

Connections between understanding and sight-reading of music in the Baroque style

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Musical style is a complex issue that involves analysis of all aspects of the work from historical, structural and performing perspectives. Sight-reading ability has been linked to the understanding of musical language, such as the knowledge of style and the perception of phrase structure. Recent research shows that skilled sight-reading requires good pattern recognition and prediction. Experienced readers tend to view notes in blocks such as phrases perceived within the framework of a musical style. This implies that analysing and understanding the characteristics of style can help performers to anticipate the flow of the music. A small group of volunteer BMusEd piano students at the Sydney Conservatorium participated in an experimental pilot study of sight-reading music in Baroque style. They were pre-tested individually on three examples of similar difficulty. The tests were videotaped and recorded using computer software in the Keyboard Laboratory. After participating in a training session that included discussion of the characteristics of Baroque style and guided practice, the students were post-tested on the same three examples.

Background

What do we mean when we talk about musical style? *The New Grove Dictionary of Music and Musicians* defines the style as:

A term denoting manner of discourse, mode of expression; more particularly the manner in which a work of art is executed. In the discussion of music, which is oriented towards relationships rather than meanings, the term raises special difficulties; it may be used to denote characteristics of an individual composer, of a period, of a geographical area or centre, or of a society or social function (Pascal, 2001: p. 316)

Musical style is a complex issue that involves analysis of all aspects of the work from historical, structural and performing perspectives. Professional musicians develop a sophisticated understanding of stylistic differences in order to convey the message intended by the composer. When asked to delineate a particular compositional style, most would describe it in practical terms that manifest in specific usage of form, texture, harmony, melody and rhythm. Such concrete concepts are useful for students when learning or sight-reading a new work.

John Sloboda conducted a number of interesting experiments in the 1970s linking piano sight-reading to the knowledge of style. In his 1976 study he introduced deliberate mistakes into musical notation of little known pieces by minor composers only to find that most subjects had ‘corrected’ the errors and played the notes as they appeared in the originals. Sloboda concluded that the subjects’ musical knowledge guided them to predict correctly what notes should be played and to ignore/ override the printing errors. His 1977 study asked the participants to sight-read some passages that were harmonically conventional and others that were not. Sloboda found that musicians’ eye-span increased for predictable melodies and tended to coincide with the phrase boundary. This was not the case for unconventional melodies. He

concluded that one of the factors in good sight-reading was the subjects' ability to relate the material to musical formulae previously stored in their memory. Sloboda (1978) has suggested that to become efficient at sight-reading a pianist needs to develop the knowledge of musical form, style and 'language' to anticipate what is coming next. He has urged students to abandon playing note-by-note and to attempt to understand music before sight-reading it.

Caroline Palmer continued similar investigations in the 1990s. Her 1992 study analysed errors in performances of music with different phrase structure, finding that pianists tended to delete notes within phrases to preserve standard phrase length. She concluded that phrase boundaries tend to be strengthened in sight-reading. In her work with van de Sande (1993, 1995) they found that the types of errors occurring in sight-reading are linked to different musical styles. For example, in polyphonic style the errors were likely to be single notes due to the linear nature of the music; in homophonic style the errors tended to be in chords, the chordal accompaniment being typical of that style. They concluded that sight-reading errors were related to the musical units characteristic of a particular style. Similarly, Drake et al. (1991) found that pianists' sight-reading was significantly disrupted the more melodic, metrical and rhythmic groupings were altered. Palmer (1997) also urged pianists to interpret the structural content of music to increase the likelihood of correctly retrieving and reproducing the score.

Other studies on pattern recognition and prediction skills in sight-reading found that experienced readers see more notes at a glance and process them quicker than less skilled readers. Waters, Underwood and Findlay (1997) measured eye-movement of musicians on a pattern-matching task, finding that better sight-readers did use larger units when comparing two musical patterns. Similarly, Waters, Townsend and Underwood (1998) have suggested that skilled readers process the notes more rapidly because they recognise familiar patterns in groups of notes in notation. Less accomplished readers often protest that they cannot process the information fast enough because they are reading note-by-note. The grammatical knowledge of music, its structure, theory and harmony facilitate the reading process by helping sight-reader to identify patterns and to predict successfully the likely direction of the music.

