SYSTEMATIC APPROACHES TO THE STUDY OF COGNITION IN WESTERN ART MUSIC PERFORMANCE

by

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ABSTRACT

This dissertation presents an instrumentalist's perspective on cognition and meta-cognition in music performance. The goal of the study is to identify and apply methods of inquiry that are phenomenologically resonant with instrumental practice. The first chapter, situating the study in the context of the writer's musical training, examines ways of studying and representing performance knowledge. The second chapter presents a case study of the preparation of Tōru Takemitsu's *Masque for Two Flutes* (1959-1960). Using grounded theory methodology, this chapter investigates the role of gesture in the negotiation of musical understanding. Chapters 3 through 5 draw on Herbert H. Clark's *joint activity* theory of language use to conceptualize music-making, taking into account context, process, and other domains of musical activity. Finally, Chapter 6, in addition to re-defining "virtuosity" for the 21st century instrumentalist, presents a set of philosophical considerations for cognitive studies in music performance.

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LIST OF SYMBOLS

Musical Symbols

Dynamic markings:
p – piano (soft)
pp – pianissimo (very soft)
mp – mezzo piano (moderately soft)
f – forte (loud)
ff – fortissimo (very loud)
mf – mezzo forte (moderately loud)

Accidentals:
b = flat
# = sharp

LIST OF ABBREVIATIONS

GT	Grounded theory
GTTM	Lerdahl & Jackendoff's (1983) Generative Theory of Tonal Music
QR	Qualitative research
WAM	Western Art Music

Rehearsal Session dates
(012105 means January 21, 2005)

Data Part One:
011405 C.P.E. Bach
012105 Takemitsu sight reading movement (mvt.) 1
020705 sight reading mvt. 2, rehearsing mvt. 1
021105 rehearsing both
030305 rehearsing both mvts.

Data Part Two:
092205 Takemitsu rehearsal
092605 Takemitsu rehearsal
092905 Takemitsu rehearsal
100105 Dress rehearsal and performance
110305 Post-performance experimental session

PREFACE

In many ways, this dissertation began on November 13, 1995 at 9:05 a.m. on a street corner in Stony Brook, Long Island. I was biking to my first degree recital for the Doctor of Musical Arts program at the State University of New York when I was hit by a car. As I came crashing to the pavement, I knew I had to make some big changes in my life. The seconds ticked by slowly while I was on the road in front of the chrome bumper of a light green Mercedez-Benz (fortunately driven by a doctor on his way to work). I promised myself that I would find a better way to balance living and music-making (*after* I performed my recital). Luckily I sustained only soft tissue injures. Painful as they were, I continued to perform for two years. But during that time, I began to explore the foundations of my training, brick by brick, in order to discover what I truly had to say.

The year after I was hit, I took a teaching assistantship in the Writing Program at SUNY. At the time, this was one of the most innovative programs for writing instruction in the United States. Patricia Belanoff and Francis Zak directed graduate students from diverse departments on the Stony Brook campus (English Literature, Philosophy, Classics, History, Mathematics, Music, among others) in a program that combined "process-oriented" and "writing across the curriculum" approaches to the teaching of writing. My graduate student cohort was mentored in the approach – not only learning how to teach writing, but how to cultivate more powerful scholarly voices for ourselves.

The "process-oriented," "learner-centered" approach to the teaching of writing originated with the work of Peter Elbow, a long-time theorist on the teaching of writing. Elbow advocates that *writing is thinking*; that "Everyone Can Write" (the title of one of his books); and that people can learn how to write by allowing the writing to occur through a series of exercises designed to generate

and then to shape ideas on paper. Important aspects of this development include: discovering what one thinks about a topic (before researching), writing an "instant" paper without concern for correctness or depth, summarizing the most popular (or unpopular) attitudes and ideas on the topic, predicting what will be found in the literature on the topic, reading and responding to important writing on the topic, sketching scenes related to the topic, and brainstorming. Exercises like *freewriting* (timed writing with or without a topic for which there is only one rule: do not stop)*, loop writing* (directed freewriting about a topic using a number of strategies like dialogue, narrative, varying the audience or writer)*,* and other writing games helped me to put into words some of the most important ideas, attitudes, and opinions I held on learning and teaching music.

I remember the first bolts of inspiration striking me on my long walks (no longer biking) from home to school and back. As I was learning the theory behind the process-oriented approach to teaching writing, I wondered if similar exercises could be offered in music lessons. After all, are we musicians not cultivating our voices? Do we not have a unique perspective to discover, a thesis to deliver, on the music we perform? I began developing improvisational exercises for use in private lessons and master classes based on Elbow's approach. I felt I had struck gold in the Writing Program and I was determined to carry that forward into some meaningful format of music pedagogy.

After two years of performing in pain, I ultimately gave up. I quit. I sold my bassoon, bought a pink sports car and drove to Santa Fe. After only four days I realized there was no chance of finding work there, so I decided to head North and landed in Colorado Springs. Fortunately for me, the University of Colorado at Colorado Springs was hiring part-time teachers of writing. I stayed in Colorado for three years, teaching writing and working on a book for music instruction. I still have that book, unpublished, in my desk drawer. I never finished it because I felt it needed more

theoretical depth than I had to offer at that time. Herein lies the theoretical depth. In the next few years I hope to pick up that book again and finish my manual for structured performance inquiry.

In 2002, with the encouragement and financial support of Brian Fisher, I purchased a very old Heckel bassoon, one of the earliest available, built in 1890, from one of my mentors, Sergio Azzolini. That bassoon carried the inspiration I needed to begin the very difficult uphill struggle to re-learn bassoon playing in a way that was more true to my spirit. With regular reflection on and through practice, cultivating my musical voice while also cultivating my scholarly voice, I feel I have come to a more balanced expression of me as a musician. I now play on a precious bassoon made of Yew built by Guntram Wolf in 2005. In folk medicine, Yew wood is known to give a person the strength to follow her heart, to find her true calling in life, reconciling the needs of the spirit and the material world. My playing has never felt better, and my understanding of the foundations of my musical practice has never been as strong.

ACKNOWLEDGEMENTS

A number of important people have been very helpful and supportive during my training and education. I would like to thank each of them individually. I would like to thank Stephen Maxym, Sergio Azzolini, and all of the instrumentalists I have had the pleasure to study and perform with during my years of training on the bassoon. My life is rich from the insight they chose to share with me. I would like to thank Brian Fisher for the many inspiring conversations about music, cognition, science, epistemology, expertise, reflection on/in action, and research design. I would like to thank the Media and Graphics Interdisciplinary Centre (MAGIC) for providing lab space and data collection equipment. I would like to thank Jesse Read and Eric Vatikiotis-Bateson for encouraging me to pursue this line of inquiry at the doctoral level, and for sponsoring my entrance into the Interdisciplinary Studies Program. I would like to thank Alexander Fisher for bringing me up to date on the current trends in music scholarship and for encouraging graduate students to take up new and innovative topics. I would like to thank John Roeder for patiently listening to and critiquing my ideas on conceptualizing music in the early days. I would like to thank Eric Vatikiotis-Bateson again for offering the infrastructure (ethics approval, lab space, data collection equipment, mentoring) in which I could work. I would like to thank Susan Cox for demonstrating the highest quality of inquiry in social science, for her detailed and constructive feedback on both the study design and the writing of this dissertation. I would like to thank Alan Dodson for agreeing to serve on my committee at such a busy stage in his career, and for his keen eye and careful reading of my writing, and for his expert knowledge of performance inquiry in music scholarship. I would like to thank William Benjamin for his insight and guidance through the final phases of writing this dissertation, for helping me to clarify my thinking and for challenging me to bridge disciplines more carefully in the text. Finally, many thanks to the flutists M and J for their generous, witty, and professional participation in the Takemitsu study.

DEDICATION

For my dear son Leonhard,

May you cultivate your experience with great fascination and wonder.

Chapter 1: Finding My Voice

Introduction

The last decade has offered a surge in scholarship on music performance. Scholars interested in music performance can draw from a range of perspectives. Ethnomusicologists examine the performed activity of music (Small 1998) as a social and cultural discourse (Monson 1996, 1997, Berliner 1997, Brinner 1995). Musicologists examine the performance histories of musical works (Bowen 1999), performance as critique of musical content (Cusick 1994), and performance as a form of semiotic self-awareness (Cumming 2000). Music theorists have been interested in the relationship of analysis to performance (Cook 1999, 2001, Dunsby 1988, 1995, Lester 1995, 1998, Leong 2005, Nolan 1994, Rothstein 1995, Schmalfeldt 1985). Creativity theorist R. Keith Sawyer (1997, 2003) examines performance from a systems perspective, drawing on widely interdisciplinary methodologies and perspectives to understand musical creativity and interaction.

Of the scholars mentioned above, only Janet Schmalfeldt and Naomi Cumming engage their "performing selves" in their scholarly writing. Schmalfeldt, a pianist, brings her performing self in conversation with her analytical self through a detailed comparative analysis of Beethoven's "Bagatelles" Op. 126 Nos. 2 and 5. While Schmalfeldt's Analyst and Performer are heavily steeped in the product-oriented, structuralist traditions[1] associated with Western Art Music (WAM), her Performer realizes that a range of performance choices can be made in response to analytical

[1] The product-oriented tradition is defined through a set of values that suggest that music is a product of the composer's creation, and that there is therefore a right and wrong way to perform a work. From this point of view a performer's task is to re-create the composer's intentions as indicated by the score. The structuralist tradition emphasizes the role that structural analysis plays in determining which performance choices are most in line with the composer's intentions. These traditional values have their most welcome domain in the music of Beethoven and his contemporaries and have supported the most popular ideas on this music for some time. See Patricia Carpenter, "The Musical Object," *Current Musicology* 5 (1967): 56-87.

findings. An analysis can dictate what not to do, but not what to do (Schmalfeldt 1985, p.27). The Performer and Analyst, in Schmalfeldt's view, cooperate in the common task of revealing new and better understandings of musical works. Cumming, a violinist, unpacks her process of semiotic self-awareness in rising to perform musical works. Rather than seeking deeper analytical understandings of the music she performs, Cumming seeks a deeper understanding of her Self through her process of embodying the music she performs. Both Schmalfeldt and Cumming work to reconcile the aims of scholarly inquiry with the aims of music performance. For Cumming, musical meaning (of a reflexive nature) is revealed through the gestures employed in shaping musical sound. For Schmalfeldt, musical structure provides a territory through which both Performer and Analyst can reveal the "essence" (Schmalfeldt 1985, p.1) of a musical work.

The tension between performance and scholarship is also made explicit in ethnomusicological participant observation research. Chernoff (1979) raised the issue in the context of his experiences learning Ewe and Dagomba drumming in Africa. When in Africa, he abandoned his scholarly aims and delved completely into the experience of making music. He felt that a total immersion in the musical training would teach him more about African culture than a systematic employment of social scientific observation. Once back in America, however, he faced the task of writing about his experiences. He realized that the aims of art and science were different, but nevertheless felt it was worthwhile to shed scholarly light on artistic practice. He says,

> … conveying my experiences with African music through the heritage of our traditions of understanding seemed to offer an opportunity not only to expand the relevance of what I had learned as an individual but also to indicate my sense of how those traditions can respond to the challenge of such an undertaking.[2]

Chernoff felt that social science could help him to more deeply understand and portray the

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[2] John Miller Chernoff, introduction to *African Rhythm and Sensibility*, (Chicago: The University of Chicago Press, 1979), 3.

artistic practice of music making in African culture. But he also felt that the process of applying social science to the experience of music making would deepen his experience as a drummer. He used "personal anecdotes and accounts of [his] African teachers both to convey an impression of the social setting of African musical life and to document the influence which [his] own experiences had on how [he] arrived at [his] perspective" (Chernoff 1979, p.3-4).

This dissertation has similar auto-ethnographic aims. I am, in a sense, a participant observer of Western Art Music (WAM). I present personal anecdotes and accounts of my own musical training in the text below. Though my training in social and cognitive science took place long after my formal training as a bassoonist had ended, I show how my experiences as a bassoonist guided my selection and employment of research methodologies. I chose to employ those methods of inquiry and analysis drawn from the social and cognitive sciences that seemed to me to be most phenomenologically resonant with instrumental performance. The process of collecting and analyzing data, and representing the results also took place in dialog with my concurrent experiences practicing and rehearsing music. It was my goal throughout the project to engage theories of cognition that held the most explanatory power for matters of music performance. Hence, the research systematically laid out a view of music cognition as shaped by the social, spatial, and temporal constraints of ensemble practice.[3]

[3] In preparation for this dissertation, I surveyed a broad range of theory in the cognitive sciences including the theories of embodied and enactive cognition, general system theory, activity theory, and situated cognition. Each of these areas have tremendous explanatory power for matters of music performance. As I mention in Chapter 2, however, one approach earned its way into my systematic investigation of gesture in the negotiation of musical understanding, the joint activity theory of Herbert H. Clark. I would like to point out that the cognitive theories I surveyed share certain ontological frameworks and perspectives which make them suitable for dealing with music performance, and those are discussed in Chapter 6.

My Performance Training

During my intense years of training on the bassoon, which occurred primarily between 1985 and 1997, I had the opportunity to perform and study with many expert musicians.[4] Of all of my teachers, Stephen Maxym had the greatest influence on my approach to playing bassoon. I met Maxym during the summer of 1991, when I was engaged to play second bassoon in The Banff Centre Opera Orchestra for a production of the Mozart Opera *Cosi fan Tutti*. Maxym was teaching a summer master class which overlapped briefly with the opera. On one of our few mornings off, the bassoon section of the opera orchestra (Katrina Russell and I) visited his master class. That morning, none of the students enrolled in his class wanted to perform. After a few tense moments of silence, I humbly volunteered to play, and he agreed to listen.

I do not remember what piece I played that morning. I do, however, remember his response, one I would come to recognize whenever he demonstrated his mastery of teaching the bassoon. After coaching me a little and getting me to experiment with a few of his techniques, Maxym's eyes lit up, and he rubbed his hands together, and he said "Yes, my dear." Then he waved me in front of his class as a quick study, a person who was gifted and quick to adapt to his instructions. He later invited me to join his incoming class at Yale University.

At that time, my bassoon playing was often described as "very musical." I had won two concerto competitions in the previous two years, and was considered a promising young bassoonist. At the National Youth Orchestra of Canada the previous summer, a fellow bassoonist in the section

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[4] The non-bassoonist musicians I have worked with include: Maurice Bourgue, Alan Hacker, Froydis Ree Wekre, James Campbell, Ransom Wilson, and Ronald Roseman. The bassoonists I have studied with include: Stephen Maxym, Sergio Azzolini, John Gaudette, Denis Godburn, Jesse Read, and Christopher Millard. I have also participated in master classes and single lessons with the following bassoonists: David Carroll, Otto Eiffert, and Arthur Weisburg.

gave me one of the most flattering compliments I ever received. She said, "when you are playing in the bassoon section, it is as though you are putting your arms around the entire woodwind section and making everyone sound good." The instrumental technique I used to achieve that musicality,[5] however, was a mish-mash of approaches that were satisfying only with a very high input of physical and mental energy. In February of 1991, I had performed for Maurice Bourgue, a European oboist with a high profile as a chamber and solo musician. After a lesson on Mozart's *Concerto for Bassoon*, he gave me a general prescription for what I should do to become a great bassoonist. He listed off, with the help of his ten fingers, nine areas of instrumental technique and musical training for me to pursue. For the tenth item, he said, "But never change your sound."

Bourgue encouraged me to study with Sergio Azzolini in Bobbio, Italy later that summer. Azzolini, a rising star in the classical music world, was a bassoonist of my own age who was apprentice to Klaus Thunemann, probably the most famous bassoonist in the world at that time. Azzolini's "extreme" musicianship and skill on the bassoon earned him comparisons to the 19th century violin virtuoso Niccolò Paganini. He was known as a "rugged individualist" – a performer with seemingly inhuman mastery of the bassoon, and a fiery approach to performing that was (and still is) sometimes met with distrust among the more established members of the field. That summer, and again in the summer of 1993, I was the only bassoonist from North America to travel to his class. In line with his character, Azzolini's master classes were driven by high energy, full of fire and inspiration. He would stand on his feet and play with his students for upwards of ten hours a day. Some afternoons he would be teaching with only a handful of the thirty enrolled students still in attendance. He always performed what he asked his students to perform, and lectured with a great

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[5] The term "musicality" is often loosely used to describe performances or performance styles that are considered subjectively pleasing. Often the term means different things to different people. When I use the term musicality, I mean, "musical creativity" using the definition I offer for creativity in Chapter 6. A musical person draws connections between sounds in a manner that is communicative of some unique or meaningful insight on (interaction with) the music.

deal of musical and physical energy. Sometimes he played musical tricks on his students and colleagues to keep the attention in the moment and the life in the sound.

When I compared myself to the thirty other bassoonists in his class (all from Europe), I fared reasonably well both years. In 1991, I performed Fasch's *Sonata in C Major* for public concert. This performance was very well received, and it demonstrated many of the principles I had learned from Azzolini during the course. To risk putting words in their mouths, they might have said, in their dinner-time discussions of everyone's level of talent and ability, "pretty good for an American." In 1993, after having studied with Maxym full-time for two years, I performed Telemann's *Sonata in E minor.* For this performance I earned high praise from everyone in attendance. Azzolini and my accompanist emphasized my Frisian heritage - a sign of acceptance into the European tradition of music-making. At dinner, Azzolini told me that I had the special interpretive gifts of a solo and chamber musician, and compared my interpretive ability to the Dutch cellist Anner Bylsma. Though these comments are not to be taken literally as a comparison between my level of skill and Bylsma's, a comparison I'd never accept, it is an indication that I made an impression with my musicality, something that meant a great deal to me back then.[6]

In sharp contrast to Maxym, Azzolini focused almost exclusively on musical expression.

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[6] Between 1991 and 1993, I studied with Maxym full time. As a result, I had more physical power as a bassoonist in 1993. In the final concert of the Bobbio course all 32 bassoonists piled on stage to perform a Renaissance motet. I played the first part with Azzolini and one of his full-time students. The part soared into the high register of the bassoon. His student had a sore throat so he elected to play the part down an octave. The rest of the bassoonists were four or five to a stand playing the other parts. While I had played with Azzolini in master classes, this was my first time actually performing with him in public. During this performance, I had an unforgettable musical experience. At one point, I remember very clearly being caught up in a rush of Azzolini's fiery energy, literally seeing my music through flames. At that instant, I was so caught up in the experience that I actually began to lead rather than follow Azzolini. This micro-second role shift jolted me out of my flow experience. Suddenly my own "essence" as a bassoonist became clear. Having seen the music through the flames of Azzolini's personality, I became aware, for the moment at least, that I was not meant to be a fiery performer like him. My musical spirit showed itself to me as not consisting of flames at all, but of a somber, cool mist. My musicality – my way of interacting creatively with musical sound – was more about subtle shifts of timbre than blasts of fiery energy. This realization happened in just an instant during the performance. Afterwards, some of the audience members complained that they could only hear the first part. Somehow, Azzolini and I had drowned out the sound of thirty other bassoonists that evening. Such was the power and intensity of that experience.

During the two summers that I studied with him, he only rarely discussed technique. While he obviously could make reeds, Azzolini would often have his best students make reeds for him. When I asked him once for tips on breathing, he said something like, "open your mouth and air comes in. You already know how to breathe."[7]

My plan for Fall of 1991 had been to attend McGill University for a Master's degree in Bassoon performance. However, inspired by Maxym's invitation and Bourgue's prescription, I decided to attend Yale University after returning from the summer course with Azzolini. I knew Maxym would offer the finest technical training I could find in North America, and I was convinced that was the correct path for me to follow. A phrase of Azzolini's accompanied me there, "risciamo tutti" – risk everything for the sake of making music.

