String Theory: An Ethnographic Study of a Professional Quartet in Hong Kong[*]

by Su Yin Mak

Abstract. Recent scholarship has witnessed welcome efforts to formulate models of "performer's analysis" that expand the definition of analysis beyond its default meaning as the text-based, intra-opus examination of the score. Yet there remains within the field a strong tendency towards the binary opposition between performative–practical and critical–theoretical orders of knowledge; structure is often consigned to the domain of the latter, and its role within "performer's analysis" has received little attention. This article reports on my attempt to redress the omission through an ethnographic study of a professional string quartet in Hong Kong. Quantitative and qualitative analysis of the rehearsal footage, along with interviews with the players, offers insights on how professional performers perceive, conceptualize, and communicate about musical structure. The research findings suggest that (1) metaphorical and embodied descriptions of music and (2) real-time, listening- and experience-based analysis can serve to mediate between theoretical and practical perspectives of musical structure. It also demonstrates how methodological interactions between theory and ethnography might contribute to such mediation.

Keywords and phrases: Rehearsal analysis, string quartet, analysis and performance, ethnography of live performance, performer's analysis of musical structure.

Since the 1990s, theoretical approaches that considered analysis to be a means of offering instructions and guidelines for performance have been largely refuted.[1]

Instead of prescribing performance decisions based on the findings of score analysis, scholars have come to acknowledge performers as artistic and intellectual equals, and have suggested new avenues for exploring the interactions between analysis and performance. Recent scholarship has witnessed welcome efforts to formulate models of "performer's analysis" that expand the definition of analysis beyond its default meaning as the text-based, intra-opus examination of the score,[2] as well as studies of recorded or

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[*] This article is an expanded version of two conference papers presented at "Analysis—Interpretation—Performance: Annual Conference of the Austrian Society for Musicology 2015," University of Music and Performing Arts, Graz, Austria, November 2015; and the Joint Annual Meeting of the American Musicological Society and the Society for Music Theory, Vancouver, Canada, November 2016. I am grateful to the conference participants for their feedback and suggestions.

[1] Cone (1968), Berry (1989), and Narmour (1988) are representative of the prescriptive approach to the relationship between analysis

and performance.

[2] The notion of a "performer's analysis" that is distinct from what has variously been designated "serious analysis," "rigorous anal-

live performances that explore the analytical implications of performance decisions. Yet, despite these welcome reflections on the meaning of analysis in relation to performance, the role of musical structure within "performer's analysis" has not received a corresponding reexamination. There remains within the field the strong tendency towards a binary opposition between performative–practical and critical–theoretical orders of knowledge that consigns the interpretation of structure exclusively to the domain of the latter, as epitomized by Carolyn Abbate's categorical separation of "drastic" experience and "gnostic" understanding.[3]

Such dualistic thinking betrays slippage between structure and structuralism, and is problematic for several reasons. First, although performer's analysis might well be intuitive and unsystematic, it does not necessarily follow that structural considerations are irrelevant: most performers do pay careful attention to how the music works, and parameters conventionally characterized as structural, such as form, harmony, and meter, often come into play in their interpretive decisions. Second, the realization that the music is not confined to the score and that performance is much more than the naïve and literal mapping of analytic findings to sound does not mean that the score no longer serves as a referent: performers in the Western art music tradition customarily play from the score, and they are just as likely as theorists to view the musical work as grounded in and delimited by its notation.[4] Third, most conservatory-educated professional performers do have formal training in music theory, and it would be presumptuous to exclude such training from the knowledge base that informs their performance choices. Finally, the supposed dichotomy between critical–theoretical and performative–practical modes of understanding is primarily a critical–theoretical construct. While the scholar and the performer undoubtedly have different concerns, objectives, and priorities, such differences are usually conceived of and presented from the perspective of the former, with little experiential input from actual performers.[5]

I believe that our understanding of "performer's analysis" could benefit greatly from the ethnographic study of live performance, since under its observational or interview-based research framework professional performers could have the opportunity to speak for themselves. This article presents the results of a research project that aims to explore how members of a professional string quartet in Hong Kong perceive, conceptualize, and communicate about aspects of musical structure.[6] Over a twelve-month period, I documented the Romer String Quartet's rehearsals and public performances, and conducted interviews and conversations with the players at various stages of the research process. Analysis of the rehearsal footage and of the players' own reflections offer valuable insights on the role of structural considerations in performance preparation, and suggests ways in which theoretical and practical perspectives of musical structure might be mediated.

1. Methodology and Research Questions

The development of ethnographic approaches to Western art music performance has largely taken place in the UK rather than North America, and might be contextualized within the body of research known collectively as British Performance Studies. In the early 2000s, fueled by higher education research directives that encourage "practice-as-research" in the performing arts,

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ysis," and "theorist's analysis" was first proposed by Rink (1990). This distinction informs all of Rink's subsequent work, and has also been adopted by other scholars, most notably by Nicholas Cook (2013).

[3] Abbate (2004, 505–536).

[4] The equation of "work" and "score" may be traced back to what Lydia Goehr (1992) has described as the historical formulation of the "work-concept." Goehr proposes that the work-concept came into existence about 1800 as a result of the romantic emphasis on creative genius. The composer is considered the ultimate authority for the musical work, and accordingly the score is its only authentic testament. This newly established ontological status meant that the musical work could exist outside its original performance context by maintaining its textual form; more seriously, it implies that the textual form could circumscribe future performances by preserving in writing the structural relationships that are to be realized in sound.

