ensemble members that this work is built on many patterns found in the opening vocalise.

***Nolo mortem peccatoris*, by Thomas Morley**
(Rehearsed and performed during the second half of the fall semester)

1. *Vocalises as a "Base" for Transfer* - Introduce this work by performing vocalises that utilize melodic patterns found in *Nolo mortem*. Warn students to listen for chromatic shifting as they sing. Define and identify *chromatic alteration* and *cross relations* after they experience these concepts. Any attempt to convey definitions before establishing a "base" experience would be ineffective for the novice learner.





To physically distinguish the movement of half and whole steps, teach singers to employ two simple hand signs as they sing: 1) *whole steps and wider* - fingers together, palm turned to the side with the thumb on top and 2) *half steps* - palm turned down with fingers together. These signs would apply equally to ascending and descending motion. Insure that ensemble members always sing pure vowels (the ability to sing a pure [o] vowel will be especially important in this work).

2. Transfer Application: Tutti Segment - After insuring that ensemble members can accurately pronounce the Latin text, perform the opening nine measures (the *cauda* refrain) in four parts. Following this initial reading, ask students to identify where the first vocalise was derived (alto and soprano mm. 6-9). If needed, reinforce the accurate singing of intervals by using the hand signs discussed above. Conductors should correct all instances of inaccurate singing and illustrate how “tuneful steps” facilitates effective intonation.

3. Pattern Recognition - After playing a recording of *Nolo mortem peccatoris*, ask ensemble members to identify all cross relations and chromatic alternations that occur in their voice part. Encourage their understanding with questions. Ask them to examine all of the works in their folder and come to the next rehearsal with five additional examples of cross relations or chromatic alterations.

***Abendlied*, by Johannes Brahms**
(Rehearsed during the spring semester, ensemble members
are beginning to demonstrate transfer of “tuneful steps” without external cues.)

1. *Transfer Application: “Imagined” Performance* - Direct the ensemble’s attention to the soprano line. As the accompanist performs the first stanza (mm. 1-13), have the students silently “sing the part in their minds.” Conductors may encourage students to use hand signs to reinforce intervallic movement. In addition, conductors must insure that the accompanist performs well-shaped phrases. Have individuals or entire sections “think” this passage using appropriate hand signals.

2. *Transfer Application: Unison Segment* - Direct the ensemble to perform the soprano line in unison on a bright [a] vowel. Insure that their singing is legato, and well-shaped. Explore how some half steps “pull toward” the following note (‘f’ to ‘e,’ m. 3) while others “fall away” (‘d’ to ‘c’ sharp, m. 8) from the preceding note.

3. *Transfer Application: Tutti Segment* - Perform the second stanza (mm. 15-27) using [du]. Precede this reading by allowing a few moments for students to mentally review their part. Encourage them to recognize similarities (motives, phrase shapes, harmony) and differences with the opening stanza. Choose a slow tempo but require “forward pulling” lines and consistent demonstrations of “tuneful steps.”

4. *Transfer Application: Entire Work* - Perform the entire work alternating between bright [a] and [u] vowels for each stanza (beginning mm. 3, 15, 29, 39). Expect transfer of “tuneful steps” with a minimum number of external reminders and direct attention to musical similarities and differences within each stanza.

Assessment

1. *Continuous Assessment* - In order to be effective, conductors must constantly assess their ensemble’s performance and provide appropriate feedback. This assessment

process identifies numerous “problem tasks” (tasks that need improvement), prioritizes their importance, determines the most vital problem to address, diagnoses the cause of this target problem, and offers instruction that is designed to improve performance. The success of teaching strategies completely depends on a conductor’s assessment skills. Conductors who are not able to efficiently recognize, prioritize, and diagnose problems, will be unable to implement effective instruction.

2. *External Assessment* - Conductors and ensembles will significantly benefit from the assessment of outside sources such as guest clinicians and festival judges. Conductors should always solicit assessment from well-respected experts.

3. *Individual Assessment* - Conductors should design “transfer exams” to be offered at the end of each semester. It is unfortunate that graded assessment tools are rarely used by ensemble conductors in academic settings. Their use reinforces the conductor’s expectation for transfer and the development of targeted performance skills. To be most effective, students should clearly understand at the beginning of the academic year what will be expected of them on these exams. For instance, at the close of the fall semester students would be required to label in written form all whole and half steps from a work they have not seen and accurately perform a section from a work presently under rehearsal. At the close of the spring semester they would be required to identify all whole and half steps in an unfamiliar, highly chromatic work and accurately perform a section from an unfamiliar work of moderate difficulty. Conductors should design these exams to assess student performance on all target performance concepts. No attempt should be made to require skills that have not been supported by extensive rehearsal instruction. This test will establish a clearly defined “performance standard” for all ensemble members and offer conductors an objective view of each student’s learning.

College Choir Target Objective #2: “Speech Singing”

After two readings of a given work, future performances will appropriately reflect the inherent speech inflection of words, phrases, and entire formal units.

Performance Concept: Utilize the natural speech inflection of a text to influence the shaping of musical lines and formal units.

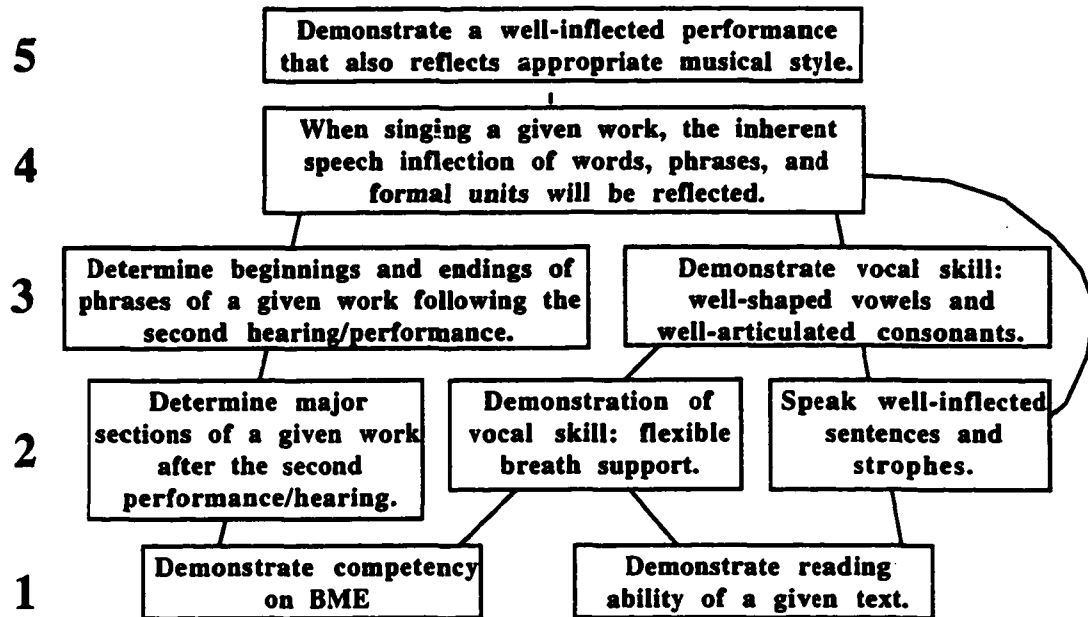
Conceptual Tag: “Speech Singing”