At the time I greatly preferred the energetic and inspirational teaching style of Azzolini to the grueling technical focus of Maxym. There were times during my training that I even foolishly questioned Maxym's interpretive skill, since he never discussed musical interpretation apart from bassoon technique. Indeed, I felt broken as a player after working through his total technical overhaul of my bassoon playing. Only now, during the process of writing this dissertation and re-acquainting myself with my own bassoon playing, have I begun to recognize the wisdom and deep, embodied musicality inherent in Maxym's approach.

Maxym specialized in teaching bassoonists how to develop awareness of and control over the minutiae of instrumental technique. Through every musical exercise he taught the same principles of breath support, embouchure, reed style, and instrument care. In almost every lesson there would be a moment when his eyes would light up, and he would say "Yes, my dear" in response to yet another

[7] I do not mean to imply that Azzolini never taught technique. I only studied with him during the intensive two-week summer sessions at Bobbio. During these times, the focus was on musical ideas, not technical aspects of bassoon playing. He very likely offered more technical instruction to his full-time students.

confirmation that he could reveal all the secrets for making bassoon playing easy. For him, musicality was measured by a bassoonist's ability to manipulate the tone, dynamics, articulation, and timbre in such a way as to create a musical quality consistent with the style of the piece. To reach this level of mastery over the music, the bassoonist had to overcome all of the things that made bassoon playing difficult, which for most people included managing the balance between breath and embouchure support, being aware of finger pressure and motion, designing reeds for maximum flexibility, and voicing the instrument.

To develop this mastery, students of Maxym learned to pay close attention to their bodies prior to, during, and after playing bassoon. We learned about the close connection between an inhalation and the resulting articulation. We were taught to breathe in the character of the music. We learned to adjust the embouchure for different ranges and timbral effects. For soft entrances in the low range of the instrument, we learned to cushion the reed from the sides. For louder entrances in the low register, we opened the embouchure by extending the jaw downward. We learned to support the pitch in the middle register by focusing on the region at the back of the ribs.[8] In the upper register, we learned to take more of the reed into the mouth and level out the upper and lower jaw slightly. We even learned to vary the finger pressure to assist with subtle aspects of technical control.[9] These examples of technical lessons highlight just a few of the ways bassoonists in his school learned to become aware of each and every little movement in association with the music they played.[10]

Students of Maxym learned to focus attention on specific areas of the body, to apply metaphors

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[8] To teach bassoonists how to become aware of this region of the abdomen, Maxym would place his wallet just below the armpit of the bassoonist and tell them not to let it fall out as they played.

[9] Attending to the lifting of the fingers and the pressing of the fingers helps a bassoonist "anchor" the movements/notes in a way that is suitable for the musical passage. See Chapter 6 for more on anchoring and other metaphors for imagining performance.

[10] For a compilation of Maxym's main teaching concepts, see Martin Mangrum, "A Method for Playing the Bassoon Based on the Teachings of Stephen Maxym," DMA thesis, The Julliard School of Music, 1990. To my knowledge, no other articles or books have been written on his teaching style.

(i.e. torso as balloon or tooth paste tube) and imaginative characters to the way the body was used, and to exercise obscure muscles. Maxym taught that a high level of physical awareness made playing easier and reduced the level of anxiety surrounding bassoon performance. In one of my lessons with him, he said, "My dear, when you are through studying with me, you'll be able to play whatever the conductor asks of you." In that statement, he was suggesting that no aspect of bassoon technique would be beyond my control. This statement was put to the test a few years later during a recital I performed only three hours after being hit by a car. During that recital I had an out of body experience. I became aware that I was observing myself from about five feet over my head, and manipulating my body from there, as if I were a puppeteer. I could see and feel inside my body and control each muscle from a state of heightened awareness. An oboist commented afterwards that I looked like "a breathing machine"; indeed, I felt mechanized by the level of physical control I was able to invoke. While I regret performing so soon after the accident (the recording sounds like I had just been hit by a car, due to the emotional intensity of my sound), I learned from that experience that I truly did have control over most of the physical processes required to make the bassoon work. The experience was like an x-ray of my level of bodily awareness gained through introspection over a period of several years.

Maxym changed my entire approach to playing the bassoon – from reed making and embouchure formation to finger technique and breath support. In order to do this, he utilized a set of principles that could be applied in different situations and with different performers. Fortunately, I had the opportunity to observe him using his principles of bassoon playing to shape the skills of a number of very talented individuals. Through this repeated exposure and reinforcement with colleagues, I learned an approach to bassoon playing that would satisfy me years later, even after a six-year break from performing.

Most of the bassoonists in my class at Yale went on to professional careers as performers. Near the end of my studies with him, Maxym let me read one of the comments he made about my place among my peers, he said, "Linda raised the standard of the class as a whole." He often spoke with me about career goals, emphasizing that bassoonists should cultivate more than just one skill. They should know what other skills they have, and learn to apply those skills in ways that support their interests in making music. "Bassoon playing," he said, "should be the one thing that makes everything else in life worthwhile." Some of his students were also machinists (building reed making tools), and some also worked in the music business. At that time I had no interests outside of bassoon playing. My attitude was heavily influenced by Azzolini's European intensity. For him, and many in that tradition, instrumental performance was an all-encompassing life effort to attain virtuosity. I have, in the decade since that time, decided to develop my abilities as a scholar.

Many times during my training years I pondered difficult and heavy issues that arose partly out of my split training between American and European styles. What does it mean to be a virtuoso performer in the European sense? In the American sense? How do I reconcile the different approaches in my own performance practice? What is my personal style as a musician? What do I have to say about music-making? I wondered why it was so easy to perform well with certain colleagues, certain ensembles, and not others. I wondered whether there was more to a performance space than its acoustics. I wondered if there was a way to treat performance as a process and in so doing, cultivate a more balanced approach to the integration of music-making and living a healthy lifestyle, as Maxym always encouraged me to do.

The conflicting cultures of musical knowledge and practice, the personal struggle to find a balanced lifestyle, and the challenge to find my own voice led me to discover methods of inquiry suitable for tackling questions like those listed above. While answers to the specific questions above

may not have a broad impact on the world of instrumental music-making, the manner for generating answers should certainly be of value.

Performance Knowledge

Performance knowledge like that of Maxym[11] is built up and distilled through decades of experience. This knowledge is passed down from teacher to student in lessons and master classes. Student performers play through a piece or exercise, and the teacher demonstrates how the performance might be shaped or enhanced by trying some different techniques or ideas. When the teacher finds some basic principles useful, those principles become associated with that teacher, and in some cases a school of playing results. The top two schools of playing available to my generation of bassoonists in North America were the Maxym school and the Schoenbach school. Students could belong to either school by studying with these famous players or their top students. Subtle and not-so-subtle differences between the two schools appear in every aspect of bassoon playing – from reed styles, to tone production, to phrasing. Sometimes bassoonists from the same school will choose to work in the same orchestra. The bassoon section of the Vancouver Symphony, for instance, consisted exclusively of players from the Schoenbach school for several decades.

However, apart from collections of performance principles applied to specific musical contexts by single individuals,[12] few attempts have been made to systematically examine performance knowledge in objective terms. How is performance knowledge cultivated? What does it

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[11] I focus my attention on the bassoon, but it should be noted that the kinds of experiences I describe in my autobiographical sketch are not unique to bassoonists. These highly physical, emotionally charged, mystifying experiences are ubiquitous in elite-level instrumental training on all instruments. And, while there are many examples of pedagogical texts on instrumental performance that make use of the kinds of knowledge cultivated through these experiences, there is a complete lack of critical reflection on that knowledge.

[12] See Mangrum, "A Method for Playing the Bassoon." See also, David McGill, "Sound in Motion: A Performer's Guide to Greater Musical Expression" (Indiana University Press, 2007).

consist of? At what point does a set of observations about music or technique become useful for performance? How is musical knowledge negotiated and exchanged between instrumentalists?

Gathering and Presenting Knowledge

In the context of interview research, Steinar Kvale (1996) contrasts two metaphors for the role of the researcher—as miner or traveler. In the "miner" metaphor, the researcher is understood to be digging for "nuggets of data or meanings out of a subject's pure experience" (Kvale 1996, p.3). The miner digs for meaning in the data at the conscious or unconscious levels, but in either case the meanings and themes are viewed as *materials* evaluated on their degree of *purity* through objective methods of questioning and analysis. The "traveler" metaphor, on the other hand, presents the researcher as one who "wanders with" subjects, engaging in *conversations* that eventually lead to *stories*. Stories from the traveler are evaluated on their explanatory power, through their "impact on the listeners" (Kvale 1996, p.4), and through the variety of perspectives that are revealed in the telling. Whereas the traveler is transformed through the process of interacting with the data, the miner's identity remains the same.[13]

The miner and traveler "represent different concepts of knowledge formation" (Kvale 1996, p.5). The miner views knowledge as "given"; the traveler views knowledge (understanding) as arising from context, process, and conversation. The miner's findings are evaluated based on the truths they represent; the traveler's, on the levels of insight and depth.

The knowledge represented in the following two passages can be viewed as examples of the traveler and miner metaphors as they are found in writing about performance. The first passage demonstrates a traveler's understanding of character, culture, and experience upon viewing a blues

[13] For an in-depth discussion of the way collaboration shapes ethnographic research, see Luke Eric Lassiter, "The Chicago Guide to Collaborative Ethnography," (Chicago: University of Chicago Press, 2005).

performance; the second demonstrates a miner's understanding of the role of body motion in music performance.

The first example is an excerpt from "Sonny's Blues" (1957), a short story written by James Baldwin.[14] In the following passage, taken from the end of the story, Baldwin describes, through the narrative voice of Sonny's brother, layers of performance interaction on stage. Sonny's struggle through drug addiction, jail, and a crisis of identity are revealed in his musical performance through the deeply introspective eyes of his brother, seated in the audience. The narrator's introductory statements suggest Baldwin's philosophical stance on music perception:

> All I know about music is that not many people ever really hear it. And even then, on the rare occasions when something opens within, and the music enters, what we mainly hear, or hear corroborated, are personal, private, vanishing evocations. But the man who creates the music is hearing something else, is dealing with the roar rising from the void and imposing order on it as it hits the air. What is evoked in him, then, is of another order, more terrible because it has no words, and triumphant, too, for that same reason. And his triumph, when he triumphs, is ours.

A performer, he seems to be saying, is charged with the task of giving form to the unspeakable depths of his experience; and in so doing, if he succeeds, he brings his audience with him through a process of transformation. But the audience may not completely comprehend the depth of the transformation involved in giving form to the unspeakable. This transformation can only be accessed through the experience of performing, or through a detailed introspection on performance. Through Sonny's brother, Baldwin walks the reader through the process of transformation by describing the subtle interactions of the musicians onstage.

Before quoting the passage at length, I would like to remind the reader why such a long segment of literary prose is relevant. Baldwin's deep observations reveal layers of performance knowledge that bridge from low-level description to higher-level insight on the plot and characters.

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[14] This story has been published in numerous sources. I use an excerpt from the version found in Gary Colombo's anthology, "Mind Readings," (Boston: Bedford/St. Martin's, 2002) pp. 413-414.

Baldwin uses physical description and narrative to reveal the experiential realities of his characters. His “traveler’s representation” of this musical performance is to be evaluated on its explanatory power. He emphasizes the layers of insight rather than the means for gathering lower level “factual” descriptions. I take the liberty of quoting this passage in full:

> I just watched Sonny's face. His face was troubled, he was working hard, but he wasn't with it. And I had the feeling that, in a way, everyone on the bandstand was waiting for him, both waiting for him and pushing him along. But as I began to watch Creole, I realized that it was Creole who held them all back. He had them on a short rein. Up there, keeping the beat with his whole body, wailing on the fiddle, with his eyes half closed, he was listening to everything, but he was listening to Sonny. He was having a dialogue with Sonny. He wanted Sonny to leave the shoreline and strike out for the deep water. He was Sonny's witness that deep water and drowning were not the same thing -- he had been there, and he knew. And he wanted Sonny to know. He was waiting for Sonny to do the things on the keys which would let Creole know that Sonny was in the water.
>
> And, while Creole listened, Sonny moved, deep within, exactly like someone in torment. I had never before thought of how awful the relationship must be between the musician and his instrument. He has to fill it, this instrument, with the breath of life, his own. He has to make it do what he wants it to do. And a piano is just a piano. It's made out of so much wood and wires and little hammers and big ones, and ivory. While there's only so much you can do with it, the only way to find this out is to try; to try and make it do everything.
>
> And Sonny hadn't been near a piano for over a year. And he wasn't on much better terms with his life, not the life that stretched before him now. He and the piano stammered, started one way, got scared, stopped; started another way, panicked, marked time, started again; then seemed to have found a direction, panicked again, got stuck. And the face I saw on Sonny I'd never seen before. Everything had been burned out of it, and, at the same time, things usually hidden were being burned in, by the fire and fury of the battle which was occurring in him up there.
>
> Yet, watching Creole's face as they neared the end of the first set, I had the feeling that something had happened, something I hadn't heard. Then they finished, there was scattered applause, and then, without an instant's warning, Creole started into something else, it was almost sardonic, it was Am I Blue. And, as though he commanded, Sonny began to play. Something began to happen. And Creole let out the reins. The dry, low, black man said something awful on the drums, Creole answered, and the drums talked back. Then the horn insisted, sweet and high, slightly detached perhaps, and Creole listened, commenting now and then, dry, and driving, beautiful, calm and old. Then they all came together again, and Sonny was part of the family again. I could tell this from his face. He seemed to have found, right there,

> beneath his fingers, a damn brand-new piano. It seemed that he couldn't get over it. Then, for a while, just being happy with Sonny, they seemed to be agreeing with him that brand-new pianos certainly were a gas.
>
> Then Creole stepped forward to remind them that what they were playing was the blues. He hit something in all of them, he hit something in me, myself, and the music tightened and deepened, apprehension began to beat the air. Creole began to tell us what the blues were all about. They were not about anything very new. He and his boys up there were keeping it new, at the risk of ruin, destruction, madness and death, in order to find new ways to make us listen. For, while the tale of how we suffer, and how we are delighted, and how we may triumph is never new, it must always be heard. There isn't any other tale to tell, it's the only light we've got in all this darkness.

Baldwin's role as researcher[15] and author is to tell us a story that demonstrates the inner change and development of the narrator as witness to the performance, of Sonny as performer with a troubled past, and of the significance of blues performance in the cultural crisis of the African American male in the 1950's. Through reading this passage, the audience becomes aware of the connection between body motion and the experience of transformation through performing and listening to live music.

We can compare Baldwin's passage with the following passage by Jane Davidson to further illustrate how the miner and traveler metaphors differ in key areas of knowledge cultivation and presentation of findings. The article titled "Communicating with the Body in Performance" is found in an edited collection of scholarly essays intended to inform practice. Notice the *mining language* which I have placed in italics below:

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[15] Baldwin's identity as a researcher, for some, may invoke the same kind of skepticism that is often leveled at performing musicians. Is Baldwin a researcher? What kind of knowledge representation is suitable for that title? Baldwin published six novels, four books of essays, two plays, and a book of photographs. He lectured at the University of Amherst, Bowling Green State, and the University of California at Berkeley. The content for his writing was cultivated over years of introspection and observation of human interaction. I view him as a researcher in the sense of the "traveler" metaphor discussed in Kvale. Though we do not have access to Baldwin's methodology for preparing this short story, we can evaluate his observational power purely on the level of insight contained within his story.

Viewing the performer

Having established that the body is vital in generating the technical and expressive qualities of a musical interpretation, it is necessary to explore what the body movements of a performer comprise. A lengthy case study of a single pianist by Jane Davidson (1991) attempted to decode the movements used in performance and determine what information these movements might be transmitting from the performer to the audience. In summary*, it was discovered* that for the pianist, an expressively intentioned performance always involved an overall, circular and swaying movement on his part. Generally, these cyclical movements were expressive, but there were certain moments within them that were more expressive than others. Indeed, there seemed to be a correlation between expressivity rating made by audiences and the specific kind of movement being used at that moment. *Several identifiable gestures were found*: hand and arm lifts and depressions of varying degrees ranging from lavish, circular gestures to small wrist rotations; a 'wiggling' of the shoulder blades; and forward and backward head nods and shakes. All movements, including the all-encompassing swaying, *were found to emanate from* the hip region. Given the pianist's sitting position, it was theorized that the hips represented the fulcrum for his centre of gravity, therefore providing the pivotal point for all upper torso movements. This centre of gravity seemed to be the central location for the generation of physical expression.

One-to-one correspondences *were sought* between the gestures used by the pianist and specific moments in the musical structure, *but it was discovered* that these gestures were employed in a fairly flexible way, so on repeat performances with similar expressive intentions, a head nod might have appeared where a shoulder 'wiggle' previously existed. However*, it was also discovered* that such gestures always appeared at the same points in the music, suggesting a strong link between the physical production of expression and its correlated expressive sound effect. For instance, there would always be a gesture at a phrase boundary of climax, though it would vary from performance to performance.[16]

Davidson presents knowledge about performance as "discovered" through objective observation. She is fulfilling the role of miner, seeking to bring objective truths about practice into a format intended to inform performers about ensemble coordination. The observations made by Davidson remain largely at the surface level — facts about motion in correlation with a musical score. The audience reports on perceived expressiveness, not on the nature of what was expressed, the environment in which it was performed, or how the music made them feel. Baldwin, on the other

[16] Jane Davidson, "Communicating with the Body in Performance," In *Musical Performance: A Guide to Understanding*, edited by John Rink (Cambridge University Press, 2002), 146.

hand, reaches into the depths of his characters to reveal motivations, experiences, transformations, at both the personal and cultural levels in the performance and creation of musical sound.

Finding My Voice

Underlying concepts of knowledge formation drive decision making in all phases of the research process from the question itself, through data collection and analysis, and finally in the representation of the project. While labels such as "miner" and "traveler" assist us in revealing the epistemological assumptions of a research project, most modern researchers aim for a position somewhere between miner and traveler, quantitative and qualitative, objectivist and constructivist agendas. As I will discuss in the final chapter, performers tend to be *pragmatic generalists*. They draw from both ends of this spectrum—and everything in between—in order to enhance the experience of music-making.

Finding the right balance of perspectives for my scholarly voice has proven quite challenging. I am trained in a performance tradition that emphasizes physicality and introspection. My experiences as a bassoonist cause me to value depth of insight and observational power over objectivist findings about music performance. As a performer, I am drawn to observe and listen for the physical aspects of presentation and the subtle realms of interaction. Where Baldwin uses his observations of music performance to shed light on cultural identity and personal growth, my observations remain in the realm of embodied musical expertise. I listen, with a physically trained ear, for *insight* into the process of performing, the experience of music-making, and the dynamics of interaction between musicians. I listen *within* the music for insight into my own music making.