[5] To be sure, there is a considerable body of work by scholars who are themselves accomplished performers, and who alternate between the theorist–analyst's and performer's viewpoints and attempt to give equal authority to each; Janet Schmalfeldt's groundbreaking 1985 article on the Beethoven bagatelles, with its innovative dialogue format, is a classic example. My point is that scholar–performers, such as Schmalfeldt and Rink are career academics first and performers second. Even when they assume the voice of the performer, their perspectives on performance are likely to differ from those of professional musicians who are not equally trained in the terms of academic discourse.

[6] A string quartet is chosen for both methodological and practical reasons. First, chamber music rehearsals typically involve a great deal of talking. Whereas in large ensembles such as an orchestra the presence of the conductor minimizes the input of individual players, and in solo music the performer does not need to talk at all, in chamber music players must constantly negotiate their interpretative differences. Moreover, the string quartet's formal conventions and aesthetic values establish it as a site for conversations among equals. Second, it is not easy to find professional musicians who are willing to let an outsider attend, record, and publish about their rehearsals, a performance context in which interpretations are by definition imperfect and provisional. I am tremendously grateful to the Romer String Quartet for agreeing to participate in my research project.

British scholarship turned from what Nicholas Cook has called a "page-to-stage" or "analysis-*to*-performance" approach to the analysis *of* performance: instead of being seen as the beneficiary of analysis, performance is treated as the object of analysis, and performers appear in the roles of informants, consultants, or collaborators.[7]

Two research centers, both of which received major funding from the UK's Arts and Humanities Research Council, established influential research trends for British Performance Studies. The first, the AHRC Research Centre for the History and Analysis of Recorded Music (CHARM, 2004–2009), was a five-year collaborative research program involving three institutions: Royal Holloway, University of London; King's College London; and the University of Sheffield. In addition to establishing online bibliographies and archives of digitized recordings to support musicological research, projects carried out by the center developed analytic approaches to the study of recordings. One representative research project of CHARM was "Style, Performance, and Meaning in Chopin's Mazurkas," which compared aspects of performance style through descriptive statistics. The tempo and dynamic data from a pool of recorded mazurka performances were extracted and then analyzed computationally using specially designed software tools; this empirical data, in turn, formed the basis of observations about historical and geographical differences in performance practice.[8]

CHARM's successor, the AHRC Research Centre for Musical Performance as Creative Practice (CMPCP, 2009–2014), was likewise a five-year research program, but one on an even larger scale.[9] As the center's name implies, it focused on live musical performance and creative music making, and encouraged collaborative research between scholars and performers; the partner institutions now included both universities (University of Cambridge; King's College London; the University of Oxford; and Royal Holloway, University of London) and conservatories (the Royal College of Music and the Guildhall School of Music and Drama). As a result of the greater involvement of performers, the overall research approach took an ethnographic turn, and relied extensively on fieldwork methods such as observation and participant-observation, questionnaires, interviews, focus-group discussions, practice diaries, and audiovisual documentation.

Aside from the research projects affiliated with CHARM and CMPCP,[10] there has been a wide range of questionnaire- and interview-based research and participant-observational studies involving various pedagogical, rehearsal, and performance situations in British scholarship—research projects that greatly inform the current study. Two important precedents for my project with the Romer String Quartet are Jane Davidson and James Good's 2002 observation and interview study of a student string quartet, and Amanda Bayley's project with the Kreutzer String Quartet and the composer Michael Finnissy, which has generated multiple publications between 2009 and 2011.[11] Davidson and Good examine how a student quartet's social dynamics affect musical interaction, and Bayley documents a professional quartet's rehearsal of a newly composed work towards investigating the interactive and communicative processes between the composer and the performers.

While I have taken reference of the research methods of these authors, my project differs from theirs in two significant ways. First, the two aforementioned studies address the performance preparation of a single concert program or a single musical work, whereas my observations took place over an extended period, and involved multiple rehearsals and performances as well as a wide range of works from the standard quartet repertoire. Second, I focus especially on how the Romer String Quartet approached aspects of musical structure, with the following three sets of research questions in mind:

a. How important are considerations of form, harmony, meter, and other structural parameters in the players' interpretative decisions about pacing, articulation, and sound quality, relative to practical concerns such as coordination and bowing?

b. Do the players correlate expressive gestures to aspects of musical structure? What vocabulary do they use in their communications? Do they refer to music-theoretical concepts and terminology?

c. How do the players view their formal training in theory and analysis? Do they find it useful in performance preparation?

My collaborators are young professional players under the age of 35 at the time of the project. They were all born in Hong Kong, received their early music education in that city, and later pursued postgraduate studies in the United States or the United Kingdom. They met through playing in one of Hong Kong's flagship orchestras, the

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[7] See Cook (2013, 49).

[8] For instance, in a journal article resulting from this project, Nicholas Cook (2007) proposes a possible performance genealogy of performances of the Op. 68, No. 3 Mazurka based on the correlation of tempo data.

[9] Whereas CHARM received just under £1m from the UK's Arts and Humanities Research Council, the funding for CMPCP was more than doubled (£2.1m).

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[10] For details on the research projects conducted by these two centers, see their respective websites: http://www.charm.rhul.ac.uk/index.html and http://www.cmpcp.ac.uk/.

[11] See Davidson and Good (2002), Bayley (2010), Bayley (2011), Bayley and Clarke (2009), and Bayley and Clarke (2010).

Table 1. The Romer String Quartet.

