

MUSIC LEARNING AND LEARNING THEORY

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to the Teaching and Learning of Music

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Music education today is a profession in search of a discipline. The typical program a music education undergraduate follows is a collection of courses which were specifically designed for other, though related, purposes. These are in addition to one or more methods courses, the content of which may have little or no association with the conditions experienced during the student teaching requirement. At the graduate level, advanced methods courses abound, and in most institutions the more traditional historical, philosophical, and social foundations of education adapted to the concerns of musicians are offered in conjunction with courses in allied fields. That one profession, self-governed or not, borrows from, and may even be based on aspects of, another is becoming increasingly common. However, the core of any profession must have substance, and that substance must be more than essential to a given profession. It must be unique to that profession.

It would seem that when music education ultimately evolves into a discipline, what are now referred to as methods courses will have undergone a metamorphosis whereby they will form the core of the undergraduate curriculum. Further, research activities which will produce the content of these methods courses will permeate the graduate curriculum. The content of the methods courses of the future is highly relevant to the issue we are addressing today. Specifically, the content must bear on how we learn when we learn music, that is, learning theory in music. A brief discussion of the content of traditional methods courses followed by a prescription for the content of the theoretical and pragmatic methods courses of the future will serve as an introduction to my assigned topic.

By definition, a method is a procedure for accomplishing something. In music education, a teacher may embrace the objective of teaching children to be musically literate. To accomplish this objective, the teacher becomes concerned, for example, with whether letter names, numbers, or syllables should be used and

what literature is appropriate. Clearly, the first concern is a matter of techniques and the second is a matter of materials; neither can be thought of as method. Method takes on significance when the teacher becomes concerned with the sequential relationships among objectives in a course of study. The following illustrative questions are indicative of the need of a sequence of objectives: 1) Should children first learn to hear and perform by rote what they are expected to read and write in music notation? 2) Should children learn to read music notation before they learn to write music notation or should the two be learned concurrently? 3) Should children learn to aurally recognize familiar tonal and rhythm patterns before they attempt to aurally indentify unfamiliar tonal and rhythm patterns? 4) Should children learn tonal patterns before rhythm patterns or rhythm patterns before tonal patterns, or should the two be learned concurrently? 5) Should children learn to create and improvise music, with or without instruments, before they learn to interpret music composed by others? 6) In conformity with phylogenetic, rather than ontogenetic, theory, should children be exposed to pentatonic music before diatonic music? 7) Should music theory be taught as introductory material or culminating material, or not at all in the music curriculum?

Techniques and materials are properly thought of in terms of appropriateness to chronological age, whereas method is properly thought of in terms of appropriateness of sequentiality of objectives regardless of chronological age. The determination of sequence of objectives, that is, method, is based on learning theory. At present, typical methods courses are concerned primarily with techniques and materials courses will be supplementary to the methods courses. Once research comes to bear on learning theory in music, a body of knowledge which pertains to the proper sequencing of objectives will be established; this body of knowledge will become the content of methods courses; students will be in

a position to select or develop for their own use one or more appropriate methods to accomplish series of objectives; and the emergence of music education as a discipline within a profession will be assured. With this concept of method in mind, we need to discuss the kinds of questions that should be answered and how we might together, music educators and psychologists, plan to acquire such answers. ✓

Over the years there have been music educators, and there still are some, who were aware of the important role of learning theory in music education. Try as they did to interpret and apply the writings of psychologists, for the most part they were dissuaded by the Gestalt S-R controversies. It would seem that the music educators did not become cynical about the value of learning theory to music but rather that they became skeptical of the isolated principals of learning with which psychologists have been historically concerned: the isolated principles of learning masqueraded as being contiguous and thus as constituting a learning theory. Cognitive psychologists have done little to remedy the situation. Acousticians occasionally tried to fill the void but it soon became apparent that psychoacoustics, not simply perception or acoustics, was the discipline more relevant to music education. But psychoacoustics and, if you will, cognitive psychology and semiotics, are relatively young and as yet they have not offered much to music educators except general ideas such as the importance of categorical perception in the understanding of music. Of course music psychologists, currently called psychomusicologists, have not been inactive during the past seventy odd years. However, they never have collectively faced the issue of learning theory in a continuing scholarly manner; isolated interests predominated.

