MUSICAL LITERACY: A HISTORICAL PERSPECTIVE

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This paper emerges from the confluence of a number of research projects on which I am currently engaged. A couple of years ago, Cambridge University Press invited me to prepare the volume on musical notation for its series of introductory texts on issues in musicology. And recently, I embarked on an ambitious project to investigate the origins of musical literacy in the medieval West. A number of issues link these two projects, some of which I shall explore today in a paper that is very much a work in progress. First, both projects are essentially historical in nature. The musicians and scribes who devised and used these notations worked in a particular historical, artistic, cultural, political and economic context that profoundly affected the way they practised music and the role that notation fulfilled in those musical practices.

Second, all musical notations used in the West constitute semiotic systems, by which I mean simply a system of signs or marks, from the literal meaning of the Greek to/ shmei=on. Third, those notations provide a powerful tool for the recording, preservation and communication of music. Although some of these systems have become quite complex, they never completely replace the oral/aural communication of music, which supplies its own powerful systems and processes for these purposes that work alongside written and literate processes in a potentially powerful symbiosis.

Much existing scholarship on notation at least implicity acknowledges the first two issues I raise here, and Eugène Cardine explicitly uses the word semiology in the title of his book Semiologia gregoriana, although much of that book treats the meaning of the individual symbols, as do many other studies of musical palaeography, and offers less on the system that those symbols constitute. As regards the third point, many musicians take the complexity of notation for granted. Many of them have expended so much time and effort acquiring facility in musical literacy that they have internalized the multiple, complex and multiply complex processes, visual, cognitive and aural, that occur when they read a score or part. Happily, the music psychologists, in the most recent literature, have adopted a sophisticated view of music reading that begins to take into account some of these complexities.

Unhappily, a large gulf still exists between those who view musical literacy as a sine qua non of musical ability, and those who recognize that oral/aural processes contribute

meaningfully to the equation. I cite only one example to illustrate the lack of sympathy between these two views. The debate regarding oral and written processes in early plainsong that occupied a good deal of space in such places as JAMS and Early Music History in the 1980s and 90s and generated a good deal more heat than light, to coin a phrase, revealed quite inflexible positions on both sides. Those who advocated written transmission seemed to believe that, once musical notation appeared in the medieval West, whenever that occurred, oral/aural processes ceased to have any significant function, while the supporters of oral transmission seemed to underestimate, by a significant margin, the visual, written and literate processes that contributed to the creation of the musical documents on which they based their arguments.

In my own studies of this matrix of processes in Aquitanian music of the eleventh and twelfth centuries, I have attempted to isolate the ways in which visual and oral/aural processes participate in the copying procedures by which musician/scribes create musical documents, and how they interact in cognition to generate the readings transmitted in those documents. I show, for example, how Adémar de Chabannes, my eleventh-century monastic alter ego, possessed an extraordinarily acute aural memory of the endless streams of untexted notes that comprise the sequentia, the untexted sequence in Aquitaine.

[SLIDE 1, Pa 1121 fol. 58r.]

That memory allowed him to correct errors of pitch he had made in his first sequentiary (copied between mid-1027 and early 1028) when he came to write out all this music a second time, between mid-1028 and 3 August 1029. Still, he succumbed in both copies to a number of rather banal errors generated by visual confusion. Visual and oral processes therefore operate, sometimes in conflict, sometimes in collaboration, in the course of copying music.

What I hope to contribute to the study of musical notation is a consideration of musical literacy in its historical context. By musical literacy, I mean the visual comprehension of the musical document and its translation into sound, actual or internalized. I do not differentiate between sight reading and the kind of music reading that occurs in study and practice because I believe the same visual, cognitive and aural processes occur in both kinds of reading; where they differ, they do so in degree and not qualitatively. On the issue of historical context, it is true that musicians engaged in the performance of early music increasingly employ original performing materials, and so replicate, in practical terms, the processes musicians of earlier eras may have employed in music reading, but I am aware of

no overreaching discussion of how musical literacy operates on a theoretical or cognitive basis in history.

Let me return to the third issue I raised above, the complexity of musical notation, with a couple of illustrations to remind ourselves of some of the matters we take for granted.

[SLIDE 2: Poulenc, *Sonata for Flute and Piano*.]