		Formal Music Education	Full-time orchestral employment (Hong Kong Sinfonietta)
First violin	Kitty Cheung	MM, Guildhall School of Music DMA, Eastman School of Music	Associate Concertmaster (since 2011)
Second violin	Kiann Chow	MM, Royal Academy of Music, London	Orchestral Associate (since 2012)
Viola	Ringo Chan	MM, Cincinnati College-Conservatory of Music	Tutti player (since 2012)
Cello	Eric Yip	MM, Chicago College of Performing Arts	Tutti player (since 2012)

Table 2. Research Activities and Material.

Research material	Form of documentation	Date	Pieces
Pre-project preparation			
Meeting with Quartet	Written notes	Sept 11, 2014	N/A
Rehearsals			
1. With theorist–observer	Video	Sept 19, 2014	Webern, *Langsamer Satz* Beethoven, Op. 18, No. 4
2. With theorist–observer	Audio	Dec 4, 2014	Haydn, String Quartet No. 40 in F Major, "The Dream"
3. Without theorist–observer		Dec 17, 2014	Ravel, String Quartet in F Malecki, Polish Suite
4. Without theorist–observer		Jan 20, 2015	Stravinsky, Double Canon Stravinsky, Three Pieces for String Quartet Haydn, String Quartet No. 40 in F Major, "The Dream" Beethoven, String Quartet No. 11 in F minor, Op. 95, "Serioso"
5. Without theorist–observer		Feb 15, 2015	Haydn, String Quartet No. 40 in F Major, "The Dream" Joyce Tang, *Lineae* Rimsky-Korsakov, Allegro in B♭
6. Without theorist–observer		Feb 18, 2015	Haydn, String Quartet No. 40 in F Major, "The Dream" Rimsky-Korsakov, Allegro in B♭
Public Performances			
1. Citibank Plaza	Video	Sept 19, 2014	Webern, *Langsamer Satz* Beethoven, Op. 18, No. 4
2. Lee Hysan Concert Hall	Video	Sept 23, 2014	Webern, *Langsamer Satz* Haydn, "Emperor" Quartet Beethoven, Op. 18, No. 4
Reflection			
Post-concert dialogue: Music Department, the Chinese University of Hong Kong	Audio	Oct 7, 2014	Webern, *Langsamer Satz* Haydn, Emperor Quartet Beethoven, Op. 18, No. 4
End of project interview	Audio	Aug 14, 2015	N/A
Online conversation with first violinist	Written	Nov 10, 2015	N/A

Hong Kong Sinfonietta, and founded the Romer String Quartet in 2013. Ever since, they have been very active as a quartet both within Hong Kong and internationally.[12]

Table 1 lists the players' formal music education and full-time professional employment. Table 2 summarizes my research activities and the types of material I collected, which include: (1) pre-project interview; (2) recordings of 6 rehearsals (both with and without my presence as an observer); (3) multiple takes of performances; and (4) players'

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[12] Additional information on the quartet and its activities is available on their website, http://www.romerstringquartet.com/.

Table 3. Comparison of categories in quantitative analysis of rehearsal data.

Mak	Bayley	Davidson and Good
1. *Play Through*	1. Play	
2. *Musical Conversations (both verbal and non-verbal)*		1. Musical conversations
		2. Musical interactions
Topics		
a. Mood/feeling/character		
b. Sound quality, balance, intonation	2. Sound Quality	
c. Tempo and coordination	3. Coordination	
d. Structural parameters (e.g. form, harmony)		
e. Instrumental technique (e.g. bowing, articulation)	4. Technique	
f. Notation	5. Notation	
g. Performance conditions		
h. Other		
	6. Context	
	7. Musicking	3. Non-verbal musical interactions
3. *Non-musical interactions*	8. Chit-chat	4. Social conversation
	9. Humor	5. Non-verbal social interactions

reflections, gathered through a post-concert discussion forum, a post-project interview, and a one-on-one conversation with the first violinist.

2. Preliminary Quantitative Analysis

All of the quartet's rehearsals alternate between playing through the music and conversations about the music. The performers typically begin with playing, and stop when there is need to work out some aspect of technique or interpretation for a particular passage. After comment, discussion and trying out different options, they come to an agreement about the preferred execution, and then move on to the next passage. Thus, I conducted quantitative analysis of the rehearsal data using the timings of the audio and audiovisual recordings to determine the relative lengths of time devoted to various activities and topics. I began by dividing the rehearsal time into three broad categories of activities:

1. Play through: continuous playing of music;
2. Musical conversations: verbal discussions about technical or expressive points of the music, complemented by nonverbal gestures serving a musical purpose, such as demonstrating a point about phrasing by playing on the instrument, singing or with physical movement;
3. Non-musical interactions (such as social chit-chat, discussion about scheduling, etc.).

Within Category 2, musical conversations, I further subdivided the rehearsal time according to the topics of discourse:

a. Mood/feeling/character;
b. Sound quality, balance, and intonation;
c. Tempo and coordination;
d. Structural parameters (e.g., form, harmony);
e. Instrumental technique (e.g., bowing, articulation);
f. Notation;
g. Performance conditions;
h. Other.