Consider the following observations I made of a video-taped dress rehearsal for a performance of Tōru Takemitsu's *Masque for Two Flutes* (1959-1960) (session 100105):[17]

> M is in position on stage when the camera is turned on. He is playing an A and some surrounding notes (G-C BAG AA) in a lick that he uses to test his sound in the hall. J strides into view from the back of the stage, casually tosses her polishing cloth on a podium to the right of the screen, brings her flute to her face, and, looking at M, repeats his warm-up lick, as if to say, "right back at you." She does this whole display straight-faced, coming into view with a casual professional stature, not overly proud, just comfortably in the game. The mimicry is her greeting to M, as if to say, "I hear you; I'm in the game; 'I can do what you can do'."
>
> M's response tells us something of the spirit in which her mimicry takes place. He curls his lips, squints his eyes and says "meyeah," pausing only briefly for my chirping in the background "here we are; we're recording." He makes a face once more, responding as though she were the obnoxious grade school friend who just made fun of his flood pants, and J laughs loud. A perfect ice-breaker for what must soon become an efficient dress rehearsal just prior to performance.
>
> Once this exchange is over, they begin to tune. M pops out a quick staccato A before J has a chance to make a sound. When he hears her slightly lower A, he pulls out his head joint before playing again. After playing her A with a full sound, J, seeing M adjust his head joint, says, "hang on, I'm pretty far out." M plays at his new position, and then J pushes her head joint in a bit to find a middle ground. After they are satisfied that the lower octave is in tune, they turn to the higher octave, where M once again pulls out.
>
> On the surface, tuning seems to be about how far to pull out or push in a head joint. However, the flutists are adjusting their bodies to suit the response of their instruments, the tone coming from the other flutist, and the resonance of the hall. Tuning is as much about "feel" as it is about sound, about grounding in the moment. Their feet are planted firmly on the ground, their bodies in the most stable, neutral position. They face each other. M stands very still; J rotates her upper body from right to left several times as she holds her tone. She feels for the vibrations, responding with her support and embouchure as she moves. She is testing her sonic space next to M on stage. The recital hall makes this a flattering process, since the sound in this hall is automatically live and full. They are checking in with that liveness to see how it feels today. If it feels good, the show will succeed. If it doesn't, the performance will be tough slogging.
>
> Tuning brings them together, transforming them from two individuals playing at the same time into an ensemble making sound. The sound they are using to connect must

[17] This rehearsal is part of the data set that is used for analysis in chapters 2 through 5 of this dissertation.

mesh from the fundamental through the whole range of upper partials. They feel through their bodies where the fundamental is grounded.[18] They adjust posture, air support, and embouchure to bring their sounds into the same sound world. Tuning is about coming together, connecting through the vibrations of breath spiraling through metal, meshing in the air space around them. J's earlier greeting, "I can do what you can do," was in effect making light of this process of deep inner connection, making it all part of the game of being a performer before an important show.

They raise their flutes. Standing in ready position, they are preparing to perform the piece as if it were the concert. It takes a full five seconds before J sounds the first note of the piece, and her concentration is palpable. In that five seconds, J stands stock still and waits for the right state of mind before sounding the opening passage. This piece is "about" non-programmatic internal dialogue, a sonic exploration of the undulations of speech without programmatic reference (session 030305). To reveal that internal dialogue, she must set aside her own agendas and goals, her identity, her attitudes, and focus solely on the production of sound. For a second, she closes her eyes; she opens them at the score. The tempo seems to rise to the surface from somewhere deep inside her body, first extremely subtle, a hint of motion in her eye brow, the crown of her head. Her elbow rides the beat and by now we in the audience can see her two-beat breath, embouchure at the ready. Her breath takes longer than I expect, as if she were riding the beats until the best one comes along.

During her preparation and first two notes, M looks directly at her. His entrance is trickier than hers. She sets the pace with a double-articulated E, marked *piano espressivo*. Then she leans on her first note as if to fully establish her presence in the sonority. In a response that appears almost shocked by the weight of her sound, his first *pianissimo* harmonic G does not speak; he moves into it slightly late, at a *piano* dynamic.

These observations are from the perspective of a performer. They do not explore the personal or cultural identities of the flutists. They do not comment on the ironic display of professional flutists performing a "dumb show" in the tradition of eighteenth century English masques, twittering around each other as insects in a glass case, evidence of a nearly extinct art form[19] (though one could very justifiably engage such musings and find in those musings some quite intriguing layers of

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[18] "Grounding the fundamental" means that the two performers are coordinating their physical stance, embouchure, breath support and overall approach so that their sounds mesh completely. If they both change their stance, they can metaphorically ground the fundamental in a different place, creating a different character in the tone. Surprisingly, this physical grounding influences the way the timbre is felt (and, very likely, perceived).

[19] The term *masque* refers to a "dumb show" spectacle from the eighteenth century. An irresponsible musicologist might imagine the Takemitsu piece as a parody of performance in the WAM tradition.

interpretation). My presence in the above text could be characterized as that of a "traveling instrumentalist."

While the above observations may be in the "traveling instrumentalist's voice," I do not limit myself to that perspective in this dissertation. Instead, I have chosen a sampling of analytical tools that seem to me to extend quite naturally from practice into a more formal research domain. Chapter 2 presents a case study of gesture use in ensemble rehearsal. In this chapter, I explore Grounded Theory as a methodological viewpoint for analyzing observational data. Chapters 3, 4, and 5 re-present the case study data through the conceptualizations of Herbert H. Clark, which are extended here to address *the negotiation of musical understanding* in rehearsals. The critical lens I employ is not the lens of the gender theorist or music theorist. It is not the lens of the cultural theorist or semiotician. It is, rather, the lens of the performing instrumentalist. There is currently no academic infrastructure for engaging this meta-perspective on instrumental performance. This work, then, should be considered preliminary and incomplete, an attempt to construct models of music cognition that are resonant with an insider's lived experience through performer-directed research on the cultivation and exchange of musical knowledge in practice.

Chapter 2: Studying Performance Knowledge in Context

Methodological Problems

Chapter One introduced the idea that introspection and bodily awareness are an important part of instrumental training. This is not to deny the reality that most professional musicians, especially those who perform in WAM, take classes to learn more formal approaches to understanding music. In fact, the average classical musician takes several years of formal training in history, theory, and analysis to supplement her instrumental training. Tests and written papers can assess how much a performer knows about the music she plays, but assessing her ability to incorporate that knowledge into her instrumental practice is much more difficult. While we can critique a performer's use of ornamentation, her skill in phrasing melodies in a certain style, or her ability to lecture about the music she plays, we do not have the conceptual tools for investigating how theoretical[20] and practical knowledge are combined in the mind of a performer.

Throughout the 1990s, research in the connection between body motion and cognition revealed layers of knowledge not accessible through linguistic analysis alone. David McNeill (1992), for example, relates hand motion to spoken language, revealing the role of gesture in speech and conversation. Rather than codifying specific gestures in an attempt to discover a "gestural language" that speakers use, McNeill focuses on the role gestures play in speech acts. He argues that hand movement and speech are closely related, and that gestures reveal aspects of the discourse structure and the thought structure (of the person speaking). McNeill argues that gestures reveal the

[20] Including musicological and music theoretical knowledge.

"imagistic, instantaneous, nonsegmented, and holistic" aspects of meaning that surround speech acts. Gestures bridge from the external processes of categorization, segmentation, formatting, and formalization to the "idiosyncratic, personal, context-specific" world of the speaker (McNeill 1992, p.2).

Researchers in music cognition and performance have taken up this interest in the role of gesture in music-making with the aim of discovering a link between body motion and music cognition. Existing studies of expression in music performance define body motion as a deviation from strict regularity, motivated on some (unconscious) level by an awareness of phrase/grouping structure. Quantitative studies of music-making, for example those that measure timing[21] (Repp 1996c, Windsor & Clarke 1997, Clarke 1988, Desain & Honing 1994, Desain 1991) or dynamics (Windsor & Clarke 1997, Todd 1992), attempt to generalize from physical analysis of sound output to music cognition. One such study (Wanderley 1999, 2002) uses quantitative measures to demonstrate how "ancillary" gestures of musicians are communicated through the sound spectrum. The findings of these studies and their accompanying algorithms for musical processes can be useful for sound synthesis and artificial intelligence, but as Windsor & Clarke (1997) point out, may be less useful for predicting or describing human musical processes.

While McNeill views gesture as a bridge between the internal and external worlds of the speaker, studies like the ones mentioned above typically view gesture as a means for revealing a performer's interpretation of a score. Studies on gesture in music-making have not to date been

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[21] See also the following studies that interpret tempo curves in relation to aspects of bodily motion: Ulf Kronman and Johan Sundberg, "Is the Musical Ritard an Allusion to Physical Motion?" in *Action and Perception in Rhythm and Music,* ed. Alf Gabrielsson, 57-68 (Stockholm: Royal Swedish Academy of Music, 1987); Eric Clarke, "Generativity, Mimesis and the Human Body in Music Performance," *Contemporary Music Review* 9 (1993): 207-221; Neil P. McAngus Todd, "The Kinematics of Musical Expression," *Journal of the Acoustical Society of America* 97/3 (March 1995): 1940-1949; Patrick Shove and Bruno H. Repp, "Musical Motion and Performance: Theoretical and Empirical Perspectives," in *The Practice of Performance: Studies in Musical Interpretation,* ed. John Rink, 55-83 (Cambridge: Cambridge University Press, 1995).

interested in the performer's imagination of herself in the process of music-making; indeed, her imagistic, impulsive, and idiosyncratic processes are often viewed with skepticism and are derogatorily labeled "irrational" or "intuitive."[22] It is not entirely clear why research in music cognition should be so far behind that of psycholinguistics in these matters. It could have to do with the role of aesthetic discourse valuing the abstract and conceptual over the practical and applied. The performance analysis literature criticizes this traditional value system (Cook 1999), but to date no suitable conceptual framework has been developed with the aim of reconciling the physical realities of musical sound with the imagistic processes of the WAM performer. The irony is that music is often considered more imagistic, impulsive, intuitive than language, and yet, the music cognition literature is focused almost exclusively on the measurable – the "hard" scientific. While a few music theorists have persevered with phenomenological inquiry,[23] more efforts have been made to identify global structures in music (e.g. Lehdahl & Jackendoff 1983) than to reveal the inner processes of negotiating musical understanding.

Qualitative studies of gesture in music performance, while more interested in the inner world of the performer, generally focus on *improving*, rather than *understanding*, performance. Jane Davidson has produced several studies employing qualitative research values, studying practical and "embodied" performance processes (Davidson 1993, 1994, 2001, 2002, 2004, 2005). Her 2004 study employs singers in her opera production as subjects. During the study, Davidson encourages her subjects to openly reflect on the process of interaction in rehearsal. Davidson adjusts the rehearsal procedures in consideration of her subjects' feelings, thoughts, and experiences. The results for her and her subjects were positive – empowerment for the individuals, and productive for the group

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[22] See also, Charles Keil, "The Theory of Participatory Discrepancies: a Progress Report," *Ethnomusicology*, 39:1, Special Issue: Participatory Discrepancies, (Winter, 1995), pp. 1-19.
[23] See David Lewin, "Music Theory, Phenomenology, and Modes of Perception", Music Perception, 3 (1986), 327–92.

dynamic. However, Davidson does not systematically study the process of reflection and what it says about performer knowledge and experience. She simply uses her performer's reflections to shape the rehearsal process. A similar "self-improvement" ethic is revealed in Elaine Goodman's (2002) classification of various processes of ensemble performance. She offers a classification of ensemble coordination designed to "enhance our experience of ensemble performance" (Goodman 2002, p. 153). This ethic is consistent with the goals of most practicing musicians. However, the motivation to improve performance can seriously compromise the validity of the research. For example, Goodman's opinions about "correct" performance are evident throughout her writing. In her section on performer gesture, she insists that a performer limit body motion to "the wiggle of the toe inside the shoe" (Goodman 2002, p. 154). Opinions like this must be examined conceptually and empirically in order to earn any validity.

The most conceptually developed domain for studying "what musicians know," not surprisingly, comes from the world of music theory. Several key studies examine the relationship of analysis to performance (Schmalfeldt 1985, Nolan 1994, Cook 1999, 2001, Lester 1995, Rink 2002, 2004). While each of the aforementioned studies calls for the emancipation of the performer's "voice" in research, the authors expose disagreements about whether or not and to what degree music analysis is useful to performance.[24] Some of the studies in this literature propose analytical techniques for performers to use (Rink 2002), or engage traditional analysis to prove how performances can (be allowed to) differ (Schmalfeldt 1985, Lester 1995). Cook (1991, 2001) takes a critical approach to the subject, offering historical arguments for why performance should be a

[24] John Rink juxtaposes the views of two prominent theorists, Leonard Meyer and Eugene Narmour (respectively) in this sentence, "Some authors regard analysis as 'implicit in what the performer does', however 'intuitive and unsystematic' it might be, while for others, performers *must* engage in rigorous and theoretically informed analysis of a work's 'parametric elements' if its 'aesthetic depth' is to be plumbed." John Rink, "Analysis and (Or?) Performance," in *Musical Performance: A Guide to Understanding*, ed. John Rink (Cambridge: Cambridge University Press, 2002), 35.

scholarly discipline in its own right and at the same time highlighting the performative dimension of analysis itself. Johnson (2004) proposes normative approaches to interpretation based on analyses of recorded performances. His study, a blend of quantitative and music-theoretical methodologies, measures intonation tendencies of various recordings and uses these as normative guidelines for performance. The same cautionary observation can be made about this line of inquiry that Windsor & Clarke (1997) conclude regarding algorithms derived from observed musical behavior: analyses of intonation tendencies, dynamic ranges, and timing in recorded performances should not be used as prescriptive or normative indications for performance.

As John Rink (2004) and Nicholas Cook (2001) point out, the field of performance analysis is still searching for a methodology that will capture the voices and concerns of musicians from more than one cultural background (and on more than one instrument). We need an approach – or rather, a range of approaches – that have greatest chance of revealing performance knowledge without imposing prior assumptions about musical behavior onto the experience of the musicians or trying to improve performance before understanding its domain. A suitable methodology should be open-ended enough to allow us to examine music-making while treating a variety of social and cultural settings equally and revealing meaningful patterns of musical interaction at the level that is most relevant to performance. Additionally, this methodology should work for all types of instruments, not just piano (the instrument that has figured most prominently in the literature of performance studies thus far).

Qualifier

In the passages that follow, I define grounded theory and demonstrate my use of it on the Takemitsu data. I show how the method of inquiry opened the data up to me in ways that were sometimes messy and unruly, and how, in the end, I was able to focus on certain themes that would

point toward theory about gesture in musical interaction. However, before I begin I would like to qualify what follows with a lesson that took me a little over two years to learn.

GT is an ambitious and challenging method for building theory from the data (rather than applying a pre-existing theory to a data set). The founders, Barney Glaser and Anselm Strauss (1967), both suggest that it can be used on any kind of data – quantitative or qualitative. When I began using GT, I very idealistically wanted to analyze the most ecologically valid data set I could create, so I chose to work with video-taped rehearsals. However, after working through this case at length, I have since learned that narrower, more focused, data sets (like focus groups or interviews) are likely to produce more focused theory. Nevertheless, I include this study here because the analytical process was of great value, and, in spite of my confusion, the themes I uncovered justified the use of an existing conceptual structure (that of Herbert H. Clark, Chapters 3 - 5), one far more sophisticated than any I could have built from this data set alone using GT. This outcome is consistent with the aims of GT in that the conceptual structure I ended up using truly earned its way into the study and provided a stable framework for dealing with complex, "real-world" observational data.

Grounded Theory Methodology

GT is a methodology for studying the social reality of participants involved in an event or issue. The principles and practices of GT aim toward a deeper understanding of an event or issue *grounded* in the set of experiences and attitudes of those involved. Though GT is a traditional methodology for qualitative research in the social sciences, it has evolved over time to incorporate a combination of newer and older approaches reflecting continuity in traditions (e.g., ethnographic fieldwork) and the influence of recent debates (e.g., postmodernism), including the "advocacy,

participatory, and self-reflective perspectives"[25] built up throughout the 1990's. The following principles and practices (summarized from Creswell 2003) of qualitative research (QR) underlie the modern approach to GT (and other qualitative methodologies):

> QR attempts to encounter the subjects of a study in their natural setting.
> QR embraces humanistic and participatory research designs.
> QR employs multiple types of data (open-ended observations, interviews, documents, sounds, emails, scrapbooks, etc.).
> QR studies emerge through a process of design and implementation. Questions, data collection, theory, and understanding are shaped by the process of inquiry.
> QR is interpretive; researchers reflect, through introspective analysis of their biases, values, and interests, on the way their identity shapes the inquiry. The term for this is reflexivity.
> QR uses iterative thinking and reasoning – from data collection to analysis. Inductive and deductive thought processes are used. Reasoning is often complex and multi-faceted.
> QR design is based on one or more qualitative research methods (grounded theory, case study, phenomenology, biography, ethnography, etc.).

GT methodology was formulated to help social scientists arrive at theory from the study of complex social situations (e.g. the experience of dying in hospitals). Rather than studying the situation from an established set of theories (e.g. about dying), the founders of GT wanted to build new theory that truly reflected the experiences of the participants involved. Data collection could include qualitative (e.g. interviews) or quantitative (e.g. questionnaires) methods. Both inductive and deductive thought processes would be used on the data. For example, a first pass at coding data would be inductive, looking to identify concepts as they arose in the data. This first pass would be very thorough, capturing as many themes and concepts as possible to avoid "forcing" an understanding on the issue.

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[25] Creswell 2003, p. 181.

Then the researcher would identify a particular focus for the data. At that point, deduction would be used to extend from the focus question through the data to investigate how that particular concept took on meaning in the data set. Until this point, no analysis would have taken place. The researcher would simply explore and organize the data in preparation for analysis. Analysis would involve exploring the relations between concepts and categories, and within concepts and categories across the data set.

Early GT (and some forms of modern GT) have been criticized for their "positivist underpinnings." Positivism, also labeled "objectivism" by some, assumes that a particular social reality can be discovered through a systematic process of coding and analysis. Many qualitative researchers strive to adopt a less positivistic stance. They recognize that social reality is variable, multi-faceted, contradictory, and often fragmented.[26]

While the founders of GT differ on the specific methods of coding and analysis, they both agree that analysis should be data-driven. Barney Glaser and Anselm Strauss parted ways not long after their initial publication *The Discovery of Grounded Theory* (1967). Whereas Glaser (1992, 2002) advocates a model of inquiry that "trusts" in the emergence of findings from the data, Strauss, with Juliet Corbin (1998), outlines a range of systematic approaches to coding and analysis from which a researcher can choose (based on the dictates of the data). According to Charmaz (2003), Glaser's approach is closest to positivism in that he assumes there is a measurable reality that will emerge from the data based on the analytical skills of the researcher. Strauss & Corbin on the other hand, are partially forgiven their positivist leanings because they place emphasis on unbiased data

[26] See Kathy Chamaz, "Grounded Theory: Objectivist and Constructivist Methods," in *Strategies of Qualitative Inquiry*, ed. Norman K. Denzin and Yvonna S. Lincoln (Thousand Oaks: SAGE Publications, 2003), 249-291; Adele E. Clarke, *Situational Analysis: Grounded Theory After the Postmodern Turn* (Thousand Oaks: SAGE Publications, 2005).

collection and accurate representation of the realities of their subjects (Charmaz, 250).

Constructivist critiques of Glaser and Strauss sometimes overlook, or perhaps simply de-emphasize, the key motivations for building GT. The purpose for developing GT was to learn how to theorize a situation without the imposition of existing theoretical constructs. This is a difficult and ambitious task, especially since its application is most called for in fields which are heavily theory-driven, fields in which the social participants have all but lost their voice. Nicholas Cook (2001) argues that this is the case for performers of music in the WAM tradition. He offers powerful evidence that the language and thought tools used in musicology and music theory are biased against understanding performance as a creative activity. He offers this quote from Arnold Schoenberg: "The performer, for all his intolerable arrogance, is totally unnecessary except as his interpretations make the music understandable to an audience unfortunate enough not to be able to read it in print" (Cook [1]). Viewing performance as reproduction of a work inspired by or through a composer, Cook maintains, has prevented the scholarly community from truly understanding music-making as a process.[27] Clearly the situation calls for some exploratory inquiry to help identify the experiences and perspectives of performers.

