Chapter 9

Musical literacy: Reading traditional clef notation

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What do we mean when we say that a child is “musically literate”? How can musical literacy be defined and what types of competencies might it infer? Because this term is widely used, it makes sense to address it in this book. As will become evident during the discussion to follow, our view, consistent with approaches to language literacy, is that *literacy* in situations related to Western classical music occurs as a result of children having developed their capacity to make music, reflect on the music in which they are engaged, express their views on music which they play, hear, or create, speak about and listen to music in order to form judgments, and read, write, comprehend, and interpret staff notation. Each of these aspects of literacy has been dealt with elsewhere in this volume, so most of our comments in this chapter will detail the fundamental aspects of learning how to use staff notation, even though we recognize that this is only one dimension of the literacy acquisition process, and that staff notation is only one type of music notation.

Literacy or literacies?

An obvious way to define and thereby understand what “musical literacy” means is to draw parallels with the ways that children become “literate” as they learn to read and write their spoken mother tongue. A common assumption is that literacy involves the simple ability to read and write, through processes involved in decoding letters, and groups of letters, into sounds and vice versa. However, literacy in language development is far more complex.

Although researchers still debate the best methods and techniques for teaching children to read language, and teachers find that each child needs an individual mix of methods and techniques, they agree that language reading is best achieved through speech, after the basic structure and vocabulary of the language has first been established (Cooper, 2003). There is also an increasing recognition of the importance of communication in real-world situations and the need to develop children’s capacities to speak, listen, read, write, and think (Cooper, 2003). Thus, literacy in reading and writing can involve developing a large set of structures “ranging from individual skills, abilities, and knowledge to social practices and functional competencies to ideological values and political goals” (Soares, 1992, pp. 8–10). This is why some language researchers prefer the term *literacies* in recognition that there is no single unitary literacy (Soares, 1992), but rather a complex of abilities (Harris & Hodges, 1995). One of the fundamental assumptions in this literature is that children should be exposed to a wide variety of literacy experiences and considerable direct or explicit instruction, beginning with experiences in listening and speaking which in due course lead on to, and continue to develop alongside, reading and writing (Cooper, 2003).

Much of this parallels theoretical conceptions of musical development where an expanded view of musical literacy is the norm (McPherson & Gabrielsson, 2002). This is one reason why some

music educators (including the authors of this chapter) try to avoid using the term “musical literacy,” because it is so easily misunderstood. There are usually other ways of saying whatever it is that you want to say when describing a child as musically literate—or as not musically literate.

Ask anyone who uses the term “musical literacy” to say what they mean by it, and they will often speak—in effect—of the ability to function fluently as a musician. But delve deeper to find out what is meant by “function,” “fluently,” or “musician,” and it becomes clear that views of “musical literacy” often focus exclusively on the ability to decode written staff notation and turn it “accurately” into sound. And this is where problems start to emerge, for while many musicians around the world can decode written staff notation fluently:

- 1 There are many modes of music-making in which notation plays no part.
- 2 No child needs to be able to decode staff notation accurately *before* starting to learn to make the sorts of music where staff notation is used customarily.
- 3 Learning to read music before, or separately from, learning to make music can lead to misunderstandings.
- 4 Too early an exposure to staff notation can lead people to overlook the features of music that are not its focus. Staff notation of a melody provides Western classical musicians with information about which note (from the Western classical scale) to play, when it should start, and (provided that the tempo remains constant) when the next note should start. It says little about timbre, articulation, how long a note should be sustained within the space of time allotted to it, dynamics, tempo change, and so forth. And this is just what it does not say about melody. Bring harmony or any of the other dimensions of music into the equation, and the partial nature of the information provided by staff notation becomes even more apparent.
- 5 Undue emphasis on staff notation can lead to atrophy of musicians’ creative abilities, and their ability to memorize.
- 6 Some people who do not read music at all nevertheless become fluent even within the realm of the music where composers and performers customarily use staff notation. Examples include adults who sing complex Western classical choral works entirely from memory, or who can sit down at a piano to “improvise” or play pieces in the style of named Western classical composers that they recall from aural and physical memory.