The spoken word, independent from its musical setting, exhibits inherent properties of rhythm, meter, pacing, and phrase shapes. Although not applicable to every choral work, most choral compositions are strongly influenced in some fashion by the rhetorical properties of its text. In fact, a particular text (poem or prose) is often the initial stimulus that influences the composition of a choral work. Given this fact, conductors and ensembles will benefit from an understanding of how speech rhythms influence and interact with musical phrases and formal units. Conductors must also anticipate problems that may arise when performing translations. For example, the knowledge of a text’s form often discloses the structure of its musical setting. Although the manner in which composers display this influence varies widely, the pursuit of choral excellence will be enhanced by an understanding of how the natural inflection of a text influences and relates to the musical properties of its setting.

Task Analysis

Figure 4.4 illustrates a learning hierarchy for the “speech singing” target objective.

Figure 4.4

"Speech Singing" Learning HierarchyLearning Set Elaboration

1. In order to meet this objective, learners must possess the basic understanding of musical notation required by the BME and demonstrate an ability to pronounce a given text. Of course, when learners confront a text in an unfamiliar language, they will rely on the conductor for this knowledge.
2. Learners must be able to identify the major sections of a musical work with minimal prompting from the conductor. In addition, they must be able to effectively perform flexible vocal lines that feature a hierarchy of stresses and relaxations that generate complete phrases, phrase groups, and formal units. This ability will require breath support skill. Learners must also be able to recite a given text so that sentences and strophes are well-inflected.
3. Learners must be able to identify the beginnings and endings of musical phrases with minimal prompting from the conductor. In addition, the learner must be able to perform accurate, pure vowels and well-articulated consonants.
4. When singing a musical work, learners must utilize the natural speech inflection of a text to influence the shaping of musical lines and formal units.
5. (Advanced level, a goal for future development) As learners develop stylistic knowledge about individual composers and stylistic eras, their "speech singing" should also reflect the appropriate style of a given work.

As was true for “tuneful steps,” demonstrating transfer of the “speech singing” objective also requires learners to utilize all four types of learning:

Declarative Knowledge - Learners must comprehend the following musical and technical concepts: meter, cadence, phrase, formal unit, vowel, consonant, and diaphragmatic-costal breathing.

Intellectual Skill - Learners must demonstrate competence performing musical notation, determining phrase and section lengths and “destination points (the point of climax for a phrase and/or formal unit),” and performing a “well-inflected” text.

Psychomotor Skill - Learners must demonstrate the necessary vocal skill (breath support, diction) to perform flexible vocal lines that appropriately portray the natural inflection of a given text.

Attitude - Learners must affirm the important role of communication in singing. Singers must value communication and concern themselves with the relationship between a given text and its musical setting. An understanding of this relationship will enable singers to effectively communicate the content, form, and dramatic essence of a musical work.

Prior Knowledge

During the entrance audition, conductors should require students to recite a brief stanza of text to evaluate their rhetorical ability. In addition to its assessment value, this task will signal the importance of this skill to students. In addition, conductors should consider vowel purity and the effectiveness of text inflection during sight reading to predict prior knowledge in this area. Level four competence (see Appendix I-A) demonstrates adequate skill in each area. Low total scores in any of these skills indicates the need for extra instructional support in that area.

A BME Supplement may also be used to further gauge the student’s ability to identify phrase shapes (beginnings and endings, destination points) and larger formal units. For instance, students could be provided with musical examples and asked to identify phrases, large sections, and phrase destination points. Given that a large number of ensemble members have only a rudimentary level of musical training, many students will require instruction support to develop these skills.

Strategies: Directing Attention

1. *Positive and Negative Examples* - Play two recordings of a familiar work for the ensemble by following an excellent performance with an ineffective performance. Discuss how each ensemble communicates the “shape” of the text and musical phrases. If students do not recognize differences between these recordings on the first hearing, replay selective portions following the initial discussion to reinforce the contrast. Express a desire to accomplish the performance level exhibited by the excellent recording.

2. *Attitude: Link Concept to Primary Goals* - Introduce the “speech singing” performance concept as one of the most powerful tools to enable the fulfillment of three of the ensemble’s general goals. Describe how making a quality recording, winning an invitation to a festival, and communicating the “dramatic essence” of musical works will require the consistent application of this concept. For instance, effective performance of this concept will enhance communication, drama (portray relationship between text and musical setting), and the perception of musical form. Invite ensemble members to identify additional ways that this approach could enhance artistic singing. Stress that “well-shaped” and convincing text inflections are expected at all stages of learning.

3. *Visual Reinforcement* - Draw attention to an attractive poster containing the target objective, performance concept, and conceptual tag. This poster will remain in the choral rehearsal room the entire year to reinforce the conductor’s expectation for the transfer.

Strategies: Guiding Thinking That Induces Transfer

Plorate filii Israel, by Giacomo Carissimi
(Rehearsed and performed during the first half of the fall semester)

1. *Vocalise “Base” Training* - Introduce the following vocalise to enhance the flexible development of breath support.



2. Pattern Recognition: The Text - Provide students with the work's text in the following manner:

Plorate filii **Israel**,
Plorate omnes **virgines**,
Et filiam Jephthe **unigenitam**

In carmine doloris lament**amini**.

Weep, you children of Israel,
Weep all you virgins,
Lament the loss of Jephthah's only
child

In songs of mourning lament.

