

Ana Rebrina

Relation of Structure, Form and Perception in Post-Tonal Music

Analysis of Compositions by Pierre Boulez, Jean Barraqué, Karel Goeyvaerts and Michel Fano

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Department of Historical Musicology, Music Theory and Church Music Studies
Kunstuniversität Graz

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Abstract

This research explores the relation between the score, performance, and perception of post-tonal music. The focus is on performer's actions and on perceptual consequences of these actions for the listener. The corpus of the study includes compositions associated with the Darmstadt Summer Course, all composed at a similar time and in comparable circumstances: three piano sonatas by Pierre Boulez, Piano Sonata by Jean Barraqué, Sonata for Two Pianos by Karel Goeyvaerts and Sonata for Two Pianos by Michel Fano. Since the serial organization of material is hardly manifested in sound realization in these complex post-tonal compositions, surface details are important for the perception. One of the objectives of this research is to determine auditory detectable details of musical surface and compare them in different performances. Since post-tonal music is often presented as inaccessible, speaking to only a narrow circle of listeners, the aim is to find possible approaches to comprehensive listening of post-tonal music through the perception of auditory details and their connection with formal sections. In addition, the aim is to discover whether performance analysis can assist music pedagogy in the deeper understanding of post-tonal music. For this purpose, the selected repertoire will be analyzed on several levels: traditional analysis of material organization and serial procedures based on sketches and pre-existing studies, historical background of compositions and recordings, structural analysis and performance analysis based on a comparison of selected parameters in different recordings, morphosyntactic analysis as an attempt to capture the details on the musical surface. Given results will be supported with theories from the field of music psychology and compared with existing studies of selected compositions. In conclusion, findings from all analyses will be compared and interpreted.

1. Introduction

The proposal for this study is inspired by an interest in research projects of the Centre for the History and Analysis of Recorded Music (CHARM) and publications that resulted from these projects. CHARM's aim is to promote different approaches to music from the traditional one, which sees music as text written in a score and reproduced in performance.¹ Seeing a performer as one who "(literally) makes music" (Leech-Wilkinson 2009a, p. 791) leads to performance analysis that could enlighten "[the] ways in which performers make music work" (p. 791). Leech-Wilkinson (2009a) mentions an interesting illustration of this turn in attitudes, referring to Griffiths' third edition of his book *Modern Music (Modern Music and After)*, in which "references to compositional techniques have been replaced by comments on the resulting sound. Where once he heard structure, now Griffiths hears musical effect" (p. 798). My research will try to follow this change in attitudes. I will focus on performer's actions, but also on perceptual consequences of these actions for the listener. Since I am interested in post-tonal music, two projects of the University of Music and Performing Arts Graz, "A Context-Sensitive Theory of Post-tonal Sound Organization" (CTPSO) and "Performing, Experiencing and Theorizing Augmented Listening" (PETAL), have also had a significant impact on my occupation with this subject. This particularly applies to project-related publications and results, such as the concept of morphosyntactic analysis (Utz 2013a). My interest lies in the relation between the score, performance, and perception of post-tonal music. I would also like to find a method for employing this performance-oriented analysis to pedagogy, with an emphasis on comprehensive listening and developing aural skills.

2. Aims and Objectives

The selected repertoire includes three piano sonatas by Pierre Boulez, Piano Sonata by Jean Barraqué, Sonata for Two Pianos by Karel Goeyvaerts, Sonata for Two Pianos by Michel Fano, as well as related compositions that may be included during the research. All selected compositions are associated with the Darmstadt Summer Course, but Boulez's and Barraqué's sonatas are more often performed and recorded, and more present in musicological literature. Richard Toop (1974), in his article "Messiaen/Goeyvaerts, Fano/Stockhausen, Boulez" argues that Goeyvaert's and Fano's sonatas, represent "the missing link" (p. 141) between Messiaen's *Mode de valeurs et d'intensités* and two compositions that are generally considered as the

¹ See <http://charm.rhul.ac.uk/about/about.html>

representatives of early European serialism: Boulez's *Structures* and Stockhausen's *Kreuzspiel*. Boulez's sonatas are chosen as the corpus of this study because they are frequently recorded. The other compositions are included because they were all composed at a similar time and in comparable circumstances. Furthermore, they all look up to Messiaen as their role model, and finally, they are scored for the same instrument(s). This allows and simplifies their comparison. While comparing different recordings, I will consider the time when and circumstances under which they were produced as well as the performer's background, since all of this can affect the recording.