The immense task of "discovering theory" was not lost on the founders Glaser and Strauss. Both authors emphasize the need for the grounded theorist to employ creativity, to refrain from "forcing" an interpretation on the data, and most of all, to be prepared for confusion and anxiety.

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[27] There is one exception of note, the composer Sofia Gubaidulina, not discussed by Cook, describes music-making as an ongoing experience, shared equally by the composer, the performer, and the listener. This is in contrast to the WAM tradition Cook exposes, a tradition that is still very much alive and well. For instance, I attended a lecture by a full professor in music from a local university who argued, in public, in 2004, that playing the cello was not a creative activity. He was drawing on century-old notions of music performance as reproduction, notions Cook challenges in this article.

This aspect of the early GT appears somewhat lost in the current move toward relativist and constructivist analyses in social science. The relativist position, while it offers intriguing methods for clustering situational "meanings" (Clarke, 2005), seems to sacrifice some of the *creativity*, *confusion*, and *persistence* (hard core problem-solving processes) discussed as vital by both founders. While one can argue strongly for multiplicity as a guiding principle for performance inquiry, especially in light of the performer's situation in WAM, it is my experience that only the most powerfully coherent conceptual designs have a hope of influencing a scholarly community so deeply entrenched in the music-as-reproduction model.[28]

GT, according to Strauss & Corbin (1998), is more than a set of procedures for analyzing data. It is a way of understanding the world that involves some basic principles for inquiry. Social situations are never straightforward. Competing agendas, differing perspectives, and contextual interference are normal. The process for studying the social reality of people requires an ability to deal with ambiguity, contradiction, complexity, change, and multiplicity. Data collection and analysis take place in the context of the researcher's understanding of an issue, which is then shaped by the process of inquiry. Personal experience and knowledge are considered not only relevant for the purposes of preventing bias, they are relevant because of the way a researcher's understanding is shaped by the process of inquiry itself. Therefore, the interaction between the researcher's thought process and the data must be as transparent as possible. Finally, both Glaser and Strauss repeatedly acknowledge that GT requires creativity, flexibility, patience, and persistence.

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[28] Cook introduces the idea that music performance in the WAM tradition is more properly investigated at the intersect between process and product. The music-as-reproduction view is concerned with product; the "process-oriented" view diminishes the importance of the musical work. Somewhere in between, Cook says, is a way to understand the creative activity of music-making.

In the final chapter, I will return to the debate between positivism and constructivism by introducing a third alternative, that of experiential realism. For now, I will be satisfied that the understanding I take away from this grounded theory study is a result of the interaction between my experiential knowledge about music performance and the data via systematic procedures for coding, analysis and representation. As I will report below, the GT analysis offered a view of some of the constraints on gesture in musical interaction. However, more importantly, the process of moving through a GT inquiry helped me identify the type of conceptual scheme that may be most useful for understanding music performance as a knowledge-building and negotiating activity. That conceptualization scheme follows in chapters 3, 4, and 5.

Research Design

GT methodology was developed to conceptualize a situation from the perspective of the participants involved. Indeed, as I mentioned earlier, this stance seems appropriate for studying music performance given the skewed perspective on performance in the literature. However, as I designed my study, I developed a further list of three research goals requiring a specially tailored study design. First, I wanted a study that would allow the flutists the freedom to practise their art as normally as possible while still providing data suitable for motion analysis. When control measures, such as the repeated performance of isolated phrases, are used as a means for gathering performance data, performers are no longer participating in their normal music-making activity. However, if the performers were rehearsing a complete work, they would normally repeat difficult passages several times. So, it seemed appropriate that the flutists would rehearse a work that was new to them and that would require some repetition.

Second, I wanted a study design flexible enough to allow me to discuss the data collection and

analysis with the flutists as the study progressed. Qualitative approaches require transparency in the influence a researcher has on her data. My musical training put me in an interesting position with regard to data gathering. I was both a researcher and colleague to the flutists, a participant in the shaping of the music as well as the shaping of understanding of the rehearsal process. To that end, the dialogue that took place in the rehearsals was as important as the playing of music.

Finally, I wanted to level the playing field between me and the flutists, to recognize the role their participation played in the cultivation of understanding on this issue. This contract included proper payment and recognition for the role they played in the study. The flutists volunteered to behave as they normally do when learning a new work – mistakes and all – in front of my inquiring eyes. They had to trust that I would accurately represent their experience. So, as well as paying them for the time they spent in front of the camera, I guaranteed that their role in the unfolding study would be transparent – that their ideas would be attributed to them,[29] that their participation would shape the themes and findings that arose from the study, and that I would do my level best not to force my own beliefs and theories onto their experience, in keeping with GT methodology.

An Instrumental Case Study on the Preparation of Tōru Takemitsu's *Masque for Two Flutes*

Chamber music is a staple activity for most performing instrumentalists. Many performers belong to more than one ensemble, and have a regular list of contacts with whom they make music. The term "instrumental case study" has a double meaning in this context. The term "instrumental" can refer to the fact that the study is about instrumentalists making music, but more importantly, it refers to a genre of case study described by Stake (1995 qtd. in Creswell 1998). An "instrumental

[29] This is, of course, within the guidelines of the ethics contract which protects their anonymity. They are referred to as "M" and "J" throughout the study.

case study" is one that is intended *for use as an instrument* to study a broader issue. In this instance, a flute duo learning Tōru Takemitsu's *Masque for Two Flutes* is studied to explore how musical meaning is negotiated through gesture in rehearsals.

This instrumental case study explores the negotiation of musical understanding in rehearsal by focusing on the working process of a single ensemble. In order for this to be an instrumental study, the ensemble must be shown to represent a situation that is likely to be played out in a similar way by other instrumentalists of similar quality. First, while their careers and career goals are not the same (see Appendix A), the flutists performed together regularly in large and small ensembles. They already knew how to work together, so we can say that they shared enough common ground to be able to communicate with each other effectively and to focus more on the music than on trying to understand each other. Second, this piece they had chosen posed a number of performance problems typical for instrumentalists learning contemporary music. They had to decipher the score, learn the compositional style of Takemitsu, blend Japanese and Western flute performance techniques, and negotiate a common "communicative" understanding of the music (030305 T3) so that they could perform the piece fluently. Though the piece challenged them technically, intellectually, and musically, it was well within their grasp. Therefore, the study of their process for rehearsing the work provided an opportunity to explore the negotiation of musical understanding between musical colleagues in a typical professional situation.

In all forms of inquiry it is useful to define the limits of what can be asked of the data. As the Takemitsu study progressed, it became clear that the outcome of this study could not be used to generalize questions of gesture use in ensembles performing other musical works, though this study would no doubt provide a more detailed framework from which to ask those questions. Similarly,

because both instrumentalists were flutists, questions about various instrumental roles in chamber ensembles would not be suitable for this data. Again, the Takemitsu study was instrumental for studying the working process of a single ensemble.

Knowledge Claims, Critical Lenses

All types of inquiry are based on a set of claims for how knowledge is cultivated (Creswell 2003, p. 7-13). Postpositivism, for example, recognizes that absolute truth can never be determined; that hypotheses are not *proven*, but *tested* in order to determine the most strongly warranted findings. Social constructivism, on the other hand, views meaning as a cultivation of inter-subjective understanding; situations are interpreted through engagement in the world. Participatory or Action Research is a dialectical process of engaging critical perspectives on important issues in order to bring about change in the lives of marginalized peoples (e.g. feminist perspectives, racialized discourses, queer theory, disability inquiry, and critical theory). Finally, pragmatism and mixed methods claim knowledge is situational.

While there are many forms of pragmatism stemming from the philosophical directions of Pierce, James, Mead and Dewey (Cresswell 2003, p. 11), some basic characteristics of the pragmatic approach can be identified as guiding principles for inquiry. Problems drive the research process. Rather than studying a problem through the dictates of a methodological stance, a pragmatist designs research based on the nature of the problem. Pragmatic inquiry recognizes knowledge as contextual. Knowledge is "not based on a strict dualism between the mind and a reality completely independent of the mind" (Cresswell 2003, p. 12), but arises as a result of the interactions between actors in a situation. Pragmatic research is less interested in abstract laws of reality than in the "what" and "how" of particular circumstances.

The Takemitsu case study is based on the following pragmatic knowledge claims: Musical processes are best understood by examining holistic data from real world situations. Musicians who have reached a professional level of competence can be trusted to know if their music is working or not. Questions about process and context are more important than questions about quality. Questions should be open-ended in the beginning, and should become more focused as the situation dictates. Themes and theories should be "grounded" in both the experiences of the flutists and the researcher's own practice of music-making.

The Data

Data for this study includes 10 video-taped rehearsals (also called "sessions"): one lab rehearsal of C.P.E. Bach's "Sonata in A Minor" with "Ghost" accompaniment,[30] and nine rehearsals of *Masque for Two Flutes*. The musicians gave formal consent to allow video taping of each rehearsal – from their first sight reading sessions to the final performance of *Masque*.[31] They agreed not to rehearse the work outside of the data collection procedures, but they could practise their music on their own. Sessions are labeled by date (012105 means January 21, 2005). Sessions 011405 (C.P.E. Bach), 012105, 020705, 021105, and 030305 form the first data set. The second set consists of five sessions, 092205, 092605, 092905, 100105 (dress rehearsal and performance), and 110305 (post-performance experimental session). The rehearsals for the first data set (January – March 2005) took place in Dr. Eric Vatikiotis-Bateson's gesture and speech lab using motion capture and

[30] The "Ghost" second part was not originally composed by C. P. E. Bach; it was composed by Gary Schocker as a performance aid for interpretation of the first part. The "Ghost" part is a second line that implies harmony for the solo part. The intention is to shape the interpretation of the solo part by revealing implied harmonies in the line.

[31] Ethics approval was granted by the University of British Columbia under Dr. Eric Vatikiotis-Bateson's project, "Determining Communicative Event Structures in Speech and Music," funded by the National Science and Engineering Research Council of Canada.

video recording. The second data set (September – November 2005) was recorded on video only, in the environs of the UBC School of Music.

Context

I met the flute duo during a graduate research seminar led by Dr. Alex Fisher in Fall 2004. The flutists volunteered to be studied after listening to a lecture I gave on GT. They were planning a recital to be held in March 2005. While they had already learned most of the music they were scheduled to perform, they had discussed learning Takemitsu's *Masque* for the performance, and offered me the opportunity to do an exploratory study of their process of learning the piece. Both flutists were considered young professionals. Both had studied flute performance for well over a decade, and had mastered a range of repertoire on the flute, winning various prizes and professional engagements. They were studying performance with the same teacher at UBC, but had also studied flute performance in various places in North America, Europe, and Australia (please see the flutists' biographies included as Appendix A).

The flutists chose to play *Masque* for the study because they had not previously performed the work. They were interested in exploring the role of gesture in music-making, and had already decided that this piece would prove interesting because of its emphasis on gestural musical elements (012105 T1).[32] The piece uses a blend of Japanese and Western contemporary musical styles. It is non-tonal, quasi-serial in some spots, and involves very complex rhythmic and temporal shifts.[33] There are stylistic features that resemble traditional shakuhachi performance, such as *portamento* to

[32] Where I reference their comments in the text, I will place the session number in parentheses next to the reference. Where there is a T[#], I include the referenced segment of the transcript in Appendix C.
[33] See Score excerpts included with full permission granted by Editions Salabert France, Appendix D. See also Burt, 2001.

end longer notes, grace notes, abrupt dynamic changes, and harmonics. During the first phase of data collection we decided the music was "about" a non-verbal, non-programmatic, internal dialogue which the two flute parts are meant to evoke (030305 T2).

Process

The data for this study were simultaneously collected and analyzed in keeping with GT methods. During the first part of the study, (January-March 2005), the emphasis was on gathering data that would combine motion capture with context. The technology changed only slightly from the initial session (011405) to the fifth session (030305). Initially, there were two free-standing microphones, one for each flutist. One flutist (J in session 011405, and M for 012105-030305) was adorned with blue dots to facilitate motion tracking. A high-definition camera was focused on the player with blue dots. An additional camera captured both flutists in one frame. Later, clip-on microphones were used instead of the free-standing mics.

The video data was very rich; in its raw form, overwhelming. In keeping with GT methods, I began organizing the data as soon as it was collected, using a combination of Transana and HyperResearch data analysis software.[34] The raw video was processed into Quicktime video files, and each file was then transcribed in Transana. I used the following transcription procedures:

1. Review field notes for the session to refresh the memory.
2. Take a first pass at watching the video to get an overall sense of the direction for the rehearsal.
3. Take a second pass at watching the video. Open a transcript file in Transana and begin quick transcription. Make note of important moments in the data (e.g. beginning of the rehearsal, start/end of play, comments on gesture).

[34] I should point out that there are a number of video analysis software packages available for such work. Some are free, some very expensive. Each package offers slightly different functionality and presentation. I could have transcribed and coded in Transana, for example, but preferred the way HyperResearch presented the data to me on the computer screen. Even though Transana offered a sound wave file with each video and allowed me to type and edit a transcript while watching the video, I found the filing system for codes and concepts hard to use. HR emphasized data organization and made it easy to access the data and create links between codes and concepts – a more important functionality for analysis.

4. On the third pass, type all dialog into the transcript. Flag moments that require more attention or more detailed transcription.
5. Review the transcript with a fourth (and/or fifth) pass, correcting errors and adding relevant detail into the transcript.

I recorded all verbal discourse, all sections of play (by measure number), and some significant moments where the body motion of the players drew my attention.

Sample transcript (030305 beginning of rehearsal):

```
J: alright, we're not together on that
M: <uh> I was... I always slow down at that point too
J: <um> I think... well / / I felt like this started before I was
done with this
M: right
J: and then I go thrown off (%laughs and waves it off) alright
M: can we go from that bar / no tempo change
J: yep
J: are you, I mean this is supposed to be slower?
M: yeah
J: but I feel like this might actually be fast
M: alright / then can we go from here say
J: like a (%baum baum baum)
M: that's a thirty second. those are. they got chopped off
J: one two three four
M: otherwise its not a 4/8 bar
J: yeah
M: its (%daya baaaa gadagadagada daa yaaa)
J: ok, alright, yea yea
M: that's, I don't know that's approximating but / um can we just
go maybe go right on the 4/8?
J: sure
M: bar 27? and maybe not, lets not accel just right now
J: yeah
M: ok
Begins measure 27
```

This transcript indicates the level of detail that was typical for each transcript (see other transcript excerpts in Appendix C). This excerpt began when J interrupted play. She identified a mistake worth going back to correct. Comments in <> (e.g. <uh> <um>) indicated simultaneous speech. Though I did not always indicate when they were talking over each other, I did indicate when they spoke simultaneously, as if to perform the same exclamation. Sometimes their words

overlapped, but they were still clearly taking turns. I did not mark those moments as simultaneous speech. Ellipses and / markers indicated short or long pauses in the dialog. Question marks indicated upturned inflection. Periods indicated downward inflection as in the end of a sentence, even if it occurred on a sentence fragment. Singing and observations of body motion were included in parentheses. The % signs indicated that the singing was marked in Transana for me to return and review. I did not attempt to tidy up the language of the flutists, because I felt that tidying up the language might obscure some of the meaning.

Once the transcripts were created, I saved them in a text file and imported both the transcript and the video into HyperResearch (HR). HR allowed me to follow lines of investigation (cases) through the video and text data, linking all of the data by code type.

7 3305 takemitsu

	Code Name	Source	Type	Reference
†	what the piece is about	3305flutedata.mov	MOVIE	00:07:05.858,0
†	mm 27-31	3305flutedata.mov	MOVIE	00:04:20.938,0
†	counting	3305flutedata.mov	MOVIE	00:03:17.069,0
†	J interrupts	3305flutedata.mov	MOVIE	00:03:17.069,0
†	M suggests repeat	3305flutedata.mov	MOVIE	00:04:46.752,0
†	post play comments	3305flutedata.mov	MOVIE	00:04:46.752,0
†	mm 27-31	3305flutedata.mov	MOVIE	00:04:53.418,0
†	post play comments	3305flutedata.mov	MOVIE	00:05:20.016,0
†	mm 27-31	3305flutedata.mov	MOVIE	00:05:36.927,0
†	J interrupts	3305flutedata.mov	MOVIE	00:05:59.024,0
†	post play comments	3305flutedata.mov	MOVIE	00:05:59.024,0
†	joke	3305flutedata.mov	MOVIE	00:05:59.024,0
†	mm 27-31	3305flutedata.mov	MOVIE	00:06:22.414,0
†	post play comments	3305flutedata.mov	MOVIE	00:06:48.707,0
†	mm 13-17	3305flutedata.mov	MOVIE	00:09:04.209,0
†	post play comments	3305flutedata.mov	MOVIE	00:09:26.775,0
†	mm 13-17	3305flutedata.mov	MOVIE	00:10:21.381,0
†	mm 18-21	3305flutedata.mov	MOVIE	00:10:49.924,0
†	mm 22-24	3305flutedata.mov	MOVIE	00:11:11.728,0
†	mm 25-31	3305flutedata.mov	MOVIE	00:11:25.679,0
†	mm 32-37	3305flutedata.mov	MOVIE	00:11:59.531,0
†	post play comments	3305flutedata.mov	MOVIE	00:12:32.575,0

Table 1: Case 7, Session 030305

The table above is an image of one line of investigation in HR, Case 7. Each line has a code name, source, file type, and reference (either in video time or character stamp). All of the codes in this case

come from the video file of Session 030305. The + sign on the very left indicates that there is an annotation for the code. The annotation contains the date the code was made, a comment about the code, and my initials. I discuss some of the issues that arose in coding the data below, but this is one of my first passes at coding the session. Notice that I am simply marking moments in the rehearsal – when they played, which measures, and when they were talking. I was organizing the data so that I could process the video for motion analysis.

8 3305a

	Code Name	Source	Type
+	mm 25-31	3305flutedata.mov	MOVIE
+	dissatisfaction	3305flutedata.mov	MOVIE
+	mm 27-31	3305flutedata.mov	MOVIE
+	satisfaction	3305flutedata.mov	MOVIE
+	mm 27-31	3305flutedata.mov	MOVIE
+	satisfaction	3305flutedata.mov	MOVIE
+	mm 27-31	3305flutedata.mov	MOVIE
+	mm 27-31	3305flutedata.mov	MOVIE
+	mm 13-17	3305flutedata.mov	MOVIE
+	mm 13-17	3305flutedata.mov	MOVIE
+	mm 27-31	3305flutedata.mov	MOVIE

Table 2: Case 8, Session 030305

A subsequent case shows a narrowing of the codes for motion data to measures 13-17 and 25-31 as well as an indication of the flutists' feelings about how the passage was played. From this effort, video data was prepared for motion analysis.[35] Table 3 (below) is an excerpt of Case 14, in which I organized the motion data for the same measures across all sessions for observational analysis. The software made it possible for me to compare the measures between sessions and within sessions at the click of a button. Again, the annotations marked by the + sign at the left of the table held information about the context of the passage and information relevant to my cross-case comparison.

[35] The motion analysis of these passages is still in progress, pending the development of software for tracking motion from points on the video screen.