The above studies suggest that style training for sight-reading should include discussions of structure, key, scale/triad patterns, harmony, modulations and specific stylistic characteristics of a particular period/ composer to improve students' skills. These ideas were tested in a pilot study on sight-reading of music in the Baroque style.

Method

A call for volunteers was distributed among the 2nd year BMusEd piano students at the Sydney Conservatorium to participate in a pilot study of sight-reading. These students were targeted because most of them were of Grade 8 (AMEB) or above standard, yet not as advanced as piano major students. There was a larger pool of students enrolled in this course than in the BMus course, thus increasing participation. It was also felt that these students would benefit the most from the study, as their sight-reading was probably not very strong.

One particular style of composition was chosen for the experiment: a two-part invention written in the Baroque style. A two-part invention is representative of many characteristics of the Baroque style: clearly structured, with well-defined harmony, the imitations between hands providing some challenges to the sight-reader. Examples were sought out from sight-reading manuals that are no longer in wide circulation in Australia today to locate materials that were of similar difficulty but unfamiliar to most students. All examples were one page long, 16–20 bars of music, fully notated and contained no ornaments or other Baroque devices that required specialist knowledge. Since the students were playing on electric keyboards, no familiarity with Baroque instruments and particular performance practices associated with each was needed. The aim of the experiment was to test students' ability to sight-read simple pieces of music written in the Baroque style *before* and *after* discussions about that style. In order to provide a fair comparison between student performances, a set tempo was chosen by the researcher and enforced by continuing metronome click during student playing. The chosen tempo was moderate to allow an average sight-reader a chance to give a reasonable performance.

Six students agreed to take part in the project. A session was organised and conducted in the Keyboard Laboratory of the Sydney Conservatorium during a Special Projects Week in September of 2005. The students were welcomed to the session and thanked for their participation in the project. The aim of the study, finding ways of improving teaching of sight-reading to tertiary students, was explained. The format of the session was to consist of pre-test, training session and post-test. Participants were reassured of complete confidentiality of their identity: the recorded data was to be coded and, when analysed, the results were to be presented in a generalised manner.

The procedures for pre- and post-tests were explained in detail:

- Each student will be asked to sight-read three examples of music written in Baroque style (see attached: Example 1 – Holland, 198-, p. 20; Example 2 – Lovelock, 1962, p. 4; Example 3 – Hesse, 1974, p. 15);
- They will be given one minute to look at the music during which they can verbalise their thoughts out loud;
- Two bars of metronome click will set the tempo prior to starting playing;
- The metronome click will continue throughout sight-reading;
- The playing will be recorded using Cubase software with the researcher and the technical officer present;
- The students are to attempt to keep going the best they can, and try not to stop;
- The testing will be done individually, with the other students waiting outside;
- The tests are to be videotaped as a back up of data.

Once the pre-tests had been completed, all students came in for the training session. After this, post-tests took place using the same procedures and musical examples. At the end of the session students were asked to provide some background information on their years of learning the piano, highest level achieved in

examinations, their opinion of their sight-reading ability and frequency of sight-reading activities.

The training session consisted of:

1. General discussion of characteristics of Baroque style. For example, key signature, triad and scale patterns; time signature and character clues; polyphony, independence of hands, imitations between hands, both rhythmic and intervallic; use of sequences, modulations (dominant key in the middle, tonic at the end); overall structure and phrase lengths; appropriate articulation (more detached) and the need to consider the linear motion of voices as well as vertical reading of notes.
2. Specific discussion of these features in the given example and students' practice of it for 5 minutes.
3. Repetition of the same training with the 2nd example.

The two examples used in the training session were different from the examples in pre- and post-tests (see attached: Example 4 – Holland, 198-, p. 25; Example 5 – Hyde, 1971–75, p.11).