This is the opening of the flute part of the finale of Poulenc's *Sonata for Flute* and Piano. Most would agree that this is not the most complex example of notation available: single line of music (no multiphonics), title that gives the Italian character designation, from which we infer a tempo, reinforced by the metronome marking, clef and time signature without key signature as in much music of this period, and notation that consists of notes (providing pitch and rhythm), dynamics, articulation and the occasional ornament. Perhaps only the quantity of leger lines distinguishes this page from most other music, although no self-respecting flute player would admit it.

Still, the page presents a considerable amount of information that the player must process visually, cognitively and aurally in order to translate it into sound. Pitch information dictates fingerings and octave placement regulated by ear and lip; rhythms require the coordination of the durational values of note and rest; articulations translate into slurring and differing qualities of tonguing (percussive for the accents, short and crisp on the staccato notes); and dynamic differentiation as indicated, although the dynamics on this page remain unsubtle. Much of this occurs at a subconscious level. No experienced flute player, and no beginner would attempt this piece, needs to instruct her or his fingers to employ the appropriate fingering or embouchure to secure the correct octave placement for any of these notes.

Moreover, an issue on which the music psychologists all agree applies here, namely that experienced musicians, in reading, perceive structurally defined groups of notes as "chunks" of information instead of processing them one note at a time, and that they do so cognitively.

[SLIDE 3: Poulenc, *Flute Sonata*, detail.]

The psychologists see analogies with reading text in that the individual notes and groups of notes form parallels with letters and words, respectively, and in the detection of patterns. So, despite the absence of a key signature, a knowledgeable flute player recognizes the melodic patterns of A major in the first line and a half, with a passing modulation to its dominant in the second half of line 2, and A major again, the movement's tonic, in line 3,

leading to the firm cadence in A at rehearsal number 2. The psychologists would argue, and I would agree, that the cognitive recognition of these patterns facilitates the execution of some aspects of the performance at a more subconscious level, such as the employment of correct fingerings, familiar not just from long practice but also from long practice of A major and E major scales. So the notes function not as simple instructions for particular finger movements, but rather recognizable patterns of musical events that trigger the subconscious to place the fingers correctly.

Similarly, rhythms coalesce into patterns, particularly as this page does not present any special rhythmic complexities. And the repetition of patterns, melodic and rhythmic, further promotes the apprehension of groups. So, most experienced players would capitalize on the nearly exact repetition from the pickup to bar 5 in the first line, through bar 8 to perceive this passage as a single unit. The lack of repetition in the next four bars suggests that the player would perceptually and cognitively group in two-bar units, bars 9-10 (aided by the melodic sequence in these bars) and 11-12. These three groups, from the pickup to bar 5 through bar 12, define themselves musically through melodic and rhythmic gesture, and these structural limits find reinforcement in the physical limits of rests and barlines.

Thomas Goolsby, in a sophisticated study of eye-movement during music reading, shows that more competent readers habitually look beyond certain physical limits, such as the end of a line. Thus, experienced flutists, having apprehended bars 5-8 as a single unit, probably look ahead to the new passage in bars 9-10 before they finish playing bar 8. Moreover, they also use rests to look further ahead. Here, during the three-plus bars of rest from the end of line 2 to the beginning of line 3, our proficient flute player has probably absorbed the rest of the section up to rehearsal number 2. Goolsby also suggests that experienced players use their peripheral vision for certain notational features. He could not detect a fixation of the eye on dynamic indications, for example, although the subjects in his experiment implemented them in their performances and therefore clearly saw them.

So, we see that even a single line of music like this one poses certain visual and cognitive problems that move music significantly beyond reading text in complexity because the musician must coordinate several different types of visual information simultaneously for a successful performance. Of course, skilled musicians regulate all the information they receive visually and process cognitively with their sense of hearing to ascertain they are performing pitches, rhythms, dynamics, articulation and expression correctly. These problems become more complex when we consider vocal music, which adds the sung, literary text to the visual stimulus, potentially polyphonic instruments like plucked or bowed string

instruments, and keyboard instruments, which conventionally play polyphony written on two or three staves. Reading an ensemble score further increases the problems of apprehension but, because the principal purpose of such a score is either study or in the case of a large ensemble, reference for a conductor, the reader in neither case directly translates the music into sound by singing or playing an instrument.

