In order to provide a convincing performance, a musician needs a story, or plan. This is particularly true regarding the piece explored in this paper – Arnold Schönberg’s Op. 11 No. 3 for piano – which might be considered a perfect illustration of the composer’s striving for music free of forms, symbols, cohesion or logic. Whatever the merits of this approach to composition, it does not work for the performer, who needs to develop a musical story to serve as a mental map which will guide him/her through the piece. Sir Adrian Boult, the British conductor, advised that performances should give audiences the impression of the work as a unified whole, like seeing a picture. Heinrich Neuhaus (1973) the noted Russian pedagogue, talked similarly of the need for the artist to approach a new work with a unifying ‘artistic image’. Observational studies show that the practice of experienced soloists follows these admonitions. How, then, does a musician approach the learning of a new work that, ostensibly, has no unifying plan? Here, we describe how a pianist

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1 The composer himself expressed this attitude rather convincingly (cf. in Antony Beaumont, 1987: trans. & ed., BusoniSchoenberg Letters (London,Faber, 1987), 389): ‘I strive for: complete liberation from all forms/From all symbols/Of cohesion and of logic./Thus: /Away with “motivic working out” /Away with harmony as/Cement or bricks of a building. […] My music must be/Brief. Concise! In two notes: not built, but “expressed”? […] It should be an expression of feeling, as our feelings, which bring:Us in contact with our subconscious, really are, and no false/Child of feelings and “conscious logic”.’


3 MISSING?

The pianist’s work began with the score, from which she developed an inner hearing of the sound-material in three stages of listening. Implicit qualities of the score became clearer to the performer over time as her relationship with the work developed; after the piece was stored in the performer’s inner ear, the score remained as a guide as she worked on building the story to be told. We will describe this process, focusing on the initial four measures, which were particularly challenging, both to relate to the other sections and because of their unusually thorough counterpoint. Playing from memory proved to be a sine qua non for this passage, due to the intensity of the polyphonic discourse and the volume of sound required; one needs only to observe the ff (fortissimo) through the whole passage leading to the final chords in fff (fortississimo), to appreciate this.

The present study is one of a series documenting how experienced concert soloists are able to perform challenging works from memory, reliably, on the concert stage. In these studies, the musicians recorded their practice and, in some cases, their public performances. After a public performance, they reported the performance cues (PCs) that they had paid attention to during the performance. PCs guide the performer through the piece by providing the musician with a series of landmarks in a mental map of the piece. By keeping this narrative thread clearly in mind, the performer ensures that the musical material flows smoothly from one musical event to the next. PCs are established by repeatedly paying attention to particular features of the music during practice, ensuring thus that musical ideas accessed through the score come to mind automatically and effortlessly as the music unfolds. As each

PC becomes the focus of attention, it activates memory for the upcoming passage, directs the musician’s attention to the relevant musical features, and tracks progress through the piece. PCs may be expressive or structural turning points, important interpretive decisions, or technical details that must be implemented as planned if the performance is to unfold as intended.

Our study differed in five ways from the previous longitudinal studies of PC development. First, as mentioned, the work in question presents apparently disconnected events; connections are made by non-traditional means. Second, instead of providing a single PC report, the pianist reported her PCs at four points in time, allowing us to document the evolution of her PCs as her relationship with the piece developed. Third, instead of describing the development of PCs for the entire piece, we focused on the opening section, for which PCs developed more slowly, due to its complexity. Fourth, unlike the previous studies—which provided objective, quantitative descriptions of practice—we provide qualitative descriptions of the pianist’s practice along with a video-recording of part of a typical practice session. The recording shows that the pianist practiced the PCs that we describe in the same way that any experienced pianist would approach a particularly complex passage, independently of its style or period, with many repetitions of short passages connected by integrative runs. Fifth, the pianist used her own system for annotating the locations of PCs in the score.

The pianist normally annotates her scores when preparing a new piece, locating both transitions in the musical structure and the musical features of interest to her as the performer. We will refer to these annotated scores as maps because the pianist uses them to help develop the mental maps she uses to guide her performances. For the study, she expanded on her usual practice by annotating fresh copies of the score on four separate occasions. Following her usual practice, she divided the piece into short passages consisting of musical phrases or sentences. For the pianist, beginnings of these passages were PCs. They were her points of arrival and/or departure that served as points of reference in her inner hearing during both practice and performance. In performance, these transitions were landing places, where she prepared herself to hold on mentally in order to engage with the following events of her listening/performance process.