Contexts involving musical literacy

Traditionally, many Western classical performing musicians have developed their literacy skills through childhood instrumental lessons that addressed instrumental skills, music reading skills, and related skills as part of the same package. However, as highlighted in other chapters and also in other writing (e.g., Mills, 2005), children who grow up in a culture where music is valued and plentiful, and where there are role models of people who describe themselves, and are described by others, as “musicians,” often grow up to be musicians themselves, in effect at their mother or somebody else’s knee, just as they learn to speak, to walk, to wash themselves, or to make friends, and so forth. We are not suggesting here that becoming a musician is (literally) innate, or that one becomes a musician simply by being in the right place for the right length of time. Growing up to be a musician involves engaging, in some way, with musicians, just as growing up to speak a foreign language involves engagement with other people who can speak it. There is tuition, of a kind, involved, but it is not necessarily the sort that must take children out of their culture in order to give them trumpet lessons in a distant studio, or piano lessons in their school.

Farrell (2001) writes of the *gharanas* (literally “households”) of India that are based on familial lineage and have musical styles that are distinct, but adapt with the times. Wiggins (1996) writes of the challenge, when learning Ghanaian drum music in Ghana, of keeping up with teenage boys who have grown up with it around them, and who cannot understand why he finds it so challenging to play. Green and Bray (1997) write of Cheryl who is aged 13. Cheryl, who lives in England, plays in her father’s folk band but has had no formal music training. Despite this, she is the most accomplished member of the band. Cheryl is a fluent musician, arguably “literate” in the music she is playing, who has learnt through engagement with other, older, musicians—and who has developed skills that surpass theirs. Her fluency as a musician—her musical literacies—has been shaped by factors including:

- ♦ developing an ability to play by ear;
- ♦ development of her musical memory;
- ♦ the absence of any curb on her creative and expressive abilities;
- ♦ the familiar music of her father’s folk band;
- ♦ the physical characteristics and timbral possibilities of the instruments available to her; and
- ♦ other people, especially her participation and involvement with older musicians.

Cheryl’s school music education truly acknowledged neither the unique abilities she brought to lessons nor the musicianship she had developed outside school. In many countries it is possible to visit classrooms where a well-meaning teacher tries to teach young children what is seen as the basics of staff notation, although they have no immediate musical need for it given that they learn songs aurally, remember their compositions or record them using invented symbols or electronically, and so forth. One also sometimes sees early instrumental lessons in which equally well-meaning instrumental teachers inadvertently give children the impression that a musician cannot play a note that has not first been decoded from the printed page, or where children are being distracted from listening to, enjoying, and refining the sounds that they are making through being required to simultaneously decode staff notation.

So, given all these caveats, how do children learn to read staff notation? While there are respects in which music is not a language, there may nevertheless be lessons here from the ways in which children learn to read their own verbal language, be it English or a language that uses another alphabet or symbol system.

Parallels between language and music literacy development

The most important principle we have observed from studies on written verbal language development is that children should become competent with spoken verbal language before they grapple with written verbal language (Adams, 1994; Kirby, 1988). In most countries children speak for as long as five years before being obliged to start learning to read on entry to school, and only after they have gained a great deal of prior experience with their native language and reached the mental age necessary to maximize their success as readers (Adams, 1994; McPherson & Gabrielson, 2002; Mills, 1991a). By this age, the home experiences of most children of having been read to by their mothers and having seen their parents and others reading will have prepared them about the nature of how words and thoughts can be represented in symbols (Adams, 1994). They are thus ready to begin to read for themselves.

It does not follow from this that children should engage formally with music aurally for as long as five years before being introduced to some form of staff notation, as they will come to their first

formal lessons having heard a great deal of music during their infancy and early childhood. Even so, it may be unwise to introduce children to music reading in their early music lessons, especially if they are learning an instrument and still working out the basics of sound production. Rather, children should be encouraged to experience and enjoy music first, so that the acquisition of formal musical skills can occur *inductively* as a natural outcome of this process (Hargreaves, 1986). An activity that can prepare young beginners for learning to read staff notation is to encourage them to invent their own notations to represent pieces they already know. This provides them with the metamusical awareness that will enhance their progress toward understanding why staff notation looks and works the way it does (McPherson & Gabrielsson, 2002; Uptis, 1990, 1992).