Needless to say, I am not looking for a Utopian solution as a result of this conference. Solutions, even when forthcoming, interact with changing conditions and become inadequate. My realistic hope is that you, the psychologists, will more than understand and be empathetic. I hope that you will work with us, the music educators, to begin to develop approaches for solving some of our problems.

We can learn much from you and, without doubt, you will benefit from observing and generalizing music learning processes. To ask you to solve our problems without our help would be absurd, because you are not professional musicians. And history has demonstrated that we cannot solve our problems without your help. Music learning theory questions cannot be neatly separated into learning theory on the one hand and music on the other. We must work together.

Of great importance, then, is the delineation of some of the questions that music educators need your help in answering as the questions apply to music learning and learning theory. Many years ago Lowell Mason introduced music into the Boston, Massachusetts, Public Schools. Upon doing so, he set down seven principles of teaching music, based on the philosophy of Pestalozzi, and incorporated them into his Manual of Instruction, published in 1834. I quote the first principle: "To teach sounds before signs — to make the child sing before he learns the written notes or their names." And the fifth principle: "To give the principles and theory after practice, as an induction from it." By virtue of these two principles alone, one can say that Lowell Mason was probably the first music educator to try to apply learning theory to instruction in music. After almost one hundred fifty years these fundamental principles have not systematically taken root and flourished in the music education profession. I will take the first principle, examine it in detail, derive implications, and propose questions which the principle raises that require our immediate attention. The fifth principle, along with others, will necessarily be considered as a matter of course.

Music, like English, has aural, oral, and visual dimensions. One hears English spoken and one hears music being performed; one speaks English and one performs (speaks) music vocally and instrumentally; and one reads and writes English and one reads and writes music. Without endeavoring to suggest that music is a language, universal or not, it is useful to parallel the process

of learning a language to that of learning music. A child hears speech and imitates speech during the preschool years. That is, the aural and oral dimensions of speech interact at a very early age. This is very important to know even if we never know whether listening or speaking occurs first. Children enter school with a limited but common aural/oral vocabulary, expand it, and then learn to use that vocabulary as a readiness for learning to read and write their native tongue. Probably of more significance is that children generalize and create with their aural/oral vocabulary in workaday activities long before they learn to read and write. As the child continues through school, and indeed through life, the aural, oral, and visual dimensions are constantly interacting and they serve as readinesses for one another. Question: Should the aural, oral, and visual dimensions be developed in the same way in the language and music learning processes? To the best of my knowledge, they are not. During the preschool years, a typical child rarely performs music (particularly when compared to speech). It is the unusual environment in which systematic singing and eurhythmic activities are provided for the preschool child, the occasional nursery songs, patriotic and religious songs, and Happy Birthday notwithstanding. Systematic activities would include songs which are appropriate at any given time in terms of at least range, tessitura, and tempo. It can be said with certainty that the preschool child hears more music than he performs. I would hope that it can be said with equal certainty that Lowell Mason meant singing as well as listening when he used the word sound in his first principle. Indeed, the typical child is not even exposed to listening to music in a systematic way. Yet music educators espouse and regularly continue to champion music appreciation as the primary goal of music education as if every child has developed or is developing tonal and rhythmic understanding, or as if aesthetic appreciation requires no readiness and one does not need to learn how to listen. That one can "enjoy" the flow of sound of a language which he cannot comprehend does not

necessarily mean that a similar response should be the goal of listening to music.