Speak the first three phrases of Latin text taking care to treat the opening syllables of the final words of the first two phrases as "mini-goals" (slight emphasis) that lead to a stronger *point of destination* on the bolded syllable of "**unigenitam**." Have the ensemble and individuals echo your performance. Insure that they can quickly understand and perform this hierarchy of stresses so that phrases unfold as one idea climaxing on "**-genitam**" and "**-tameni**." Emphasize that the communication of text stresses is better controlled by deemphasizing weak syllables versus overemphasizing moments of stress. In order to guard against the derailment of target objective instruction, delay correcting more subtle pronunciation mistakes until the ensemble can consistently recite well-inflected lines.

3. Vocalise as a "Base" for Transfer - Have the ensemble chant the text utilizing the following melodic pattern:



Ask students to hypothesize how a composer might set this text to rhythm. In addition, encourage students to suggest an appropriate meter for this text.

4. **Transfer Application: Entire Work** - Introduce the score to the ensemble and briefly compare the students' ideas with Carissimi's setting. Invite them to locate each phrase and discuss how the musical form relates to the text. Have students recite the first phrase in notated rhythm but with correct inflection. Insure that all weak syllables are deemphasized, especially the final two syllables of "Israel." When students can successfully recite the text in rhythm, perform the entire movement insisting on effective demonstration of the target objective.

Nolo mortem peccatoris, by Thomas Morley
(Rehearsed and performed during the second half of the fall semester)

1. **Pattern Recognition** - Provide students with a version of the text that does not contain structural cues such as indented phrases or underlined destination points. Ask individuals to recite the text with attention to well-shaped inflection.

Nolo mortem peccatoris;
Haec sunt verba Salvatoris.

Father, I am thy only son,
Sent down from heaven mankind to save.
Father, all things fulfilled and done
According to thy will, I have.
Father, my will now all is this:
Nolo mortem peccatoris.

Father, behold my painful smart,
Taken for man on every side;
Even from my birth to death most tart,
No kind of pain I have denied,
But suffered all and all for this:
Nolo mortem peccatoris.

Ask students to identify key structural patterns: a) Is there a phrase that reoccurs? b) If so, what is the function of this phrase? c) Is each line an individual idea or does a regular pattern of line groupings exist? d) Are phrase destination points consistently on the last word or do some occur before the final word? For instance, should the fourth line of the first strophe be performed "According to thy will, I have" or "According to thy will, I

have” or perhaps, “According to thy will, I have.” e) Which line(s) or word(s) suggest a vivid musical setting? Develop this last question by introducing the concept of “text painting.” Draw attention to examples of this technique from works that students already know.

2. Transfer Application: Tutti Segment - Have the ensemble perform the opening phrase of the first “verse” (mm. 10-17) with proper inflection. Insure that the weak syllable of “Father” is executed gracefully and with precision. Also make sure that each line pulls to “save” in measure 17.

3. Transfer Application: Entire Work - Draw students’ attention to the following questions before they perform the entire work: a) How many big sections does this work have, two or three? b) Where are all of the important destination points? c) Where does Morley use text painting and how does he dramatize the text? Following the performance, encourage their understanding of these points with pertinent questions. After the ensemble discovers the work’s formal structure, the conductor should reinforce this knowledge by constantly referring to key structure points during rehearsal. Instead of using measure numbers to direct attention, conductors can instruct members to begin at “the second phrase of the ‘B’ section” or “the return of ‘A’ material.” This technique also encourages singers to actively *think* about how each phrase and section is related.

Abendlied, by Johannes Brahms

(Rehearsed during the spring semester, ensemble members are beginning to demonstrate transfer of “speech singing” without external cues.)

1. Pattern Recognition - Starting from the score, speak the first stanza phrase by phrase in German and have the ensemble echo the conductor’s inflection and pronunciation (mm. 3-6, 7-11). Insure that each phrase is well-shaped with a fluid and dynamic sense of legato. Keep the ensemble focused on the “speech singing” objective and only correct obvious diction mistakes. Make sure the ensemble understands that the answers to all of

their diction problems will be easier to fix after they have internalized the phrase shapes of each section.

2. Transfer Application: Unison Segment - Have all parts perform the soprano line of stanza one in unison (mm. 3-11). It will be assumed that the ensemble has spent some time performing the parts of this work on selected vowels. Insure that the combination of text and music does not disturb the performance of musical phrase shapes that have already been established.

3. Pattern Recognition - Demonstrate the pronunciation and inflection of stanzas two, three, and four and encourage the ensemble to echo the conductor's performance model. Ask ensemble members to determine the total number of large sections within the work and the number of phrases within each section.

4. Transfer Application: Entire Work - Draw students' attention to the following questions as they perform the entire work: a) How many phrases/destination points are in the second stanza? b) Can you identify two dramatic and unexpected moments in the work where Brahms confounds your expectations? c) This work is filled with many subtle and some not-so-subtle examples of text painting. Can you find some of these examples?

Assessment

1. Develop Reflective Skills - Regularly play recordings of brief works (2-3 minutes, twice a week) for the ensemble. Discuss and evaluate each ensemble's ability to accomplish "well-inflected" singing. These choirs should provide a wide range of positive and negative examples of the target objective. After the conductor models this reflective process through example and discussion, require ensemble members to evaluate performances in writing utilizing the form in Appendix III-A. In addition to the use of guest choir recordings, ensemble members should also evaluate recordings of their own singing. This evaluation procedure could be used to assess most aspects of choral singing.

2. *Individual Assessment* - Evaluate “speech singing” skill during the transfer exams given at the close of each semester. During the fall semester, students would perform a familiar work in solo quartets. During the spring semester they would perform a work in quartets that has been rehearsed only one time during regular practice periods. Students will be expected to perform musical phrases and complete sections that are well-inflected. Conductors should emphasize that these experiences are designed to establish a performance standard for the entire ensemble. In addition, they offer an objective assessment of the ensemble’s learning.

Choral Setting II: A Community Choir

The second choral setting to be discussed features a ninety-voice community choir. This ensemble rehearses once a week for two hours and prepares two complete programs each year. Although a large majority of the ensemble are adults between the ages of thirty and sixty five, a small number of high school and college students also participate. In order to join the ensemble, singers must be at least sixteen years old and pass an audition. Appendix I-A outlines the content of this audition. In addition, all members are required to take a Basic Musicianship Exam (BME) found in Appendix I-B. Singers who do not demonstrate competency on this exam are required to attend three general musicianship classes (thirty minute sessions each) held immediately before the first three rehearsals of the season. The audition and BME (or equivalent class work) insure that every ensemble member can demonstrate competency in certain fundamental skills including: vocal production, pitch memory, rhythmic performance, metric awareness, written identification of diatonic intervals, and familiarity with important musical symbols and terms.