Most 5- or 6-year-old children's knowledge about how music can be represented in any form of notation will be below their level of understanding of how verbal language can be represented in print. Thus, children younger than 6 probably learn an instrument best when teaching emphasizes learning to play pieces that they already know by sound, and rote learning of unfamiliar pieces, in order to establish ear-to-hand coordination skills that lay a foundation for introducing notation later and which also keep their imaginative skills alive (McPherson & Gabrielsson, 2002).

We know from studies with young learners that the functional literacy of knowing where to put your fingers after having seen a visual cue on a score, represents a very limited form of comprehending staff notation (McPherson, 1993, 2005; Schleuter, 1997). The knowledge of letter names and note patterns needs therefore to be practiced in various contexts, leading from familiar patterns to more challenging, previously unknown patterns.

Another important principle is that even after children have learnt to read and write verbal language, they still speak it. As they become fluent users of staff notation, and when they have achieved fluency, they still need opportunities to work free of staff notation, in order to develop and sustain the full range and depth of their musical literacy.

As mentioned earlier, children are exposed to a great deal of written verbal language in their environment for several years before they learn to read it. They see when adults use it, and when they do not, such as when a mother helps her infant by pointing to the words as she reads the story. This is related to the practice within the Anglican choral tradition whereby a new chorister may be paired with an older chorister who is expected to point to the music as he or she sings, with younger choristers joining in sections that they can recall, long before they have learned to read music autonomously (Mills & Barrett, 2006).

Finally, in their early stages as readers of spoken verbal language, children learn to read words that they already know. Long before they can read fluently, they may pick out words such as their name on birthday cakes or cards (Mills, 2005). When their formal reading begins, they first learn to read simple words that are already in their spoken vocabulary. The opportunity to cross-check material that they are reading with material that they know, and to relate it within an aural system that they already understand, could be useful also in music. This is why the general rule recommended by McPherson and Gabrielsson (2002) is for children to learn to read pieces they already know by ear, before pieces they do not know which require more sophisticated levels of processing. This principle underpinned some of the early published band methods (Brittin & Sheldon, 2004).

The mechanics of reading music notation

When reading aloud we are saying the words from one section while reading the words from the section that immediately follows. Likewise, when performing and interpreting music from notation our eyes may run ahead of what is actually being played (Sloboda, 2005). Studies show

that expert sight-readers are able to recognize “chunks” or patterns of up to seven notes after the music has been removed (Dodson, 1983; Schleuter & Schleuter, 1988; Sloboda, 1988, 2005). Most importantly, the evidence also suggests that reading skills are developed through experience and familiarity with the symbols being read, such that it is easier to look ahead and anticipate the flow of the music when the notation contains predictable or straightforward patterns (Sloboda, 2005). Problems involving visual processing, therefore, do not always explain poor reading ability. As with reading text, poor readers of musical notation are probably the tail end of a continuous distribution, rather than a peculiar group whose reading processes are different from more efficient readers. By this we mean that they probably display deficits on skills that more able readers can do better, rather than employ processes that are entirely different (Meadows, 1993).

In the very beginning stages of learning to read staff notation, a young child will need to learn that music is read by moving your eyes from left to right, top to bottom on the page. As a child learns to distinguish common familiar patterns in the pieces being studied, he or she becomes more capable of integrating a more varied array of patterns into his or her repertoire, and begins to differentiate and predict patterns from the overall shape or start of the particular pattern. It is advantageous in all stages of development for the child to have the sound of the music in his or her mind, because this will enable the young musician to draw on these aural recollections in order to “read ahead.”

Many children exposed to a traditional approach to music instruction begin learning notation from the very first lessons. Without being taught to link the sound of musical patterns with notated patterns these children will probably learn to rely on sight vocabulary, going directly from the visual image to the fingering required to execute this on their instrument. These are what Schleuter (1997) refers to as “button pushers” to whom notation indicates only what fingers to push down. In such cases the player goes from eye to hand, without necessarily connecting this with his or her ear, or from visual perceptions to the reproduction of the written notation on the instrument (King, 1983). Being aware of the sound of the music and also of being able to link this auditory perception with the visual perception, however, is especially important if the child is to be able to develop the repertoire of musical patterns required to perform more difficult passages. Establishing each of the links between eye, ear, and hand is also necessary if the child is to develop the capacity to deal with unfamiliar patterns when performing a new piece of music (King, 1983).