Question: Does the lack of appropriate music performance inhibit a child's ability to understand what he hears? Question: Does the lack of hearing music in an intimate setting inhibit a child's ability to perform music? Question: Does the lack of appropriate aural/oral experiences in music inhibit a child's ability to read and write music? Question: Does the lack of music reading and writing abilities inhibit the continuing development of a child's music performance and listening skills? It should be understood that in the reading and writing of music, one sees with his ears and hears with his eyes. To read and music with comprehension, one must hear what he sees. Question: If there is a sequence of learning in terms of the aural, oral, and visual dimensions in music, what is the proper sequence? Are there more than one? Question: Do the answers to these questions become dichotomous as they relate to preschool and school age children? I am persuaded, and I hope intelligently, that the answers to those questions are largely affirmative. Nonetheless, my further questions are not toally dependent upon positive answers to those already offered.

As I speak to you now, it is obvious that I am engaging in the oral process and that you are engaging in the aural process. But am I not listening to myself as I speak and are you not speaking silently as you listen? Of course, what is important is that you naturally understand and give meaning to what I am saying, or are anticipating what I will say is irrelevant to our immediate purposes. The phenomenological concerns of Husserl in "presencing" what is heard in terms of retention and "protention" in contrast to recollection go beyond the scope of this paper. The immediate concern is that it is logical, and I hope reasonable, to assume that musicians give intrinsic meaning to music they perform and hear performed by others through music syntax in a manner similar to the way you give meaning to what you are now thinking and to what I am saying through language

syntax. I am not suggesting that one cannot give extrinsic meaning to programmatic music without syntax. I am simply trying to make the point that in order to help a child learn music, we must know what a child attends to when he performs and hears music. He does not memorize individual notes or groups of notes any more than you are memorizing individual words or sentences to derive meaning as you are listening to me. Question: What is music syntax? To answer that music syntax comprises tonal and rhythmic elements is to beg the question. We must distinguish among music elements to answer the question with precision. And we must come to terms with congruent, and possibly more basic, issues that demand consideration. Let me explain.

If you close your eyes, you can form an image of me. Open your eyes and you have a vision of me. If I sing, you can hear me. You may re-hear in your mind (the music not being physically present) what I sang and it is curious to discover that there is no word to describe such behavior. To call it aural imagery is only to create confusion, because you are really not seeing what you hear. To call it aural perception is to make no distinction between hearing music which is physically present and hearing music which is not. Therefore, I have coined the verb to audiate as a definition of this process. How audiation is learned probably would be best explained as a correlate to the answers of my earlier questions. When we ask what music syntax is, we should also ask what we audiate. As I have suggested, to arrive at satisfactory answers to these questions, I believe that we must distinguish among music elements. Question: Do we attend differently to key and tonality (major, minor, dorian, etc.) as we listen and give meaning to music? Question: Does melodic form affect our perception of key and tonality as we listen and give meaning to music? Question: Do we attend differently to tempo and meter as we listen and give meaning to music? Question: Does melodic rhythm affect our perception of tempo and meter as we listen and give

meaning to music? Question: Is motion a part of time or is time a part of motion; is the concept of rhythm derived by perceiving accent groupings which fill and divide time or by perceiving time which connects accents into groupings?

Question: Does the mind pair beats subjectively in order to give objective meaning to overall rhythm? Question: To what extent is the mind capable of

attending to both tonal and rhythmic dimensions when listening and giving meaning to music? Or must the mind attend to both tonal and rhythmic dimensions concurrently in order to give sophisticated meaning to music? I have always found it interesting that many persons cannot recite the text of a song without stopping unless it is chanted in the rhythm of the song. Similarly, many persons cannot reproduce the exact tones of a song when it is required that the tones be performed in equal lengths.

