

CHAPTER 1

AUDIATION

This is a book about music learning theory. In simple terms, it explains how we learn when we learn music. My first aim is to examine the nature of audiation and of music aptitude and music achievement so that music educators at all levels and in all instructional settings will better understand music learning theory and so begin to teach music more appropriately and efficiently. My second aim is to help parents learn enough about music learning theory so that they can better guide the music education of their children, at home and in their search for appropriate teachers and instructional programs. My final aim is to help make clear to all nonprofessionals how they might develop more enjoyment as listeners and feel greater satisfaction in all their amateur musical pursuits.

To accomplish these goals, I will be asking you to re-examine old ideas and to accept new ones, particularly with regard to the value of testing. When testing is undertaken professionally and test results are used with wisdom, judgment, and sensitivity, their value, in terms of the personal as well as the educational development of students, cannot be overstated. The initial, and perhaps most important, step in the process is to come to terms with the meaning and role of music aptitude in music education. Although audiation is fundamental to both, it is crucial to understand how music aptitude and music achievement are different from each other.

It is possible, of course, for you to understand music learning theory without understanding audiation or understanding music aptitude and its relation to music achievement. But because all students do not share the same capacities, it is only with a grasp of the characteristics of audiation and music aptitude that we can realistically become aware of how we

might best respond, as teachers and parents, in meeting the individual needs of all students in terms of their music achievement.

Audiation takes place when we assimilate **and comprehend** in our minds music that we have just heard performed or have heard performed sometime in the past. We also audiate when we assimilate **and comprehend** in our minds music that we may or may not have heard but are reading in notation or are composing or improvising. Aural perception takes place when we are actually hearing sound the moment it is being produced. We audiate actual sound only after we have aurally perceived it. In aural perception we are dealing with **immediate sound events**. In audiation, however, we are dealing with **delayed musical events**. Moreover, compared to what is often called musical imagery, audiation is a more profound process. Musical imagery simply suggests a vivid or figurative picture of what the sound of music might represent. It does not require the assimilation and comprehension of the musical sound itself, as does audiation.

You may audiate while you are listening to, recalling, performing, interpreting, creating or composing, improvising, reading, or writing music. Though it may seem contradictory that you can listen to music and at the same time audiate that music, certainly you would agree that you automatically think about what is being said as you are listening to or participating in conversation. Listening to music with comprehension and listening to speech with comprehension involve similar operations. Further, as I will explain in detail later about notational audiation, just as you will begin to give meaning to these words that you are reading now only after you have read them, so you give meaning to music notation not as, but only after, you have seen it.

Neither you nor anyone else can teach children to audiate. That comes naturally. Audiation is a matter of music aptitude. By providing children with appropriate knowledge and experiences, however, we can teach them **how** to audiate, that is, how to use their audiation potential as it is determined by their music aptitude to maximize their music achievement.

The explanation of the types and stages of audiation that I will present here is intended to offer specific details about how audiation functions in all activities typically associated with musical endeavors. That information should accord you greater insight into the nature of music aptitude and also provide you with the background for grasping the essence of the sequential structure of music learning theory. Because audiation is the basis of both music aptitude and music achievement, it necessarily becomes the foundation of music learning theory.

It is a normal reaction for persons to wonder if it still is possible for

them to learn how to audiate, regardless of their age. Of course it is, but the older we are, the longer learning will take. And, to be sure, our level of music aptitude will be an influential factor.

As I have said, it is as you listen to music that you are aurally perceiving sound. It is not until a short time after you hear the sound that you audiate and give meaning to that sound as music. You are, of course, also aurally perceiving and then giving meaning to the additional sounds that are following in the music. That is, you are doing more than one thing at the same time when you are audiating music. You are attending to and also comprehending the music and, depending on your knowledge and experience, perhaps more. Why do persons readily agree that this is the case for language, but not for music? I suspect it is because as a society we have grown so far removed from and uncomfortable with music itself that we are no longer able to apprehend its natural sequence.

Audiating while listening to the sound of music is much like simultaneous translation. Translation does not take place only between different languages. Each of us continually translates into unique meaning what we are hearing spoken in our own language. Talk to me and to another person at the same time about any subject. What each of us perceives or brings away from the conversation is relative to our intelligence as well as to our knowledge and experience concerning the subject.

Sound itself is not music. Sound becomes music only through audiation, when, as with language, you translate the sounds in your mind to give them meaning. The meaning you give to these sounds will be different on different occasions as well as different from that given them by any other person. Your level of music aptitude and the extent of your education and experience determines the quality of meaning you are able to offer to music at any given time.