It is probably true also that there are various stages leading up to the skilled ability to read notation and that the nature of reading staff notation, as with most other musical skills, changes substantially during the first five or six years of the formal learning process. For example, McPherson’s (1993, 1994a, 2005) studies with beginner- to advanced-level children learning musical instruments show wide differences between sight-reading ability occurring even within the first 12 months, and that the main predictor of the children’s ability to process notation was the strategies they used to aid their performance (see further McPherson, Davidson, & Evans, Chapter 22).

In summary, the mechanics of reading notation involve the coordination of a number of differing skills. Highly developed readers of notation display an ability to link the sound with the notation (McPherson, 1993, 1994b, 2005; Schleuter, 1997). Young instrumentalists, however, may have more trouble with reading rhythm than pitch, because “pitch production with many instruments is possible without internalization of pitch, while rhythm production is difficult without auditory coding” (Dodson, 1983, p. 4). As an example, McPherson (1993, 1994a) examined a group of wind instrumentalists, all of whom had been studying their instrument for more than two years. He found that students of all ability levels made approximately three times as many rhythm errors as compared to pitch errors. These results can be interpreted as follows: Sight-singing involves

processes whereby the child will need to comprehend both pitch and rhythm in order to successfully “sing” the passage being performed. In this sense, the task of sight-singing demands an ability to inwardly “hear,” or what Gordon (2003) refers to as “audiate” (i.e., comprehend), both pitch and rhythm. However, when sight-reading on an instrument, the player does not need to audiate pitch at the same level as is needed to bring meaning to the rhythm. When most children see the passage “F-G-E-F,” for example, they know that this is fingered in a certain way on their instrument. They therefore do not necessarily need to be able to hear the passage in their mind, in order to be able to perform it on their instrument. But with rhythm, they will need to know how the pattern sounds. There are therefore subtle differences between sight-singing and sight-reading in the way that musicians process pitch and rhythm. The ability to self-correct errors is important for efficient sight-reading and sight-singing (Mills, 1983).

Hierarchical levels

There are few studies that help us conceptualize how young children develop their ability to read unfamiliar melodies from staff notation. One, by Cantwell and Millard (1994), involves an attempt to identify the different hierarchical levels at which reading traditional staff notation can be analyzed. These researchers speculated that processing staff notation has similarities with processing text and used Kirby’s (1988) work on processing text to construct an eight-level hierarchy of operational levels that they believe are required when children process staff notation. Cantwell and Millard’s (1994) theoretical synthesis of Kirby’s work can be abbreviated as follows:

- 1 *Features*: the markings on the page that form the basis of notation. These involve awareness of the features of the lines and curves of the musical symbols and notes, and knowledge that they are both systematic and meaningful.
- 2 *Letters/musical notes and signs*: Consistent interpretation of features allows the child to attend to and recognize basic symbol units such as individual notes, clef signs, time signatures, dynamic markings, sharps, flats, and so forth.
- 3 *Syllables/intervals*: Structural analysis of melodic patterns involves recognizing the systematic relationships between adjoining notes (e.g., intervals).
- 4 *Words/groups*: The transition from individual notes to groups of notes occurs via structural analysis of the component intervals, or by visual scanning of the whole musical idea (e.g., chord, scale run). This represents the first level of musical meaning; however, at this level, the meanings attached to individual clusters are decontextualized and isolated.
- 5 *Word groups/motifs or note grouplets*: Combinations of clusters form a *motif* or *motif grouplet*, a level of musical meaning equivalent to understanding individual phrases and clauses in text. These may vary in length according to their musical function.
- 6 *Idea/musical phrase or figure*: In music, an individual idea is expressed by combining motifs into a musical phrase.
- 7 *Main idea/musical idea*: The combination of musical phrases yields a musical idea, equivalent in text-processing terms to the construction of a main idea from a paragraph.
- 8 *Themes/musical subject*: Understanding of the musical subject involves imposing a sense of musicality onto the score such that the component musical phrase and subject are taken beyond technical proficiency to include variations of sound, mood, dynamics, and so forth in ways that allow for individualized interpretation of the score (Cantwell & Millard, 1994, pp. 47–9).