The approach that Cook (2013, p. 87) terms "analysis-to-performance" presumes a tight relationship between structure and performance. Performance is then "the beneficiary of analysis" (2013, p. 49). An opposite approach is performance analysis, in which the performer is a significant contributor. In that regard, a musical structure is not unambiguous and "therefore should be seen as constructed, not immanent; as pluralistic, not singular" (Rink, 2015, p. 129). My objective is to discover how performers construct a structure in different performances and whether they somehow signify it. Writers have various conceptions regarding the relation of structure and perception. Daniel Leech-Wilkinson (2012, para. 4.10) argues that music is perceived through "details of the musical surface that performers are able most precisely to modify and of which listeners are most aware", and that "long-term structures [are] theoretical, useful for composers, an invitation from analysts to imagine music in a particular way, but apparently not perceptible." I wonder what those notable details are and whether they differ in different performances.

Although, as mentioned above, structure is insignificant for perception, the CTPSO and PETAL projects assume that compositional structure and large-scale dimensions are relevant for the interpretation of music (Utz, 2013b, p. 36). If the structure is relevant for the interpretation, in a way that the performer approaches certain compositions with a strategy, then it could be assumed that different approaches will affect the listener's perception differently.

One of the objectives of this research is to determine auditory detectable details of musical surface and compare them in different performances. Since the serial organization of material is hardly manifested in sound realization in these complex post-tonal compositions, surface details are important for the perception. Referring to the conclusion that perceptual processes in listening to post-tonal music do not differ from everyday listening (Utz, 2013a), I will try to look for the cause of these perceived details in psychological studies such as Bregman's (1990). Furthermore, I will try to establish the importance of structure for perception and ways in which

performers approach this problem. I would like to find out if there is a certain regularity in approaches to different but similar compositions if they are performed by the same performer (for example, in Yvonne Loriod's performance of Boulez's second sonata and Barraqué's sonata). Do these details "mark" the form (Utz, 2017b, p. 4), and do performers use them to signify boundaries of large structure? In research that dealt with the perception of macroform in post-tonal music, Anna Rita Addessi and Roberto Caterina (2005) asked the subjects their strategy for dividing form sections from one another. The answers were diverse: variation in intensity, timbre variation, acceleration, deceleration or change in rhythm, thickening or thinning of the sound, introduction, repetition, elements concluding or suspending and pause (p. 108). Although there were some differences in the ranking of the preferred answer, musicians and non-musicians seemed to apply similar strategies. The research has also shown that boundaries of form sections in score-based analyses conducted by the analysts differ from the subject's analyses based on listening. I would like to find out the criteria for the perception of different form sections in the selected repertoire and the extent to which they depend on the performance.

Finally, although listening and understanding post-tonal music are undoubtedly possible without prior knowledge or musical education (Utz, 2013a, p. 95) (after all, Addessi and Caterina's research included non-musicians²), I wonder whether performance analysis can assist music pedagogy in the deeper understanding of post-tonal music. Since post-tonal music is often presented as inaccessible, speaking to only a narrow circle of listeners, my aim is to find possible approaches to comprehensive listening of post-tonal music through the perception of auditory details and their connection with formal sections. With the assistance of performance analysis, one could be pointed to several groups of distinctive details that could guide one through a composition. It is possible that this is the way of developing a listening experience that could help in understanding other compositions; consequently, it could present post-tonal music to a new audience.