Although music is not a language, the process is the same for audiating and giving meaning to music as for thinking and giving meaning to speech. When you are listening to speech, you are giving meaning to what was just said by recalling and making connections with what you have heard on earlier occasions. At the same time, you are anticipating or predicting what you will be hearing next, based on your experience and understanding. Similarly, when you are listening to music, you are giving meaning to what you just heard by recalling what you have heard on earlier occasions. At the same time, you are anticipating or predicting what you will be hearing next, based on your music achievement. In other words, when you are audiating as you are listening to music, you are summarizing and generalizing from the specific music patterns you have just heard as a way to anticipate or predict what will follow. Every action becomes an interaction. What you are audiating depends on what you

have already audiated. As audiation develops, the broader and deeper it becomes and thus the more it is able to reflect on itself. Members of an audience who are not audiating usually do not know when a piece of unfamiliar, or even familiar, music is nearing its end. They may applaud at any time, or not at all, unless they receive clues from others in the audience who are audiating.

Through the process of audiation, we sing and move in our minds, without ever having to sing and move physically. We learn from the outside in, from the general to the specific. Though we are capable of memorizing specific material without comprehending what we have memorized, we quickly forget it. That is the case with many younger musicians, and many older musicians as well, who give recitals. They are encouraged to memorize notes but they do not know how to audiate what they have memorized and are trying to perform. Many Suzuki students, though they are fortunate to be taught to perform before they are taught to read notation, are not guided in audiating, so they may never experience the joy that comes with the realization that audiation is excitingly circular, back and forth motion, and not at all like imitation and memorization, which are boringly linear. In fact, when a student learns how to audiate, imitation and memorization become unnecessary. It has been said that audiation is magic, whereas memorization and imitation are open folly.

Consider language, speech, and thought. Language is the result of the need to communicate. Speech is the way we communicate. Thought is what we have communicated. Music, performance, and audiation have parallel meanings. Music is the result of the need to communicate. Performance is how this communication takes place. Audiation is what is communicated.

Despite the analogies I have been drawing between language and music, it must be understood that music is not a language. Music has no words or grammar. Instead it has only syntax, which is the orderly arrangement of sounds. It is interesting to speculate, however, whether language may indeed be a form of music. Also, consider the impact of using the word *music* as a verb as well as a noun. If it were a verb, audiation would then be implied, and so perhaps the word *audiation* would have never had to have been coined. We would say with confidence to someone, "Did you music that?" and not vaguely and doubtfully, "Did you hear that?"

Varieties of audiation

It would be difficult, if not impossible, to describe all of the ways and combinations of ways in which musicians audiate. Consider, for example, the way drummers in a jazz ensemble audiate the melody of a song as they are improvising solo and the intricate patterns of sound conductors are continually audiating as they are guiding a symphony orchestra. Consider also how differently performers audiate when they interpret a piece of music as a soloist from when they play in ensemble. Obviously it is more difficult for ensemble players to audiate what other ensemble players are performing than it is for them to audiate their own part. Whether elementary or advanced, vocal or instrumental, solo or ensemble, however, audiation is a matter of concentrating on one set of musical sounds while at the same time attending to or performing one or more sets of other musical sounds. When they are practicing and not audiating, musicians are conscious of what they are doing and they absorb the music. When they are performing and audiating, however, musicians are unconscious of what they are doing and the music absorbs them. Fine musicians know when they are audiating: it is when the ears become more important than the fingers.

Some musicians are capable of audiating one piece of music while they are listening to or performing another, and other musicians are capable of audiating the inner and lower parts of a piece of music while they are audiating its melody. Musicians who are truly improvising may be audiating aspects of a piece of music they are performing that are different from what is actually being performed, the chord progression in jazz, for example, that underlies the melody or the melody that underlies a variation. A jazz instrumentalist, scat singer, or rap performer may audiate a phrase from one piece of music and substitute it for the original phrase in the piece of music he or she is performing. Scat singers and rap performers, like some instrumentalists, may not even be able to explain in technical or theoretical terms what they are audiating. Whereas most musicians who perform jazz through imitation can perform in only one style, those who audiate can comfortably perform jazz in two or more styles, such as both swing and bop. Composers who audiate, those who are not dependent on an instrument while composing, usually audiate several aspects of the music they are creating concurrently, such as the melody, harmony, phrasing, and instrumentation. Such composers audiate in silence, just as artists “see in the dark.” All capable musicians anticipate and predict in audiation what they expect to hear, perform, improvise, or create before they actually engage in listening, performing, improvising, or composing.

Notational audiation

The audiation of music notation is called notational audiation. If you are able to hear the musical sound of and give syntactical meaning to what you see in music notation before you perform it, before someone else performs it, or as you write it, you are engaging in notational audiation. One may read or write notation without audiating the music that it represents, however, and when that occurs, the person is simply **decoding symbols, not audiating music**. To notationally audiate, you need to transcend the print and audiate the music that the symbols represent. Notation is a "window" that one sees through; audiation is on the other side. A musician who can audiate is able to **bring musical meaning to notation**. A musician who cannot audiate can only **take theoretical meaning from notation**. If, for example, instrumentalists cannot transpose without the aid of notation or the knowledge of music theory, they are "playing by notes" and are lacking in audiation skill.