For comparative purposes, Table 3 shows these categories alongside those used in Davidson and Good and Bayley's research. Whereas the categories adopted in both the earlier rehearsal studies make a large distinction between verbal and nonverbal modes of interaction, I have found that, in practice, verbal discussions about particular performance issues are inevitably accompanied by what Amanda Bayley (2011, 409–411) calls "musicking": where players use their instruments or singing rather than words to explain what they mean.[13] There are no straightforward breaks between playing and talking, and although one could break up the conversation and assign definite lengths of time to the two modes of interaction, it would be both counterintuitive and pedantic to do so. My "musical conversations" category is based, instead, on the understanding that communications about music conversations may take both verbal and nonverbal forms. Also, both Davidson and Good and Bayley subsume playing and musicking under the single category of "musical interactions," whereas I believe they are fundamentally dif-

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13 Note that Bayley's usage of the term "musicking" differs from Christopher Small's original definition, in which the verb "to music" means "to take part, in any capacity, in a music performance, whether by performing, by listening, by rehearsing or practicing, by providing material for the performance (what is called composing), or by dancing" (1998, 8).
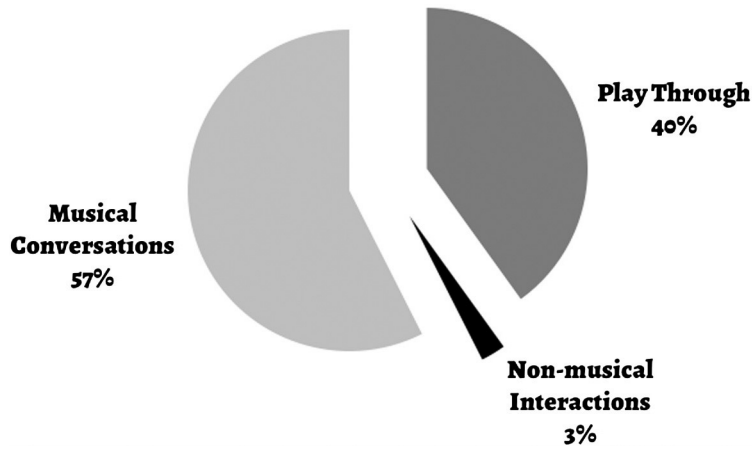
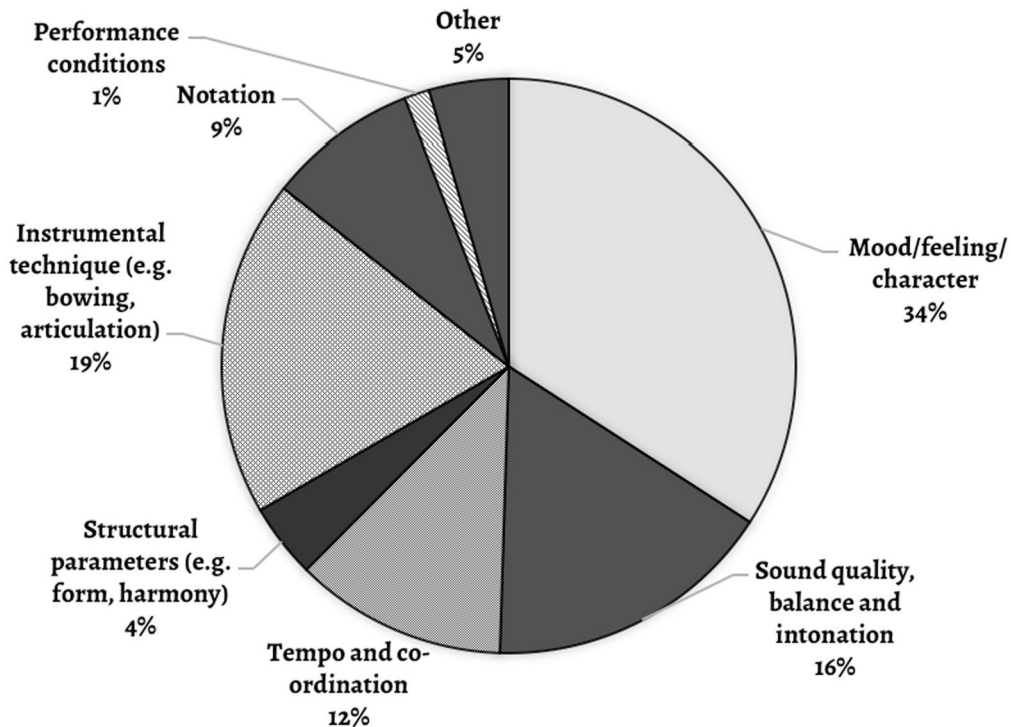*Figure 1. Time distribution of three-hour rehearsal on September 19, 2014.*

Figure 2. Topics of discussion in rehearsal on September 19, 2014.

ferent activities: the former *is* music making, whereas the latter occurs within conversations *about* music making.

The following two figures illustrate how I have analyzed the rehearsal data quantitatively. Figure 1 shows the relative amount of time spent on the three broad categories in a three-hour rehearsal on September 19, 2014, and Figure 2 shows the topics of discourse within "musical conversations."

The largest portion of rehearsal conversation was devoted to discussions of mood, feeling, and character (34%).

Next in importance were issues of sound, coordination, and technical execution (12–19%). Structural parameters, such as harmony and form, were rarely singled out as topics of discussion (only 4%)—which at first glance might seem to confirm the common academic prejudice that performers do not concern themselves with musical structure when they prepare for performance. However, the low percentage number is misleading because quantitative analysis has inherent methodological limitations. Musical conversations—like any other type of conversation—flow organically from one topic to the next, and the discussion

Example 1. Beethoven, String Quartet in C Minor, Op. 18, No. 4, iv, mm. 137–153.

topics inevitably overlap. Video Example 1,[14] a video segment from the September 19 rehearsal, illustrates: the passage in question is from Beethoven's Op. 18, No. 4. The players began with a technical discussion of bowing, continued to a highly colorful metaphorical description of musical urgency as analogous to "needing to use the bathroom," and ended with an extended consideration of pacing and coordination in terms of "running" and "chasing."[15]

In my quantitative analysis of the rehearsal footage, categorization by topic has been made according to what is most easily distinguishable; and since harmony was not singled out or even mentioned in this segment, I did not include its discussion under the category of "structural parameters" in Figure 2. Yet, the first violinist's remarks about musical urgency were actually implicitly based on harmonic analysis. At a later point in the rehearsal, I asked the players what they meant by the analogy of "needing to use the bathroom," and they explained as follows:[16]

VA: It's like the harmony gives you a sense of urgency, an intensity, but you don't let yourself spill [with hand gesture]. You desperately need release, but you don't let yourself go.