From the three performances recorded in the pre- and post-tests the first was considered as a warm-up piece and not counted in the analysis. A similar approach has been adopted by a number of other experimental studies in sight-reading. The other two examples recorded were analysed using Cubase software. This computer program lists the notes played in pitch (numerical form) and length (duration in seconds). Student versions of each example were compared to a pre-recorded 'expert' version and correlations between these were calculated in the two categories of pitch and duration. The correlations for pre-test and post-test were compared to ascertain any change in the accuracy of sight-reading.

Case studies and individual results

The results are reported as case studies and are a compilation of background information on each student, descriptions of student behaviour from the videotapes and summary of changes in scores between the pre- and post-tests. Student performances in the pre- and post-tests were analysed and compared to an expert version of the same examples using correlations. The changes in scores determined if each student made any progress (see Table 1 and Table 2).

Table 1. Changes in pitch from pre-test to post-test

Student	1	2	3	4	5	6
Pre-test, ex.2	0.53	0.25	0.09	0.47	0.02	0.3
Post-test, ex.2	0.32	0.49	0.17	0.37	0.19	0.12
Change	-21%	+24%	+8%	-10%	+17%	-18%
Pre-test, ex.3	0.76	0.1	0.03	0.05	0.25	0.07
Post-test, ex.3	0.36	0.34	0.37	0.09	0.26	0.25
Change	-40%	+24%	+34%	+4%	+1%	+18%

Note. The scores represent correlations to the 'expert' version of the example.

Table 2. Changes in duration from pre-test to post-test

Student	1	2	3	4	5	6
Pre-test, ex.2	0.35	0.3	0.01	-0.02	0.14	-0.05
Post-test, ex.2	0.55	0.44	0	0	-0.07	-0.03
Change	+20%	+14%	-1%	+2%	-21%	+2%
Pre-test, ex.3	0.36	0.14	-0.06	-0.04	-0.07	-0.03
Post-test, ex.3	0.08	0.11	-0.08	0.02	0.07	-0.01
Change	-28%	-3%	-2%	+6%	+14%	+2%

Note. The scores represent correlations to the 'expert' version of the example.

Student 1

This was a male student with 13 years of experience playing the piano, yet with only 6th Grade AMEB as his highest exam result. His teacher occasionally spent some time in lessons on sight-reading, yet the student felt it was an important skill to develop. He judged his sight-reading to be 'good'. During the pre-test he was ready to play early, not using the full minute to look at the music. He thought that the alteration between quavers and semi-quavers in Ex. 2 might be difficult to follow and that dynamics and accents in Ex. 3 were distracting. His attitude was rather cocky, over-confident: 'This is too easy for me'. His playing was fluent but had some errors. During the post-test he was again ready to commence playing early. He said he was more aware of staccatos in Ex. 2 and that Ex. 3 was 'All right'. His manner seemed again very confident, but his playing was rushed and at times messy. The results show that while this student had the highest scores in both pitch and duration initially, he was not able to maintain the same level of accuracy in the repeat performance. In post-test in Ex. 2 he gained 20% in duration but lost 21% in pitch. He did much worse in Ex. 3, losing 40% in pitch and 28% in duration.

Student 2

This was a female student with 10 years of playing the piano who achieved AMusA level. Her teacher never did any sight-reading in piano lessons, yet the student judged it to be a very important skill and rated herself as a 'good-to-excellent' reader. In pre-test she noted the key-signature of Ex. 2 and began shadow-playing. She recognised key change, then sang the melody. After early note errors in both hands, she got better and kept up with the metronome. She noted that Ex. 3 was in a minor key and had many dynamic changes. She again used shadow-playing prior to starting. She found this example more difficult to keep going and occasionally dropped the left hand. During post-test she verbalised much more before playing Ex. 2, saying: 'I see sequences more. I heard them when I played them last time, but I did not really identify them. Articulation is quite important here, because of staccato in one hand against the other and *vice versa*'. She again noted the key change, shadow-played and vocalised. In Ex. 3 she also verbalised more prior to playing: 'Again sequences in this one. It is a bit harder for me. There are jumps and leaps and more

accidentals. More to concentrate on: dynamics, changes of key.’ The results did confirm that greater awareness of stylistic details demonstrated by this student in her verbalisations had a positive impact on her post-test playing, with gains of 24% in pitch and 14% in duration in Ex. 2; similarly in Ex. 3 she gained 24% in pitch but lost 3% in duration. While she was second in overall accuracy in both pitch and duration, she has made the greatest improvement after training in both areas.

