International Symposium on Performance Science
ISBN 978-2-9601378-0-4

Theory and practice: A case study of how Schenkerian analysis shaped the learning of Chopin's *Barcarolle*

Roger Chaffin[1], Cristina Caparelli Gerling[2], Alexander Demos[1], and Andrea Melms[1]

[1] Department of Psychology, University of Connecticut, USA
[2] Department of Music, Federal University of Rio Grande do Sul, Brazil

When confronted by a problem, experts in many fields begin by looking at the "big picture". Experienced musicians do the same when learning a new piece, first forming a "musical image" of the whole piece. What happens when the composer has cleverly obscured the big picture? To find out, we recorded the practice of an experienced pianist and music theorist as she learned Chopin's *Barcarolle* for the first time and then gave ten public performances. Initially, the pianist felt that her practice did not progress and she discontinued work at the piano to undertake a detailed Schenkerian analysis before continuing. Places that the pianist identified as important in the Schenkerian structure she also used as starting places during practice. The effect was present in the initial practice sessions, before the analysis, and later during preparation for public performance. The effect was not present immediately after the analysis while the pianist learned and memorized the piece, when starting places were mainly determined by fingering issues. The big picture shaped practice during the pianist's initial efforts to understand the piece and again during her preparation for performance.

Keywords: performance; performance cues; Schenkerian analysis; practice

Experienced concert soloists use the musical structure of a piece to organize both their practice and their memory. Knowing that memory failure is always a possibility in live performance, they prepare a safety net**:** a mental map based on the musical structure that allows them to keep track of where they are and provides landmarks reminding them of what to do next. These *per-*

formance cues (PCs) are prepared during practice so that they come to mind automatically, ensuring that the performance unfolds as planned.

The development of PCs has been observed in a small number of longitudinal case studies involving pieces in which the musical structure was relatively clear-cut by J. S. Bach, Debussy, and Stravinsky (Chaffin 2007, Chaffin *et al.* 2002, Chaffin *et al.* 2010, Ginsborg and Chaffin 2011). Here, we describe the development of a pianist's mental map for a piece whose musical structure was much more challenging to identify even for the pianist involved (the second author), who is a theorist as well as a performer. Chopin's *Barcarolle Op. 60* is a masterpiece of structural resourcefulness that constantly surprises the listener with its beguiling harmonic and melodic patterns. How does a performer approach a piece whose complexity requires meticulous probing and exploration, in which structural landmarks are disguised or obscured?

The pianist kept a record of her practice and performances over a four-year period as she learned the Barcarolle for the first time and gave ten public performances. She recorded approximately 20 hours of practice at the beginning and end of this time-period. We transcribed the practice and compared the locations that the pianist used as starting places with the locations of the PCs that she reported using in her performances. We expected that, as in the previous longitudinal studies of PC development, the pianist's starting places would reflect her understanding of the musical structure and show how she established the PCs that she reported.

We were interested to see how the unusual structural complexity of the Barcarolle affected this process. In previous longitudinal studies the musical structure was relatively transparent to the highly trained musicians involved. From the start, they used the structure to organize their practice, starting and stopping at section boundaries. How would the pianist organize her practice of a piece whose musical structure was harder to discern?

METHOD

Participants

The pianist, the second author of this paper, was trained in classical piano and in music theory in Brazil and the USA. She is Professor of Music at the Federal University of Rio Grande do Sul, in Brazil where she performs regularly both as a soloist and as a chamber musician.

Materials

The pianist selected Frédéric Chopin's *Barcarolle Op. 60* for the study because she saw it as an opportunity to learn a staple of the piano repertoire that she had never played before. The piece is one of Chopin's last and greatest works, capturing the essence of his pianism, profound knowledge of counterpoint, and reflecting his admiration of J. S. Bach. In this work, his treatment of dissonance achieved new heights of sophistication and expressive power. The *Barcarolle* was one of the works that Chopin chose for his last recital in Paris in 1848, shortly before his death. Notated in 116 bars in 12:8 time, the *Barcarolle* takes approximately 8.5 minutes to perform.

Procedure

The pianist learned the *Barcarolle* and gave ten public performances over a four-year period, recording more than 20 hours of her practice during three periods (see Table 1). During periods when she did not record her practice she kept a log of her activities. The first practice period consisted of 3.5 hours of practice in four sessions in March 2008, after which the pianist interrupted her work at the piano to develop her own Schenkerian analysis. When she resumed practice eight months later in February 2009, she made much better progress and scheduled the first public performance for the following year. She recorded a third period of practice as she prepared for a series of performances in the laboratory in September to November 2012. We transcribed the practice by recording the location of each start and stop.

Table 1. Time-course of activities and PC reports showing duration of practice recorded.

Time period	*Activity*	*PC reports*	*Dates*	*Duration recorded practice*
1	Practice sessions 1-4	-	2008 March	3:31:00
2	Schenkerian analysis	-	2008 June-Aug.	-
3	Practice sessions 5-18	-	2009 Feb.	13:49:00
4	Practice sessions 19-43	1-4	2010 Jan.-Feb.	-
5	Public performances 1-6	5	2010 Feb. – 2011 Feb.	-
6	Practice sessions 44-49	-	2012 Sept.-Nov.	3:00:00
7	Lab performances	6-7	2012 Jan.-May	-
8	Public performances 8-10	8	2012 April-Aug.	-

The pianist reported the PCs she used during performance on eight occasions, marking them on copies of the score shortly after performances to indicate features of the music she had paid attention to as she played. She made the first four reports after practice performances during the six weeks before the first public performance, the fifth report after the first public performance, and the last report after the final (tenth) public performance more than 2.5 years later. During the final months of the study she also provided a *standard* report of the PCs that she generally attended to and a report of the *Schenkerian structure* in which she located musical transitions and rated them on a 1-4 scale with 1 representing the most important. Other PC reports also identified transitions in the same Schenkerian structure but were not classified in terms of level of importance.