FV: For example … let me give you a practical and technical explanation. Just now, we were talking about m. 137 in the last movement [of Beethoven's Op. 18, No. 4], this passage [points to the place in the score]. Actually, each time the music moves up a notch, but we have to hold back because the crescendo doesn't start until there [points to m. 149]. So the feeling we want to create is [that] the music wants to crescendo but we can't let it crescendo.

VA: Like we need to pee but we can't.

Video Example 2 is a video segment of this conversation, and Example 1 is the score for the passage in question.

Clearly, quantitative analysis cannot show *how* problems are raised, discussed, and resolved during the course of a rehearsal. The graphic representation of data can only give a rough sense of the various elements, and must be supplemented by additional analysis based on qualitative principles. In the rest of this article, I offer some general remarks about the quartet's interpretative practice based on both my own observations and explanations by the quartet members themselves, and explore its methodological and pedagogical implications for music theory.

3. QUALITATIVE ANALYSIS

The quartet's comments on the Beethoven quartet passage in Video Examples 1 and 2 bear interesting com-

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[14] This and future video examples can be found at *Intégral*'s website, http://www.esm.rochester.edu/theory/integral/. When prompted, please use the password mak_30.2016 to access the documents pertaining to this article.

[15] Since the players communicated in Cantonese, I have added English subtitles to all the video segments included in this article.

[16] Here and elsewhere in this article, remarks by the players will be identified as follows: FV = first violinist, SV = second violinist, VA = violist, VC = cellist.

parison with conventional theoretical explanations. First, the players did not identify the progression and its chordal components using letter names (e.g., "C major"), functional Roman numerals (e.g., "V of IV"), or theoretical terminology (e.g., "sequence"), but instead described its rhetorical and expressive effects; it would seem that they think of harmony in terms of actions rather than names, as verbs rather than nouns. Second, their perception of suppressed tension seems to have resulted from the contradiction between the progression's harmonic tendencies ("needs release," "moves up") and Beethoven's dynamic markings ("we have to hold back because the crescendo doesn't start until there"); accordingly, they interpreted the crescendo marking at m. 149 as a cue for resolution. By contrast, a music theorist would locate the moment of release at m. 153, when the augmented-sixth chord moves to V.

We also saw that the players used metaphorical and embodied descriptions extensively during rehearsal, even when addressing details of technical execution. Moreover, they moved seamlessly between talking, playing, singing, and the use of physical gestures. Video Example 3, taken from a rehearsal of Rimsky-Korsakov's Allegro in B♭ held on February 15, 2015, offers additional illustration. When discussing the character of the main theme, the first violinist proposed that it should be "more feminine." The violist joking said, "like Hello Kitty," and the first violinist responded, "Yes, Hello Kitty—like Tchaikovsky but even more effeminate." After playing through the theme, the performers agreed to maintain a "princess" character that is "like *Scheherazade*," and cautioned each other that the music should not "sound like Hercules" even when there is a forte dynamic marking.

The delightful mix of vivid metaphors in this exchange ("Hello Kitty," "Hercules") were used in tandem with stylistic references to other works and composers (Tchaikovsky and *Scheherazade*) to describe the theme's supposed "feminine" character; and the priority placed on feeling and character, in turn, was closely related to the attention to tone quality. This style of communication is typical of all the rehearsal sessions I observed. In my end-of-project interview with the Romer String Quartet on August 4, 2015, excerpts of which are shown in Appendix I, the players repeatedly emphasized that the interpretative process begins with sound and feeling:

SV: Personally I am not so scientific. Most of the time I go by feeling. I simply rely on listening, a lot of listening and singing, and then I feel, this is how I should play.

FV: The reason why sound quality is a priority is because all four of us have to be a unified voice at the end of the day. So we work on the sound first, then we take that unified sound and slowly manipulate it, and navigate together, whether to move towards this direction or

that direction. If we do it the opposite way, approach the structure before dealing with the sound, then each person would use a different voice to try and express the same idea, and you end up wasting a lot of time... But with sound, either it works or it doesn't. So sound has to do with musical structure, but not directly.

VA: Or one should say that through listening to the tone quality, or [aiming for] the tone quality we want to achieve, we slowly discover what the structure is. After unifying our sound, we might hear, for example, how the harmony moves, we would find the sparks, and then we would know how to shape the phrase. That's how it goes, roughly... Harmony is the first step, and from harmony you can infer phrasing, and when you further extrapolate, phrasing will become form. It's a step-by-step process.