14 crosscasevideosegments

	Code Name	Source	Type
†	27-31session5	92205takemitsu.mov	MOVIE
†	27-31session5	92205takemitsu.mov	MOVIE
†	27-31session5	92205takemitsu.mov	MOVIE
†	27-31session5	92205takemitsu.mov	MOVIE
†	discuss beating motion	92205takemitsu.mov	MOVIE
†	27-31session5	92205takemitsu.mov	MOVIE
†	27-31session5	92205takemitsu.mov	MOVIE
†	13-17session5	92205takemitsu.mov	MOVIE
†	27-31session5	92205takemitsu.mov	MOVIE
†	13-17session5	92205takemitsu.mov	MOVIE
†	27-31session5	92205takemitsu.mov	MOVIE
†	discuss both movements a	92605flutedata.avi	MOVIE
†	13-17session6	92605flutedata.avi	MOVIE
†	27-31session6	92605flutedata.avi	MOVIE
†	discuss unsatisfaction hov	92605flutedata.avi	MOVIE
†	13-17session6	92605flutedata.avi	MOVIE
†	13-17session6	92605flutedata.avi	MOVIE
†	13-17session6	92605flutedata.avi	MOVIE
†	13-17session6	92605flutedata.avi	MOVIE
†	13-17session6	92605flutedata.avi	MOVIE
†	discuss vibrato	92605flutedata.avi	MOVIE
†	13-17session6	92605flutedata.avi	MOVIE
†	13-17session6	92605flutedata.avi	MOVIE
†	27-31session6	92605flutedata.avi	MOVIE
†	27-31session6	92605flutedata.avi	MOVIE
†	discuss beating motion	92605flutedata.avi	MOVIE
†	27-31session6	92605flutedata.avi	MOVIE
†	27-31session6	92605flutedata.avi	MOVIE
†	27-31session6	92605flutedata.avi	MOVIE
†	27-31session6	92605flutedata.avi	MOVIE
†	27-31session6	92605flutedata.avi	MOVIE
†	27-31session6	92605flutedata.avi	MOVIE
†	27-31session6	92605flutedata.avi	MOVIE
†	13-17session7	92905flutedata.mov	MOVIE
†	27-31session7	92905flutedata.mov	MOVIE
†	discussing ensemble	92905flutedata.mov	MOVIE
†	13-17session7	92905flutedata.mov	MOVIE
†	27-31session7	92905flutedata.mov	MOVIE
†	discuss leader follower se	92905flutedata.mov	MOVIE
†	13-17session8	10105.avi	MOVIE
†	27-31session8	10105.avi	MOVIE
†	discuss preperformance	10105.avi	MOVIE
†	13-17session8	10105.avi	MOVIE
†	27-31session8	10105.avi	MOVIE

Table 3: Case 14, Cross-case analysis of motion in measures 13-17 and 27-31

Because I was able to view the relevant segments of video after one another, I was able to observe changes in the body motion of the players within and across the rehearsals and performances. These observations were compared to thematic categories coded from the verbal transcripts to produce the theory and findings presented at the end of this chapter.

As Coffee and Atkinson point out, the software helps with the organization of data, but the analysis was my responsibility. In what follows, I expose my working process, some of the problems I encountered, and some of the insights that arose through the GT effort.

During data collection and analysis, I kept records of my experiences in the lab (field notes), my thoughts on looking at the data (code notes), and my decisions for analysis (memos). In all, there are 10 field note files, 25 memo files, and 3 code note files. Some notes on coding occur in the memos, but the 3 files labeled "codenotes" deal exclusively with decisions on conceptualizing the data through the use of codes. In addition to these files, there are a few miscellaneous writings on the process of creating transcripts, and some posing questions for reflection, either drawn from the literature or from conversations with others.

In addition to the research files above, I kept a practice journal. Though the practice journal began before the GT study, entries from my journal during data collection, coding, and analysis influenced my thought process. The most notable example of this was a reflection I made on rehearsing Bozza's *Sonatine for Flute and Bassoon* with J. In one journal entry (12006practice), I recall a discussion we had on body motion during one of our rehearsals. Here is an excerpt from this memo (note that this memo occurs after data collection is finished):

> When J and I rehearse, we are still learning notes. We don't have any rhythmic ambiguities, as they do with the Takemitsu, but the Bozza is quite challenging in terms of quick finger technique. So, we practise with a metronome, under speed, in order to get the notes right.

> Gesture isn't an issue. We don't think about roles, who leads, who follows, or anything at this point. We simply breathe together and start. I do often follow her, perhaps because it is her recital that we're preparing this piece for, and perhaps because bassoon is more often in an accompanying role than a leading role, though this particular piece is evenly divided between parts. There is no clear convention for leader-follower for this duet, in other words.
>
> So, in rehearsal yesterday, J mentioned that if she moves less, the difficult fingering passages come out better. She was wondering if that is also true for M. I told her that it is often true for me. If I have a lot of very fast fingerings and articulations, I try to keep the rest of my body still to facilitate that technique. Sometimes a gesture can help to ground a fast passage once the notes are learned, but until the notes are solidly under my fingers, I minimize the beating and/or expressive movements. Emphasizing certain notes can make a passage more musically successful, and sometimes that emphasis comes from body motion - e.g. down beating on the first sixteenth to "ground" it (in a melodic sequence).
>
> So, it occurred to me that I have to remember this as I'm building theory about the role of gesture in music performance. Perhaps this can help identify the limits of the Takemitsu project. The Takemitsu is useful because, as M says, "it requires more physicality" [to ground musical gestures in a fluctuating sense of time]. On the other hand, any hypothesis we arrive at must be grounded in other rehearsal data, data that examines different musical and technical challenges. The Bozza solicits different approaches to physicality than the Takemitsu, and this must be kept in mind.

Before this journal entry, I had been working through my observations about gesture use in the Takemitsu rehearsal. I felt pretty confident that I understood the issue from within the data. However, as I reflected on my experience of playing Bozza with J, and specifically dealing with the intersect between gesture and technique, I realized that any observation about gesture use on one piece would be limited by the technical/musical requirements of that work. I also observed that J and I were focused on playing, not on leading or following or interpreting. Our attention was grounded in the production and blending of our sounds. This observation reminded me that body motion can change during the course of rehearsing a work. I then began to look for such changes in the rehearsal data.

Nothing I have written so far reflects the "messy" state of activity that was my coding process for approximately a year and a half. When I mention above that GT requires creativity, patience, persistence, and a willingness to deal with confusion, anxiety, and very obvious findings, I am speaking not only from the words of Glaser and Strauss, but from my own experience. I began by coding passages of repeated music that might be useful for comparing gesture over time. I sectioned off measures 11-17 and 25-31 of the first movement because the two passages are rhythmically the same (though the parts are switched and the whole passage is transposed up a minor third in the second section). Among the challenges presented in this passage is the shifting tempo, from 38 → 60 → 38. As the arrow indicates, the tempo change is not abrupt, but occurs over five eighth-note beats in each direction. This took a fair amount of rehearsal to coordinate and, as a result, these passages appear many times in the data. But I was also trying to conceptualize aspects of the context for these passages: issues that came up in discussion, or that I observed during play. Here is a segment of a research memo dated 042705:

> I have sectioned off phrases in the parts based on where the players rehearse them. They "intuitively"[36] rehearse full phrases and go back to regular starting places.
>
> Movement one is divided up as follows:
>
> Phrase 1 mm 1-3
> Phrase 2 mm 4-7
> Phrase 3 mm 8-10
> Phrase 4 mm 11-17
> Phrase 5 mm 18-21
> Phrase 6 mm 22-24
> Phrase 7 mm 25-31
> Phrase 8 mm 32-37
>
> The flute players say that they think this piece is about gestures. The term gesture carries many meanings in music analysis, but it might be useful to consider what the

[36] I use the term "intuitively" to mean that they seem to have selected these segments without much discussion. These segments are felt as full phrases, with a starting point, middle, and end. It makes sense that the flutists would choose full phrases to rehearse, since it is far more awkward to begin in the middle of a phrase than at the beginning.

flutists mean when they use the term. They seem to use the term gesture to mean these things:

- physical gestures that carry some kind of metaphorical meaning (M: gestures corresponding to the undulations of speech (030305 T2)
- notational gestures (J: corresponding segments in the music 030305 T2) clusters of notes and rhythms, including some kind of call and answer, repetition, variation and contrast
- stylistic gestures – portamento, harmonics, percussive sounds

Perhaps the physical gestures can be treated in a similar way to the notational gestures. They can appear repeated, in a different part, altered in some way to show progression of ideas from beginning to middle to end.

Alternately, classify the stylistic gestures by type.
- Portamento
- Harmonics
- Percussive sounds
    accent, accent with grace notes, double articulation, quasi flutter
- Dynamic wedges
- Intervals
    large leaps, chromatic motion

I was searching for a way to conceptualize the flutists' use of "gesture" in the data. On the one hand, I could examine gesture use in terms of "musical gestures" evident in their discussions of the score (i.e. stylistic or notational). On the other hand, I could examine gestures as physical motions, directly connected to the intent for shaping the sound (e.g. undulations of speech). But I was not content to stop there. I was also struggling with the need to represent changes in body motion that occurred from one rehearsal to the next, and wondering if other themes might present themselves as relevant. As a result, I explored the use of different coding strategies[37] that would open the data up to me in more systematic ways.

I coded several sessions using line-by-line coding. Line-by-line coding is a systematic approach that aims to prevent "forcing." By producing a code for each line of text, a broader range

[37] The coding strategies were drawn from Anselm Strauss and Juliet Corbin, *Basics of Qualitative Research* (Thousand Oaks: SAGE Publications, 1998).

of themes becomes evident. This step promised to identify themes that were most relevant to the flutists. The following list, taken from 80305codenotes,[38] is an early attempt at line-by-line coding:

> New codes added today:
>
> conscious of camera
> competitive play
> identity
> information presented
> interruption
> performance goal
> performance ritual
> rehearsal ritual
> technical difficulty
>
> Codes added yesterday:
>
> self-critique
> requests repeat
> requests repeat with strategy
>
> Possible codes: "competition" and "identity." They are not part of my question – or are they? I'm not sure yet.

You can see from this passage that the introduction of a systematic tool actually confused me somewhat. If I had stayed on a narrow path of investigating gesture, I might have had more to report. However, I was not convinced that the narrow view I was taking would satisfactorily encompass issues of "competition" or "identity" or "process" or other themes that would certainly be relevant to practice.

At a later stage, I began working with "in vivo" coding, codes that appear in the words used by the participants. However, this led to a cascade of experiments with different conceptual lenses. Codenote 110206, presented below, records this process. I began by identifying "in vivo" codes, and then worked with "gloss" codes, category labels, and finally descriptive codes. I will include the

---

[38] These codes are all taken from 030305linebyline, case number 6 in HyperResearch. Single-spaced segments of text are excerpts from code notes or memos.

extended codenote here to demonstrate my thought process. Major coding concepts are listed in capital letters where they occur. This codenote is also summarized below.

------CODENOTE 110206 START

CODING "IN VIVO" of 030305 (“in vivo” coding - choosing code words from the dialogue itself)

not together
slow down
[counting - describes what they are doing]
[singing - describes what they are doing]
can we start
do it again
run it
start from the top
can we try

DATA REDUCTION—reducing the complexity of the data by counting the number of times certain words occur. Discussion: I go through the session fairly quickly now, knowing what is in it. I notice that after coding these terms above, they come back repeatedly. One idea would be to do a simple "data reduction" exercise with these codes, counting how many times who said which phrase.

GLOSS – a term that generalizes the content of a passage
The word “*compromise*” is a gloss for "I think we're alright. At least for Saturday." I am uncomfortable using gloss codes for now, because of the danger of forcing meanings onto the data.

CATEGORY LABEL – a term that captures a recognized thematic category
tempo - to refer to passages where they are discussing the tempo, either by singing the rhythms at the desired tempo, or by discussing markings on the score, or by talking about their performance of the tempo (we slowed down, can we "accel" more).
dynamics - to refer to passages where they discuss dynamics – either the markings, or the performance, or the goal

Multiple codes can exist for a single line. For instance, from 030305 T7:

J: oh right there, let's do the swell, I didn't do it either but..

the “in vivo” code "***swell***" would be too narrow, since I have a category for ***dynamics***. I would have to use both codes here. However, this passage also comments on what they *didn't do* just then, what they *would like to be able to do*, and also a comment that qualifies her interruption by suggesting that she realizes they both forgot to perform the swell.

Discussion: Coffey and Atkinson explain that coding should not be a "summary" approach, using "a limited set of categories" (p. 49), but rather, a way to use points of data as a basis for deepening the process of inquiry. The label "swell" would be too narrow (though it does connect the conversation with a detail in the score). The label "dynamics" is broader but doesn't involve any interpretation or affordance for analysis beyond how many times the category "dynamics" appears in the data. The **INTERPRETIVE** (or "axial" to use Anselm Strauss's term) **LABEL**, "noting performance error" (or goal), and "qualifying comment with self inclusion" tell us more about the process of cultivating musical expression and the interaction between performers in the context of this rehearsal. These codes allow us to examine the process of interaction and relate to a larger question about how musicality is cultivated. It is assumed that "doing the swell," according to these performers, would be more musically successful than not doing it.

Topic check: "How interaction influences motion in musical performance"
We can take this stated goal, "doing the swell" and revisit the video to see if there are any observed changes in motion during this passage now labeled, "complicated manipulation." In this passage, the "swell" to which they refer is followed by a staccato tone. Performing the swell ending with a staccato requires some technical control, but it also requires detailed collaboration. An analysis of this passage (030305 T7) and others like it will show us some of the rehearsal techniques they use.

> ***tries separately*** (indicates playing a passage on flute alone)
> ***try together*** (indicates playing together)
> ***gesture mimicking musical moment*** (indicates an emphasized body motion with singing to indicate a sonic goal for the musical gesture)
> ***extra-musical concept*** (can be a metaphor or in this case a reference to the Doppler effect (030305 T4) or to a "Salvador Dali movie" (030305 T6) or perhaps even to the "Rite of Spring" section (030305 T5)
> ***accompanist gestures*** (indicates the use of beating or cueing gestures to assist the ensemble)

Even looking at the codes above, we have an indication that there is more to learn from analyzing the flutists' concepts of the role of body motion in coordination. Two kinds of physical gestures are found in the transcript: ***gesture mimicking musical moment*** and ***accompanist gestures***.

DESCRIPTION

> ***competitive play*** - to refer to moments where they are joking about who is right and who is wrong, who made a mistake, and so on.
> ***singing*** - times when they sing alone or separately (to clarify tempo mostly)
> ***counting*** - they are counting to sort out the rhythms
> ***gesture mimicking musical moment*** - wWAAAwaawa (large gesture)
> ***referencing external repertoire*** - "rite of spring section"

> ***working out gesture*** - through singing, playing, trying to get a combination of performance factors together for a certain musical gesture
> ***complicated manipulation*** - a difficult musical gesture to perform. here they work out how the gesture should sound and feel through singing and playing alone and together.

----- CODENOTE 110206 END

The codenote above records some of the complexity I encountered when defining coding categories. Beginning with "in vivo" codes, using words of the flutists, I moved to find other ways to represent things I saw happening in the data. I looked for GLOSS codes to represent the gist of a passage, but felt dissatisfied with those. I also used CATEGORY LABELS to identify topics like ***tempo*** and ***dynamics***. I got stuck when I came to a label that did not carry enough of the meaning of a segment of data, ***swell***. I saw that there was more going on in that moment, and then I began looking for a code type to deal with that complexity. I then prefered the INTERPRETIVE LABEL to deal with a moment that requires some terminology and/or explanation. I descended into increasing confusion and then sought comfort in the relative safety of the DESCRIPTIVE LABEL.

My next codenote (110606) returns to "in vivo" coding, but on another session. At this point I am analyzing a session from part 2 of the study (092205), where I begin to notice a shape to the rehearsal and wonder how that shape might compare to shapes that could be evident in the other sessions. Here is the discussion (110606):

> So, whenever I begin to code a new session, I begin all over, at the beginning.
> Because what happens is that there will be a focus on one or two things per rehearsal.
> The rehearsal itself has a shape.
>
> So, 092205 for instance, has a shape of themes:
> ***refresh memories about counting, discuss context for rehearsal***
> ***count, mark score, discuss detail, try things [long time]***
> ***run through once***
> ***discuss***
> ***run through twice***
> ***finish***

> The whole session was on counting and timing and how to execute the passages. Some body motion is discussed, to assist the interrelatedness of the parts. They are talking about the music differently than in previous sessions. The parts seem to be more integrated to them as they try to refresh their memories.
>
> One gets the sense that they are working out details that they may have passed over in previous sessions, and they say as much early on in the rehearsal.

I think it should be clear by now that I floundered quite a bit while sorting through ways to conceptualize this data. There is one last memo that I would like to share before moving on to a discussion of my changing identity in the study. This memo was evidence of an attempt to reconcile McNeill's methodology with my data. It was written a year earlier than the last two research notes listed above, and I think it demonstrates a certain degree of conceptual coherence that perhaps was lost as I struggled to interpret the data. Here is the entire memo:

------MEMO 060305 START

> Friday June 3, 2005
>
> I have decided to examine the gestures of the flute players according to David McNeill's methods of gesture analysis to see if I can access their thoughts about the music.
>
> Certain things are true about their goals:
> 1. While they work to achieve accuracy of rhythm and inflection, they value spontaneity over accuracy in performance.
>
> 2. While they work to evoke expression in the music, they do not wish their interpretation to sound stilted or contrived or too heavily determined ahead of time.
>
> 3. Their discussions of dynamics include expressive gestures, like those for exaggerated speech. When they demonstrate dynamic goals through these gestures, they do not sing accurate pitches.
>
> 4. When they sing through a passage to determine the correct counting, they are more likely to attempt accurate pitches (than when singing for dynamics).
>
> 5. When they are pleased with a passage, keeping their instruments in the air means they will go on. When one of the players brings their instrument down quickly, it means they will discuss what just happened. Sometimes they discuss what worked,

sometimes they discuss what didn't work. Often they will repeat a passage just because it worked, to solidify the timing.

6. Jokes serve to lighten the rehearsal environment, comment lightly on their enculturation into WAM performance domain, and provide a safer environment for the competitive but collaborative task of performance in ensemble. Jokes allow them to take risks necessary for spontaneous and satisfying musical interaction. Jokes allow them to establish and play around with roles (leading, following "first" and "second"), common ground, and a playful environment for competition/collaboration.

7. At the prompting of the researcher, and after hearing a definition of masques, they arrive at a conclusion about the music that they are satisfied with: that the gestures in the music correspond to the undulations of speech. They are both sufficiently satisfied with that statement to move on from it quickly and get back to playing.

8. Watching the motion with the sound off, I can see how they move together or independently, and then compare that with their comments after playing to see if certain kinds of motions result in a more satisfactory result for them. Use HyperResearch for this? The beginning of 030305. J interrupts, saying that "they aren't together". I take this to mean that she feels they are apart, so naturally one would expect that their body motion would reflect that. It would be interesting to analyze their motion during the same passage, comparing their comments on how it felt with observations about their interaction (motion.) So one section is at the beginning of 030305.

Question: so, if they use beating motions (which they do) to help navigate tempo fluctuations as in the fourth repetition of 27-31 (including the first 25-31 passage), do they use other kinds of gestures while playing? Metaphoric? What would those look like? Obviously, they would not be with their hands. But there are all kinds of degrees of motion to consider. For instance, just eyeballing the first section, M is using all kinds of more abstract motions. When they begin beating, they are moving more together. So, depending on the musician's notion of something, their body motion will change. When the goal is to play together, the body motion will shift from more interpretive to more dynamic? From abstract (metaphoric) to beating?

------- MEMO 060305 STOP

I mentioned McNeill earlier in this chapter, in reference to his thesis that hand motions reveal aspects of communication that are imagistic, impulsive, and idiosyncratic. You may notice, as I do, that the above passage doesn't specifically emphasize the self-positioning of the flutists with respect to their interaction. I dance around such self-positioning with observations 5 and, to some extent, 8. But other observations are either drawn directly from their comments (1 & 2), observations of the

connection between singing, gesture, and musical task (3 & 4), an observation about the role of humor in rehearsal (6), a seemingly unrelated observation about the meaning of the title of the work (7), and some idea for how I might further analyze the data (8). I end with many questions, which is not such a bad conclusion for such an early stage of inquiry. However, a more determinate framework is needed in order to answer these, and other, questions about gesture in music making.