Existing textbooks on post-tonal music theory are mostly concerned with theoretical concepts such as pitch-class set theory (Kostka, 2006; Rahn, 1980; Straus, 2005), or approaches to post-tonal theory through ear training (Friedmann, 1990). Roig-Francolí (2008) suggests

²"The differences between the two groups of subjects, musicians and non-musicians, were not, apart from one exceptional case, statistically significant. This finding would therefore seem to support the hypothesis that, at some levels of analysis, the competence possessed by musicians does not necessarily affect the perception of the macroform of a piece, at least in the case of post-tonal music. The fact that most of the musicians had some familiarity with post-tonal music makes this aspect of our results all the more noteworthy" (Addessi and Caterina, 2005, p. 112).

implementing historical and social context into post-tonal pedagogy. The theoretical aspects such as material organization and compositional procedures are important issues for students being introduced to post-tonal music for the first time, but it should not be assumed “that analysis of music should somehow reflect the way in which we hear it” (Schuijjer, 2008, p. 23). This “analysis of music” mostly implies the analysis of the score.

This research builds upon existing research concerned with post-tonal pedagogy (for example, Lang, 2013) in the aspect of performance analysis. The introduction to post-tonal music could start from analysis of overall sound compared in different performances. The causes of perceived sound could be sought in the performer’s interpretation of the score and then compared to compositional procedures.

3. Methodology

In this research, I intend to analyze the selected repertoire on several levels. One is the traditional analysis of material organization and serial procedures based on sketches and pre-existing studies. This analysis is not the aim itself, rather it presents help in orientation through composition. I will explore the historical background of compositions and recordings. In addition, I will conduct structural analysis and performance analysis based on a comparison of selected parameters in different recordings. The morphosyntactic analysis will present an attempt to capture the details on the musical surface. Given results will be supported with theories from the field of music psychology and compared with existing studies³ of selected compositions. In conclusion, findings from all analyses will be compared and interpreted.

a) Historical background

The circumstances in which the selected repertoire was composed,⁴ as well as the conditions in which and the time when each was made, might affect the recordings in question. These pieces of information could deepen the understanding of specific actions. For example, Cook (2013, p. 5) distinguishes two approaches to performance, which differ in their conception of time: rhetorical and structuralist performance. It is important to emphasize that these two approaches are not mutually exclusive – performance could be influenced by one or both approaches. Although there are some implications for association of premodern and rhetorical performance,

³ For instance, Bösch, 1999; Dobretsberger, 2005; Henrich, 1997; Metzger and Riehn, 1993; Zenck, 2017.

⁴ For instance, Grant, 2001; Parsons, 2003; Ross, 2007; Toop, 1974.

as well as modern and structuralist performance (p. 86), Cook showed that there is no clearly established time boundary between them (p. 129). Research into historical background could include performers' personal scores or correspondence, if available. This could help to explain performers' interpretative process in terms of "informed intuition" (Rink, 2002, p. 36).

b) Structural analysis

As mentioned earlier, analysis of material organization and serial procedures is not the aim. Its purpose is orientation through the material. This analysis will be complemented with a large-structure analysis. The resulting structure will not be observed as something that compositions "have" (Cook, 2013, p. 87), rather it will provide a starting point to various explanations.