The pianist made her first map in September 2011, during the preparation for her first public performance of Opus 11 No. 3, which took place on the 18th

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3. The authors would like to thank Rita Aiello (NYU) and Cristina Gerling (UFRGS) for their precious inputs regarding specific points explored in this paper.
4. Thorough counterpoint was part of Schoenberg’s usual approach to composition. He himself commented on this feature in measures 57-77 of his 1st String Quartet op.7, justifying Mahler’s comments on his own inability to read the score “of no more than four staves”. Cf. Arnold Schoenberg, Style and Idea. (California: UCP, 1964), 42.
October, 2011.11 At this time she had not yet formed the intention to study her own use of PCs. She made the map as part of her normal preparation.12 Later, after deciding to document her own use of PCs, she elaborated the map by colour-coding the sections she had previously marked to make her understanding of the musical structure clearer to other readers. The pianist made these additions while preparing for her second public performance, which took place at Lincoln Center in New York on the 14th January, 2012.13At this time, she also added to Map 1 the PCs that she hoped to use in the upcoming performance, circling passages in blue to indicate their location.14

The second map was made on the 15th January, 2012, the day after the second public concert,15 when the pianist indicated – in a clean, unmarked copy of the score – the PCs that she had used in the performance the day before. During this performance, it became clear to the pianist that she needed to add more PCs in the opening four measures. From the beginning, the pianist had perceived this passage as a strong opening statement.16 After the second concert, the pianist realized that she had played the entire passage as a single, long phrase, without actually listening to its different voices. Although she had analytically scrutinized the counterpoint during practice, she had not thought about it during the performance. Consequently, some interesting features that should have been emphasized were missed, despite having been repeatedly rehearsed. Realizing that she would need PCs at these locations in order to make performance of this passage secure, she decided to make their development the focus of this study.

11 As part of a contemporary music concert presented by the research group (Grupo de Estudos e Prática da Música dos Séculos XX e XXI/ CNPq) under her responsibility at the Music Graduate program of the Music and Visual Arts Department of the Federal University of Paraná, Brazil, on October 16th 2011. These initial annotations provided the basis for an analytical report of Op. 11 No. 3 that combined the performer’s point of view with that of a music analyst. Zélia Chueke and Norton Dudeque, 2011; ‘Analysing Schoenberg’s op.11 n°3’, IEMTP 2nd study-day; www.iemtp.ufpr.br.

12 This map focused on section markings, represented by the red and green marks in Map 1. This more formal approach was used to develop the 2011 paper (Zélia Chueke and Norton Dudeque, Dec. 2011).


14 This method of marking studies of PCs is different from the previous studies cited above in which the musicians indicated the location of PCs using arrows pointing to specific locations where a PC first became relevant during performance, and provided separate reports of the musical structure by marking the locations of boundaries between sections subsections or and phrases.


16 Schoenberg himself must have thought this way which can be verified by the fact that in the manuscript accessible through Arnold Schoenberg Institute Archives in Vienna: http://www.schoenberg.at) there are no alterations in the opening four measures. All the alterations and second thoughts occur in later measures.
and presents itself visually, just like a picture, before either practising or performing, and every time I think about the piece. First of all, I had to find the idea of the whole (beginning, middle and end of the story). The structural scheme was deduced somehow between the visual and the sounding perception of the score (mostly rhythmic), since I couldn’t perceive the actual sounding of many of the passages as easily as I do with tonal music or less complex discourse of any nature (atonal, for instance).19

This initial understanding of the score is reflected in PC Map 1, which shows that the pianist saw the piece as divided into three sections: A (measures 1–5.1, outlined in red), and B (measures 5.2–24.1), and C (measures 24.4–35) both outlined in green.20 She immediately saw section B as made up of many separate ideas thrown together, as if someone was talking to him/herself, or as if different people were expressing their ideas without worrying if they were connected to each other. At this point, she saw A as the ‘hard part’, in contrast with B and C, and indicated this in Map 1 by colour-coding section A as red, and both sections B and C as green.

The pianist’s first concern was the connection of the two green areas to each other and to section A, based on the eighth-notes indicated by Schoenberg as the pulse (‘Bewegt ♪’). So, she had to figure out how to listen to A. This was not immediately evident due to the intricate counterpoint and technical difficulties of the section. It required experimentation to determine a reasonable tempo for A, which, in turn, established the limits for faster tempos throughout the piece. After setting these tempo relationships, she was able to internally ‘sing’ the story to herself, varying the pulse (♪) according to the composer’s indications (Bewegt, poco rit., etwas langsamer, etc). At this point, the pianist began trying things at the piano to figure out how to perform each passage.21 Practice alternated between technically easier events, such as the beginning of section B, and hard passages such as the 8th PC (see Map 1). Although she sometimes chose to practise the subsections (the green squares) separately, she was also attentive to their connection.22 She did not want to create a chopped-up sort of memorization that would interfere with the story’s fluency. The connection between the different subsections was the tempo of the ♪ pulse as suggested by Schoenberg, which determined the ‘mood’ of each event.