This hierarchy suggests that children first become aware of the features of staff notation as they start to develop a sense of what reading notation is all about, and begin to learn how music is notated on the score. Next, consistent interpretation of the features of staff notation allows the child to attend to basic symbol units of the medium. In staff notation, this includes being able to recognize individual notes, clef signs, time and key signatures, dynamic markings, sharps, flats, and so forth. During this stage the size of the notation is important, as children learn to process the notation and focus their eyes on the line of the staff notation. If the symbols are too close together, then they may have difficulty perceiving differences, or may even skip over important details such as a flat or sharp.

From here, further development will be hampered unless the child has already learnt to link the auditory sound with the visual notation. They will need to develop their capacity to recognize motifs and patterns, such as sequences, and cope with pulse, meter, and rhythm as well as key, tonality, and pitch. These relationships form the basis for learning to comprehend or “audiate” what is seen in notation, and of being aware of the syntax of the music being performed. At the most sophisticated level, the child will learn how to use what he or she has seen in the notation to enhance the expression of their performance.

A number of implications arise from this hierarchy, two of which are highlighted by Cantwell and Millard (1994). The first involves the need for teachers to explicitly cue their students to focus their processing operations at a higher level on the hierarchy than they are currently working. For example, young learners could be cued to translate the individual notes and patterns that they are learning to read into a meaningful entity of a melody or phrase, such as by singing the melody while following the notation before they commence to play it on an instrument. Focusing children’s attention on the flow of a melody and the expressive detail in a score, or even encouraging them to play the passage with a different kind of expression, can help them develop a more sophisticated awareness of the broader purpose of notation. As they develop further, students can then be encouraged to focus their attention on the upper two levels (*musical ideas* and *themes*), so that they understand how notation can help them develop a personalized conception of the musical score.

A second implication of the study concerns ways in which “deep” rather than “surface” levels of processing can be encouraged during teaching, based on the premise that the development of deeper processing skills when reading notation is just as important as the development of technical skill on an instrument.

Practice leads to automaticity, allowing children to quickly and accurately discern key features in the staff notation, and then use these to coordinate motor movements that allow them to either sing or play the melody represented in notation. Such automaticity allows musicians to direct their attention to higher levels, such as the expressive detail or the overall flow of the melody and how it might be interpreted. Practice, in the form of drill and practice exercises, can help a child to react quickly to the symbols they see in notation. But drill and practice activities can also be boring and frustrating for learners, and not necessarily the most efficient form of learning. Guided meaningful reading of a range of musical repertoire in which the student’s attention is directed to relevant technical and expressive characteristics that are embedded in the music itself helps to instill confidence and knowledge that can be applied in other contexts. Allied with these experiences are kinaesthetic relationships such as being able to recognize the “key terrain” of the piece. On the piano, for example, each key has a kinaesthetically distinct feel (E major being quite different from C major, for example). A child will have a better chance of learning how to read staff notation if he or she is able to recognize the “key terrain” of the passage of the piece being learned.

As an extension of these points, McPherson and Gabrielsson (2002) propose that children need to acquire some knowledge of how to attend to individual details and decode the basic elements of pitch and rhythm. They will need to learn, for example, that a quarter note (or crotchet) is one beat in length in many contexts and that music is represented by notes on a five-line staff which can be more easily remembered using mnemonic aids (e.g., “F-A-C-E” for the spaces on a treble clef; this is levels 1 and 2 on the hierarchy). However, learning can be extremely tedious and frustrating if the process concentrates too much on these types of fine detail such that a child’s attention is constantly focused on learning the names of individual notes and rhythmic patterns divorced from the sound of the music itself. This is especially evident in situations where knowledge of this kind is not immediately put into practice so that it can be integrated into the child’s growing awareness of how the actual music really sounds.

Following on from this it would be incorrect to assume that children need to memorize a wide range of “facts” before they will be successful in learning how to read and comprehend notation. The process of reading music can be extremely slow and tortuous for children when the learning process introduces elements of music that are not immediately applied in the musical examples performed or studied by the children themselves. Thus, the old style of instrumental “method” books, which displayed all the rhythmic patterns (from whole notes leading down to quarter, sixteenth, and thirty-second note values) and a full range of pitches within as well as above and below the musical stave, have long been dismissed by music educators as a very ineffective way of introducing children to notation. Most contemporary method books for teaching children to play an instrument now include only the information needed at the time of learning to play a specific melody, so that the child does not have to learn information which is not immediately put into practice.