Music notation is a collection of visual symbols that are intended to represent the sound of music. Music theory attempts to define and explain the rationale behind the use of those visual symbols, and yet at best, notation works only like still photography, whereas music flows like a motion picture. Audiation is the understanding of the flow of music. There is value in being able to audiate the flow of music whether or not one understands notation or music theory, and jazz and folk artists demonstrate this every day. The value of understanding notation and music theory without being able to audiate, however, is questionable. Nevertheless, there are students in music classes who are taught to do that every day. In fact, it may be reasonable to define music theory as ignorance of audiation glorified and reduced to a system.

Notation and music theory are often taught to students as a substitute for teaching them how to audiate. Some teachers have never thought about audiation, and those that have may not know how to teach it. Others know that it is easier to teach notation and music theory than to teach audiation. For example, we all know that it is easier to teach students the parts of speech than it is to teach them how to think. Fortunately, parents automatically and naturally model thinking for their children long before their children enter school. The situation is not so fortunate with audiation. In our culture, audiation is held in so low regard, apparently, that teaching children to audiate is now left to the professionals, if anyone at all, after the most precious time of a child's life for developing audiation skill has past.

Just as aural perception is different from audiation, so the process of decoding notation is different from notational audiation. To use the word

imagery with regard to the process of reading notation implies seeing imaginary or real notation without necessarily audiating what is seen. The term *aural imagery* is even more confusing. I prefer the term *notational audiation* because it is specific and makes clear the relation as well as the distinction between audiation and notational audiation.

Distinguishing audiation from imitation

Audiation, as opposed to imitation, which is the first step in learning to make the best use of the potential for audiation, are often confused. Imitation, sometimes called inner hearing, is a product, whereas audiation is a process. Be clear: It is possible, and unfortunately too often the case, for one to perform a piece of music by imitation without engaging in audiation. It is not possible to imitate and to audiate at the same time. Learning by rote is not the same as learning by understanding, whether the subject be history, mathematics, or music.

Just as you can learn to say nonsense syllables, such as “ah va di,” or to repeat a sentence in a foreign language and not know the meaning of what you are saying, children can learn to sing a song by rote without giving it musical meaning, that is, without understanding the syntax of the song. Such children are, of course, imitating but not audiating. That the children’s skill in imitation is more highly developed than their audiation becomes obvious when they are asked to sing alone. Observant teachers know that although a group of children can perform a song in ensemble relatively free of errors, only one or two members of the group may be able to sing the entire song solo. When children are audiating, ensemble performances are no different for them than solo performances, because in both cases they are simultaneously performing **and** recreating music in their minds. If, for some reason, they forget the exact notes, they improvise convincing substitutes.

Imitation is learning through someone else’s ears. Audiation is learning through one’s own ears. Imitation is analogous to using tracing paper to draw a picture, whereas audiation is analogous to visualizing and then drawing a picture. Imitation is like painting a canvas; it requires the adding of material. Audiation is like sculpture; it requires the taking away of material. Just as you must think for yourself, so you must audiate for yourself. You imitate when you repeat what you heard just a few seconds ago, which is immediate imitation, or when you repeat what you heard a while ago, which is delayed imitation. In either case, this is a **reactive response** and has only initial and limited value for learning, because unless we audiate what we have just imitated, what we learn by rote we

soon forget, as is so often the case, for example, with the names and dates children learn in school. Audiation is a very different kind of learning, however, because when you audiate, you retain and “think about” what you heard seconds, minutes, hours, days, weeks, months, or even years ago. Audiation is an **active response**. When we imitate we know what to perform next in familiar music by **remembering** what we just performed. It is a process of looking backward. When one audiates, however, one knows what to perform next, without negating memory, by **anticipating** in familiar music and **predicting** in unfamiliar music what is to come. It involves forward thinking.

What is audiated plays a formidable role later in how one learns and creates. What we audiate is never forgotten; it becomes a component of more complex audiation. In cognitive terms, the structure of audiation is deep and serves in **background conception**. The structure of imitation, on the other hand, is superficial and serves simply as **foreground perception**.

Clarifying the audiation process

Like imitation, memory and recognition are part of the audiation process. Alone, however, they are not audiation. We can recognize a piece of music, even music performed with some incorrect pitches and durations, and still not be able to audiate it. We might be aware only of its melodic contour and rhythm. Many persons who recognize *Jingle Bells* are unable to sing its resting tone, to identify and move to its fundamental beats, to hear its tonality and meter, or to specify the chord progression that underlies its melody. Think, if you can bear it, about the last time you heard a radio commercial with a typical person singing, a group of waiters and waitresses singing *Happy Birthday* in a restaurant, or fans singing the national anthem at a sports event. Without the words being used as support, the sound would have been even more disturbing.