19 Measure numbering follows this paper’s purpose, indicating 6 beats per measure, based on 6 eighth-notes, inspired by Schoenberg’s indication of an eighth note pulse at the beginning of the piece.

20 This coincides with Ursula Oppens’ testimony in a recent interview with the first author (New York, 16th January 2012). Oppens described her process of preparing the première of Elliot Carter’s Night Fantasies at the Bath festival on 2nd June 1980. She talked about holding the piece together based on the constant changing of tempi and also used the term ‘the right technical feeling’ to be able to

21 These connections were illustrated at the piano during one of the conferences at the International Exchanges on Music Theory and Performance second study day at the University of Évora, Portugal, and is available at http://www.iemtp.ufpr.br/iemtp/second_day.html perform what one listens to.

When the pianist first marked the location of her PCs in Map 1 (the blue circles), she was preparing for her second public performance (on 14th January 2012 in New York). At this point, they were still more 'practice cues' than performance cues. They still needed more practice to make them fully reliable in performance. At this stage, they represented points where the pianist could reliably start practising, providing she had the idea of the whole already established in her inner hearing. The circled areas were the passages that she heard in her inner ear when she needed a place to start a new sequence in her narration. She heard them as short phrases, or statements, that originated from what she had just heard and, in turn, served as the origin for what followed in the musical discourse. She was pleased to find that most of the places that she had circled were available to her during the public performance on 14th January, 2012, confirming their efficacy as PCs. This is reflected in PC Map 2 (below), which was made on Sunday, 15th January, the day after the New York concert.

The map shows the places that the pianist used as points of reference during the concert; the circled passages are the 'landing places' she held on to in order to keep track of her progress and prepare for the following musical event. Since the first performance, in October 2011, it had become clear to the pianist that the opening of piece No. 3 required a substantial change of mood. It involves an entirely different structure and discourse from Op.11 No.2. The pianist realized that the abruptness of the opening could easily overwhelm her ability to listen during performance. The two red circles in Map 2 indicate places where she had mentally held on during the performance in order not to get lost. On this occasion, holding on had proved sufficient to avoid getting lost, but not sufficient to provide a natural flow to the musical discourse. The pianist realized, that in order to reliably elicit the performance gestures that she intended, she needed to add PCs at these points to guide her listening. After the last chords of section A, the pianist was able to focus more on the flow of the musical narrative. The passages that she attended to (circled in blue) were places where she connected different musical ideas or anticipated upcoming musical events.

Notice that the PCs in Maps 1 and 2 are mostly the same, indicating that the places that the pianist listened for and used as starting places while preparing for the second performance, were the same places that she was able to hold on to during the performance. The 'big picture' is approximately the same on both maps, with a little more elaboration in Map 2, into 'A', 'B', 'C' sections and a 'Coda' (marked in brown). The differences between the two maps reflect the evolution of the pianist's musical story for the piece, as her ability to listen became more detailed. In Map 2, PCs 4 and 8 from Map 1 have disappeared, absorbed by the larger passages to which they belong (measures 11.5–15.1 and 24.3–27 respectively). PC 7 from Map 1 becomes more focused on the specific elements in measures 22–24.1 that unify...
The first four measures

When the pianist sat down at the piano to play the opening of the piece, without the score, nearly two months later, on 8th March 2012, having not performed or practiced the piece since the last concert on 14th January, she was able to reconstruct the opening section of Op. 11 No. 3 from memory, taking about 15 minutes to do so. She was preparing a welcome lecture for new students in which she would play the passage to illustrate the kind of challenges that the students could expect. Anchoring on the PCs, she was able to perform the introduction by heart. Later the same day, she marked the PCs on a copy of the score (PC Map 3a). PCs marked in red are those that proved essential for holding on during the performance. They had been present in the pianist’s inner ear during the reconstruction from memory earlier in the day, as well as during the performance, and they had already been indicated on PC Map 2. The PCs in blue refer to the points which made possible the reconstruction of performance from memory. They revealed themselves during the reconstruction and occurred along with the others (marked in red) during the performance for the students.

As she made this map (PC Map 3a, above), the pianist realized that many of the PCs, particularly the more recent ones (marked in blue), represented vertical relationships; and that anchoring on these PCs by means of vertical listening, even for a single moment, could impede her forward movement through the music. Several PC markings were at points where chords are actually involved, such as at 1.3, 2.5, 3.2, 3.3, and 3.6. Others were at points where the hands play simultaneously, such as at 0.6, 3.3, 3.6 – 4.2. Still others were at points where a coincidence of attachment might be heard as a ‘chord’, such as at 0.6, 1.6, 2.2, 2.6 and 3.3. All of these markings could suggest or even induce vertical listening and a consequent interruption of fluency.