Identity

Throughout the study, I struggled to define my identity as a performer/researcher. Would I be a "miner," searching for valuable clips of dialogue, practice strategies, or motion data? Would I be a "traveler," exploring my understanding of music-making through the experience of observing my colleagues? To what extent should my prior training and experience as a performer shape my role as a researcher? What role should my own music analysis play in the data collection and rehearsal processes? In the first phase of the study, I made a choice (in consultation with Professor John Roeder, who is himself a music theorist and analyst) not to analyze the music and not to intervene in the process of rehearsing the work, except to ask questions.

This decision was difficult to make, and even more difficult to obey. First, I am a musician. Musicians evaluate each other based on the level of insight they can offer in rehearsal. The flutists occasionally asked what I thought of a particular phrasing or sound, recognizing that I was likely to have a comment that would contribute to their performance of the work. Occasionally I asked a question that was interpreted as an indirect suggestion for performance, an act for which I would later scold myself. And occasionally I blatantly suggested they try a different performance technique. My performer and researcher identities clashed often during the data collection process.

I will summarize briefly some highlights of these tensions in the first data set, where the tension was strongest.

Session 011405 – Researcher/Performer

My Utterance as R (researcher) or P (performer)	Their Response
R: Talk about something	
R: rehearse as you would in a normal situation	M: I'm having a hard time doing this with a straight face.
P: I thought that was nice. The separate lines came out better.	J: The second line is supposed to be a "Ghost" line and therefore should not be brought out as expressively as if it was a true accompaniment part. *(M disagrees with J; they agree to play the passage with J "more mp").*
R/P: where are you looking? P: that's a really interesting spot I was going to ask you guys to…	J: measure 33 *They continue to discuss without paying attention to me.*
P: There's one really nice spot where you guys got really quiet; the contrast in the dynamics was really nice. P: Yeah, I think that's the spot you're talking about. That was cool. P: It would be nice to hear some really quiet dynamics in there.	J: That's probably the spot we're talking about. M: We could probably exploit the dynamics better in general. M: That's what my teacher says too. ☺
P: Can I ask you guys to try something? P: From measure 30 to 34 can you maintain a really quiet atmosphere, rather than growing there? P: within the quiet dynamic you can still try to shape it with the downbeats… see what happens.	M, J: yep M: You mean like its printed? ☺ *J comments that in this tradition the downbeat should be emphasized*
R: you can go on; do whatever you like	*They go on.*
R: This is very interesting… R: No, the tuning, the adjusting.	M: what, how I freak out? ☺
	☺ = Jokes and laughter

Table 4: Session 011405 My Roles as R (researcher) and P (performer)

The dialogue in the above table is taken from the very first data collection event. Each row in the table represents one conversation that occurred during the session, with my utterance on the left, labeled either "R" for researcher or "P" for performer. The flutists were practising a piece by C.P.E. Bach that I had previously studied. Its original version is for a solo flute (or other wind instrument). The "teaching edition" (Gary Schocker, 2001) from which they are playing includes a "Ghost" part

to help with realizing the original solo line. It works nicely as a duet, and the flutists enjoyed performing the piece.[39]

This was also my first session as a researcher, collecting data on someone other than myself. In retrospect, I see myself contributing along two clearly distinct lines. As a researcher, I am facilitating the collection of data. Comments about what they should play or do, and what would be "interesting" as data seem to fit that role. The other comments, however, are more in line with the type of statements a colleague might make in a rehearsal. When I asked them to try a quieter dynamic, or commented on what sounded good, I was participating as a performer. By moving from musician and colleague to researcher, I was transitioning to an unknown role in our relationship. Neither they nor I really knew at this point where that transition would lead. The session that follows highlights a more typical researcher – subject relationship.

R: That's a very interesting question. So you're reading this for the first time. To what extent are you counting and to what extent are you following each other's beats?	*They discuss their process and attention.*
R - *I frequently break the flow of rehearsal by clapping to synchronize the video and sound recording devices.*	*They tolerate the interruptions and almost find them amusing.*
R - *I keep track of time and hunt for motion data. I was trying to identify areas of the score/performance that would be most useful for motion analysis.*	*They rehearse.*

Table 5: Session 012105 A Typical Researcher – Subject Relationship

Reflecting back on the experience, this session (summarized above) highlighted the tension between data collection and rehearsal. My synchronization claps broke the flow of the rehearsal. The

[39] They chose to work on this piece for the first session because we were still in the set-up stages in the lab. We did not want to risk losing any Takemitsu data because of problems with the recording technology.

claps also shifted the focus from *rehearsing* to *playing*, as if only the playing qualified as data. This was partly a result of the emphasis I was hoping to place on motion capture in the early days of the study. I was striving to gather motion data that could be analyzed according to the system Dr. Eric Vatikiotis-Bateson used for the study of motion in speech.[40] Even though I understood that the motion capture data would be more meaningful if analyzed in context, the way I interacted with the flutists (carefully keeping track of measure numbers, synchronizing the technology) emphasized the motion data over the contextual data. The flutists, however, were continually aware of my presence, and seemed comfortable with the situation in the lab. They were cooperative and comfortable in front of the camera.

Session 020705 – Blurring Boundaries

My field notes for this second session are once again limited to recording the kind of motion data that would be useful for gesture analysis. I was trying to record where they started and stopped, looking for some segments to analyze later on. However, in this session, an interesting shift occurs for one of the flutists. Having picked up my interest in following along with the score and rehearsal, J speaks to my future self through the camera, letting me know where they are and what they are doing. She has blurred a boundary – from performer to research collaborator. This was a type of interaction I had encouraged in conversations outside of the lab. On the other hand, my researcher identity was stronger than my performer identity through most of the session. I interrupted very few times in this session. I participated in a brief confirmation on fermata markings. I also asked for a note clarification. A few times I asked them "how are you doing [x]?" and they explained. This shows I was following along, engaged, but only peripherally involved in the rehearsal itself.

[40] An analysis of this motion data will be presented in a future paper.

J says to camera:
“stopping at measure 28” “from bar 16” “this is in measure 20” “we’re in bar 4” “marking beats in the score”

Table 6: Blurring Boundaries (a)

Near the end of this session, M said, “you realize that this is a far more efficient rehearsal than we normally have. Should I say this on camera? Are you going to edit this out? ‘Cause it’s usually interspersed with gossip and chit chat and things, so... Maybe I shouldn’t have admitted that.” J says, “Its OK. We’re just good friends.” During this moment, I was once again a colleague, “among friends.”

Session 021105 – Setting my inner theorist free

In my field notes for this session, I asked myself if I should analyze the music. The question is phrased this way, “I wonder if I should interfere with the process by analyzing the music?” I was considering how to lessen my impact on the data. I was concerned that too much involvement might “force” the data; that my presence might be too strong. Near the end of the session, I observed that they were sounding more “coherent,” “not just playing the right notes, but making sounds that said something.” I then asked them what they thought the movement “means.” They replied that they were not “feeling it musically yet,” but that they were ““getting more of what he is after” – getting more of the patterns, rather than different sets of notes.” J said that she was “experimenting” with the music. M said, “those instances when things come together are quite profound.” They were both alluding to the process of cultivating musical understanding through practice. J said that she did not

have a mental picture of the music, but was recognizing more of the inversions, and transpositions (patterns of notes) as she played them.

It is important to point out that they never did perform an analysis of this work.[41] Their experimentation with the music occurred in real time by *sounding out the notes in the context of counting and playing together*. The flutists listened as they played; they coordinated their body motion in the delivery of the notes, rhythms, ornamental techniques (trills, portamenti, etc), and dynamics.

I had been focused on the role gesture played in negotiating musical understanding. However, the performer in me was concerned that my analytical scope was too narrow. They had been marking the score to facilitate counting and coordination. When "things came together," they experienced something that M called, "profound." Thus, it seemed that in this case anyway, counting and marking the score played a huge role in their experimentation with the music. It became clear that I might not want to focus solely on gesture, but on the whole range of activities that assisted the negotiation of musical understanding (see chapters 3-5 for an analysis of these using Herbert H. Clark's Joint Activity Theory).

Overall, my footprint on this session was small. I gave a few indications of the passing of time ("we only have about 2 minutes left"), and left the choice of activities up to the flutists ("whatever you do is fine"). However, a further blurring of boundaries occurred when M and J took

[41] See their discussion on their approaches to analyzing music for performance and course work in Appendix C 092605 T15.

over the video synchronization claps.[42] They gave each other "high-fives" to save me the trouble of walking over and clapping (or was it to minimize the interruption of the flow?).

Session 030305 – Data Intruder

Data Intruder!
P: "Do either of you know what *Masque* means?"

Table 7: Data Intruder (a)

In my field notes, I chastised myself for intruding on their rehearsal with this question. The question sprang forth unpremeditated. The question presented as curiosity, but the observer in me raised red flags and sounded alarm bells as I spoke. If I had been rehearsing with them, this question would have been totally acceptable. Musicians often bring up questions and meanings for discussion; I do this often in rehearsal. Sometimes idle conversation that seems totally unconnected to the rehearsal can serve a purpose (i.e. to lighten tension, to shift the focus, to connect as individuals). M and J refer to this as "chit chat" in session 020705. In any case, my question here seems to have broken a barrier. I had already decided to sit quietly and let them work; then I intruded on the data in a glaring fashion. Even so, the resulting discussion offered insight that was both useful for the performers and for the analysis. Even though I saw my question as an intrusion, the flutists responded with surprising succinctness.

[42] We used synchronization claps to assist with motion capture analysis. The clap was initially performed by one of the researchers in the lab – me, or someone else – in front of all three cameras to coordinate the sound track with the video footage. The software for analyzing the motion from video is still under development.

P: "Do either of you know what *Masque* means?	J: "Who's going to look this up for Saturday?"
P gives a lengthy definition of the term masque (drawn from the internet in real time) which includes the following statement, "an internal dialogue without programmatic reference" (see 030305 T2).	M (*after brief consideration*): "I wonder if the gestures are supposed to correspond to the undulations of speech" J: "well they kinda do" M: "yeah, I suppose, in a Japanese sort of way."

Table 8: Data Intruder (b)

After a very brief discussion in which they sorted out how "internal dialogue" might not have "programmatic content," M made a very profound statement about meaning in this piece. His statement, "I wonder if the gestures are supposed to correspond to the undulations of speech," revealed both his intention for performing the piece and one possible meaning for the confusing definition of masque. He seemed to have hit the nail on the head after about only 15 seconds of consideration. And because J agreed so quickly, he seemed to have articulated an understanding that they both shared based on their experiences with sounding the music, evidence that in some cases at least, "performance knowledge" of the music can arise through practice, not verbal activity.[43]

J: "I wonder how we will sell this piece to the audience."	P: "I don't think you need to sell the piece too hard. It sounds nice." M: [this piece is] "in the context of a very user-friendly program." P: "It's interesting music; there is dialogue in it. Even it if is non-tonal dialogue, it's pretty clear."

Table 9: Blurring Boundaries (b)

In this passage, the boundaries were once again blurred almost to the point where we could say our roles were reversed. I answered a performance question that J posed for the ensemble as though I

[43] See also the flutists' comments about the role of theorizing in practice (092605 T14). It is clear that there is some mechanism for cultivating musical knowledge through practice alone, but to date no one has studied what that cognitive process might involve, given the strong influence of theoretical and analytical processes in the music cognition literature.

was part of the group. This role shift was repeated later, when M asked me how the closing phrases sound,

M: "Do these sound too affected Linda"?	P: "hmm? could you play that again"? (*not listening*)
	Later, after they had played it again: P: "the statements seem anti-climactic and don't need to draw too much attention to themselves."

Table 10: Blurring Boundaries (c)

Discussion

Throughout the first data collection phase, I experienced tension between my role as researcher and colleague. However, the preceding summaries emphasize the blurring of roles not just for myself, but for the flutists as well. When I refrained from commenting on their performance, they asked me for input. When I seemed otherwise engaged, J would inform the camera about rehearsal numbers and score markings. They took over the synchronization claps. I respond as an ensemble member after J asked a question. This blurring of roles was semi-intentional. When I designed this study, I wanted the flutists to feel like collaborators, not "subjects," and to some extent I succeeded in making that happen.

Thematic Categories – Gesture in *Masque for Two Flutes*

Earlier, I laid out a set of pragmatic knowledge claims that formed the foundation for the research design. I said I wanted to collect "real world" rehearsal data. I refrained from assessing the quality of the flutists' music-making in part because I trusted their perspectives on the quality of their own work and in part because I wanted to focus on *the way they negotiated musical understanding*, instead of judging them as players. To that end, I valued questions about context and

process over questions about quality. I also said that the research should evolve based on the direction the rehearsals were taking, not on the dictates of existing theory. And finally, I said I should "ground" the themes and findings in the data and check them with my experiences as a musician. What follows is a summary of the main themes that arose in the flutists' discussions between themselves and with me during the rehearsals.

The flutists suggest that Tōru Takemitsu's *Masque for Two Flutes* provides a unique perspective on the use of gesture in rehearsal. Because the piece is non-tonal and combines a mix of Eastern and Western musical styles[44] and performance techniques (including portamento, percussive grace notes spanning intervals of more than an octave, and harmonics), the flutists in the study describe the music as "gestural" (012105 T1) and "requiring more physicality" (092905 T12) than some of their other repertoire.[45] The flutists also discuss the "improvisatory" and "conversational" nature of the music (despite their continuous attention to rhythmic accuracy) (012105 T1, 030305 T2, T3 , 092605 T14). The term *Masque* is defined during one of the sessions as "internal dialogue without programmatic reference" (030305 T2). The flutists suggest that the "musical gestures correspond to the undulations of speech"(030305 T2). These statements together point to gesture as a main theme in the rehearsals.

On a less mundane level, the flutists also discuss the development of a "larger picture" of the work. They spend the majority of time in rehearsal working on small details of timing, counting, dynamics, and so on, but at key moments in the process (sessions 012105, 030305, 092605, and 100105), they step back from that attention to detail and talk about their overall goals for the music. They both agree that the piece should "sound improvisatory and conversational," and that

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[44] See also Burt, 2001.

[45] The term gesture in this context refers to the link between score and the physical motion required to produce sounds. Earlier, I discussed gesture in three main categories: physical gesture, notational gesture, and stylistic gesture. In practice, these three categories come together and the interaction between them becomes the performance of the music.

"spontaneity" should be valued over "accuracy." They suggest that even if a wrong note is played, or an entrance is missed, the performance will be successful if they keep *the feeling of a* spontaneous conversation alive. They agree that being able to sustain the "larger picture" of the musical work is a positive indication that they are ready to perform. Their discussions seem to indicate that the spontaneity they strive for is a result of their ability to "make visible" their intentions for performance so that they can coordinate the "conversation" of the music *in real time*. This coordination goes beyond getting the notes and rhythms right – though learning the correct notes and rhythms seems to be a prerequisite. In fact, it points to a cognitive ability to engage in music-making in a manner that allows them to be fully present in their interaction with the score, each other, and the occasion and context for playing (see the discussion on Virtuosity in Chapter 6).

The flutists explicitly and implicitly posit that "ensemble"[46] is a product of enculturation into a specific style of performance. They describe learning about ensemble in lessons where their teachers simply asked them to watch and follow, to mimic their body motions (092905 T12). Only in moments of difficulty (when ensemble isn't working, or when a cue is not comprehensible to the group, or when the music is very difficult to count), or when directly asked (92905 T12, 110305) do the musicians communicate verbally about specific gestures. For example, in session 021105 T8 and 030305 T9, they disagree about which type of beating gesture to use. M uses his upper body to make his internal beat visible. J taps her foot. Through discussion, they agree that upper body motion is best, as long as the motion is confined to the larger beats, not the subdivisions. Future studies should examine the process of enculturation and the phenomenon of entrainment by taking into account the requirements of the instrument class, the instructions of certain schools of performance, and the

[46] The term "ensemble" is used here to mean the ability of a group to coordinate music-making at a high level of togetherness, so that they sound like one person playing.

conventions of certain ensemble types and genres. These factors may very well play a more significant role than the score alone.

Findings on Physical Gestures

The pragmatic turn of this inquiry requires that I follow through with the themes as they arose in situ. Of the above themes, the first (on gesture use in the cultivation of musical understanding) is most suited to a detailed investigation here. The second theme (experiencing the work as a spontaneous conversation) will be dealt with in future work with experiential inquiry on music performance, briefly introduced in Chapter 6. The third theme (conventions of ensemble performance in schools of flute playing) will also be dealt with in a larger study that will take more of a social constructivist stance.

During my initial reflections on the data, I broadly categorized gestures into three types: notational, physical, and stylistic. Here, however, I further subdivide physical gestures into two categories: expressive and ensemble gestures.[47] Both physical gestures, these categories can loosely be attributed to different purposes – though these purposes occur simultaneously. Expressive gestures "make visible" (M) the expressive intentions (sonic character: vibrato, dynamics, articulation) for performance. Ensemble gestures make visible specific cues for the ensemble (when to begin and end notes, pulsing or beating motions). Please note that expressive gestures also facilitate ensemble and ensemble gestures are meant to convey expressive intent. These categories are not discrete. If anything, the terms offer different perspectives on the same gestures.

[47] The term ensemble is used as a name for the group of people who get together and play, and as a term that describes how well the group plays together. An ensemble can have a good sense of ensemble. That means they (the ensemble) play together well (as though they were of one mind). The second sense of the term is used in this paragraph. Certain gestures, ensemble gestures, facilitate the playing as if the players are of one mind.

In a nutshell, my findings can be stated as follows: the volume[48] of expressive and ensemble gestures changes based on the amount of time spent learning the music, external distractions to performance, and general well-being or intent of the performers. More importantly, once the music is learned, gestural roles can shift between performers, and all physical gestures can be removed without threatening the sense of ensemble. This finding points to the need to further understand the implications of context and process on physical gesture in performance. I expand upon these findings in the text below, after presenting some contextualization for gesture in instrumental performance.

It is important to keep in mind that gestural roles are *taught* systematically to flutists. Flutists from different parts of the continent studying with different teachers will have the same ensemble language. The flutists report being taught ensemble gestures by playing duets with their teachers (092905 T12); they also report teaching ensemble gestures to their students (092905 T12). Ensemble gestures are taught mostly through mimicry, "do as I do, watch me, follow me." The roles are divided based on "first" and "second" flute lines. The "first flute" is always the leader (092905 T12), and the second flute "interprets the gestures of the first flute player" (092905 T12). However, these roles are fluid and rely on context. If, for instance, the first flute misses an entrance, the second flute will cue in order to keep the group together (100105 concert).

Secondly, gesture use is constrained by the physiology of flute playing. Flute performance gestures are intimately connected with the breath. Because the flute is a wind instrument, no sound is possible unless the flutist draws in air. Thus, a major component of wind instrumental training involves learning how to breathe. The flutists confirm this in their discussion of their training (92905 T12). My background as a wind player performing with these flutists (and many other musicians)

[48] The word volume is used here to mean the size (or depth) of the gesture. This is a label for the gesture's ability to "make visible" the intent of the flutist.

also confirms this observation. In order for two wind players to play together, they must first learn to breathe with the same speed, volume (depth),[49] and character[50] of breath. The entrance cue is always tied to the speed and depth of the in-breath in wind instrumental performance.