c) Performance analysis

In the analysis of each composition, I will implement multiple listenings and computer programs for the visualization of the chosen parameters. This includes Sonic Visualiser and software developed under CHARM's "The Mazurka Project".⁵ The computer-aided analysis will include parameters of tempo and dynamics, and they will represent the basis for comparison of different performances. Through analysing recordings, I will try to extract perceptible surface details and seek their justification in the perception theories of David Huron (2001), Albert Bregman (1990) and others. In addition, I will rely on the morphosyntactic approach to sound "that assigns a prominent role to the interaction of morphological (Gestalt-oriented) and syntactic (time-oriented) perceptual processes based on syntactic archetypes (tension/release, call/response, presence, etc.)" (Utz, 2013b, p. 34). According to Bregman (1990, p. 434), conflicting principles are responsible for grouping different elements into one stream. Some of them include proximity in time and frequency proximity, which "compete" with one another in grouping tones in one stream. The gap between two pitches that could guarantee grouping in time or in pitch space is not precisely established. This gap is flexible; it depends on musical context, and possibly on performance. These principles are crucial for the perception of the post-tonal musical surface because, according to Bregman (p. 457): "In much complex contemporary music we cannot talk about melodic lines in the traditional sense, but still there exist horizontal and vertical dimensions of the organization. The total mass of sound may separate itself into layers that are distinct from others and persist for varying lengths of time." I will try to identify the principles responsible for generating streams in each composition and compare them in different performances. I will use "close listening" (Cook, 2013, Chapter

⁵ <http://mazurka.org.uk/software/online/>

5; Leech-Wilkinson, 2009b, Chapter 8.2.) with computer-aided graphs of tempo and dynamics, which could assist in the precise determination of surface details in the total sound.

As shown in analyses of Scelsi's *I Presagi* (Utz, 2013b; 2013c) or Boulez's *Structures* (Utz, 2017b), our perceptive system allows focus on various dimensions of the sound or different combinations of these dimensions. Therefore, "performative listening is the individual realization of this oscillation which in turn forms the basis of their association with meanings and emotions" (Utz, 2013b, p. 40). Consequently, the aim of this analysis is not to uncover the best or a singular approach to listening – on the contrary, the aim is to uncover multiple perception modes (Utz, 2013b, p. 36).

d) Even though some discussions cast doubt on the possibility of large-structure perception (Leech-Wilkinson, 2012, para. 4.8–4.10), I will try to relate the results of perceived surface details with structure and examine the performer's possible intention in indicating the large-structure boundaries.

e) Pedagogical implications

As one possible application of performance analysis in pedagogy, I will refer to Joseph Straus' interesting 1986 analysis of Milton Babbitt's *Second string quartet*. Straus described his approach as "listener-oriented" (p. 11). His aim was not to analytically determine and perceive twelve-tone material, but rather to indicate some musical relationships unrelated to twelve-tone material, which one can follow through composition. These relationships included contour (up – down), dynamics (loud – soft), register (high – low), articulation (*staccato* – *legato*) and rhythm (long – short). He tried to guide the listener's attention by pointing to a specific element at certain moments while emphasizing that his suggestions were "only one of many possible paths through a rich edifice" (p. 11). It is possible that this approach, accompanied by an analysis of several performances, is a promising way of presenting post-tonal music to a new audience through pedagogy. It would not only include traditional analysis and "interpretations" (Schuijjer, 2008, p. 23) of the score, but also "the process through which such interpretations come into being" – and this process is performance.

Possible disposition of the thesis:

1. Structural analysis of selected compositions
2. Auditory and performance analysis of selected compositions
3. Performance analysis in music pedagogy

4. Work Plan

Year 1

Phase	Research activity	Time period
1	Analysis of the selected repertoire based on score, sketches and existing literature	Serial procedures
		Structural analysis
		Historical background
2	Comparison with existing literature	February
3	Selection of recordings	March-April
4	Historical backgrounds of selected recordings	
5	Analysis of surface details in selected recordings	May-June
6	Refining literature review, sketching chapters	July-September

Year 2

Phase	Research activity	Time period
1	Construction of tempo and dynamics graphs	October
2	Comparison of chosen parameters in different recordings	November-December
3	Perceptive mechanisms	Review of existing literature
		Perception of surface details - psychological principles
		Large structure perception
4	Performer's approach to large structure; perceptive consequences	May-June
5	Comparison of findings, sketching chapters	July-September

Year 3

Phase	Research activity	Time period
1	General approach to post-tonal music in education	October
2	Performance analysis: pedagogical implications	November-December
3	Conclusion	January-September
4	Writing and editing	

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