Most students and probably most musicians memorize a piece of music without being able to audiate it syntactically. Memorizing music on an instrument is primarily related to fingerings and other technical matters and not to the audiation of the music itself. How many persons do you know who can play a melody on an instrument but are unable to sing what they have played; to play a variation of the original melody; to play the melody in a different keyality, tonality, or with alternate fingerings; or to demonstrate with body movement the phrases of the melody? To the extent that they cannot do these things, they are not audiating what they

have performed. It is as if they were reciting words they had memorized without ascribing meaning to them.

Just as a calculator becomes a crutch for students who cannot multiply or divide, so a musical instrument becomes a crutch for students who cannot audiate. This is immediately obvious when students have learned to play scales by memorizing fingerings. Although these students may be able to recognize that they are performing with poor intonation or inaccurate rhythm, their lack of audiation skill makes it virtually impossible for them to correct those problems by themselves. Audiation may be expressed through a musical instrument but it cannot be taken from a musical instrument. A musical instrument is simply an extension of the body, of the person who is playing it. When students complain about having vocal or instrumental technique problems or of having had a memory lapse while performing a piece of music, the most likely cause is that they memorized the music but were not audiating what they were performing. For the most part, technical and memory problems, not the least of which relates to tone quality, can be corrected away from the instrument through audiation, because what is most important is that we first hear the sound that we want to make.

About two hundred years ago in France, Pierre Galin observed that students who had devoted many years to learning to play an instrument were not able to sing what they played or to read music notation by singing. In other words, what concerned him was that the students, although considered accomplished, could not audiate. Most had to consult their violin, their pianoforte, or their flute in order to read a new tune, so that it was actually the instrument that did the reading for them. It is as if in order to read a book, they had to operate a machine designed to say the words.

We give meaning to music by audiating the syntax of the music. When we are listening to, performing, or improvising a piece of music and are simultaneously and continuously attending to the tonality and the meter of that music, we are audiating syntax, even if we do not have the formal musical vocabulary to express verbally what we are comprehending. This kind of audiation is three dimensional, because it involves audiating tonality and meter as well as the combined audiation of pitches moving in different directions toward and away from the tonal center with durations moving forward as they relate to underlying beats. We may also be audiating, for example, tone quality, chord progressions, form, style, expression, and instrumentation.

Value of audiation

As I explained previously, when we merely recognize what we have heard or memorize what we intend to perform, we live in the past. In audiation, the past lives in us. When musicians recall music through audiation, which is a matter of **memory and not mechanical memorization**, there is no doubt that they are giving music syntactical meaning. Just as persons recall from memory but do not memorize directions for finding their way home, so musicians recall from memory a piece of music through audiation as they are performing. They do not need to memorize the music to perform it. It is unfortunate that although many persons with high music aptitudes have learned to imitate and memorize very well, they have not learned to audiate.

But, you may be asking, why is this so unfortunate, the shadow question being, why is this book necessary? I could give you a rhetorical answer by asking, why is it necessary to think? Perhaps all you can do at best is to **anticipate** what you will be hearing as you attend to **familiar** music. Now suppose all you were capable of doing was recognizing familiar sentences. Suppose you could not think about unfamiliar ones. Would you be at a disadvantage? Of course you would, as you are with music if you do not have the means necessary to think about it meaningfully. The ability to audiate provides you with the means to do so much more with music than merely to listen to it in association with ritual and special occasions. Audiation skill empowers you to **predict** what you will be hearing as you are attending to **unfamiliar** music. The better you audiate, the more you can understand and make generalizations about even a piece of familiar music each time you hear it. Once your brain has engaged in the generalization of audiation, it can never again regain its original shape.

If you are able to audiate music, you can learn to create, to improvise, and to accompany yourself and other musicians with appropriate harmonic progressions and, if you should so desire, to read and write notation with comprehension. Music becomes your property. You need no longer look in on what others are doing, because now you can enjoy through understanding what they are doing or have done. Through audiation, you are able to export what you know to music and then import meaning from music, an interaction that gives you insight both into the music of others and into yourself and your own music.

It is important to understand that naming and being aware of tonality and meter or harmonic progressions in audiation is not music theory. To name something is not necessarily to theorize about it, and yet unfortunately, many persons are lead to believe that having familiarity with

music terminology or having the ability to read music notation is dependent on knowledge of music theory. That, however, is not necessarily the case.

TYPES AND STAGES OF AUDIATION

To understand technically what takes place as we audiate, it is necessary to understand each of the types and stages of audiation. This section cannot be read quickly. If you take the time to go over it carefully, however, you will find the information rewarding.

There are eight types and six stages of audiation. Not all types include exactly the same stages, and although the stages are sequential, the types are not. Some of the types, however, serve as preparation for others. The eight types and the six stages of audiation as they occur in type I are outlined in table 1. The types of audiation are explained first and the stages second.