In this data, the volume (size) of the breath cue changed based on the interaction between the musicians in context. If the ensemble was at risk, a slow, soft breath was even softer and slower, an up-beat breath was even more clear and direct (021105, 030305, 092905, 100105).[51] This may seem counter-intuitive. Would not a risky situation cause the flutists to play more mechanically, less expressively? Would not the level of risk inhibit full attention to the breath? While it may be possible to answer these questions in the affirmative in some performance situations, these flutists reliably responded to increased risk by increasing the communicative volume of their breath cues. For example, the opening of the piece took progressively longer (measured in seconds) in the dress rehearsal and concert than in any other rehearsal in the data. The increased pressure to perform caused J to slow down her breath and take more time before sounding the first note. However, the increase in volume did not always mean increased time. In the dress rehearsal in the Old Aud., the flutists used much larger body motions (easily visible without measurement equipment) to communicate their expressive intentions. In this case they had forgotten their marked score and compensated for that by increasing the size of their communicative breath cues.

Some might wonder if these changes in volume are evidence of inconsistencies in the performers. After all, doesn't the tempo marking dictate the correct volume of breath cue? Expert

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[49] The volume of the breath includes the depth of the breath (the amount of air taken in) and the size of the physical motion that accompanies the breath. The volume of the cue refers to the size of the cue; the volume of the breath refers to the amount of air taken in, often assessed aurally by ensemble members.

[50] The character of a breath refers to the human meaning conveyed by the manner in which the breath is taken. A flutist might include a facial expression or bodily posture that gives evidence of some additional interpretive meaning.

[51] My ability to observe these subtle aspects of performance is in part a result of my training. In lessons with Mr. Stephen Maxym, I was taught to breathe in character with the musical expression - not just in time with the beat, but with the beat + dynamics + musical character. This requires practice and skill producing sound on the instrument in a variety of ways and is one indication of mastery on an wind instrument.

wind players do more than simply follow the dictates of the score. Tempo markings on a score are presented as concrete, measurable units of time. However, temporal experience is rarely so neatly quantifiable. To perform music at a certain speed is to understand the experience of the music at a certain tempo. Andante = at a walking pace. Vivace = lively. Tempo markings are indications of an experiential parsing of the sounds. The flutists must convey to each other the experience they wish to share. In this sense, the musical score leaves a lot to the imagination. If they wish to convey a slow, quiet entrance, they must "make visible" (M) to each other what that means for each moment. Their goal as performers is to remain fully present in the interaction with each other, the score, and the occasion for playing. Any distraction becomes a threat to this awareness. In these risky situations (092905, 100105) they increased the volume of their expressive and ensemble cues in order to compel each other to remain fully present, to dress up the moment as if it were experientially slow and quiet. And breathing, something we normally consider an involuntary act, was the main vehicle through which expressive and ensemble gestures were carried. Because the breath is so closely tied to our experience, this required considerable control on the part of the flutists. The increase in volume of the gestures in sessions 092905 and 100105 can be seen by the trained (and even perhaps an untrained) eye. However, we have yet to build technology that can measure these aspects of instrumental control.

During the process of rehearsing this piece, the flutists learned which gestures were most useful for achieving their musical goals. When they were sight reading, they produced minimal body motion. From session 3 onward, they began to discuss ways of using body motion to facilitate ensemble (e.g. "being more visual with the beats" 021105 T8, 092905 T15). Perhaps the one occasion that emphasized this most clearly is the "god moment" in session 092205 T16. J mentioned that she "like[d] it" when M nodded on his F. The nod helped her to place her note (B). M replies:

"we should make this a *god moment*" (a gesture that will mark the placement of that beat no matter what has happened before it).[52] A more common metaphor for the *god moment* is captured by the term, "anchor." In this passage, M is using his nod on the F to *anchor* their performance of the passage. No matter how rough the seas get, his nod will help them find the pulse.

The data also reveal that gestures were not the only important means for cultivating and maintaining a sense of ensemble. Performance gestures were consciously employed, *along with a range of other supports*, to facilitate ensemble. Other ensemble support systems included: the score, pencil markings on the score (092905), and discussion (021105, 030305, 092205, 092605).[53] These other supports became evident by their impact on communicative gesture use. The flutists relied heavily on pencil markings (beat markings and dynamics). This became evident in session 7 (092905) when they were forced to use a score that did not have their pencil markings on it. As a result, both flutists reported having to be more attentive to the score and to each other. In this session, their ensemble gestures clearly increased in size and communicative strength. Without their pencil markings, the flutists were using a larger volume of gestures to keep the ensemble intact. The lack of pencil markings, the different location, and the impending concert were all relevant to the increase in their gesture volume (size) during that session.

Finally, gestures, once learned, could be removed from performance without damaging the sense of ensemble. This was the most striking observation we made. The performers, who admitted that the piece required more "physicality" than most other pieces they play, could, at the end of the

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[52] See Chapter 5 for a further discussion of the "god moment."

[53] The author recently attended a rehearsal of the *Trio for Piano, Oboe, and Bassoon* by Francis Poulenc. The oboist, a recently retired famous North American oboist, had produced his own parts for the performance. Even though he had played this piece dozens of times in his career, and at least three times with this particular bassoonist, and was using his own parts, he was still making pencil marks in his part, in response to the changed environment, new pianist, or perhaps just to draw his attention to something he hadn't previously noticed. So, the score and the individual markings are important considerations for performance practice.

series of rehearsals, perform the piece successfully without using gestural cues, even when separated by a divider (092905, 110305).

Theory

The aims of the GT model is to develop theory that is grounded in the experiences of the participants represented in the study. In qualitative research, theory provides an explanation for the behaviors under investigation. The pragmatic approach I have taken requires that any theories derived from the data be connected to the goals, statements, and actions of the flutists. The theory developed in this project can be stated as follows: Wind players adopt (and are taught) fairly standardized gestural roles for ensemble performance. These roles predict the kind and quality of cueing gestures a performer will use. Over time in rehearsal, the roles can shift if certain passages of music require it, or if the environment presents distractions that require a heavier reliance on body motion to maintain the ensemble. Furthermore, increased distraction can result in a greater volume of body motion to facilitate "togetherness."

Because gestures can be adopted and eliminated and gestural roles can change, performance gesture should be considered a communicative function of the interaction between musicians and should be analyzed as such. Viewing gesture this way can be helpful as attention is drawn away from idealized realizations of a work to the process of musical interaction between individuals.

Finally, this study highlighted a set of constraints that operate on gesture use in ensemble practice, including context (lab, two concert halls, a class room), process (sight reading through performance), proximity (with and without an obstruction), score markings (marked or unmarked score), and ensemble roles (leader, follower). Further work is needed to develop a conceptual structure upon which the relations between these elements can be revealed. The following chapters

offer a conceptualization suitable for addressing the connection between gesture use and five aspects of musical interaction: context, process, proximity, score markings, and ensemble roles.

Chapter 3: Conceptualizing Musical Interaction

In the last decade, some attempts have been made to conceptualize music as performance. Main themes in the literature, some of which have been mentioned earlier, include the "process vs product" debate and criticism of the "work-centered," "performance-as-reproduction" model in WAM (Small 1998, Cook 2001, Monson 1996, Berliner 1997, Brinner 1995). In addition, R. Keith Sawyer (2003) argues that structuralism and its by-products are responsible for the product-oriented tradition of music scholarship (pp. 76-79).

Structuralism is the label for an approach to the study of language and music that is based on the structural analysis of the contents (of language, or music). A structural analysis of meaning in music is derived from the relations between the structural units (notes, rhythms, phrases) in a musical work. A structural analysis to some extent dictates what an experienced listener "should" hear in a musical work. This approach fails to incorporate the varied meanings that can arise in context, and so is less effective for matters of performance. According to Sawyer, the aims of structuralism are consistent with the aims of music theory, but not the aims of music performance. For Sawyer, music performance is a creative "process."[54] Or, stated another way, the creativity of performance "co-occurs" with the generation of a creative product.[55] Further, the *emergence of musical sound from the interactions between musicians,* in the process-oriented view, is considered a creative end in itself.

Nicholas Cook (2001) on the other hand, warns that music performance, in the WAM tradition, should be defined by the *relation* between product and process. The challenge has been to find a conceptualization scheme sophisticated enough to deal with questions of culture, context,

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[54] Though in his taxonomy, the degree of creativity can vary from scripted to improvised styles (Sawyer 2003).
[55] This opens up a distinction between a note (or phrase or other musical material) and *how it is delivered in context*, one of the distinctions also raised in Monson (1997).

process, understanding, and creativity, without sacrificing "the musical work" or, in the case of non-notated musics, "the music itself."

In the discipline of ethnomusicology, the challenge of studying non-notated and highly ritualized musics has seeded much debate over musical values, processes, and products. Monson (1997), Sawyer (2003), Brinner (1995) and Berliner (1997) engage the interactional semiotics paradigm, examining music performance as a culturally situated activity. The interactional semiotics paradigm examines music performance as the means through which social, cultural, and/or ritual meanings are conveyed. Monson demonstrates how musical materials (e.g. the shuffle rhythm) have indexical qualities that can arise in context. The performed musical materials comment on different musical styles (intermusicality), reveal the attitudes of the musicians, and respond to shifts in the performance environment.[56] Berliner unpacks the nature of instrumental roles and the exchange of musical cues between soloist and rhythm section.

Perhaps the most structured of the interactional semiotics conceptualizations is Brinner's (1995) theory of musical interaction. He outlines four "constellations" of concepts useful for guiding inquiry on musical interaction: the *interactive network* (the roles of the performers and the links between them), the *interactive system* (the musical materials used), the *interactive sound structure* (the "constraints and concepts" surrounding the way sounds are put together), and the *interactive motivation* (why people are induced to participate). He is hammering away at the reality that interaction drives music performance at several layers of consideration "within and across stylistic and cultural boundaries" (Brinner 1995, 169).[57] He organizes inquiry around the "cues, responses,

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[56] This occurs through the expectation, layering, and variation of musical materials in real time.

[57] Using a comparison with Western orchestral conventions, he unpacks the roles in the interactive network in Javanese Gamelan. The assignment and division of leadership roles, the explicitness, recognition, and positioning of the leaders, the spontaneity and rehearsal of musical ideas, and the various domains of control over blend, balance, rhythmic coordination, and tempo.

signals, markers, [and] prompts" that are used in performance, and he carefully unpacks the meaning of each of these interactive devices.

In a similar, albeit more fully developed, theory on the nature of linguistic communication, Herbert H. Clark (1996) proposes a *joint action* approach to the study of language.[58] Where the interactional semiotics paradigm remains mostly in the realm of social/cultural meaning, Clark's conceptualization deals with both individual and group processes in the negotiation of *understanding* more broadly construed. Clark suggests that language is an emergent property of coordinated joint actions. He organizes *speech acts* according to a set of *joint activity* types: ongoing or temporally constrained, scripted or free, formal or informal, verbal or nonverbal, egalitarian or autocratic.[59] His conceptual structure facilitates inquiry at all layers of human interaction. At the micro level, he analyzes the coordination of physical activity (e.g. three phases of a hand shake) that surrounds language acts. At the macro level, he shows how variations of "common ground" facilitate much of our conversational interaction. He argues that common ground is established through two main processes, *communal* and *personal*. Communal common ground includes those groups we understand a person belonging to (nationality, profession, hobbies or athletics, scholarly community, and so on). Personal common ground is the set of experiences (perceptions and actions) that people share. These categories of understanding are shared and negotiated through joint actions (as evident in particular kinds of handshakes or greetings suitable to a particular group or culture).

Clark's conceptual framework for investigating language is relevant here because he examines *how language is used* to negotiate meaning. Whether language is spoken, written, or

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[58] He dismisses the "product" tradition in linguistics – the generative grammars proposed by Chomsky, and contrasts it with the "action" tradition, which grows out of the study and philosophy of intention in social action (56).

[59] In a similar way, Sawyer (2003) organizes musical activity types along a trajectory from ritualized to improvisational. However, Clark's categories of speech acts are more broad, allowing for a greater number of activity types and situations.

performed, Clark conceptualizes language as activity, rather than language as a set of properties. I summarize his set of propositions about language (Clark 1996, 23-24) as follows: language use is always social (whether the audience is real or imaginary); its use involves both the speaker's (writer's) meaning and the listener's (audience's) understanding (and the way these are negotiated); its most basic form is the face-to-face setting; it has more than one layer of activity; the study of language use is both a social and cognitive science.

Recalling Cook's (2001) requirement that music performance be defined by the relation between product (the work) and process (the performance), we might ask, how does Clark's conceptualization, which appears to be a process-oriented view of language, take into account the use of scripts? First, Clark's view is not strictly a process-oriented view of language. Rather, his framework is that of *language as activity*. This broader conceptualization includes *process* as one factor in the cultivation of understanding, but does not stop there. "Plays, story telling, dictating, television news, reading…" – are domains of language use that involve participants, settings, goals, and actions (Clark 1996, 24). The conceptual framework is built to take all of these into account.

Because Clark focuses on the *activity*, not the components, of language, his conceptualization bypasses some of the pitfalls that can occur when a conceptual structure from linguistics is applied to music. In the "product" or "structuralist" tradition, where analyses are carried out on the sentences/phrases, phonemes/notes, problems arise that prevent the full and free use of the theories for music cognition. The problem gets to the assumptions about what constitutes a musical sound or moment. If music is defined as a collection of notes and phrases that refer to each other on a structural level, methods of analysis in music cognition focus on the relations of notes and phrases as they might exist (or be perceived) in the mind/ear of the listener. In this view, the activity of music performance is defined as: the act of practising a musical instrument in order to perfect the correct

reproduction of the relations between notes and phrases in a particular work. There is nothing wrong with this view, except that it has no explanatory power for the embodied and communicative aspects of music performance. However, that definition of music need not be the only one from which to begin a cognitive study of music. If we take, for example, the expanded usage of the term "music" as a verb, (Small 1998), we may be able to find suitable methodologies for music cognition that allow investigation of the embodied and communicative acts associated with "musicking." From there we can work toward an understanding of the way musical meaning is cultivated, shared, and negotiated in human interaction.

Clark offers a way of studying the activities that surround the negotiation of understanding through language acts. I am suggesting, in the next three chapters, that understanding can occur through word or sound – that the joint activity view works as cleanly for the study of musical acts as it does for language acts. Language and music are different activities. The games are different; the pieces are different, but they both emerge as products of human activity. I am recognizing a commonality that does not have to do with certain aspects of the product, but with every aspect of the nature of the interactive process. By adopting this "joint action" approach, I am side-stepping the problems of the structuralist legacy and opening up a new avenue for social and cognitive inquiry in music.

Before delving more deeply into an application of Clark's conceptualization to the Takemitsu data (Chapters 4 and 5), I will briefly discuss some of the main conceptual frameworks represented in his book. While my goal is mainly to introduce and define the concepts, occasionally throughout what follows I hint at ways to use these concepts as a basis for performance inquiry. There are two productive ways that I envision inquiry on music performance taking place. One type of inquiry is performance inquiry for the purposes of developing cognitive theory on music performance, as I do

with the Takemitsu study in the chapters that follow. The other type of inquiry can be undertaken in rehearsals to further systematize experimentation on and through music making. While I do not go into much detail on the second type of inquiry, I do hint from time to time about ways concepts from this study made their way into the rehearsals. In doing so, I am acutely aware of the similarities between the concepts of Clark and rehearsal techniques I have already learned in the past. I find Clark's conceptual structure resonates with the way I have been taught to think about performance. I estimate it would take little effort to develop systematic ways of applying his theory to musical experiments in rehearsals.

Joint Activity

Clark defines language as "merely an emergent product" of human activity (Clark 1996, pp. 29-30). Instead of examining the components of language, he systematically unpacks *the joint activity* that produces language. In doing so, he first distinguishes between different forms of the word *activity*. "Activity" is an ongoing process; "an activity" is a time-bound event; "joint activities" have more than one participant.

Joint activities occur along different "dimensions of variation" (Clark 1996, p.31). I will present these dimensions of variation by offering examples from music performance as illustrations.

Dimensions of variation	**From ←→ To**
scriptedness	score ←→ improvised
	ritualized behaviors ←→ free-form behaviors
formality	professional concert ←→ living room jam session
	presentational music making ←→ communal music making
verbalness	talking about music ←→ playing music
cooperativeness	chamber music ←→ competition or audition
governance	egalitarian ←→ autocratic
	equal parts ←→ designated leader

Fig. 1. Dimensions of variation

Typically, music performance in the WAM tradition is discussed only in the dimension of formal presentation, either recorded or live. The dimensions of variation listed above, however, emphasize the vast range of musical activities that can actually exist. That language is an *emergent property* of human activity may seem transparent. After all, in daily life, we rarely follow written scripts. However, much of the music-making that occurs in the Western tradition is score-based, even if the score has been memorized. At first glance, the dimensions of variation listed here may seem only marginally relevant to music performance. If we focus only on the work that is being performed, we may think that the music will sound the same along all of these dimensions. However, the reality is that even scripted music is shaped by the dimension of variation of the activity. There have been no studies "proving" this for WAM; however, personal experience tells us that playing a concerto for an orchestral audition is very different than performing the same concerto with the orchestra. Performing a piece of music with a friend is a very different experience than performing the same piece with a complete stranger from another country. The focus and energy level varies greatly from a living room reading to a public performance. The very fact that we have to "practise performing" should be a strong indication that performance elicits a very different kind of music-making than does rehearsing. On a more subtle level, an ensemble may have a set of ritual behaviors for rehearsing a work in the learning stages and may then toss those rituals aside (or employ new ones) in order to liven up a performance of that same piece. The resulting goal for the music is not the same; the performers do not want to sound the same in every situation. We simply have not studied the way dimensions of variation shape the emerging music.

On a more positive note, we can use Clark's dimensions of variation to help define the situations for music-making in the Takemitsu study. Though there was a score, the degree of *scriptedness* of the performance of that score was an important theme in the rehearsals (021105,

030305). The flutists discussed wanting to move from sounding "accurate" to sounding "conversational," in other words, to minimize the scriptedness of their performance. Their goal was to achieve a level of "spontaneity" within the allowable constraints of tempo, timing, dynamics, and articulation. A sense of spontaneity could only be achieved when they had reached a certain level of familiarity with the music. So while their initial goals were to attain a suitable level of accuracy, when they knew the score well enough they were free to respond to each other (and to the score) with greater flexibility in the moment. If one flutist delayed an entrance even the slightest amount, the other would be free to respond in kind, with all the freedom of an improvised act. As they continued to rehearse the work through part 2, they achieved greater levels of awareness and familiarity,[60] to the point where they could perform the work without their rehearsal score, and even without being able to see each other (110305).

The *behaviors* of rehearsal were typical, even ritualized – to the extent that the preparation of a new work normally takes place along certain sets of procedures from sight-reading, to rehearsing, to running through the work as a whole, to dress rehearsal, to performance.[61] The flutists showed up on time, tuned, and worked together in very predictable ways. Data collection intruded on their rehearsal process only rarely, and more in part 1 than in part 2 (see chapter 2, "Identity" for some indications of intrusion in the data).

The degree of *formality* was increased by the presence of the recording equipment for each session. In the Western tradition, some dress rehearsals are recorded to allow the performers to view themselves performing before a concert takes place, and concerts are often recorded, but sight reading and typical rehearsal activities are generally not considered worthy material for recording.

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[60] Clark would call this *common ground*.

[61] Though these activities are listed in a linear fashion, obviously the order of events can change. Sometimes one is asked to sight-read music for a performance; often performers alternate between rehearsing and running through larger sections, and so on.

The flutists had to step outside of their accustomed place on the spectrum of variation for the level of *formality* in the early stages of data collection.