The pianist labeled each feature that she marked to indicate the aspect of the music involved, using varying numbers of labels in different reports (range=2-8; mode=6). The labels were: section, subsection, Schenker, Schenker-level 1-4, switch, dynamics, heightening, tempo change, and fingering.

We examined the relationship between PC reports and starts using stepwise multiple regression analyses. We performed separate analyses for each time period (2008, 2009, and 2012). The dependent variable in each case was the number of starts per bar. The predictor variables were the various types of PC identified in the eight reports with presence and absence of PCs in each bar dummy coded as 0 or 1. The same predictors were used in each analysis.

RESULTS

The pianist's initial work on the piece took place during four long practice sessions in 2008, totaling 3.5 hours. During these sessions she started most frequently in bars where she later reported PCs based on her Schenkerian analysis (see Table 2). She also started more frequently in bars where she later reported PCs for fingering.

After undertaking the Schenkerian analysis, which took two months, the pianist set the piece aside for six months. When she resumed work she learned and memorized the piece in 13 sessions, each averaging approximately an hour in length. During this second practice period the effects of fingering PCs on practice seen in the first period continued, i.e. the pianist continued to start in bars containing fingering PCs. The effects of Schenkerian structure, on the other hand, disappeared. The analysis appeared to have resolved the issues that had previously motivated her starts at structural turning points, leaving her free to focus more on technical and pianistic issues.

Table 2. Summary of significant effects of PCs for expression and technique on frequency of starts during practice during three time periods.

PC type and Report no.	*Practice period*		
Expression	*2008*	*2009*	*2012*
Schenkerian (6)	89.07**	-	-
Schenker level 4 (7)	18.81*	-	-
Harmonic descent (4)	-	-	24.79*
Basic Technique			
Fingering (3)	-	85.70***	-
Fingering (4)	37.28*	86.61***	-
Fingering & misc. (5)	36.31*	44.10*	-

Note. *p<0.05, **p<0.01, ***p<0.001

Three years later, when the pianist next recorded her practice, the effect of the Schenkerian structure reappeared. The pianist labeled these PCs "harmonic descent," referring to the series of harmonic descents that bring the piece back to the F# tonic in measure 113. At this point the pianist had already given six public performances. She was secure in her technique and no longer needed to start at PCs for fingering. Instead, she was thinking in terms of the tonal and harmonic trajectory of the music, working to do justice to the complexity and subtlety of Chopin's design.

DISCUSSION

The pianist solved the problem of learning a structurally opaque piece by interrupting practice to complete a Schenkerian analysis. Trained as a music theorist, this was her solution when she found that working at the keyboard did not produce the kind of progress to which she was accustomed. Like experts in other fields she approached the problem of learning the *Barcarolle* by first developing a clear idea of the "big picture" (Chaffin *et al.* 2002, Glaser and Chi 1988) and developing a "musical image" of the piece (Neuhaus 1973, p. 17). When she was unable to do this at the keyboard, analysis provided another route.

The pianist tried to understand the big picture from the beginning. This is why she used transitions in the Schenkerian structure as starting places in the initial practice sessions, even before beginning the analysis. Interestingly, once the analysis was completed, the effect disappeared while she learned and memorized the piece. The effects of Schenkerian structure on practice did not reappear until the final practice period, as she prepared for performance.

The strategy of looking first at the big picture is characteristic of expert problem-solving in many fields, from mathematics to chess to radiology. When experts are unable to see the big picture immediately they take time to explore the problem before trying to solve it. Novices, in contrast, plunge into the details without a clear idea of where they are going (Glaser and Chi 1988). As a result, their understanding of the problem is more superficial and their problem-solving efforts less effective. In our study, the pianist intuitively followed the strategy used by experts, although she was not, at the time, aware of these parallels between music practice and expert problem-solving.

Acknowledgments

We thank Kay Alfred and Elliott Giese for help transcribing practice sessions.

Address for correspondence

Roger Chaffin, Department of Psychology, University of Connecticut, 406 Babbidge Road, U-1020, Storrs, Connecticut 06269-1020, USA; Email: roger.chaffin@uconn.edu

References

Chaffin R. (2007). Learning Clair de Lune: Retrieval practice and expert memorization. *Music Perception, 24,* pp. 377-393.

Chaffin R., Imreh G., and Crawford M. (2002). *Practicing Perfection*. Mahwah, New Jersey, USA: Erlbaum Associates.

Chaffin R., Lisboa T., Logan T., and Begosh K. T. (2010). Preparing for memorized cello performance: The role of performance cues. *Psychology of Music, 38*, pp. 3–30.

Ginsborg J. and Chaffin R. (2011). Performance cues in singing and conducting: evidence from practice and recall. In I. Deliège and J. Davidson (eds.), *Music and the Mind: Essays in Honour of John Sloboda* (pp. 339-360). Oxford: Oxford University Press.

Glaser R. and Chi M. T. H. (1988). Overview. In M. T. G. Chi, M. J. Farr, and R. Glaser (eds.), *The Nature of Expertise* (pp. xv-xxviii). Hillsdale, New Jersey, USA: Erlbaum.

Neuhaus H. (1973). *The Art of Piano Playing* (trans. K. A. Leibovitch). London: Kahn & Averill.