The conductor in performance does engage in physical gestures to lead the ensemble, gestures in direct response to the visual information presented in the score and the cognitive processes she or he employs to interpret it. This type of reading, therefore, differs only in degree and not in substance from the kind of reading a singer or player uses. A skilled conductor follows several lines of music simultaneously, reading a variety of clefs and parts for transposing instruments, as well as dynamics, articulations, expressive marks and other indications. There are limits, however, on the number of lines even the most prodigious conductor can follow, and some composers feel obliged to call the conductor's attention to specific parts within the score.

[SLIDE 4: Schoenberg, *Five Pieces for Orchestra, Opus 16, no. 2*.]

Here is a page from the second of Schoenberg's *Five Pieces for Orchestra, Opus 16*, to which the composer or printer has added majuscule H or N with a square bracket to designate, respectively, Hauptstimme or Nebenstimme, principal or secondary voice. Such signs occur frequently in Schoenberg, although these ones appear to be second thoughts. In the first printed edition, 1912, a few brackets occur in the fifth piece only, without the H or N. Those on this page were added to this edition, revised by the composer for reduced orchestra in 1949 and first printed in 1952. A note by Richard Hoffmann, dated June 1952, explains: "Metronome markings, numbered measures, and principal and secondary voice indications were likewise added so that rehearsal time might be reduced considerably and the actual performance be as faithful a realization of the composer's intentions as possible." I would also note that, although the instruction at the beginning of the third piece reads in part, "There are no motivs in this piece which have to be brought to the fore," passages throughout are marked Hauptstimme.

The application of the procedure from the perspective of the conductor is simple enough. For example, the Hauptstimme continues in the first violins from the previous page, although it never receives a closing bracket either on this page or subsequently. Schoenberg then marks the doubling in the second violins and the oboes. To this point, then, with the exception of omitting the closing bracket in the first violins, the procedure is clear.

Schoenberg's treatment of the Nebenstimmen, however, requires some discussion. First, he designates the contrapuntal use of motivic material from the Hauptstimme in second bassoon and second, third and fourth horns as Nebenstimme, to which he adds the English horn in the next bar. Again, because of the motivic relations between this voice and the Hauptstimme, Schoenberg's reasoning seems quite clear.

Simultaneously, Schoenberg also marks the long-note gesture doubled in first piccolo, flute and clarinet as Nebenstimme, but not, curiously enough, its further doubling in the xylophone. The rhythmic diminution of this idea then appears in first and second trombones, also designated Nebenstimme and overlapping with the other two Nebenstimmen just mentioned. Again, a doubling, this time in the third trombone at the octave below, is not marked. So, whereas Schoenberg meticulously indicates all the doublings of the Hauptstimme as they enter and depart, he has omitted, either by oversight or design, at least two doublings of designated Nebenstimmen. If we are to understand the latter interpretation, then these voices should form part of the background accompaniment, and simply provide support for the marked voices they double, but the inconsistency is remarkable.

What remains in this dense contrapuntal texture to comprise the background? Quite a bit, actually, such as the active inner voice in second piccolo and flute, the motivic interchange between second clarinet and first basoon, also rhythmically active, and another active inner voice in the violas and 'cellos, as well as the figuration in the harp and celeste. Some conductors would welcome the guidance Schoenberg offers through this dense and complex score, to expedite and facilitate their own literate comsumption of it as well as to reduce rehearsal time as Hoffmann advocates. Others will find Schoenberg's designations arbitrary, particularly those of the Nebenstimmen, and wonder why some voices merit it and others do not. These markings, then, might impede the musical literacy of those conductors.

Other composers, or their publishers, simplify the visual layout of the score by deleting the staves of instruments that rest, even within the system.

[SLIDE 5: Stravinsky, *Variations, Aldous Huxley in Memoriam*.]

Here is a page from Stravinsky's *Huxley Variations* showing how he or Boosey & Hawkes has treated rests. I chose this page because of the way the printer interrupts the oboe, horn, harp, piano and string parts instead of showing three bars' rest in the conventional manner. Stravinsky and Schoenberg, by adopting these strategies of presentation, acknowledge the complexity of their scores, and therefore use enhanced visual information to guide the conductor. To be sure, Schoenberg has intervened more actively to designate those

lines of the first and second importance, while Stravinsky, perhaps atypically for him, has assumed a more passive posture, uncluttering the score by removing silent parts, but each directs the conductor's eye.