I have tried to focus my remarks and questions so that by this time you will be searching for ways of clarifying what to me is a pervading problem. It is true that we are gathered here to discuss learning theory as it applies to music. Hilgard and Bower, Gagne, Ausubel, Piaget and Montessori in a less direct way, and other psychologists think of learning theory in the singular. What I am suggesting is that there are learning theories in terms of disciplines as well as in terms of individual philosophical preferences. Specifically, I believe that there are a skills learning theory and a content learning theory for music. Though to say so may be an exaggeration, skills learning theory is common to all disciplines of learning. Regardless of what we are learning, we perceive, discriminate, generalize, conceptualize, create, memorize, etc. However, the content to which we apply these skills is, of course, different for each learning discipline. Further, the content of each learning discipline is multifarious. In music we think in terms of tonic, dominant, major, minor, atonal, duple, triple, binary, ternary, classical, folk, jazz, timbre, keyboard, singing, and dancing, to name but a few dimensions. Question: Does content affect the application of a generalized

skills learning sequence? Question: Should content be sequenced in the form of a learning theory? Question: Should different dimensions of music content be sequenced differently in the form of learning theories? Question: If both content and skills are sequenced in terms of learning theory, how might the different dimensions of content and skills be coordinated and articulated in the instructional process?

As you know, music educators can avail themselves of valid music aptitude batteries. Music aptitude tests possess more content and construct validity, and at least as much predictive and diagnostic validity, as intelligence tests. Because one does not need to be musically literate to take a music aptitude test as one needs language literacy to take an intelligence test, music aptitude tests are fortunately much less saturated with corresponding achievement factors. Since we are able to diagnose children's musical strengths and weaknesses with a reasonable degree of assurance, we are compelled to be concerned with how children's individual musical differences interact with learning theory.

Question: Should children with high tonal, rhythm, and aesthetic/expressive/interpretive aptitudes be taught differently (that is, should skills and/or content learning sequences be adapted) from children with correspondingly low aptitudes?

Question: If the answer to the previous question is positive, how might this be most appropriately effected? For example, should high aptitude children be, as Bruner might suggest, spiraled into creativity and generalization activities?

Question: Again, as Bruner might suggest, should low aptitude children be expected to engage in some form of creativity and generalization? Question: Should generalization activities precede creativity activities or vice versa? Question: Should only high aptitude children be exposed to music theory? Question: Should creativity and improvisation be thought of as eliciting highly similar behaviors or should they be sequenced? And I cannot refrain from asking another question for which I, unlike Virginia, do not really expect an answer: Is there really

such a thing as creativity or are there only eternal ideas which one re-discovers with assiduous study?

In all learning theories there is a direct or indirect reference to verbal association skill. I think that it is important to emphasize that music is primarily an aural rather than a visual art. In language we informally learn to give verbal association to an object we see and to an image. In this way, the object we see becomes the word and vice versa in the learning process. However, in music we can hear a melody or a rhythmic line, but little provision is made in the formative years for giving verbal association to what we hear and audiate. This, if done at all, is done usually through formal instruction at a later time. Question: Because verbal association is a different but equally important type of learning in music and because in its absence the development of higher levels of learning might be retarded or prevented, should it come at an earlier level in the music learning sequence than in the language learning sequence? Question: If the answer to the previous question is positive, should verbal association learning come directly after aural/oral learning and before symbolic association learning so that what is being read can be given precise verbal association and in turn be directly associated with sound? Question: Given the aural/oral, verbal association, and symbolic association levels of learning, is the music reading process the reverse of the music writing process?

It is common in music education, both vocal and instrumental, for children to be taught the letter names of lines and spaces of the staff, and to be taught the time value names of notes. That is, in reality, children are being taught theory before practice, or sign before sound, because the technique used to attempt to achieve the objective of verbal association is untenable. Other than in a "perfect Pitch" or "perfect time" sense, it would seem impossible for the musical mind to verbally associate the sound of an individual pitch or note other

than at the symbolic level, and even that is uncertain. Question: At any level of learning, should a child develop skills with tonal and rhythm patterns (groups of pitches and notes, respectively) rather than with isolated pitches and notes in the same way that the child deals with words rather than with individual letters for comprehension? Question: Regardless of whether patterns are used, does retroactive or proactive inhibition occur with certain techniques used at the verbal association level of learning more than with other techniques?