Children will not always acquire efficient reading skills by exclusively starting on letter name/note duration and then working up. Right from the start, they need to operate at a higher level of abstraction to extract the sense of the passage they are attempting to read. Equally important are the small-scale predictions built up through a knowledge of form, style, and larger units such as chords, measures, beats, and phrases, which must be understood before music reading becomes meaningful (Sloboda, 2005). In this sense, unless the beginner knows the music through repeated hearings and has been able to form a mental blueprint internally, then it will be more difficult and frustrating to try to read it note by note.

Finally, and as mentioned previously, it is important to remind ourselves that children will vary widely in their progress toward fluent reading. As shown in McPherson’s (1993, 2005) longitudinal studies with young beginners (see Chapter 22, this volume), wide differences in reading abilities appear in the first weeks of learning, with some children struggling to read while others pick up notation skills relatively easy. Unfortunately, children who have problems often do not receive the type of supportive instruction that will improve their abilities, with the result that they often cease instruction. Educators would not allow such wide differences to occur in everyday instruction of children learning to read their spoken language, and nor should we allow them to occur in music. Learning to read staff notation involves a complex of skills, and no two students will follow exactly the same line of development.

In summary, then, a key principle of effective learning is that any new concept or piece of information about staff notation should be linked wherever possible to structurally meaningful entities such as phrases and melodies (i.e., the upper levels of the hierarchy) rather than individual notes, so that the child’s focus of attention is on the main reason for learning: access to music-making. In the very early stages of learning, unless the sound of the melody the child is trying to read or perform is in his or her mind, then the act of reading the notation is more likely to be frustrating and tedious.

An example of the music-reading process

With the previous section as our guide, we now turn to a practical example of the very earliest stages of learning to read musical notation. If reading staff notation is in any way similar to reading words, then at its most basic level there are probably two distinct ways in which a child can decode notation. First, the child could break down the individual notes and sound them out before they are blended together to form a meaningful whole. In this method the child would see, for example (see Figure 9.1), and try to decode this by breaking it down into individual notes (see Figure 9.2):

Fig. 9.1 A meaningful whole

A major problem with this approach is that the emphasis is on moving from symbol to action

Figure 9.2 Individual notes

(fingerings) to sound, rather than from symbol to sound to action (McPherson & Gabrielsson, 2002; see also Mainwaring, 1933, 1941, 1951). This is how many young beginners who are taught to read music from the very first lessons often practice at home—by stumbling over individual notes as they continue playing, sometimes so slowly and hesitantly that they no longer are able to perceive the music they are attempting to perform (McPherson, 1993; McPherson & Gabrielsson, 2002; McPherson & Renwick, 2001). In such situations children may have insufficient cognitive resources left to devote to manipulating their instrument and listening to what they are playing because so much of their attention is focused on reading notation (McPherson & Gabrielsson, 2002). This is particularly important to note, given that vision tends to dominate and inhibit the processing of signals from other modalities (Posner, Nissen, & Klein, 1976; Smythe, 1984). As Bamberger (1996, 1999) explains, beginners find these types of learning experiences extremely frustrating, especially when they are taught to look at the smallest objects such as single notes and to classify these without any knowledge of their context or functional meaning. Asking beginners to focus on notation too early, according to Bamberger (1996), means asking them to “put aside their most intimate ways of knowing—figures, felt paths, context and function” (p. 44). Too early an emphasis on notation can therefore lead to a decreased aural sensitivity for the natural unified patterns that children spontaneously observe when listening to music.

A second, more direct method would be for the child to link the patterns of a group of notes directly to the overall sound that is represented in the notation. This is more like the processes that seem to be used by children who are given the opportunity to play by ear, for example:

Amy [age 32 months] is not one to “plink-plonk” on the piano, but loves to watch her father play. He shows her how to play E-D-C: she copies him and says ‘That’s *Three Blind Mice*’. She works out how to continue *Three Blind Mice*, playing E-D-C E-D-C G-F-E G-F-E. She then stops abruptly, and goes off to play with some toys. (Mills, 2005, p. 164)

In a related approach to music reading, the child would be encouraged to learn to comprehend groups of notes (see Figure 9.3):