TYPE 1: LISTENING TO MUSIC — The most common type of audiation takes place as we are listening to familiar or unfamiliar music. As we listen, we hear familiar and unfamiliar tonal patterns and rhythm patterns, and it is by sequencing, recalling, anticipating, and predicting the patterns through audiation that we give syntactical meaning to what we hear. The procedure is the same when we listen to speech, attending to the individual words and combining them into phrases and sentences in our minds to give grammatical and syntactical meaning to what we have heard. While sequencing, recalling, anticipating, and predicting words as we are listening to them being spoken, we give conscious attention only to those words that are essential to the meaning; the others are absorbed by our unconscious minds, because knowing the essentials makes the inessential obvious. In music we give special attention to the essential pitches of a tonal pattern and to the essential durations of a rhythm pattern while merely absorbing into our unconscious the pitches and durations that are not essential to the syntactical meaning of the music.

Although the parallels are numerous, be clear about the difference between language and music. In language we attend to complete words that are essential, because language is used to impart specific knowledge or ideas. In music, however, we attend to the essential pitches and essential durations that constitute and define the essential patterns that give the music its syntactical meaning or structure. Essential pitches and essential durations in essential tonal patterns and essential rhythm patterns are those that establish the function of complete tonal patterns and complete

rhythm patterns and so give syntactical meaning to the music. Though a complete tonal pattern may include only essential pitches and a complete rhythm pattern may include only essential durations, the majority of complete tonal patterns include both essential pitches and inessential pitches, and the majority of rhythm patterns include both essential durations and inessential durations.

TABLE 1

TYPES OF AUDIATION

Type 1	listening to	familiar or unfamiliar music
Type 2	reading	familiar or unfamiliar music
Type 3	writing	familiar or unfamiliar music from dictation
Type 4	recalling and performing	familiar music from memory
Type 5	recalling and writing	familiar music from memory
Type 6	creating and improvising	unfamiliar music while performing or in silence
Type 7	creating and improvising	unfamiliar music while reading
Type 8	creating and improvising	unfamiliar music while writing

For example, the essential pitches in a complete tonal pattern may outline a tonic or dominant function in major or harmonic minor tonality, and the essential durations in a complete rhythm pattern may outline a macro/microbeat or division/elongation function in usual duple or triple meter. The inessential pitches in a complete tonal pattern may include consecutive or nonconsecutive repeated pitches, while the inessential durations in a complete rhythm pattern might be those that are divisions or elongation of microbeats or elongations of macrobeats, for example, or the components of complete rhythm patterns that are repeated. Unlike

repeated pitches in a complete tonal pattern, however, many repeated durations in a complete rhythm pattern are essential to syntactical meaning.

As will be explained, what is true for audiation is also true for notational audiation. Moreover, the essential tonal patterns of essential pitches and the essential rhythm patterns of essential durations that we are audiating will not necessarily be the same as the complete patterns that we are seeing in notation, although as I have suggested, what constitute essential and inessential pitches, durations, tonal patterns, and rhythm patterns is a personal matter. Nonetheless, I think the following might offer some clarification. Sing the song *Twinkle, Twinkle, Little Star* as you read the words below. I have italicized what are, in my opinion, the essential pitches which, when combined, create the essential tonal patterns. The only essential durations are those with crosses above them, and they create the one essential rhythm pattern in the entire song.

+ + +

Twink - le, twink - le, lit - tle star
How - I won - der what you are
Up a - bove the world so high
Like a dia - mond in the sky
Twink - le, twink - le, lit - tle star
How I won - der what you are

TYPE 2: READING MUSIC — A second type of audiation, notational audiation, takes place as we are reading the notation of familiar or unfamiliar patterns in both familiar and unfamiliar music. We may read a score silently, we may perform what we read, we may conduct from a score, or we may read as we listen to music. To truly read in all cases is to be able to audiate from notation what is to be performed before the sound is physically heard.

When we read and audiate the notation of familiar or unfamiliar music, we organize and audiate the essential pitches and durations and the essential tonal patterns and rhythm patterns from the series of symbols that we see, without the aid of aural perception. As we are audiating, we place the inessential pitches and durations into complete patterns, thus making sense of the notes on the page.

TYPE 3: WRITING MUSIC FROM DICTATION — A third type of audiation takes place as we are writing from dictation familiar or unfamiliar patterns in familiar or unfamiliar music. Although writing music from dictation is the reverse of reading music from a score, it, too, is considered notational audiation. When we write from dictation, we audiate what

we have already aurally perceived, then we represent what we have audiated with symbols in notation. As we are audiating the essential pitches and durations and the essential tonal patterns and rhythm patterns that we are writing, we automatically place the inessential pitches and durations where they belong to complete the musical patterns we are hearing.

TYPE 4: RECALLING MUSIC FROM MEMORY — A fourth type of audiation takes place when we recall in our minds familiar patterns in familiar music and perform them vocally or on a musical instrument, conduct what our inner ear hears, or simply listen in silence. Each of the patterns in the music we are audiating in recall guides us in organizing and sequentially recalling in audiation the remaining patterns. As we are audiating, we place the inessential pitches and durations into the complete pattern, and this process continues throughout the piece of music.