Both the players' discussion of harmony in the Beethoven rehearsal and their remarks in this interview excerpt suggest that they view musical structure as emergent, as something that is processually apprehended during the rehearsal process: the act of interpretation is not one of "translating" structure *into* sound, but rather one of discovering structure *through* sound. This emphasis on real-time listening seems to exemplify Nicholas Cook's (2013) claim that "performer's analysis" differs fundamentally from "theorist's analysis." Extending Mark Johnson and Steven Larson's (2003) distinction between the participant's and the observer's perspectives, Cook (2013, 45) defines performer's analysis as being located on the ground and following "real-time action;" it is oriented towards "experiencing the music as a continuous unfolding from one moment to the next." By contrast, theorist's analysis adopts the observer's bird's-eye view, and relies on "spatialised, hierarchical models [which] assume that meaning is concentrated in coherent wholes rather than the transitions between them." Indeed, at a different point in the interview, the first violinist even said that the quartet's approach to structure is "not rational," and is "not like writing a theory paper." She claimed to prefer relying on her instincts to respond to the music, instead of "sitting around discussing."

Yet, from my observations, in all six rehearsals the quartet actually spent *more* time talking than playing, as Figures 3 and 4 show. The first chart breaks down the cumulative time for all 6 rehearsals into the categories of play through, musical conversation, and non-musical interaction. The second chart artificially separates and compares the time spent on talking and playing.

When I pointed out to the players that they actually "sit around and discuss" more than they think they do, and asked them how they saw the role of structural analysis in their rehearsal conversations, the cellist had the following response:
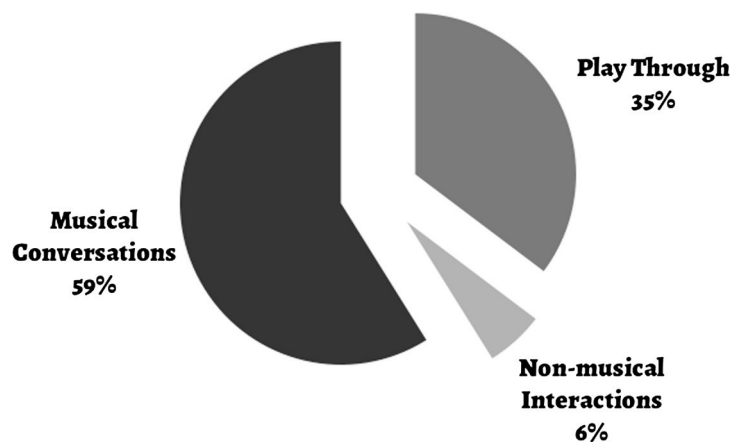
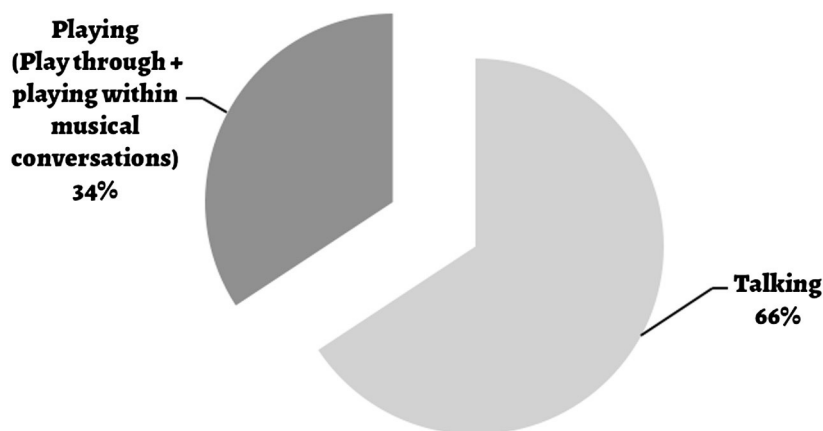*Figure 3. Cumulative time spent on play through, musical conversations, and non-musical interactions.*

Figure 4. Cumulative time spent on playing and talking.

VC: There are many considerations [in performance], like having a big picture [such as the concept of] exposition; or when materials recur, we have to decide whether to parallel or to do something different. Actually I think that as long as there is a frame, you can do anything in music, provided that it makes sense. If it makes sense, even the average person can hear and feel that it sounds okay. But if you feel something works emotionally, and at the same time you can also explain why, then you would have more confidence [in the interpretation].

The cellist's remark suggests that for him a synoptic, bird's-eye view of musical structure is *concomitant* with the real-time, processual approach described earlier. Moreover—and gratifyingly so for music theorists—the comment also implies that structural analysis can serve to confirm interpretative decisions arrived at through intuition and feeling. In response to my follow-up question as to how they came to acquire a sense of large-scale struc-

ture, the other three players expressed different opinions. The first violinist and violist credited their formal musical education for teaching them how to "listen for paradigms" and "identify and verbalize what they heard," whereas the second violinist said her study program included no music analysis and so she relied mostly on "feeling" and "a lot of listening."

The players' responses suggest that the relationship between structural analysis and performance strategies is more complex and less mutually exclusive than can be subsumed under a binary distinction between "performer's analysis" and "theorist's analysis."[17] Cook is right that performers primarily situate their listening within the musical foreground, and focus most of their attention on phrasing, local harmonic progressions, and sonorous elements such as intonation, balance, and tone quality; nevertheless, they

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[17] To be fair, Cook never explicitly claimed that the two modes of analysis are mutually exclusive.

are also aware of the importance of large-scale structural articulations and expectations, regardless of whether such awareness is acquired through formal instruction in theory and analysis, familiarity with performance conventions, or a combination of both.