Fig. 9.3 Comprehending patterns

and to associate these with the aural image already formed of a well-known piece of music, such as the repeated pattern at the beginning of *Three Blind Mice*. Obviously, this is a more direct and musical way of working, as young readers work more holistically to connect what they see with the sound of each pattern or phrase. This *direct* or holistic way of processing notation is how many children exposed to rote teaching techniques would learn to process notation. For example, in the Suzuki method children learn a large repertoire of pieces by rote before learning to perform the same repertoire when notation is introduced. In this approach they already have a mental image of what the music sounds like and how it can be reproduced on their instrument, and therefore only need to learn how to link the symbol of what they see with this mental image. In contrast to the first method, the emphasis is more musical, as the young musician learns to work from symbol to sound to action (McPherson & Gabrielsson, 2002).

There may be times when all children will use both methods for analyzing notation, depending on the level of difficulty of the music being performed. For example, young musicians who are skilled readers will tend to work at the holistic level, performing with ease the musical patterns that they have come to know and internalize. However, when they encounter a difficult or unusual rhythmic or pitch pattern they may stumble before breaking the pattern down into simpler units and then gradually piecing it together in order to perform it as a whole. However, it is important to note that research in reading words (Kirby, 1988) suggests that poor readers find it difficult to rely exclusively on a “phonological approach,” whereby they break a word down into individual letters before sounding it out and eventually blending it together. Reading staff notation can cause a similar type of problem, because when individual notes are broken down into isolated units, and divorced from the meter or key in which they operate, their meaning can be destroyed. This is why Gordon (2003) and others stress the importance of learning to read notation in context, and why staff notation will only have relevance when the child learns to feel the beat or tonality of the patterns he or she is trying to reproduce from notation. It is also the reason why teachers will often use rhythmic and tonal syllables as an aid to reading development and why young children learning an instrument will often be taught to tap out the beat using large motor movements as an aid to learning to feel the rhythm of a pattern they are about to learn to perform. However, tapping out rhythms, rather than a pulse, can be problematic, as we will see in the next section.

Common problems

Learning to decipher staff notation can be very confusing for a child. Music uses a number of ordinary-sounding words that mean something different from their usage in everyday life: high and low being just one pair of examples. The relationship between hearing and comprehending high and low pitch in music and physically learning how to play it on an instrument can be very mystifying. On the piano high and low notes go from right to left, on the guitar the highest string is at the bottom, and on the cello the sound goes up as you slide your hand down a string.

The common practice of teaching children to read rhythms by tapping or clapping is also very problematic. Rhythms have durations as well as onsets, but a “long” tap or clap is the same length

as a “short” tap or clap: only the silence after the tap or clap changes in length. The first author (Mills, 1991b, c) worked with children aged 8 to 10, to learn more about the information they pick up from rhythms that are clapped or played to them. She based her experiment on a simple rhythmic pattern used in earlier research by Bamberger (1988) (see Figure 9.4):

Fig. 9.4 Experimental rhythmic pattern

The response of one child was typical of many of the children who took part in the Bamberger research (see Figure 9.5). Lucy had recently started learning the violin:

After listening to the clapped rhythm, she drew her hand and showed, through labelling the fingers from “beat 1” to “beat 5” that she had spotted that the rhythm repeated, and also that the repeating cell consisted of five claps. She also showed that “beats 3–5” were a group of some sort (Figure 9.5a). [The researcher] asked Lucy if she could think of another way of drawing the rhythm. She drew five teddy bears that she numbered 1–5, labelling clasps 3–5 “fast.” Alice’s response seemed reasonable . . . there is a sense in which “beats 3–5” sound like a group. However, the US research had judged responses like Lucy’s to be immature, and to suggest that she had not heard the rhythm properly. (Mills, 2005, pp. 101–103)

In a subsequent session a couple of weeks later, the researcher returned with a very simple electronic keyboard so that she could investigate how Lucy might respond to rhythms that were sustained. Instead of clapping rhythms, Lucy was taught to play them on a single note using the electronic keyboard that would sustain the sound until the key was lifted. After learning the rhythm shown in Figure 9.5b, Lucy was asked to draw something that would remind her of the rhythm that she had just learned.