When we can recall in audiation a familiar piece of music, it is not because we have memorized it. Memorization does not serve audiation; it serves only to entrench physical movements, so that when persons whose audiation skills are not fully developed are singing or performing music on an instrument, they are dependent on muscular activity, such as fingerings and vocal fold movements, that have been established through the process of memorization to guide them in their performance.

TYPE 5: WRITING MUSIC FROM MEMORY — A fifth type of audiation, which also involves notational audiation, takes place as we write familiar patterns in familiar music that we organize and recall through audiation. The mental process of recall and organization is the same as in type 4 of audiation, the only difference being that type 4 culminates in some form of performance, whereas type 5 requires translating musical sounds into written notation.

TYPE 6: CREATING OR IMPROVISING MUSIC — A sixth type of audiation takes place as we are creating or improvising unfamiliar music, using both familiar and unfamiliar patterns, in silence or during actual performance. Each of the patterns in the music we are creating or improvising in audiation guides us in sequentially organizing in audiation additional musical patterns. And once again, as we are audiating essential pitches and durations and essential tonal and rhythm patterns as we are creating (that is, composing using our own invented patterns) or improvising (using previously agreed upon formulas or patterns as in jazz improvisation), we are automatically placing the inessential pitches and durations into the complete patterns. The process continues throughout the piece of music.

TYPE 7: READING AND CREATING OR IMPROVISING MUSIC — A seventh type of audiation, which also includes notational audiation, takes place as we are reading both familiar and unfamiliar tonal patterns and at the same time creating or improvising new, unfamiliar, music in silence or during actual performance. For example, as we are creating music, we may be reading indeterminate notation in a contemporary score or choosing arbitrary boxes of pitches or rhythms to use as our musical material. Improvisation may involve performing a new melody to fit the figured bass (as in Baroque music) or chord symbols (as in fake books) that we are reading in score. Although the mental process is the same as when we are creating music or improvising without notation, type 7 involves the addition of notational audiation.

TYPE 8: WRITING AND CREATING OR IMPROVISING MUSIC — An eighth type of audiation takes place as we are writing both familiar and unfamiliar patterns and at the same time creating or improvising unfamiliar music. It includes notational audiation. If, however, we recall over a period of time what we have created or improvised before we write it, type 8 could become type 5 of audiation. The processes for types 7 and 8 are the same, the only difference is that type 7 culminates in reading, whereas type 8 culminates in the writing of music we have created or improvised.

The six stages of audiation and the mental process that takes place within each stage can only be theorized. Logic and reason suggest, however, that when learning conditions for a given type of audiation are ideal in terms of music learning theory, all relevant stages are included in one form or another and interact in a complex circular sequence of mental activity. Moving forward and backward in this complex circular sequence prepares us for the type of audiation activity required in the other stages, so that after the first stage of audiation is initiated and the ideal audiation process continues, from two to six stages of audiation seem to occur concurrently. When one or more of the relevant stages is omitted in the audiation process, however, the stages cease to be sequential, and learning becomes less than ideal.

With the exception of stage 1, all stages of audiation remain constant in every type of audiation. Stage 1 changes depending on whether it is necessarily activated aurally (as in types 1 and 3), visually (as in type 2), or through audiation (as in types 4, 5, 6, 7, and 8). The small differences found in stage 1, however, do not affect the sequential nature of the stages of audiation. The six stages of audiation are outlined in table 2 as they occur in type 1 of audiation.

TABLE 2
STAGES OF AUDIATION

Stage 1	momentary retention
Stage 2	imitating and audiating tonal patterns and rhythm patterns and recognizing and identifying a tonal center and macrobeats
Stage 3	establishing objective or subjective tonality and meter
Stage 4	retaining in audiation tonal patterns and rhythm patterns that have been organized
Stage 5	recalling tonal patterns and rhythm patterns organized and audiated in other pieces of music
Stage 6	anticipating and predicting tonal patterns and rhythm patterns

STAGE 1: MOMENTARY RETENTION — Here we are retaining in our minds short series of pitches and durations that we heard just moments earlier in the music. Although this does not strictly incorporate audiation, but only momentary mental retention, such mental retention is a necessary preparation for audiating the essential pitches and essential durations and the essential tonal patterns and essential rhythm patterns in the music that we will later hear.

Because there is no conscious present, but only an immediate past, we are not aware of what we hear at the exact moment that we hear it. Instead, we unconsciously retain the series of pitches and durations that we have just perceived in terms of immediate impressions, without giving them any musical meaning. We retain the series as an “aftersound” for only a few seconds, about the same length of time that we unconsciously retain with closed eyes an afterimage of what we have just seen, and, as with this kind of visual afterimage, unless in stage 2 we can give conscious meaning to the aftersound within a few seconds, what we have retained in stage 1 is lost.