Student 3

This female student has played the piano for 12 years and achieved 8th Grade AMEB standard. Her teacher occasionally worked on sight-reading in lessons and the student felt it was an important skill to have. She ranked her skills as ‘average’. During pre-test she was silent and used the preparation time to shadow-play. She began Ex. 2 at a wrong time, had many note errors, but kept going in tempo. In Ex. 3 she noted more dynamics and accidentals and realised that more was required musically. She again used shadowing prior to playing. This time she came in correctly and kept going while making note errors, at times only managing to keep one hand going. In post-test she was completely silent and used the time to shadow-play. She seemed to make fewer note errors in Ex. 2 and even attempt some articulation. In Ex. 3 she still dropped left hand out at times but kept up with the metronome. The results did confirm that in post-test she improved her note accuracy in Ex. 2, gaining 8% in pitch but losing 1% in duration. Her performance in Ex. 3 was better, with 34% gain in pitch and 2% loss in duration. This student improved only in the area of pitch.

Student 4

This female student achieved AMusA level after 12 years of learning the piano. Her teacher never worked on sight-reading in lessons, yet the student thought the skill was important. She rated herself as a ‘very weak’ sight-reader. In pre-test she noticed articulation and time signature in Ex. 2 but was ready to play early. While there were note errors, she kept up with the metronome and attempted to do some articulation. She thought that Ex. 3 looked ‘scarier’ with more dynamics and lots of semiquavers. She wasn’t sure she was going to get it right, yet she began early. There were more note errors, but she kept up with the metronome. She said ‘Sorry’ at the end and tried to cover up her embarrassment with a laugh. During post-test she noted an accidental in Ex. 2 and was looking for entries of subject and staccato/legato articulation. She began playing early and was at times ahead of the metronome beat. In Ex. 3 she noticed more dynamics, accidentals, entry in right hand, recognised scale movements, dominant and tonic. She was ready to start before time and seemed to be rushing. The results show that this student made no significant improvement overall: she deteriorated in one example but improved in the other. In Ex. 2 she lost 10% in pitch and gained 2% in duration and in Ex. 3 she gained 4% in pitch and 6% in duration.

Student 5

This female student has learnt piano for 12 years with an interruption in the middle and her only practical examination was for the Higher School Certificate. Her teacher never did any sight-reading in lessons yet the student thought the skill was important.

She rated herself as a 'weak' sight-reader. During pre-test she was silent, sighing heavily, peering at the music, hand-to-mouth. She began Ex. 2 one bar late, stopped early and had many errors and interruptions. She was not able to keep up playing and constantly corrected her mistakes. In Ex. 3 she was again silent, shaking her head prior to playing. She again came in one bar late, stopping immediately to correct herself. Her performance had no flow and very many errors. In post-test she again was silent, peering at the music in Ex. 2. She came one bar late and was stopping and correcting herself constantly during playing. In Ex. 3 she stopped after 4 bars. While there were many interruptions and corrections, there were some passages of the piece that had some flow. The results show that she was able to improve in one area only, pitch OR duration. In Ex. 2 she gained 17% in pitch but lost 21% in duration in post-test; she did better in Ex. 3 gaining 14% in duration and 1% in pitch. Overall, this student made slight improvement after training with the gains in Ex. 3 outweighing losses in Ex. 2.