Members of this ensemble possess a wide range of musical training and experience. While many have only minimal reading skills, about ten percent are music professionals. Approximately sixty percent of members have been in the ensemble for more than eight

years. However, fifteen percent are new singers who have not participated in a skilled choral ensemble in many years. Although the ensemble contains a small number of expert learners, the vast majority of singers are novice learners.

In contrast to the academic college choir setting, the relationship between conductor and ensemble in this setting is not governed by a professor-student social structure. For example, many community choir members are likely to be older than the conductor and none will be required to participate in the ensemble as music majors are often required to participate in college ensembles. In addition, community choir members will not be individually evaluated following the end of a semester. Due to these factors, the conductor of the community choir relies more heavily on motivational strategies than the college choir conductor. However, this does not mean that motivation does not play a critical role in college choir learning or that community choirs must accept lower performance standards. In fact, performance standards and expectations should be equally high in both contexts.

The community choir typically performs major choral works. During its winter concert, the choir will perform *The Creation*, by Joseph Haydn (1732-1809). The spring concert will feature Felix Mendelssohn's (1809-1847) *There shall a star from Jacob come forth* and Maurice Duruflé's (1902-1986) *Requiem*. The following discussion of transfer strategies will be applied to the rehearsal and performance of Haydn's *Awake the harp* (from *The Creation*, Appendix II-D), Mendelssohn's *There shall a Star from Jacob come forth* (Appendix II-E), and Duruflé's *Kyrie II* (from *Requiem*, organ and choir version.)⁶

The ensemble and conductor have established four general goals: a) To improve fundamental *breath support* skills; b) To improve *balance* (with the orchestra and within the ensemble) by recruiting more men and by developing resonance skills that address this concern; c) To "make a connection" with audience members by *communicating* the

⁶Permission was not granted by the publisher to place a copy of this movement in the appendix.

“dramatic essence” of each work; and d) To enhance general *clarity* by improving pitch accuracy, well-blended vowels, and “goal-directed” singing. Goal directed singing can be understood as a performance method that directs the listener’s attention to the most essential material within a line or texture.

When considering possible target objectives, conductors should enhance instructional efficiency by selecting target objectives that are mutually supportive. Not only does this approach save rehearsal time by facilitating the combined presentation of objectives, it also helps learners perceive how different skills can be mutually supportive. In contrast to the previous discussion of transfer strategies which individually described two target objectives, the balance of Chapter Four simultaneously discusses two related target objectives. This combined treatment demonstrates how transfer strategies effectively support multiple performance objectives.

Community Choir Target Objectives

Target Objective #1

When performing musical lines that require singing in high and/or low tessituras, singers will maintain balanced resonance throughout diverse registers and textures.

Performance Concept: Increase resonance space as lines ascend into a high tessitura and brighten vowels as lines descend into a low tessitura.

Conceptual Tag: “Equal Ring”

Target Objective #2

When performing polyphonic textures, voice parts that convey significant material will often predominate over parts that convey less significant material.

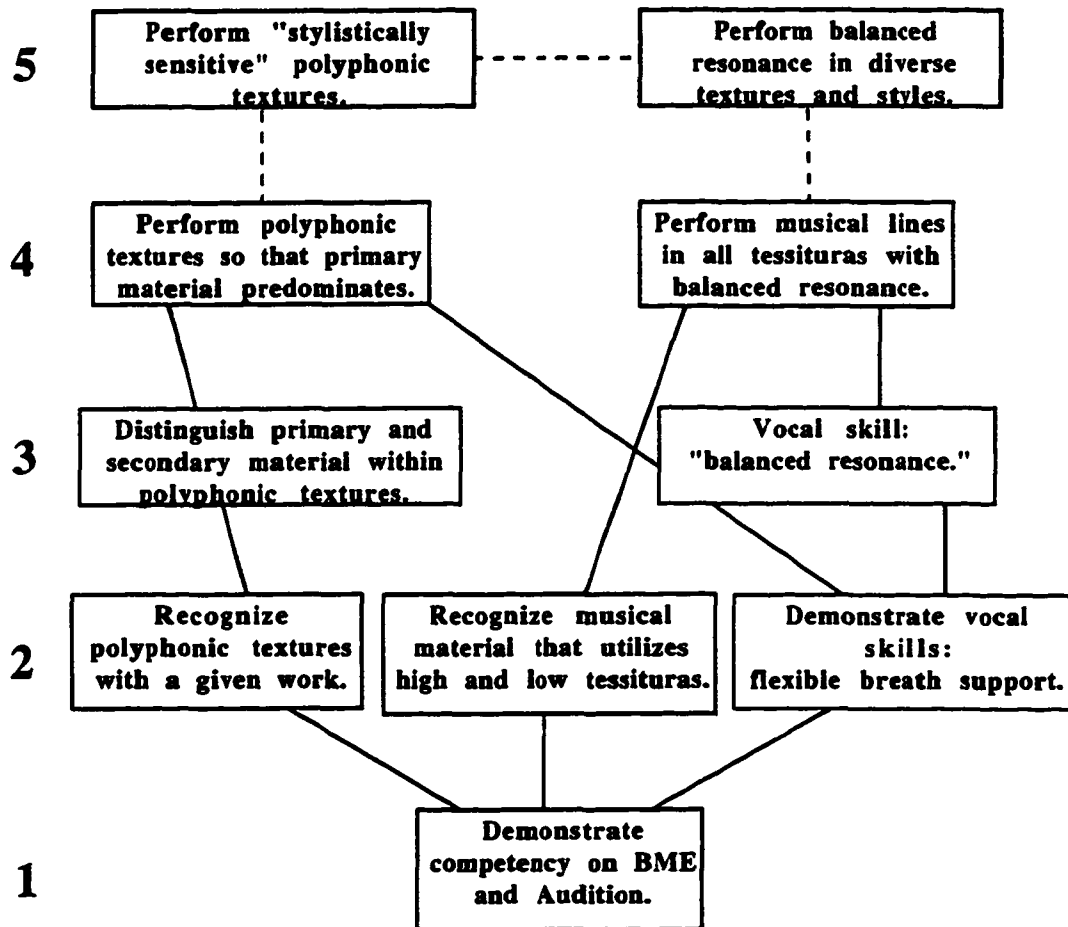
Performance Concept: When singing polyphony, identify and consider the relationship between primary and secondary material.