These examples remind us of the complex range of processes that comprise the action of reading music, even when confronted by a relatively straight-forward passage like the page from Poulenc's *flute sonata*. Eye, mind and ear interact to process and interpret the visual inputs and translate them into sound. These considerations will serve to illuminate issues of literacy that musicians of other eras may have faced when they tackled the musical notations most familiar to them. I have chosen three radically contrasting examples to illustrate how different styles of notation provoke idiosyncratic reactions from literate musicians. First, I cite an example of early medieval neumatic notation.

[SLIDE 6, SG 359 p. 26.]

This is a page from Saint Gall, Stiftsbibliothek, MS 359, one of the earliest complete neumed manuscripts, written in the early tenth century. It shows the end of the *Mass for the First Sunday of Advent* and the beginning of the *Mass for Saint Lucy*.

[SLIDE 7, SG 359 p. 26, detail.]

The Alleluia for Advent Sunday, with verse Ostende nobis, shows the challenges that await the musically literate reader. The morphology of the neumes indicates melodic direction and the number of notes. The uirga and punctum designate a single note, the uirga a note above the preceding note, the punctum below. The cliuis and podatus are both binary neumes that employ compound pen strokes to show they comprise two notes, and so palaeographers term them ligatures; they represent, respectively, descent and ascent. This notational dialect also uses longer ligatures, like the porrectus, which designates three notes of which the middle note is the lowest, or combines neumes to create longer groups, such as the uirga with two puncta or the podatus with two puncta to form groups of three and four notes, respectively.

First in importance for the singer is the indication of which notes are to be sung for each syllable of text via ligation and grouping. The setting of the phrase "et salutare" illustrates the technique, as the monosyllabic "et" and the first two and final syllables of "salutare" each receive a single note, while the accented penultimate syllable has three, as the ligated porrectus unequivocally shows. Unfortunately, the text scribe, who worked first and wrote in a darker ink than the music scribe, did not know the chant well. In three places, he has left insufficient horizontal space for the melody: "domine," "tuam" and "tuum." In each

case, the music scribe has continued the music upwards and to the right, creating space below the line of neumes for the musical setting of the subsequent syllables or syllable. The music scribe, therefore, has used the two-dimensional space in a creative way to maintain the integrity of this aspect of the musical notation, namely the clear designation of the musical setting for each syllable of text.

The scribe also provides supplementary information about the execution of the melody in the form of ornaments, aids for declamation, and some details about the speed and duration of notes. I take each in turn. Among the most common ornaments in plainsong is the quilisma, defined by medieval music theorists as a turning or tremulous movement, and so a purely melodic decoration. Scribes and singers employed liquescents, comprising two notes, the first to be sung full voice on the vowel and the second to be sung as a semi-vocal note, to assist in the declamation of certain combinations of letters. A descending liquescent, or a cephalicus, occurs on the first syllable of "Alleluia" to facilitate the pronunciation of the double consonant between the first two vowels, while an ascending one, an eptaphonus, appears on the final syllable of "misericordiam" to aid the enunciation of the final consonant m before the next word, "tuam."

Two devices indicate speed and duration. The tractulus, a short horizontal line added to a neume, indicates that the singer should lengthen the note. The scribe has also added letters in roman script above certain neumes to specify the method of execution. These letters, known as litterae significatiuae or significative letters, affect virtually every aspect of the performance. Most common here are the letters t and c, which mean tenere or trahere (to hold or to draw out) and celeriter (quickly), and so longer and shorter notes, respectively. Modern palaeographers remain uncertain about the precise significance of these symbols. For example, do they pertain to the entire neume or a single note within the neume? And does the tractulus differ in nature from the littera significatiua t, for example, when either is applied to a cliuis? Knowledgeable tenth-century singers did not share our uncertainties, of course, and would use them for guidance in the execution of the chant.

We turn now to the information these neumes communicate to us regarding the pitch or intervallic content of the chant, and it is slim. As I mention above, they do show melodic direction, but principally within the neume itself, and not between neumes. For example, the verse begins with two uirgae, the first of which shows that it is higher than the last note of refrain. But what is the relationship between the first and second notes? On the basis of the neumes alone, the second note could either lie above the first note or stand in unison with it; if the former, there is no indication of how large an interval separates them. But the problems

continue with the very next neume, completing the setting of the second syllable of "Ostende." The neume's shape identifies it as a torculus, a ternary neume in which the middle note is the highest. But, not only do we not know the neume's constituent intervals, we also do not know whether its first note lies above, below or at the same pitch as the preceding uirga, never mind what the interval might be if not a unison.