4. Reflection and Evaluation

My documentation of the Romer String Quartet's rehearsal practice reveals that the performers approached musical structure in relation to sound quality and ensemble coordination, which are crucial concerns in performance preparation but hardly ever addressed in score analysis. They negotiated divergent opinions through a combination of musical interaction (e.g., testing out different ways of phrasing) and verbal communication; and, in the latter, metaphorical and embodied descriptions played a far greater role than technical discussions. It is also clear that the quartet views performance in terms of discourse. As the first violinist elegantly puts it:

FV: I guess it's like dealing with a language. When you are communicating, or trying to work out how best to communicate, you wouldn't be thinking about aspects of grammar or linguistics... I am talking to you now and I am not thinking about what verb tense I am using, even though I know what that is. So when we play we usually do so by instinct, as though we are talking. We go by feeling. But sometimes someone might notice, hey, you added an "-ed," you suddenly switched to past sense, or you added a comma ... it works, but why? Why don't you use a question mark instead, or why don't you say it some other way? That's basically what our discussions are about. [Someone points out] this or that other way also works. And that's when the dictionary comes out.

As in verbal discourse, musical communication relies on the tacit knowledge of syntactical norms that would only be explicitly identified or conceptualized in theoretical terms when the need arises. After having read a draft version of the present article, the first violinist offered additional comments on the discursive nature of performance. For her, the score is akin to a drama script, and the players are simultaneously "actors" and "producers" who make the music come alive in performance.[18] (A complete transcript of this conversation is provided in Appendix II.)

The notion of dramatic discourse prompts consideration of how current analytic models and pedagogical methods in music theory might accommodate both "real-time" and "synoptic" perspectives of musical structure, and how

they can be made more relevant to the performer. On one hand, although Cook is right that many music theorists conceptualize relationships between sonic events in spatial terms, in contemporary music theory there *are* analytic approaches that explore the discursive implications of compositional strategies through approximating our moment-to-moment hearing. David Lewin's seminal phenomenology article and Janet Schmalfeldt's theory of processual form are cases in point: not only do both these authors include performance considerations within their theoretical formulations, they also enact, in their writing, the emergent quality of structure coming into being.[19] On the other hand, these and other phenomenologically-influenced analytical approaches are not often assimilated into music theory curricula.

In university music departments and conservatories across North America, the UK, Europe, and Asia, core theory classes tend to focus on the study of harmony and form; tempo, rhythm, and meter receive comparatively little attention. Moreover, although there are many fine textbooks which integrate the teaching of harmony and aural skills and which include numerous "real music" examples, the prevailing mode of pedagogical presentation remains taxonomic: the aural experience is used to illustrate theoretical concepts, rather than the other way around. Accordingly, considerations of affect, character, and tone quality, which are central to both performance and listening, tend only to be addressed peripherally. Might this be the reason why many music students find music theory irrelevant to their performance activities—as the cellist suggested?

VC: When I was a music student, sometimes I really did not want to go to theory class. Why? Because music students believe in their hearts that theory classes are completely irrelevant to the practical situations they will face later [as performers]. Actually, at the end of the day, musicians are very instinctive. If [theory teachers] started with listening, they'd make a stronger impression than only talking about "this is a German sixth," blah blah blah. Teachers should try to make students experience the musical effect [of the chord] before explaining how it works. That would be better than talking about the concept first, and then telling students what its effect is supposed to be. That's what I think.

The cellist's remarks have suggestive implications for music theory pedagogy. Since he brought up the German sixth, let us return to the Beethoven rehearsal excerpt discussed earlier (Example 1). Beethoven's crescendo markings at mm. 149–152 cue the appearance of the augmented-sixth chord, which in turn signals the release of suppressed

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[18] For an insightful recent study on the relationship between the compositional strategies in Mozart's chamber music and social agency, see Klorman (2016).

[19] See Lewin (1986) and Schmalfeldt (2011).

energy; but the harmonic tension continues until m. 153, when the augmented-sixth chord moves to V. In focusing their attention primarily on the dynamic markings rather than the chord progression, the players conflated "release of energy" with "release of harmonic tension," and inadvertently "missed" the moment of resolution at the end of the phrase. This oversight might not have occurred had they conceptualized the augmented-sixth chord in terms of its teleological tendency and expressive potential, in terms of what it does instead of what it is called. I believe that all musicians, regardless of whether they are professional theorists or performers, should aim towards the integration of tacit knowledge based on instinct and experience with the explicit knowledge based on conceptual understanding. If, as the cellist recommends, the prioritization of effect over taxonomy can help performers integrate a conceptual understanding of harmonic functions with their musical experience, it can also, at the same time, encourage theory instructors to become more sensitive to the rhetorical effects and sonorous implications of musical syntax.

Conclusion

In this ethnographic field study of the Romer String Quartet, I have illustrated some ways in which the professional practice of performers relies upon latent processes of structural analysis and the vital role of metaphorical language when these processes of analysis are made manifest during discussions and negotiations that take place during rehearsal. To be sure, my documentation, interpretation, and evaluation of the quartet members' views and accounts constitute a case study only, and cannot be generalized into a comprehensive model of interpretative decision making in performance. Nevertheless, the research outcome prompts critical reflection on how (1) metaphorical and embodied descriptions of music and (2) real-time, listening- and experience-based analysis might serve to mediate between theoretical and practical perspectives of musical structure, and suggests new directions for music theory pedagogy in the undergraduate classroom, where the majority of students come from performance backgrounds. I hope, also, to have demonstrated from these preliminary findings how collaborations between theorists and performers, and methodological interactions between theory and ethnography, might contribute to such mediation.

Appendix I. Excerpts from Interview, August 4, 2015 (English Translation by Theorist–Observer)

FV = first violin, SV = second violin, VA = viola, VC = cello.