Conceptual Tag: “Highlighting”

Task Analysis

Figure 4.5 illustrates a learning hierarchy for both target objectives.

Figure 4.5 *"Highlighting" and "Equal Ring" Learning Hierarchies*



Learning Set Elaboration

1. In order to meet these objectives, singers must pass an entrance audition and demonstrate the basic understanding of musical notation and concepts required by the BME or equivalent musicianship classes.

2. While observing a score, learners must be able to identify polyphonic textures and recognize when their voice part utilizes a high or low tessitura. In addition, they must demonstrate a level of vocal skill that enables them to perform well-supported lines that frequently change registers.

3. When observing a polyphonic texture, learners must be able to distinguish primary material from secondary material. In addition, they must be able to subtly modify vowel shapes by brightening descending lines and darkening ascending lines. Singers darken their vocal resonance by slightly “covering” or enhancing vertical vowel space. Enhancing a sense of “forward placement” or horizontal vowel space brightens vocal resonance. Conductors who dislike the terms “bright” and “dark” may substitute alternate terms. The actual labels that are used are less important than the ensemble’s understanding of the performance techniques associated with labels.

4. While performing choral music, learners will sing with “balanced resonance” so that their performance of polyphonic textures allows primary material to predominate.

5. (Advanced level, a goal for future development) Learners will modify their “balanced resonance” to stylistically interpret all types of musical textures.

As expected, demonstrating transfer of the “equal ring” and “highlighting”

objectives requires learners to utilize all four types of learning:

Declarative Knowledge - Learners must comprehend the following musical and technical concepts: texture, polyphonic, homophonic, primary and secondary material, resonance, placement, vowel space, diaphragmatic-costal breathing, and tessitura.

Intellectual Skill - Learners must demonstrate competence performing musical notation, identifying primary and secondary material within polyphonic textures, and recognizing musical passages that utilize a high or low tessitura.

Psychomotor Skill - Learners must demonstrate the necessary vocal skill (breath support, free phonation, vowel modification) to perform with “balanced resonance” in all tessituras.

Attitude - Learners must affirm that the needs of the ensemble outweigh the personal preferences of individual members. Each learner must be willing to modify personal behavior to support unified and appropriately balanced musical outcomes. For instance, they must choose to modify vocal resonance to support the interpretive demands of “the moment” and assume personal responsibility for identifying and accentuating all entrances of primary material within polyphonic textures.

Prior Knowledge

Conductors evaluate the vocal skill of individual singers during the entrance audition (See Appendix I-C). In addition to a general evaluation of resonance and breath support skill, they should assess each person’s high and low tessitura singing. This

information may prove helpful when tabulated by individual sections. For example, conductors who are interested in their ensemble's "blending" potential might consider their tenor and soprano's ability to support and modify high tessitura singing and their bass and alto singer's ability to modify middle and low tessitura singing. Conductors who identify low total scores in one or both of these areas should make plans to cultivate these underdeveloped skills.

Since the performance of these target objectives requires familiarity with certain key concepts and procedures (see Declarative Knowledge section above), conductors should probe their ensemble's understanding of these areas in a BME Supplement. Ensemble members should be asked to define certain concepts,⁷ demonstrate the ability to identify and distinguish between homophonic and polyphonic textures, recognize when musical passages require high and low tessitura singing, and identify all appearances of primary material within an unfamiliar polyphonic work. Even when learners are not familiar with these concepts or procedures, participating in the examination effectively draws their attention to these tasks and provides a good starting point for instruction. The evaluation of statements designed to elicit learner dispositions may also be used (see pages 81-82).

Strategies: Directing Attention

1. *Positive and Negative Examples* - Play two recordings of short works or movements from larger works for the ensemble. Present them in the following manner:

Example #1: (Negative) A recording of a past performance by the ensemble demonstrating a need for improvement of target objectives.

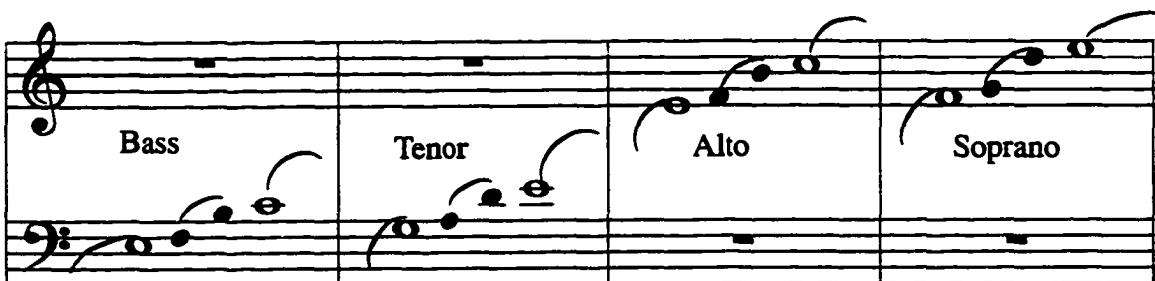
Example #2: (Positive) A recording of a past performance by the ensemble demonstrating an effective performance of target objectives.

⁷Including: resonance, polyphony, homophony, head voice, texture, diphthong, and principal versus secondary material.

Guide a brief discussion comparing the two recordings. Help ensemble members *experience* how and why an effective performance of both objectives enhances their choral singing.

2. *Attitude: Link Concepts to Primary Goals* - Introduce “equal ring” and “highlighting” as two essential tools that enable the fulfillment of ensemble goals. Emphasize how both target objectives enhance musical balance and clarity. In addition, stress how the performance of these target objectives helps bring to life the “dramatic essence” of a musical work. Insist that members demonstrate a willingness to modify personal preferences and behavior to support unified and well-balanced performances. Finally, encourage them to identify additional ways that the accomplishment of these target objectives will foster improved performance.

3. *Visual Reinforcement* - Draw attention to two posters that illustrate the target objectives, performance concepts, and conceptual tags. The “equal ring” poster should include the following guide that clearly outlines each section’s low, middle, and high tessituras.