In one place, the notation does give specific relative pitch information, between the first and second syllables of "misericordiam," where the music scribe has written the littera significatiua e, meaning equaliter or unison, signifying that the punctum on the first syllable and the uirga on the second indicate the same pitch, counterintuitively, of course, because a uirga ought to mean that its note stands higher than the preceding note. On the next neume, the cliuis on the third syllable of "misericordiam," beside the letter c for celeriter, the scribe has written the letter l, meaning leuare, raise. Some scholars believe that this refers to pitch, and so the first note of the cliuis should be higher than the preceding uirga. Scribes more often use the letter a or the abbreviation alt, meaning altius or higher, to indicate pitch, and this letter may well mean raise in the sense of emphasize, perhaps by accent or volume.

So, the notation provides firm indication of melodic direction only within the neume and not between neumes, and the scribe supplies a single littera significatiua that specifies a relative pitch relationship. I think everyone would agree that constitutes a very thin harvest. I hasten to point out the scribes of this era had at their disposal at least three means of showing pitch relationships with greater accuracy: palaeofrankish notation indicates intervallic or relative pitch information accurately, while dasian and alphabetic notations provide firm absolute pitch information. Leo Treitler points out that these three notational types occur most often in theoretical treatises or musical sources intended for use by persons other than the professional singers of the monastic choir, the celebrant, for example. The scribe of this manuscript, therefore, used neumatic, non-pitched notation by choice, probably driven by convention.

How did a knowledgeable tenth-century singer go about reading this notation? We can assume that he possessed unambiguous knowledge of two aspects of the piece: the pitch content from long exposure to the melody as an observer and participant in the liturgy, and the text, which is psalmodic, from long study of the Bible, particularly the psalter. The text scribe has provided a full text to show unequivocally what part of the Psalm functions as the text of the chant. Beyond that indication, this notation specifies two other aspects of the piece in more detail than any other: the relationship between text and music, and the application of

melodic ornaments and nuances. The first, taken in conjunction with the information about melodic direction, serves as mnemonic to remind the singer of the precise course of the chant. The second, the indications of ornaments and nuances, responds to a perceived difficulty Frankish singers encountered in adopting Roman chant and, more important, Roman styles of singing.

Observers hostile to the Franks, principally John the Deacon, writing in his ninth-century biography of Gregory the Great, and Adémar de Chabannes, in his account of the dispute between the Frankish and Roman cantors in Rome over Easter 787, state that the Franks could not execute the Roman style of singing. Notker Balbulus, the famous composer of sequences at Saint Gall, countered in his biography of Charlemagne by accusing the Roman cantors sent by Charlemagne to the Frankish kingdom of deliberately misinforming their Frankish counterparts about the correct mode of singing. Whatever the truth of the matter, and it probably lies between these positions, the notation Notker himself came to know and perhaps even use at Saint Gall, provides significant, detailed information about the application of these nuances.

So, the singer would begin by identifying a reasonable "chunk" of music for visual apprehension. In the first instance, the text, where present, would define the chunk. Some chunks would consist of a group of words, perhaps "Ostende nobis" at the beginning of the verse, or "et salutare" at the end of the second line; some would comprise a single word, like "domine" or "da", isolated between two lengthy melismata. This particular chant provides no good example of an instance where the singer might proceed one syllable at a time, but there are four obvious places, the melismata at the end of "Alleluia," on the first syllables of "tuam" and "tuum," and the final syllable of "nobis," where he would break the melisma into its constituent musical components. The music scribe suggests where some of those breaks might occur through the horizontal spacing of the neumes.

Once the singer has visually absorbed the chunk of information, the cognitive processes that ensue differ slightly from those of the flute player reading the Poulenc Sonata because the notation does not specify pitches. The singer, therefore, coordinates the neumatic information regarding the distribution of the music above the text with the directional indications to match those data with the aural image of the melody retained in memory. Our flute player may have memorized large sections of the Poulenc Sonata, but the presence of pitch information in the score permits a precise matching of memory with visual data and confirmation of the version stored in memory. The singer of this chant, on the other hand,

must supply the pitch information from memory and coordinate it with the much less precise notation. Instead of seeking patterns like the A major and E major pitch collections found in the Poulenc, the singer must recall the exact pitch sequence of this chant. Even the role of the ears differs, as the singer must regulate what he is singing against his memory of the chant instead of the visual information supplied by the notation, which does not offer sufficient detail.