STAGE 2: IMITATING AND AUDIATING TONAL PATTERNS AND RHYTHM PATTERNS AND RECOGNIZING AND IDENTIFYING A TONAL CENTER AND MACROBEATS — As we listen to series of pitches and durations in music,

we silently recognize and identify through **audiation** one or more tonal centers and macrobeats in the music by **imitating** (silently running through in our minds what we have just heard without giving it any musical meaning) all of the pitches and durations in the series that we heard moments earlier. Then we quickly organize through **audiation** the series of pitches and durations into their essential pitches and durations and their essential tonal patterns and rhythm patterns on the basis of the one or more tonal centers and macrobeats we have unconsciously recognized and identified. By recognizing what is familiar and identifying what is unfamiliar, the process becomes a continuous interaction between the recognition and identification of tonal centers and macrobeats, on the one hand, and the organization of the musical essentials, on the other. The more we feel sure of the tonal centers and macrobeats in the music, the better we can organize them into patterns that make musical sense.

STAGE 3: ESTABLISHING OBJECTIVE OR SUBJECTIVE TONALITY AND METER — As we engage in stages 1 and 2 of audiation, we establish through audiation the objective or subjective tonality and the objective or subjective meter of the music. When tonality and meter are objective, which is usually the case in traditional western music, general agreement about the tonality and meter of the music can be expected. There is not consensus for subjective tonality and subjective meter, however. With regard to objectivity and subjectivity, consider the chant below.

+	+	+	+
Hap -	py and	good is	the fun -
+		+	ny old clown

If you are of the opinion that there are four big beats (macrobeats) underlying the entire chant, as indicated by the crosses above the words, then you are audiating the chant in usual triple meter, because the macrobeats are divided into three small beats (microbeats). On the other hand, if someone else is of the opinion that there are only two big beats (macrobeats) underlying the entire chant, as is indicated by the crosses below the words, then that person is audiating the chant in usual duple meter, dividing the macrobeats into two small beats (microbeats), which are further divided into divisions of microbeats. Under these conditions, then, the chant would be considered to have subjective meter. If you both agree on the placement of the macrobeats, the chant would, of course, be considered to have objective meter.

The process in stage 3 becomes a continuous interaction between establishing tonality and meter within the context of essential pitches and durations and essential tonal patterns and rhythm patterns, so that the better we are able to organize the four essentials in the music, the better we can recognize and identify the tonality and the meter of the music. Because the process is so rapid, it seems as if we are engaging in the first three stages of audiation simultaneously. Remember, however, that in stage 2, it is the recognition and identification of a tonal center and the macrobeats in the music that provides the basis for organizing the four essentials in the music.

The interaction among the first three stages of audiation typically results in making us assess and possibly restructure the essential pitches and durations and the essential tonal patterns and rhythm patterns that we have organized earlier and are retaining in audiation. We may also clarify and make better decisions about the tonality and meter we think we have recognized or identified, and such actions will undoubtedly affect our decisions about the forthcoming patterns, tonalities, and meters we hear as we continue to listen.

How we organize essential pitches, durations, tonal patterns, and rhythm patterns cannot be explained precisely. It does seem, however, that essential pitches and essential tonal patterns, on the one hand, and essential durations and essential rhythm patterns, on the other, are organized separately, with the rhythm essentials providing a foundation for the tonal essentials. That is, we do not attend to recognizing and identifying tonal essentials and rhythm essentials at the exact same time, nor do we attend to all of the tonal essentials before all of the rhythm essentials, or vice versa. We so rapidly alternate our attention from one to the other type of essential in our audiation that it may only seem that everything is occurring simultaneously. I feel sure that we include at least two, but usually three, essential pitches in each essential tonal pattern, and that we include two, but usually more, essential durations in each essential rhythm pattern.

Individual differences in terms of music aptitude and achievement will, of course, affect our choice of essential pitches and durations as we organize essential tonal patterns and rhythm patterns in the music we are audiating. Persons from different cultures or with different musical backgrounds will also exhibit differences in their choices and organization of the possibilities.

Repeated pitches, contiguous or not, are usually not considered essential in a tonal pattern. Some of those repeated pitches, however, may be associated with different durations and thus be considered essential in a rhythm pattern. Nonetheless, the essential pitches and essential dura-

tions that we choose to organize into essential tonal patterns and essential rhythm patterns are always affected by the tonality and the meter that we are audiating. For example, our ears may organize the essential pitches to outline a tonic or dominant function or to outline pivotal points in changes of tonality, keyality, or melodic contour. Likewise, our ears may organize the essential durations to outline a macro/microbeat or division/elongation function or to outline pivotal points in changes of meter, tempo, or rhythm groupings. Factors associated with such elements as form, style, dynamics, and timbre may also influence the way we organize essential pitches and durations.