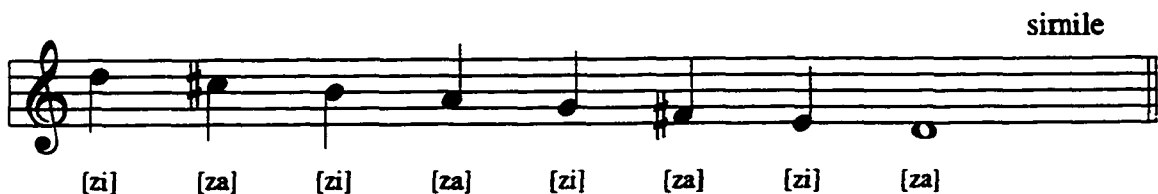
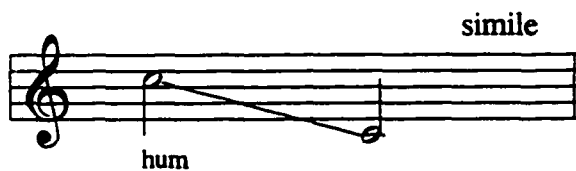


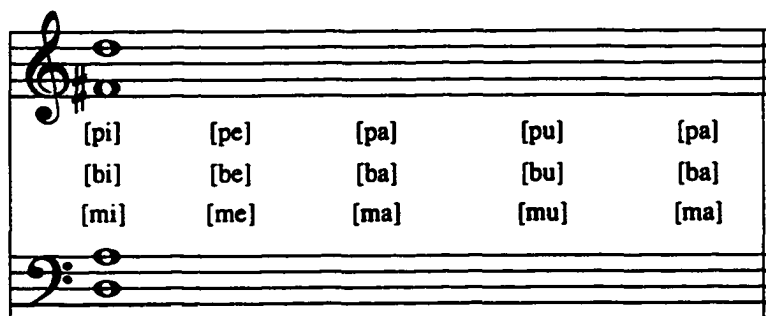
These posters should remain in the choral rehearsal room the entire year to reinforce the conductor’s expectation for transfer of these target objectives.

4. *Multiple Examples* - While drawing members’ attention to various choral movements within *The Creation* including *Awake the Harp*, ask them to identify specific textures. Invite members to examine further movements on their own and locate two

examples each of homophony and polyphony. Identify and describe “blended” textures that include characteristics of both textures (i.e. *Awake the Harp*, mm. 7-9, homophony with imitation between soprano and bass; mm. 48-53, homophony with melismatic elaborations). In addition, discuss the implications for performance that a given texture should stimulate. For example, the identification of polyphonic textures, or imitation within homophonic textures, should immediately stimulate the “highlighting” objective while vertical tuning strategies should be applied to homophonic textures.

5. Vocalise “Base” Training - Perform the following vocalises to develop breath support, resonance, and “equal ring.” Continually remind singers why and how the effective performance of these vocalises (i.e. gradually brightening descending lines) will enhance their ability to perform musical works.





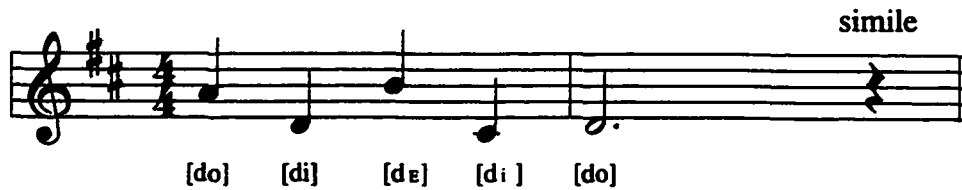
Strategies: Guiding Thinking That Induces Transfer

Awake the Harp, by Joseph Haydn
(Rehearsed and performed during the winter portion of the season)

1. Pattern Recognition - Invite members to scan the movement and identify all sections that utilize high or low tessituras. Providing them with the following clue, “this movement contains three sections,” ask them to identify the length of each section and determine their predominate textures.

2. Vocalise as a “Base” for Transfer - Perform the following vocalises making sure that members always sing a bright, forwardly placed vowels. Encourage singers to “carry over” the brightness and “point” of the [i] vowel into the [o] and [E] vowels. The alternation between open and closed vowels also introduces a natural sense of metric hierarchy that should be continued when the text is performed. Insist that singers always perform pure [o] vowels and resist singing diphthongs. These vocalises also have a prerequisite relationship.





After the ensemble satisfactorily performs these vocalises, pair the alto/bass and soprano/tenor voices and ask them to sing the fugue subject in their range with text. When singing the word “earth,” make sure that singers drop the [r] and keep the vowel bright and forwardly placed.

3. *Pattern Recognition* - Invite the accompanist to perform the fugal section vocal parts (mm. 11-42) and ask members to identify and mark each theme entrance in their part. Warn members how to distinguish “false” (alto and soprano mm. 23-26) from “real” statements of the primary theme. Encourage them to also coordinate this information with their earlier identification of high and low tessitura singing. Following confirmation of all theme entrances, perform the section again and invite members to sing only the theme entrances with text. If singers are unable to maintain “balanced resonance” at first, have them use the [o] and [i] vowels as in the earlier vocalise. Identify those sections when the application of “equal ring” facilitates “highlighting (i.e. bright low notes-altos mm. 15-16, bright low notes-basses mm. 18-19, rounded high notes-sopranos mm. 21-25, bright low notes-tenors mm. 26-27, bright low notes-altos and basses mm. 37-38).”

4. *Transfer Application: Tumi Section* - Perform the fugal section with text making sure that ensemble members demonstrate competence on both performance objectives. If members do not consistently deemphasize the performance of secondary material, invite them to sing all primary themes with text and all secondary material on [du] or some other closed vowel.

There Shall a Star from Jacob Come Forth, by Felix Mendelssohn
 (Rehearsed and performed during the spring portion of the season)

1. Vocalise as a "Base" for Transfer - Using the primary theme as an interpretive model, perform the following vocalise. Insure that their singing is legato, well-shaped, and that "equal ring" is evident. In particular, make sure singers produce bright low pitches (mm. 1 & 3) and free, open top notes. Encourage singers to imagine that all three vowels emanate from the same high and forwardly placed focal point within their mouth.



2. Transfer Application: Unison Segment - After members can satisfactorily perform the vocalise, invite them to sing the primary theme (mm. 2-8) with text. Insure that they continue to demonstrate "equal ring."