Lucy drew ten pigs, which she numbered from one to ten. She labelled pigs 2, 3, 7 and 8 as “fast.” Next . . . without prompting, she clapped the rhythm and labelled pigs 4 and 9 “fast” too. It was as though the rhythm that she was hearing had changed into one that could be written more accurately using the notation shown below the pigs. Thereafter, Lucy gave up drawing until she had first clapped a rhythm that she had learnt to play on the keyboard. (Mills, 2005, p. 103)

Her responses to three further rhythms are shown in Figures 9.5c–e.

Finally, the researcher returned to the original rhythm (see Figure 9.5f). Lucy’s response was the same as when she had not used the sustaining instrument, except that she produced squares instead of teddies, and wrote out the repetition of the first “bar.” Her notation could be interpreted as:

- ♦ inaccurate, duration-based notation of the rhythms;
- ♦ notation based on something other than duration;
- ♦ accurate, duration-based notations of rhythms reconstructed from the previously clapped rhythms.

Given that in the rhythm shown in Figure 9.5b Lucy changed her accurate notation after clapping, the third of these interpretations is the most sensible:

A long clap is no longer than a short clap: only the silence between varies in length. So Lucy is entitled to reconstruct the clapped rhythms like this if she wishes.

Fig. 9.5a–f Drawings illustrating the notation and perception of rhythm by Lucy (aged 8)

Why did Lucy clap?

The answer is that her violin teacher has trained her to clap rhythms before playing them. When Lucy plays a rhythm, her teacher cannot tell whether any mistakes result from inaccurate rhythmic perception or technical difficulties such as plucking a string, or changing bow, at the moment intended. Asking Lucy to sing the rhythm on a single note does not work either, because Lucy learns in a group,

and the teacher cannot tell whether an individual is, for example, sustaining a crotchet for the duration of a minim. Asking Lucy to clap makes things easier for the teacher, who can see if Lucy is not clapping in the right place, even when she is clapping in a group.

The problem is that Lucy's teacher had not noticed that clapping changes Lucy's rhythmic perception. There is nothing intuitive about an assumption that a clap represents a note which lasts until the next clap is heard. When the teacher claps a rhythm she may, as [adult musicians often] do, "hear" a tone that sustains until the onset of the next clap. But Lucy seems not to do this. She may learn to. (Mills, 2005, pp. 103–4)

But it is unlikely that clapping rhythms before she has played them will prove helpful. Problems such as Lucy's are embedded deeply within systems of music education. For example, syllabuses sometimes suggest activities such as clapping the rhythm of a known song, or clapping short rhythmic patterns. What, exactly, is the rhythm of a song? How can a clap be anything other than short?

Coda

This chapter has considered how children develop into "literate" musicians. As has become evident in the discussion and other chapters in this volume, any conception of what it is to be "musically literate" is fraught with problems related to defining what is meant by music and the various situations in which children might be engaged musically. Consequently, one of the main purposes of this chapter has been to disentangle some issues related to literacy as it applies to music, and to do so in ways that will help readers understand one of the most easily misunderstood areas of a child's musical development.

In the final analysis, it is important to acknowledge how many children learn to read staff notation and achieve a level of proficiency that enables them to function musically. Equally, however, many children are failed by the ways in which they are taught to read music, and give up playing completely. Reading staff notation is not a prerequisite for successful engagement with and appreciation of music, and exclusive concentration on reading has held back the progress of countless learners, while putting many others off completely (McPherson, 1993, 2005; Mills, 1991b,c, 2005; Priest, 1989; Schenck, 1989).

Author note

Janet Mills passed away in 2007, which is the reason why this chapter is a reproduction of Chapter 8 from the first edition of the book, with the addition of five reflective questions.

Reflective questions

- 1 Reflect on how you learned to read traditional staff notation. How successful was it, and if you had the opportunity to learn again, what could have been done differently that would have helped you master traditional staff notation more quickly?
- 2 Think about how children learn to read and write language, and draw parallels for how they learn to read and notate music. What are the key similarities and differences? To what degree is it valid to even make these comparisons?
- 3 List the positives and negatives for introducing notation from the very first instrumental lesson. What are the short- and long-term consequences for the learner?
- 4 List the ways you could encourage "deep" rather than "surface" levels of processing during your teaching. How might this approach enhance the acquisition of technical skill on an instrument?

- 5 To what degree do you think traditional staff notation will be important in music education approaches in the future, given that many of the world's music traditions are not notated? How would you defend the teaching of staff notation to the population of students you teach?

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