STAGE 4: RETAINING IN AUDIATION TONAL PATTERNS AND RHYTHM PATTERNS THAT HAVE BEEN ORGANIZED — As we actively engage in the first three stages of audiation, we are simultaneously retaining essential pitches and durations and essential tonal patterns and rhythm patterns that we have already organized in the music. Thus, we are engaging in the first four stages of audiation in a cyclical process as the stages are interacting with one another, continuing to assess and restructure the essentials that we have organized earlier and are retaining in audiation, and continuing to clarify and make better decisions about the tonality and meter we have already recognized or identified.

It is in stage 4 of audiation that, in addition to tonality, keyality, meter, and tempo, we bring to fulfillment our recognition and identification of sequence, repetition, form, style, timbre, dynamics, and other relevant factors that enable us to give meaning to music. As more stages of audiation are introduced, our tonal and rhythm aptitudes largely determine the extent to which we begin to audiate and continue to learn from engaging in the audiation process.

STAGE 5: RECALLING TONAL PATTERNS AND RHYTHM PATTERNS ORGANIZED AND AUDIATED IN OTHER PIECES OF MUSIC — The more music we have heard and the larger our established vocabulary of essential pitches and durations and essential tonal patterns and rhythm patterns in various tonalities and meters, the better we can engage in stage 5 of audiation. This is because stage 5 involves recalling the essential tonal patterns and rhythm patterns that we have organized and audiated in other pieces of music by comparing their similarities to and differences from the essential patterns in the music we are presently audiating. We may have heard the other pieces of music a day, week, month, or years ago. As with the first four stages, we are engaging in the first five stages of audiation in a cyclical process as the stages are interacting with one another. We continue to assess, to restructure, and to clarify the essential patterns that we

have organized earlier and are retaining in audiation as we make better decisions about the tonality and meter we have recognized or identified.

If we have heard very little music or an abundance of the same type and style of music and thus have developed a limited vocabulary of essential tonal patterns and rhythm patterns, we profit little from stage 5, if indeed we are even able to engage in audiation beyond stage 4. As with language, the more words we have in our vocabulary, the better we can think and communicate. In music, the more essential tonal patterns and essential rhythm patterns we have in our tonal and rhythm vocabularies, the better we can audiate and respond to music. When the music that we are hearing is familiar, the audiation process becomes relatively simple, but when the music we are hearing is unfamiliar, the audiation process becomes relatively complex.

STAGE 6: ANTICIPATING AND PREDICTING TONAL PATTERNS AND RHYTHM PATTERNS — As we are engaging in the first five stages of audiation, we are anticipating and predicting the essential tonal patterns and rhythm patterns that we will be hearing next in the music. (I am using the words *anticipation* and *prediction* with precise meanings: Anticipation is used to mean the foretelling of what will be heard in familiar music, whereas prediction is used to mean the foretelling of what might be heard in unfamiliar music. Prediction is based on knowledge gained from familiar music.) With the possible exception of stage 5, more essential tonal patterns and more essential rhythm patterns are audiated at stage 6 of audiation than at any other stage. Our anticipations and predictions are based on our perception of the essential tonal patterns and essential rhythm patterns that we are currently audiating, as well as those from other pieces of music in various tonalities and meters that we have heard before.

The more accurately we anticipate and make predictions, the better we will understand the music we are hearing. If our anticipations and predictions are not borne out in the music, we will encounter difficulty in understanding the music, but if only a few of our anticipations and predictions are inaccurate, we can continue the cyclical process of audiation and will make the necessary simple alterations in our further anticipations and predictions. Should our predictions be grossly inaccurate or should we not be able to anticipate or make predictions at all, the audiation process will revert to and probably remain at stage 1, and the music will have at best only little meaning for us.

As you read table 3, which shows how stage 1 is incorporated into the eight types of audiation, keep in mind that all activity associated with stage 1 of audiation is unconscious. The stages of audiation are the same

for types 1 and 2 of audiation with the following exception: visual impressions activate stage 1 when we read notation. That is, immediate visual impressions replace immediate aural impressions at stage 1 in type 2 of audiation. The stages of audiation are exactly the same for types 1 and 3 of audiation. The stages of audiation are the same for types 1 and 4 and for types 1 and 5 of audiation with the following exception: audiation activates stage 1 of audiation when we recall music. That is, at stage 1 in types 4 and 5 of audiation, the audiation of short series of pitches and durations replaces the immediate aural impressions of the short series of pitches and durations that are heard. The stages of audiation are the same for types 1 and 6, types 1 and 7, and types 1 and 8 of audiation with the following exception: audiation activates stage 1 of audiation when we create and improvise music. That is, as in types 4 and 5, in stage 1 of types 6, 7, and 8, audiation of the short series of pitches and durations replaces the immediate aural impressions of the short series of pitches and durations that are heard.

TABLE 3

HOW STAGE 1 COMBINES WITH THE EIGHT TYPES OF AUDIATION

Type 1	immediate aural impressions
Type 2	immediate visual impressions
Type 3	immediate aural impressions
Types 4 and 5	audiation
Types 6, 7, and 8	audiation

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