3. Transfer Application: Tutti Segment - Invite members to slowly perform the end of the 'B' section (mm. 53-63) on [dæ]. Eliminate all eighth notes and insure that each chord is "well-tuned." During the initial half of this section (to about m. 57), insure that all vowels are spacious and round. However, singers should begin "brightening" their vowels following measure 57 (especially the altos and basses) as they descend into a low tessitura.

4. Pattern Recognition - Invite members to scan the work and identify a) all passages that utilize high or low tessituras, b) all non-imitative sections (homophonic), and c) all primary theme entrances (basses and sopranos-6 total, altos-2, tenors-4). During a brief discussion, stress that this work is mostly polyphonic and encourage members to

identify when the “equal ring” objective effectively supports the “highlighting” objective (basses-mm. 21-28, tutti-mm. 53-63).

5. *Transfer Application: Entire Work* - Invite members to perform all primary theme statements with text and all other material on [du] to enhance clarity. Expect them to demonstrate the target objectives as they sing. Encourage them to “be aware” of each primary theme appearance as they sing. Only sing all material with text after ensemble members become familiar with the work’s architecture. The need to deemphasize secondary material will be more pressing than the need to strengthen primary material.

Kyrie II, by Maurice Duruflé
(Rehearsed and performed during the spring portion of the season)

1. *Pattern Recognition: Large Scale* - Provide ensemble members with a vocal score, the original chant melody, and a brief description of Duruflé’s compositional style. Play a good recording of *Kyrie II* for the ensemble and ask the singers to answer the following questions: a) How many large sections do you hear? Where do they occur? How do they relate to each other (‘A’ mm. 1-26, ‘B’ mm. 26-48, ‘A1’ mm. 49-74)? b) Choose one of the following terms to describe the movement’s texture - polyphony, polyphony alternating with homophony, elaborated homophony, or homophony; and c) How does Duruflé use the chant melody to construct this movement (‘A’ = ‘a’ mm. 1-17 & ‘b’ mm. 18-26, ‘B’ is free material, ‘A1’ = ‘c’ mm. 49-60 & ‘a’ mm. 61-74)? Although their scores only contain the vocal parts, singers should be reminded that the organ may also perform important material. Many ensemble members will need help answering these questions. Some conductors may choose to simplify the challenges posed by the questions by presenting answers in a finished form (pre-marked parts or required marking of parts according to a fixed “answer model”). However, this approach encourages a relatively passive role for the learner. The discovery method outlined above initiates thought

processes within the learner that are self-generated, active, and meaningful. Encouraged by the conductor and experts within the ensemble, members should be challenged to discover all of these answers with only minimal prompting. If singers do not have difficulty determining the work's formal outline, the conductor should also describe the relationship between the vocal elaborations and organ cantus firmus in measures 10 through 18 (elaborated 'b' accompanies 'a' *cantus firmus*). Conductors should insure that this discussion stays focussed only on the most pertinent information that will enable transfer. Lengthy, unfocused discussions will only waste valuable rehearsal time.

2. Pattern Recognition: Small Scale - Invite members to scan both 'A' sections (mm. 1-26, 49-74) and identify each appearance of primary material within their part. Ask them to pay special attention to those moments when primary material is sung in either a high or low tessitura (bright, low notes-basses mm. 10-13; bright, low notes-altos mm. 11-13; round, high notes-tutti mm. 18-20, 49-63).

3. Vocalises as a "Base" for Transfer - Perform the following vocalise to promote legato singing and round, spacious [i] vowels. Encourage singers to imagine more [a] "space" in their [i] vowels.



4. Transfer Application: Tutti Segment - Invite members to perform both 'A' sections singing all primary material on [li] and all secondary material on [lu]. Insure that all lines are *molto legato*, vowels are well-formed, and all primary material predominates. In the early stages of learning, singers will need to be reminded to lighten their performance of secondary material. However, expect them to demonstrate "equal ring" and "highlighting" from their initial performance.

5. *Transfer Application: Entire Work* - After the ensemble can satisfactorily perform both 'A' sections on selected vowels, perform the entire work with the text. Encourage and expect the transfer of both target objectives.

Assessment

1. *Developing Reflective Skills* - Regularly play recordings of their own singing and invite members to evaluate their collective ability to demonstrate "equal ring" and "highlighting." In addition, selected members can "sit out" of rehearsals to evaluate the ensemble's performance. To encourage active participation, require them to make evaluations in writing (see Appendix III-B). This process should generate improved evaluation skills and stronger levels of motivation as members recognize improvements in the ensemble's performance. Since individual singers often have difficulty perceiving the true sound and balance of the ensemble, this opportunity for self-evaluation is extremely valuable. After establishing high expectations at the onset of learning, the conductor should overtly and covertly encourage singers to embrace these expectations as they evaluate and improve their performance.

2. *Individual Assessment* - Since members do not participate in the community chorus to satisfy a requirement or receive a grade, conductors should avoid establishing individual assessment requirements beyond the audition. However, some ensembles may choose to adopt such a tool as a motivational device. While reliance on group-evaluation tools will be less precise than individual assessments, they still provide conductors and ensembles with clear and objective assessments of skill development.

Summary

Since a majority of singers who participate in choral ensembles today are novice musical learners, conductors must not assume that successful performances by these

singers represent demonstrations of meaningful knowledge. Research clearly indicates that novice learners usually fail to generate meaningful conceptual knowledge unless they receive instruction specifically designed to meet this objective. Moreover, experience teaches conductors that an ensemble's familiarity with a particular work or musical style will not predict singers' ability to transfer this knowledge to similar musical contexts. In fact, conductors often voice frustration with the slow learning pace of their ensembles.

While some may attribute this problem to institutional factors such as inadequate support for music education programs and a low level of musical literacy among the population, others might blame the "serious" musicians who insist on performing "old" music that has lost all relevance to modern audiences. A careful exploration of this problem would reveal many possible causes.

This document suggests a different solution to this challenge; conductors who wish to enhance their ensemble's ability to generate meaningful knowledge should infuse their rehearsal instruction with insights gleaned from cognitive science. As conductors understand more about how singers learn, they can more effectively design rehearsal instruction that fosters transfer. The application of these insights will help their singers narrow the gap between novice and expert learners.