Now to the final topic, instrumental music. I do not intend to deal directly with motor skills any more than the previous discussions dealt directly with short or long term memory. Nor am I concerned with the efficacy of different degrees of overlearning, the beta hypothesis, or the comparative benefits of massed and distributed practice. What I am directly concerned with is how the musical mind "tells" the fingers, arms, hands, tongue, jaw, lips, etc. what to do when one performs on a music instrument, assuming physical coordination is established or forthcoming. The following queries are preliminary. Question: Is a music instrument an extension of the human voice? Question: Does the ability to sing in tune affect a child's ability to play an instrument with acceptable intonation? The interest should be in preciseness of pitch and not necessarily melodic direction. Question: Does muscular ability, in terms of eurythmics, affect a child's ability to play an instrument with good overall rhythm? The interest should be in both large and small muscle movements as they relate to tempo, meter, and melodic rhythm. Question: Is it possible, as Seashore implied, that the answers to these last two questions must be qualified depending upon instrument type? Question: Will preference for timbre affect a child's success with a given instrument?

By the previous questions I am assuming that in order to perform on a music instrument consistently with his aptitudes, a child must develop his musical mind through a learning theory sequence at least at the time, but preferably before,

he begins the study of an instrument. Further, we as teachers must distinguish between the techniques used to develop the musical mind at each level of learning and the executive techniques used for manipulating the instrument. It would seem that the richer the experiences in terms of these three dimensions — the development of levels of music learning, learning theory techniques, and instrumental techniques — the more motivated and successful the beginning instrumentalist will be. Question: Should the same skills and content learning sequences (assuming the viability of the latter) be followed for instrumental music instruction and general music instruction? If the answer to the previous question is positive, would it necessarily follow that each level of learning is paralleled in general music and instrumental music instruction or that all or some levels of learning are taught contiguously in general music before the first level of learning is introduced in instrumental music? Might the answer be different for skills learning sequence and content learning sequence? The following queries are illustrative. Question: Assume that a child sequentially develops aural/oral, verbal association, and symbolic association skills in general music. When the child begins the study of an instrument, should he return to the aural/oral level and play tunes by rote on the instrument before he engages in symbolic association, both reading and writing? Question: Regardless of the answer to the previous question, should the child be introduced to instrumental sight reading if he has not learned vocal sight reading? Question: Would it be best, if it were possible, for a beginning instrumentalist to begin performing at an inference level of learning, exemplified by creativity and improvisation, and to work backwards, as it were, to symbolic association? As an aside, is it possible that one is always sight reading even if the music being read is familiar? Question: Can a child satisfactorily generalize an understanding in singing, for example, major and minor, to performing in dorian and mixolydian on an instrument?

I would like to complete the discussion with some questions which have more technical ramifications. Regardless of the comparative nature of the sequences of learning for vocal and instrumental music, sooner or later an instrumentalist is usually confronted with the necessity of reading music. Question: When an instrumentalist sees notation (the symbolic association level), does he first relate the symbols back to the verbal association level and second, in a tactile sense, associate names fingers, and fingerings, on the instrument?. Where does and should the aural/oral level of learning enter this sequential process? Question: Is verbal association at all necessary for instrumental music reading? Question: What is the role of verbal association in instrumental creativity and improvisation? That is, is some type of verbal association the vehicle by which the musical mind indicates to the fingers what is being created and improvised and how they, the fingers, should move to effect a result? Question: Is it possible that there is a skills learning sequence, a content learning sequence, and an executive learning sequence, all of which should be coordinated? If the answer to the previous question is positive, we must remember that there are many types of instruments, each requiring at least one unique skill.

I fear that until the questions I have proposed, additional questions they have raised, and many others have been answered, music education will not be a discipline and the teaching of music will continue to be less than satisfactory. Moreover, I have a greater fear. It is for society in general. If the arts are not taught effectively, children may never experience the pleasure of gaining insight into themselves through the arts. Though all children are not created equal in ability they should be given equal opportunity to develop such insights. I hope that this conference will contribute toward that end.