Along the way, the singer absorbs the special signs that indicate ornaments, like the quilisma and the liquescents, and notes, perhaps in peripheral vision as happens with dynamics in reading conventional notation, the performing nuances suggested by the litterae significatiuae and applies them. His sense of hearing regulates the whole, but here, memory plays a much bigger role because of the nature of the notation. So, the visual, cognitive and aural processes in which the singer of plainchant engages closely resemble those of the modern flute player working with the score of the Poulenc Sonata, and where they differ, they do so because the singer must accommodate the qualitatively different type of information the notation provides.

A different situation again confronts the lutenist who would play from tablature. Here is a piece by the turn of the seventeenth century composer Francis Pilkington.

[SLIDE 8: Pilkington, *Galliard*]

Still, the tablature constitutes significantly more than a fingering chart. Although the lutenist may process the finger motions and the rhythms dictated by the notation subconsciously, just as the flute player subconsciously applies the correct fingerings, the resolution of the data provided by the notation into musical events can only occur in cognition. For example, the lutenist might take the first three bars as an initial perceptual chunk of information. Within that, she or he might recognize the patterns consistent with what musicians of the common practice era would call G major, and beyond that, the repetition of the melodic gesture in the first two bars, slightly varied and shifted down an octave and into the middle voice, along with the cadential gesture that occupies bar three. These patterns, the general as well as those more specific to this piece, facilitate the lutenist's apprehension of the notation and its translation into not only sound but cogent musical events.

I return to the twentieth century for my final example, which concerns the invention of notational symbols to indicate the application of particular effects.

[SLIDE 9: Penderecki, *Threnody*]

Here is a page of Penderecki's *Threnody* of 1961, showing the combination of standard notation, including natural and artificial harmonics, with a number of special symbols, some of which Penderecki himself may have invented. I am less concerned with how the conductor would read this page, although she or he would need to become intimately familiar with the symbols, the techniques they stipulate and the sounds they produce. Rather, I am interested in the mode of apprehension the player faced with one of these parts would need to adopt. First, all the players must intensively study this page, where Penderecki explains the symbols.

[SLIDE 10: Penderecki, *Threnody*]

Then, they need to practise the required techniques assiduously so that when they meet a passage such as that shown here, they can execute them as the score indicates. The top group, consisting of four violins, three violas, three 'cellos and two contrabasses, must perform in sequence: 1) a very rapid tremolo between the bridge and the tailpiece, arco, 2) the highest note on the instrument, also arco, 3) two percussive blows on the upper sound board of the instrument either with the nut of the bow or the fingertips, 4) an arpeggio across all the strings between the bridge and the tailpiece played col legno battuto, 5) a second rapid tremolo between the bridge and the tailpiece, again arco, and 6) the highest note on the instrument, this time pizzicato. None of these techniques is particularly difficult, although they call for certain manipulations of the bow, and in the slow tempo, those manipulations need not be hurried.

The graver problem is that this part cannot be read by any player who has not devoted a certain amount of time to studying the page of instructions, practising the techniques and practising the passage. Even today, nearly half a century after the composition of this piece, very few of these symbols have entered established notational practice, and some composers use other symbols for the same technique. All these circumstances combine to make the fluent reading of this passage, and many others like it in the post-World War II repertory, next to impossible. Any reasonable performance can only result from a significant investment of time on the part of the players in dedicated study of the parts and intensive rehearsal. By mentioning these issues, I do not criticize the piece, which many find extraordinarily moving, or Penderecki's zeal in essaying new string techniques and their compositional exploitation. But the use of new, unfamiliar symbols simply generates significant problems in reading the score.

Different styles of notation, then, require different strategies of reading in the coordination of visual, cognitive and aural processes. Sometimes practice and convention determine the combination, as in our tenth-century example from Saint Gall, where the music scribe has deliberately chosen a notation that shows pitch information poorly but clearly defines the distribution of music over the text and the placement of vocal nuances. At the other extreme, a composer creates new notational symbols as a means of exploring the creation of new sounds. Both notations generate special challenges in reading, challenges that we often underestimate because those of us who are musically literate in the conventional sense take so much for granted when we consume a musical score as a direct result of our having risen to the challenge of musical literacy and internalizing the processes we undertake.