These conductors must first and foremost encourage ensemble members to *think* as they perform. In order for learners to exhibit transfer, they must perceive a relationship between existing knowledge and a new learning task. When singers link new learning to familiar concepts and encode this information with possible *knowledge uses*, they "lay the groundwork" for transfer. This process encourages and enables the future perception of conceptual similarity as singers encounter new learning challenges. In addition, conductors should foster learning attitudes that explicitly reinforce a desire and expectation for transfer.

When managed by a skilled conductor, the instructional approach outlined in Chapters Three and Four will create "intelligent," successful choral ensembles whose

members can appropriately transfer existing knowledge and skills to future settings. While this approach is certainly not a “golden bullet” or a prerequisite for success, it does enhance the efficient development of performance skill. The essential “flow” of this approach is outlined below:

Establish Target Objectives

- *Introduce the target objective, performance concept, and conceptual tag (Teaching for Transfer Principles #1 & #2)

Conduct a Task Analysis

- *Decompose the target objective and identify all prerequisite knowledge and types of learning (TTP #1)

Determine Prior Knowledge

- *Describe how to ascertain the ensemble’s relevant prior knowledge (TTP #2)

Strategies: Direct Attention

- *Establish attitudes that support effective performance such as an expectation for transfer (TTP #2)
- *Introduce and reinforce the performance concept with rudimentary learning experiences (TTP #5)
- *Introduce learners to positive and negative examples of the concept (TTP #4)

Strategies: Guide Thinking that Induces Transfer

- *Enable the perception of relevant information patterns (specific intervals, texts, formal devices, etc., TTP #4 & #5)
- *Reinforce these perceptions with simple tasks that function as “bases” of learning from which transfer can occur (TTP #5)
- *Design specific applications that facilitate the transfer of target objectives from the “base” experience to related tasks (TTP #4 & #5)

Assessment

- *Suggest specific tools that enable the accurate assessment of transfer

Some conductors may assert that spending even small amounts of time on the reflective activities outlined above will waste “productive” rehearsal time. In addition, they warn that questioning and discussion techniques slow the pace of rehearsals and ultimately restrict the amount of repertoire that ensembles can learn. They believe that classrooms would be a more appropriate place to use these strategies.

When evaluated from a short-term perspective, the use of questioning, elaboration, and discovery strategies initially requires extra rehearsal time that could slow the outward pace of learning. However, the internal cognitive development present in this stage actively outpaces the “inner” development stimulated by “faster” rote learning environments. When viewed from a long-term perspective, these strategies significantly magnify the “inner” and “outward” speed and acquisition of performance skill. As singers develop transfer skills, ensembles demonstrate the ability to “think ahead” and solve musical challenges without prompting from the conductor. Conductors should view the use of reflective strategies as a *learning investment* that expands their ensemble’s magnification of existing performance skill. When used effectively, this initial investment of time directly translates into improved rehearsal efficiency and musical artistry. In addition, the evaluative techniques involved in this process provide conductors with clear, objective assessments of their ensemble’s capabilities and weaknesses.

A transfer-sensitive environment also encourages ensemble members to become more involved in their learning and make a deeper commitment to the ensemble. In general, people value organizations that satisfy important human needs. Choral environments that foster transfer can offer singers high-quality artistic experiences *and* opportunities for learning that effectively enrich their understanding and appreciation of choral music.

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APPENDIX I-A

Audition Evaluation Form

Name:

Voice Part: B2 B1 T2 T1

Address:

A2 A1 S2 S1

Phone:

Briefly outline your vocal training and experience (also include familiarity with languages):

<u>Vocal Skills</u>	<u>Poor</u>				<u>Excellent</u>
1. Upper Tessitura (range & quality *____)	1	2	3	4	5
2. Lower Tessitura (range & quality *____)	1	2	3	4	5
3. Breath Management & Support	1	2	3	4	5
4. Phonation (freedom & flexibility)	1	2	3	4	5
5. Resonance	1	2	3	4	5
6. Vowel Purity	1	2	3	4	5
					Total: _____
 <u>Performance Skills</u>					
7. Pitch Memory	1	2	3	4	5
8. Sight Reading	1	2	3	4	5
9. Recitation (inflection skill)	1	2	3	4	5
					Total: _____
 <u>Personal Aptitude</u>					
10. General Attitude & Intelligence	1	3	5	7	9
11. Musicality	1	3	5	7	9
Total: _____					
Other factors:					
					Grand Total: _____

*Indicate highest and lowest well-sung note

APPENDIX I-B Basic Musicianship Examination

Metric Awareness (5 points)

Points: _____

1. Identify the appropriate meter or meters for the following examples.



Stepwise Interval Discrimination (14 points)

Points: _____

2. Mark each step in the examples below by connecting all seconds with a slur. Identify each step as a half or whole step by writing a 1/2 or 1 above the slur.

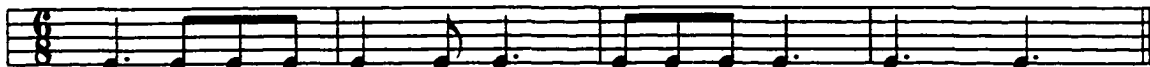


APPENDIX I-B (cont.)

Rhythmic Skills (15 points)

Points: _____

4. Clap the following rhythms. Be sure to maintain a steady tempo.



General Knowledge (10 points)

Points: _____

4. Define the following terms, concepts, or symbols:

forte -

adagio -

soft palate -

mezzo piano -

legato -

<.

meter -

allegro -

ledger line -

diaphragm -

Total Points:_____

(A score of 43 or higher demonstrates competence)

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APPENDIX III-A
“Speech Singing” Evaluations

1. How does the music move and unfold? Describe the qualities of movement (static-forceful, fast-slow, heavy-light, smooth-bumpy, etc.) that you perceive and describe how the ensemble accomplishes this linear and harmonic motion.

2. Can you perceive individual phrases that have clear beginnings, “traveling time,” and destination points? Describe how the ensemble uses (or does not use) the text to shape phrases.

3. Does this performance enhance or detract from the “dramatic essence” of the music? Explain your answer.

APPENDIX III-B
“Highlighting” and “Equal Ring” Evaluations

1. Is this work primarily homophonic or polyphonic? Describe any “combination” textures that might predominate.

2. During the performance of polyphony, can you clearly perceive the primary material and secondary material? Is there a sense of over-all movement toward well-articulated goals or do the textures seem dense and static. Can you perceive how primary and secondary material interact?

3. Evaluate how the ensemble is able, not able, or only sometimes able, to demonstrate “highlighting.”