Student 6

This student was a male and has achieved AMusA level after 7 years of learning the piano. His teacher never used sight-reading in lessons and the student considered this skill as unimportant. Yet he judged his sight-reading to be 'weak'. During pre-test he presented an intelligent overview of Ex. 2, noting key-sign and signature, type of rhythm, dynamics, patterns of notes going up and down. Yet errors began immediately on starting to play, the student dropping the left hand and being unable to keep up. 'Oh, no!' he said, smiling embarrassed. In Ex. 3 in addition to noting the same items as in Ex. 2, he also identified skips, sharps, and accidentals and judged the piece to be more difficult. But as soon as left hand came in, he was not able to cope, playing rather slowly with many errors. He shook his head and smiled. In post-test his analysis of Ex. 2 was even more detailed: '3₈, d-minor, semiquavers, staccato, end in d-minor, mostly scales, pattern of up and down semiquavers, mostly does this'. While still not being able to keep up with the metronome, he was at least trying to do so. He laughed three times from embarrassment. In Ex. 3 he again made more detailed stylistic observations: '3₈, b-minor, lots of crescendos and diminuendos which I'll probably end up ignoring anyway, semiquavers, passing between hands, accidentals, mostly scale work, turns, an accent here and there'. The playing was again very slow and had many errors, but he made more of an effort to keep up with the metronome. The differences between pre- and post-tests showed more note errors in Ex. 2 (loss of 18% in pitch and gain of 2% in duration) and a better result in Ex. 3 (gain of 18% in pitch and 2% in duration). This student made very slight progress in duration.

The results show that the experiment was of greatest benefit to the second best sight-reader (Student 2). She was able to incorporate new style strategies into her second performance, achieving the biggest improvements in the post-test. The best sight-reader (Student 1) did not improve after training possibly due to over-confidence and unwillingness to learn. Perhaps, since he was a good sight-reader already, there was also a smaller margin for improvement. The weaker sight-readers received slight benefit from training, either doing better in one example and worse in the other example OR improving in one area (pitch or duration) but deteriorating in the other area. It is not surprising that a short training session made little impact on

their sight-reading: while their understanding of stylistic information about Baroque music might have been enhanced, a long-term training program would be necessary to translate that knowledge into rapid generation of motor sequences on the piano. Other factors contributing to the lack of student progress might have been tiredness (it took several hours to complete the entire project) and psychological stresses (performing in front of the researcher and technical officer, being videotaped, remembering their first performance and trying to at least match or play better on post-tests). Some of these design problems could be eliminated in a longer-term project, which would also include a control group.

In addition to strategies taught in the training session, some participants exhibited other useful preparatory techniques: shadowing, singing the melody and taking time prior to playing. These students tended to keep up with the metronome even if it meant dropping one hand for a while. The negative strategies utilised by less successful students were: starting to play before time for perusal was over, rushing, stopping and correcting mistakes.

This pilot study into training of Baroque style for sight-reading showed that there exists a link between knowledge of style and effective sight-reading, with the 'good-to-excellent' sight-reader showing real improvements in accuracy on post-tests and the weaker sight-readers achieving some improvement either in one of the examples or in one particular area (pitch or duration). There is an urgent need to develop new style-teaching curricula for sight-reading and to test them in large-scale long-term projects.

About the author

Katie Zhukov has graduated with First Class Honours from the Elder Conservatorium of Music, Adelaide, a Masters degree from the Juilliard School of Music, New York, and a PhD from the University of New South Wales. Over the last 22 years Dr. Zhukov has established her reputation as a fine performer, educator and researcher. She has taught at the Sydney, Queensland and Western Australian Conservatoriums. Katie Zhukov has championed piano music by Australian women composers, which is available on five CDs from the Australian Music Centre. Her solo CD *Ragtime, Dreams and Visions* is released by Publications by Wirripang in 2008.

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References

- Drake, C., Dowling, W. J., & Palmer, C. (1991). Accent structures in the reproductions of simple tunes by children and adult pianists. *Music Perception*, 8, 315–34.
- Hesse, M. (1974). *Sight reading excursion: Grade Seven*. St. Leonards, NSW: Castle Music.
- Holland, D. (198-). *Sight reading: Step by step* (Book 2). Cremorne Junction, NSW: Castle Music.