(a) On the relationship between sound quality and musical structure

FV: The reason why sound is a priority is because all four of us have to be a unified voice at the end of the day. So we work on the sound first, then we take that unified sound and slowly manipulate it, and navigate together, whether to move towards this direction or that direction. If we do it the opposite way, approach the structure before dealing with the sound, then each person would use a different voice to try and express the same idea, and you end up wasting a lot of time... But with sound, either it works is or it doesn't. So sound has to do with musical structure, but not directly.

VA: Or one should say that through listening to the tone quality, or [aiming for] the tone quality we want to achieve, we slowly discover what the structure is. After unifying our sound, we might hear, for example, how the harmony moves, we would find the sparks, and then we would know how to shape the phrase. That's how it goes, roughly... Harmony is the first step, and from harmony you can infer phrasing, and when you further extrapolate, phrasing will become form. It's a step-by-step process.

(b) On the role of structural analysis in performance preparation

FV: We do think about structure, but not in a rational way. In the end, one has to combine thought and feeling. So, about musical structure, we cannot put it in black and white, as though writing a theory paper, and say, this phrase works like this so every time we have to play it this way. Because then we would become video machines of ourselves, as though following an instruction manual that dictates exactly what to do. Sometimes, too much discussion may not be a good thing... So we rely on our instincts to respond to the music, instead of sitting around discussing, the way we are doing now.

VC: There are many considerations [in performance], like having a big picture [such as the concept of] exposition; or when materials recur, we have to decide whether to parallel or to do something different. Actually I think that as long as there is a frame, you can do anything in music, as long as it makes sense. If it makes sense, even the average person can hear and feel that it sounds okay. But if you feel something works emotionally, and at the same time you

can also explain why, then you would have more confidence [in the interpretation].

FV: I guess it's like dealing with a language. When you are communicating, or trying to work out how best to communicate, you wouldn't be thinking about aspects of grammar or linguistics… I am talking to you now and I am not thinking about what verb tense I am using, even though I know what that is. So when we play we usually do so by instinct, as though we are talking. We go by feeling. But sometimes someone might notice, hey, you added a "-ed," you suddenly switched to past sense, or you added a comma… it works, but why? Why don't you use a question mark instead, or why don't you say it some other way? That's basically what our discussions are about. [Someone points out] this or that other way also works. And that's when the dictionary comes out.

(c) On the usefulness of theory classes

FV: I think the most useful is learning how to listen to paradigms, like the same thing that happens in a million pieces. Except for theory teachers, no one would expose you to concepts like that. Because your [instrumental] teacher would only teach you a particular piece. So I find this very useful.

SV: My own training [at Guildhall] involved no music analysis. I took one course called "musical structure" but I never needed to use analysis in violin lessons or chamber music lessons… I know there is such a thing, it's just that I am not willing to do it myself. So I rely on my feeling, on a lot of listening, then I add my own take—I do want my playing to be unique and different—then I add their [the other quartet members'] ideas, and that's it.

VC: To be honest, Su Yin, when I took [theory] classes I thought, okay, this is interesting, but then I forgot everything afterwards. Some [theory] teachers teach on paper only. Then you listen to the music examples and you think, oh, so this is what that [chord] is called. Then you think, I know this already. When I was a music student, sometimes I really did not want to go to theory class. Why? Because music students believe in their hearts that theory classes are completely irrelevant to the practical situations they will face later [as performers]. Actually, at the end of the day, musicians are very instinctive. If [theory teachers] started with listening,

they'd make a stronger impression than only talking about "this is a German sixth," blah blah blah. Teachers should try to make students experience the musical effect [of the chord] before explaining how it works. That would be better than talking about the concept first, and then telling students what its effect is supposed to be. That's what I think.

VA: I think it depends on how your teacher or combination of teachers taught you. When I first got to Cincinnati I didn't know what I was hearing, so they [instrumental, chamber and theory professors] spent a lot of time getting me to identify what I heard, and verbalize what I heard. Their idea is that if you can't explain something, it means you don't really understand it. So from then on I became someone who had to understand everything clearly before I can play it … which is completely opposite from Kiann's education.

Appendix II. Transcription of Facebook Message Conversation with First-violinist Kitty Cheung, November 10, 2015 (Conducted in English)

11/10, 3:56pm
Kitty Cheung
What is on the page is like a drama script

So true….
As performers we are there to make it come alive

Thus we talk about the settings, we talk about the props, we talk about the atmosphere, which perspective out of all possibilities we should be coming from, what message do we bring across

and as members of the string quartet we rehearse and practise the interaction and the flow of the plot

11/10, 4:08pm
Kitty Cheung
One might feel more emotional reciting the script one day than another. As we are also the producers of the production, we discuss what effect we want to achieve, then let the "performer-self" elaborate the acting on the spot. In short, performers' approach is more about setting the scenario and opening possibilities

11/10, 7:02pm
Su Yin Mak
Love your comments Kitty! Can I quote your later? [smiley emoticon]

11/10, 7:25pm
Kitty Cheung
Sure!!

11/10, 10:19pm
Kitty Cheung
Setting: musical structure
Atmosphere: tone colors
Props: various techniques

11/10, 11:02pm
Su Yin Mak
[Like]

11/10, 11:05pm
Kitty Cheung
When the technique and the musical structure connects with the same "feeling from nature", it is when a performance becomes natural and convincing

Reading your Qualitative Analysis section reminded me of the above...

11/10, 11:11pm
Su Yin Mak
Yes! I believe that very much
Thought and feeling should be at one

11/10, 11:12pm
Kitty Cheung
Yayaya

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