As she examined the annotations that she was making, it became clear to the pianist that, although she was aware of the polyphony as the result of her analysis, she had not altogether heard it in this way in her inner hearing during the performance. After repeating the passage many times during practice, she was not entirely sure of having the polyphony consciously present in her inner hearing in a way that would allow her to anticipate events during performance. This was most evident for the anchoring chords at 3.2, 3.3 and 3.5, which, she now realized, are part of a line and should not be heard vertically. She decided to map the polyphonic relationships in the passage and lead to the closure of section B. PC 9 from Map 1 moves from measure 30 to measure 29, where it announces the start of transition into the final statement in measures 33–35. In measure 28, there is a new PC, not present in Map 1, announcing the transition in measures 29–32. The increased precision of the PCs in Map 2 was the fruit of practice and of the growing intimacy with the piece which it produces.
This new way of annotating the PCs better represented the way in which the pianist listened to the music. The video’s clips illustrate the process of conscious appropriation of the sound material in a way that allowed the pianist to tell her story. The videos show the function of PCs as starting points during practising. The 1st video shows the pianist listening to the coincidences of attack between beats 2.1 and 3.5 (indicated in Map 4 as PCs in violet and blue, respectively) to ensure that they were heard as horizontal rather than vertical relationships. The 2nd video shows the similar practice of the horizontal relationships after ten months of not playing or looking at the score – represented in Map 4 by the green brackets at beats 1.4 and 1.6. The 3rd video shows the practice of the top voice from beats 2.6 to 3.5 (both points indicated in Map 4 as PCs in blue) as a fluent discourse. The 4th and 5th videos show the practice of the whole introduction, first with and then without the score, showing that, once the piece was memorized, the presence of the score did not alter the performance. The PCs were incorporated in the pianist’s inner hearing, allowing her to hear the music without looking at the score.
the time she had spent in studying the score and in practising. When she played the piece again, she listened with a new understanding that was reflected in her changing PC reports. The development of musical understanding that we observed might be attributed to the apparently deliberate obscenity of the composer, in the case of Op. 11 No. 3. Nevertheless, we suggest that similar changes probably occur with any piece, as a result of spontaneous development of performers’ musical sensibilities while dealing with (or finding) the narrative thread.

REFERENCES


Esteban Buch refers to 1909 as the year of Schönberg’s ‘anti-romantic turning point’, taking into account his music (from op.11 to op.18) and also his statements, addressed first to Richard Strauss, on 14 July 1909, and then to Busoni, about his need of freedom. Cf Esteban Buch, Le cas Schönberg (Paris: Gallimard, 2006), p.202.

Similar changes have been observed in other studies that followed the development of PCs across multiple performances mentioned in endnote n.9, where the musicians reported PCs were consistently in the same locations, but the content of the thought represented by the PC had changed.


266 267
This chapter explores my collaboration (as pianist) with British composer Patrick Nunn on his work for piano, 3D sensors and live electronics: Morphosis. By documenting the entire collaboration process, I was able to examine the development of the unique gestural language of the work and its genesis in shared workshops. The case-study also facilitates an examination of the role of the sensors and electronics as a catalyst for shaping our collaboration and the musical outcomes.

The case-study, part of a project studying music and gesture at the University of Nice and IRCAM¹, followed on from my PhD dissertation at the Royal Academy of Music, which examined the dynamics of composer-performer relationships, documenting 48 collaborations in total, with 10 in-depth case-studies on new works for solo piano (Kanga 2014). In creating the auto-ethnographic case presented here, I drew upon the research on collaborative creativity by Keith Sawyer (2007), Mihalyi Csikszentmihalyi (1997) and Vera John-Steiner (2000) the work of Heyde/Bayley (2015), Hooper (2013) and Clarke/Doffman/Timmers (2015), who studied the factors such as notation and instrument design which influence collaboration as well as the work of Clarke/Cook/Harrison/Thomas (2005), Heyde/Finch (2007), Hayden/Windsor (2007), Östersjö (2008), Roche (2011), Clarke/Doffman/Lim (2013) and Clarke/Doffman/Gorton/Östersjö (2015) that feature auto-ethnographic studies of the artist-researchers’ creative practices in order to explore many different models of collaborative relationships in music. In discussing the development of a work-specific gestural language within an electro-acoustic system, I drew on the work of Claude Cadoz (1999), Marc Battier (2000), and in particular of Marcelo Wanderley (2002) – who has analysed these systems in terms of types of technology.

¹ Zubin Kanga’s post-doctoral position in the CTEL research centre at the University of Nice-Sophia Antipolis is part of the GEMME project on Music and Gesture, supported by funds granted by the ANR (National Agency for Research, France).