- Hyde, M. (c1971–75). *Sight reading adventures: Eighth Grade to Diploma*. Sydney: Southern Cross Publishing Co.
- Lovelock, W. (1962). *Tests in sight reading: Grade Seven to Diploma* (Volume 3). Melbourne: Allans Publishing.
- Palmer, C. (1997). Music Performance. *Annual Review of Psychology*, 48, 115–38.
- Palmer, C. & van de Sande, C. (1993). Units of knowledge in music performance. *Journal of Experimental Psychology: Learning, Memory, Cognition*, 19, 457–70.
- Palmer, C. & van de Sande, C. (1995). Range of planning in skilled music performance. *Journal of Experimental Psychology: Human Perception and Performance*, 21, 947–62.
- Pascal, R. (2001). Style. In S. Sadie & J. Tyrell (Eds), *The New Grove Dictionary of Music and Musicians* (2nd Ed), 18, 316–321.
- Sloboda, J. (1976). The effect of item position on the likelihood of identification by inference in prose and music reading. *Canadian Journal of Psychology*, 30(4), 228–38.
- Sloboda, J. (1977). Phrase units as determinants of visual processing in music reading. *British Journal of Psychology*, 68, 117–24,
- Sloboda, J. (1978). The psychology of music reading. *Psychology of Music*, 6(2), 3–20.
- Waters, A. J., Underwood, G., & Findlay, J. M. (1997). Studying expertise in music reading: use of pattern-matching paradigm. *Perception and Psychophysics*, 59(4), 477–88.
- Waters, A. J., Townsend, E., & Underwood, G. (1998). Expertise in music sight-reading: a study of pianists. *British Journal of Psychology*, 89(1), 123–49.

SIGHT-READING PILOT STUDY – STYLE

EXAMPLE 2

Moderato

p

mf

dim.

p

SIGHT-READING PILOT STUDY – STYLE
EXAMPLE 3

Con anima

The musical score is written for piano in 3/8 time and G major. It consists of four systems of two staves each. The first system begins with a forte (*f*) dynamic. The second system features a crescendo (*cresc.*) marking. The third system includes a forte (*f*) dynamic. The fourth system includes a decrescendo (*dim.*) marking. The piece concludes with a double bar line.

SIGHT-READING PILOT STUDY – STYLE

EXAMPLE 4

Moderato

The first system of musical notation consists of two staves. The upper staff is in treble clef and the lower staff is in bass clef. Both staves are marked with a key signature of two sharps (F# and C#) and a time signature of 6/16. The music begins with a whole rest in the bass staff. The melody in the treble staff starts with a quarter note G4, followed by eighth notes A4, B4, and C5. The bass staff then enters with a steady eighth-note accompaniment.

The second system continues the piece. The treble staff features a melodic line with quarter and eighth notes, including some slurs. The bass staff maintains a consistent eighth-note accompaniment pattern.

The third system shows further development of the melody in the treble staff, with some notes beamed together. The bass staff accompaniment remains steady.

The fourth system continues the musical progression. The treble staff has a melodic line with some rests, while the bass staff provides a rhythmic foundation.

The fifth system shows the melody in the treble staff moving through various intervals. The bass staff accompaniment continues with eighth notes.

The sixth and final system of the piece. The treble staff concludes with a melodic phrase, and the bass staff accompaniment ends with a final chord.

SIGHT-READING PILOT STUDY -- STYLE
EXAMPLE 5

Glucoso

The musical score is written for piano in 6/8 time, marked *mf* and *a tempo*. It consists of four systems of two staves each. The key signature has one sharp (F#). The first system begins with a treble clef and a bass clef. The melody in the treble clef starts with a quarter note G4, followed by eighth notes A4-B4-C5, and then a half note D5. The bass line starts with a whole rest, followed by a half note G3, and then eighth notes F3-E3-D3. The second system continues the melody with a quarter note D5, followed by eighth notes C5-B4-A4, and then a half note G4. The bass line continues with eighth notes G3-F3-E3, followed by a half note D3. The third system shows the melody with a quarter note G4, followed by eighth notes A4-B4-C5, and then a half note D5. The bass line continues with eighth notes G3-F3-E3, followed by a half note D3. The fourth system concludes the piece with a quarter note G4, followed by eighth notes A4-B4-C5, and then a half note D5. The bass line continues with eighth notes G3-F3-E3, followed by a half note D3.