This is a list of some of the activities of music-making the flutists in this study are likely to encounter:

Formal:
Lessons
Masterclasses
Juried Recitals
Public Recitals
Paid Rehearsals
Rehearsals for Juried Performances
Paid Reading Sessions
Paid Performances
Recording Sessions

Informal:
Unpaid Reading Sessions
Unpaid Rehearsals
Social Gatherings
Improv Sessions
Community Involvement
Practise Sessions

Private:
Rehearsals (paid and unpaid)
Practise Sessions

Public:
Performances
Social Gatherings
Community Involvement

Recorded:
(many) Live Performances
Recording Sessions
Reading Sessions (New Music)
Some Improv Sessions

Ephemeral:
(Most) Rehearsals
(Most) Lessons
(Most) Master classes
(Most) Practise Sessions

Fig. 2. Activities of music-making

The categories represent opposite ends of activity types, formal ← → informal, private ← → public, recorded ← → ephemeral. Most of the music made by these flutists fits into the "ephemeral" category. However, all of the data collected for this study is "recorded." This is a distinction that must be taken into account when any observations about process are made. In part 1 of the study (021105), M reported that having a camera present for the rehearsal actually made the ensemble more efficient. Typically, their practice was interspersed with more "gossip and chit chat." This is one way that the formality changed their approach; no doubt there were others as well.

As I already mentioned above, rehearsals can be either formal or informal. In the *music as joint activity* view, music-making is understood as one kind of activity in formal, and another kind in informal, rehearsals. Formal and informal performances produce qualitatively different kinds of music. This is an unusual distinction to make in WAM, where the focus has been mostly on the work itself and how the work is realized. The assumption has been that the work determines the music that is made, and the music is either performed well or poorly. However, as research in interactional semiotics has already pointed out,[62] the social setting can greatly influence the music. If M and J were performing *Masque* in the lab and their flute teacher walked in to listen for a few minutes, their performance would be influenced by her presence. If the listener were a parent or a twelve-year-old flute student, the performance would change in different ways.[63]

One of the unique aspects of this study is that it encompasses *verbal* and instrumental interaction as part of the process for negotiating music. We normally view talk about music as being a very different type of activity than music-making. However, in rehearsal, talk and play are interspersed. When musical activity, rather than the work, structures the inquiry, we see how talk and play can belong to the same activity, can serve the same goal, and can reference each other (see Chapter 4 for more on defining event structures).

Finally, the degree of *cooperativeness* in this ensemble is very high. The flutists are frequent collaborators and often switch leading and following roles. In addition, they mention learning to lead and follow as part of their training in flute performance (100105). J leads, unless M has a solo

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[62] Interactional semiotics has generally only been applied to world music and to jazz. Indeed, these improvisational genres lend themselves well to the sharp contrast that many scholars want to make between the Western tradition of music-making and "everything else." However, I would argue that musicians in the Western tradition need not be pigeon-holed to the extent that the literature on WAM would indicate (see Cook 2001).

[63] This has some serious implications for music education. If a performer has a qualitatively different kind of performance experience in a jury, in a lesson, or in a live performance; if the music that is made is influenced by the presence of certain people in the room, then our method for evaluating music performances (or auditions) should take these influences into account. We might ask if the person who plays the best audition will be the best colleague. We might ask if the teacher's demeanor shapes the pupil's musical performance.

entrance. They tell frequent jokes to lighten the atmosphere and seem genuinely supportive of one another.

Roles

All joint activities have a list of participants. Participants play different roles in the activity. For a musical activity like a rehearsal, the participants are the group of people with instruments who intend to be playing the same piece.[64] If other musicians are in the room holding instruments, they are not considered part of the ensemble. Members of the ensemble have defined *activity roles*. Parts are assigned to each player (e.g. first flute, second flute), and a part typically comes with a set of expectations for participation. Though not always the case in practice, in principle, the person who plays the first part is generally considered the ensemble leader, and the first part is typically in an upper voice (violin, flute or oboe, trumpet) or assigned to the piano. As stated earlier, *governance* is one of the dimensions of variability in a musical activity.

But activities can be embedded within one another (Clark 1996, 32-33). The list of attendees in a master class is greater than the list of performers at any one time. The list of attendees in a public concert is greater than the list of the performers (usually, anyway) on stage. Activity roles for this larger set of participants can also be explored. For example, the stage manager has a specific role in the presentation of a concert, as do members of the audience. The expectations for these roles are usually quite specific to a musical genre or culture (when to clap, when/what to holler, when to stand, whether to sing along) and sometimes specific to a certain performance venue.

M, J, and I were all participants in the Takemitsu study. M and J were members of the ensemble, and the three of us were members of the group collecting data on music performance.

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[64] Clark gives the example of a string quartet playing Haydn (p. 32).

During data collection, we shifted the ensemble roles to see if the *sense of ensemble* could be broken. The *sense of ensemble* is a term we use to describe how "together" a musical performance feels.[65] The goal for performing this piece was to have both flute parts sounding like an internal non-programmatic dialogue, "conforming to the undulations of speech" (M, 030305). We imagined this dialogue belonging to the internal voices of a single individual. J was playing the first flute part, M, the second. During the dress rehearsal (092905) in the Old Auditorium,[66] I asked the flutists if they would switch performance roles while still playing their parts. M, still playing the second part, took responsibility for cueing and leading, and J, on the first part, watched, listened and followed as he led. Immediately, their different styles of leadership showed through. M tended to move more and with larger motions than J. His moving also seemed, understandably, contrived. He had to manufacture movements that were not natural to his participation – leading from the second part.[67]

However, while they reported that shifting roles did make certain passages feel more awkward to them, they agreed that the music still held together (092905, 110305). In fact, shifting the roles on purpose allowed us to examine what exactly was expected of the leader in this work. The leader, as M described it, was expected to "be [more] visible with" cues and gestures. The follower was expected to watch and listen for interpretive, dynamic, and tempo cues, and to respond accordingly. They also pointed out that this exercise caused them to notice that the parts were more evenly distributed than they previously believed. There were spots where it did not make sense for the second player to lead, because the first player had a solo entrance. There were also places where the second part leads or plays alone. Even so, the flutists were both very quick to reaffirm that J was

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[65] "Togetherness" includes measurable features like timing and tempo and qualitative features like phrase shaping, dynamics, and articulation.

[66] The Old Auditorium is one of the venues used in the Takemitsu study. It is discussed more fully in the "Settings" section of this chapter.

[67] Note that it is also considered rude to lead from a part that is not the designated lead. This may have made him uncomfortable, as though he were undercutting his friend.

the leader because she was playing the first flute part (100105).[68] In any case, the experiment was very productive as a rehearsal technique. It allowed the flutists to become more aware of the physical details of their roles and the way that their personal styles modified their culturally defined roles in performance.[69]

We can extend the concept of embedding to include participants whose roles may not be entirely obvious, but who nonetheless shape the activity of music-making. Near the end of the study (before session 110305), the flutists perform the work for a master class with Lorna McGee, their flute instructor. Because she worked so closely with them, her influence on their performance of the work could be unpacked not only during the time they performed for her, but also in terms of how her instruction influenced their approach to rehearsing the work.[70] In part 1, Dr. Eric Vatikiotis-Bateson and several lab assistants were present during the data collection sessions. Their participation emphasized the lab experience (synchronization claps for "takes," microphone placement, camera placement, lighting) and the collection of motion data. Similarly, the flutists' thoughts on the respective audiences for parts 1 and 2 played an important role in the evolution and focus of rehearsals. In part 1, the flutists discuss how they might "sell" the work to the audience in Lillooet, B.C.. During part 2, they are aware that the audience for the performance will be drawn from graduate students in the Pacific Northwest area, a more music-critical audience. J wondered out loud if I have photocopied the score for them (100105 dress rehearsal). Here they were not concerned with "selling" the music, but with performing it to a high standard.

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[68] I am aware that it is important to distinguish between what people say and do in terms of activity roles in rehearsal. M is a quintet leader, and M and J perform together often, alternating leading and following roles. In reality, leading and following are tasks that both flutists engage constantly throughout the rehearsal and performance. They must always "be visible with" their intentions for performance, they must always listen and watch and respond appropriately to the other player.

[69] This is the first example I give of a rehearsal technique following from the conceptual structure of Clark.

[70] The flutists reported that their performance of *Masques* for the flute master class was a success. Unfortunately, I was not there to hear it. Further studies along these lines should pursue the influence of master teachers on their students, perhaps as part of a larger study on performance schools.

My discussion on "Identity" in chapter 2 reveals some issues around the *activity roles* for data collection in this study. There, I report that the three of us experienced some shifting of expectations and roles during data collection and, to a lesser extent, analysis. I took on the roles of colleague and researcher at different times. M and J took on roles of performer and researcher at different times. This was a desired outcome, since one of my research goals was to move beyond the idea of the performer as guinea pig.

When we identify the roles of all participants in performance situations, we can begin to account for their influence on the experience of making music. This can lead to a higher degree of self-empowerment for the musicians and a greater awareness of culture in musical performances. In research, this awareness can make explicit the influence a researcher has on her data through her procedures for data collection, through her prior assumptions about musical practice, through the questions she asks of the data during analysis, and in the way her experiences interact with the analytical process.

Goals

Joint activities can be defined by the goals that participants hold and share (Clark 33). Goals can be personal or public, long term or immediate. Clark identifies a goal by describing what was achieved: "musicians A, B, C, and D played a Haydn string quartet" (Clark 34). Clark calls the dominant goal for an activity, the *domain goal*. For example, the domain goal for the flutists was to learn *Masque* for public performance. The domain goal for the research project was to study musical interaction. The domain goal for a certain rehearsal would include a more specific item like, "reading through the second movement" (020705). The flutists shared the same public performance goals. Likewise, the participants in the research project all shared the same domain goal, even

though our procedures for achieving that goal (our roles) differed. It was my job to make sure there was a space to rehearse. It was their job to rehearse.

Procedural goals can also be identified for each activity. For example, the procedural goal for the project contract was that the flutists would only rehearse this work in front of the camera, so that all of their interactions in the process of learning this work would be recorded. The procedural goal for the rehearsals were specific to the *state of the activity* (40-41). If the flutists were sight reading, their procedural goal was to make it through the entire movement in one session.[71] Procedural goals are those we use to make sure we achieve the desired outcome. We decide to tackle one problem at a time, to work efficiently, to pay attention, to contribute ideas, and so on.

Interpersonal goals, such as lessening the tension through jokes and laughing, maintaining a positive atmosphere, and valuing all participants equally can also be identified and investigated as part of the interaction process. The flutists use jokes in every session. It is clear that the jokes serve an important purpose for them, and that the jokes are consciously employed to lessen tension between them. A more subtle interpersonal goal might be to enhance, or otherwise manage the degree to which a player allows him or herself to contribute verbally in rehearsal.

Finally, while the set of goals listed above can be considered shared goals, personal goals (or *private agendas*) for each participant also influence the activity. Personal goals are an important part of the negotiation of music-making. For each session a flutist might have had a goal to "focus his/her tone" or to "get the notes right in measure [x]." Personal and shared goals intersect in joint activities to advance the state of the activity. Though I only encounter the personal goals of the flutists through their statements in rehearsal, I reflect on my own personal goals at length in both my research and

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[71] Because this work has many complex rhythms and unique technical challenges, this was an appropriate goal. If they had been reading a tonal work from the Classical period, their goal might have been to read through it quickly and then rehearse it in sections.

practice journals. It should be somewhat obvious that a systematic exploration of personal, shared, and public goals for performance would be of interested to those performers wanting to improve or otherwise critically examine their ensemble's effectiveness. But on a more subtle level, we can examine the way these layered goals intersect in the process of negotiating musical understanding. This opens one window into an aspect of music cognition in performance.

Settings

Just as the activity type, participant roles, and goals for an activity can shape the nature of an interaction (and therefore the emergent product of that interaction), the social or physical setting is also relevant to the way music is shaped in performance. Set variation for music performances can include the formality or social use of a performance space (performance hall, classroom, living room, gazebo, lab, recording studio), the dimensions of a performance space (the size of the stage, the amount of recording technology used) and the amount and/or quality of resonance offered by a performance space. It is not uncommon for performers to explore different positioning on stage to maximize the use of a room's acoustics. We can explore the other dimensions of variation to see how the experience of performing is shaped not just by the acoustic properties of a space, but also by its social dimensions and the personal and public performance histories associated with it. For example, the flutists in this study have gathered a set of experiences in and around some of the settings used in the Takemitsu study.

Recital Hall and Old Auditorium

Two performance venues included in the Takemitsu data are the Recital Hall and the Old Auditorium. The Recital Hall seats 270 people and is considered by many to be the heart of the Music Building at UBC. Almost all of the juried student performances are held in this space, and many community concerts, public lectures, and events take place in this hall. As a result of its central

role in the functioning of the music school, and in part because the acoustics in this room are pleasing, it is considered a luxury to practise or rehearse in this room. The stage is suitable for small to medium-sized ensembles, and there is no "bad" place to sit.

We used the recital hall for sessions 092205 (rehearsal), 100105 (dress rehearsal and concert), and 110305 (experimental session). In chapter 1 (Finding My Voice), I offer my impression of how the recital hall influenced the process of tuning for the 100105 dress rehearsal. Because the hall is resonant and the experiences in this hall are typically very formal, the hall itself plays a role in the music that emerges from the players.

In contrast, the Old Auditorium is somewhat of a run-down museum in a separate building across a courtyard from the Music Building. The ghosts of many performances past live in this space. The lighting doesn't work, the floor creaks, many of the seats have lost their coverings (and some their hinges). Buckets of paint and opera props typically litter the back stage, and a smattering of percussion equipment sits ready for use by the handful of students who regularly practise in this hall. Despite its state of disrepair, students often find themselves performing in this space (though not for public events, due to fire regulations). The flutists in this study have performed concerto competitions, new music concerts, band concerts, and summer band festival concerts in the Old Aud. Rehearsals are also scheduled in this space from time to time.

Performances in the Old Aud are generally considered less formal than those that take place in the Recital Hall. The acoustics are live and open and the building often adds its own contribution to the performance by way of clanging pipes, creaking floors and seats, and various sounds of unknown origin. Session 092905 took place in the Old Aud. We had not been scheduled to rehearse there, but moved there after being bumped from the Recital Hall. Indeed, this session began with a string of a comedic errors. There were no electrical outlets within reach of the stage; I had forgotten

a digital tape; the flutists had forgotten their rehearsal score. As a result of all of these "glitches" the flutists remarked that the rehearsal seemed more like a live performance – more on edge, more energy, more risk, and more "accompaniment" from the building itself. At the beginning of the rehearsal, the flutists spoke about the hall. M and J recalled past performances here, M somewhat wistfully, J with mild displeasure (not at the hall itself, but an event that took place therein). As I have discussed already in the findings for the GT study, the body motions that occurred in this session had a greater communicative volume than those of prior sessions. The flutists moved more, with larger gestures and felt a greater sense of risk in this space.

***the lab*, Linguistics Annex**

"The lab" was the first place we met for rehearsals. The room is carpeted and full of hardware (several computers, a tower of high-tech recording devices, an Optotrak camera, various piles of unassembled hardware pieces). The flutists were standing in front of a blank white wall, between two cluttered tables, facing two cameras. Microphones were attached to their collars, and three very bright spot lights beamed at them from about five feet away. The music stand (they had only a single wire stand to use between them) had to be placed in a position that didn't occlude torso movements from the camera. There was background noise from the hardware, and several lab assistants were present to help with running the many pieces of technology.

The above description may make the lab seem like an undesirable place to make music. However, because we allowed them to rehearse the music as they normally would, the flutists had no problem adjusting to the space. Five sessions were recorded in the lab, and even with some minor changes in the technological set up the flutists approached the rehearsals in a professional manner. The lab did not solicit the same kind of appreciation that the recital hall and Old Aud brought out.

They did not talk about the resonance levels in the lab; they did not mention anything about the room at all. They just focused on their goals for the rehearsal.

Event Boundaries

Clark suggests that a "successful" joint activity has a negotiated entrance and exit (36-38). The participants coordinate their actions around some identifiable and mutually recognized set of goals. If one of the participants doesn't recognize the intentions of the other participant, the activity is not considered jointly negotiated. For example, if J begins playing the piece while M is talking to a lab assistant, the activity could not be described as a successful performance of the piece. It may seem like the negotiation of activities in a music rehearsal would be more transparent than the negotiation of joint activities in face-to-face conversation. The presence of the score, the *activity roles* and the *procedural goals* set the boundaries for many of the activities of a music rehearsal. However, rehearsals are also very complex social situations that require a number of negotiated events. The signals to tune (or not), the signal to begin rehearsing, the suggestion to start with the second movement (or to rehearse a particular section or to try a new dynamic, tempo, phrase shape), the interruption of play (to make a comment or fix an error), the continuation of play after a rehearsed passage, and the telling of jokes are all bounded events that require real time negotiation between the participants.

Joint activities can occur in layers, or simultaneously. They can overlap or break down. In any case, identifying the event can be useful for contextualizing activities in rehearsals. In light of the complexity of music rehearsals' event structures, I devote an entire chapter to this subject (Chapter 4).

Coordination

In order for joint activities to take place, people must be able to coordinate their actions. For many activities, as mentioned above, *procedural goals* and *activity roles* facilitate the coordination. In music performance, coordination can be understood as occurring via conventional and non-conventional procedures. Conventional procedures can include the constellation of concepts proposed by Brinner (1995): the *interactive network* (the activity roles), the *interactive system* (the musical materials used), the *interactive sound structure* (the constraints and concepts surrounding the way the musical sounds are put together), and the *interactive motivation* (why people are induced to participate). To these I would add, speaking the same language, playing the same piece, and following the same procedural goals.

Non-conventional procedures are also employed in music performance. For example, when the flutists were working through a rhythmically difficult phrase, they would repeat the phrase several times correctly to solidify the performance. Somehow, without speaking about it, the flutists would both know when to continue playing. At a certain point, after rehearsing a passage a few times, they wouldn't say, "let's play it one more time and go on"; they would just continue playing with no further discussion.[72] On other occasions the flutists played through a mistake, and then immediately repeated the passage with the error in it, correcting the error without discussion. These were coordinated acts, but they did not follow conventional procedures. It is during these non-conventional coordinated acts that one begins to recognize music-making as a cognitive joint activity. See Chapter 5 for a discussion of four domains of coordination in the Takemitsu data.

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[72] What *may* be happening at these moments, at least from my personal experience, is that the experience of making music bumps all awareness of the problem that was being solved. Either they have played it the way they intended to play it enough times to allow them focus on the experience rather than the intent for the passage, or they simply wish to move forward to tackle another performance problem in the piece.

Common Ground

Coordinated activities and events happen over time. As the activity advances, the participants accumulate *common ground*. Clark identifies three areas of *common ground* in joint activities (Clark 43):

> 1. *initial common ground* – the set of background facts, assumptions, and beliefs the participants presupposed when they entered the activity
> 2. *current state of the joint activity* – what the participants presuppose to be the state of the activity at the moment
> 3. *public events so far* – the events the participants presuppose have occurred in public leading up to the current state

The initial common ground for the flutists of the Takemitsu study would be quite large. They had both played and studied the flute for close to twenty years. During that time, they had learned many things about flute technique and ensemble coordination, as discussed elsewhere. They had performed tonal and non-tonal music, and had learned a variety of extended flute playing techniques (glissandi, percussive articulations, harmonic fingerings, etc.). In addition to the knowledge about flute playing that each of them had acquired, they had also performed together regularly during the two years prior to the study. They "presumed something" about each other's working styles, rehearsal habits, strengths and weaknesses as performers, and the set of experiences each might have with learning music in a contemporary style. They had every reason to believe this set of rehearsals and performances would build upon their previous experiences.

To illustrate second type of common ground, *state of the activity*, Clark uses his example of a transaction in a grocery store. His transaction is tracked by all participants through external representations – as goods are placed on the counter, money is exchanged, the participants move through various stages of the interaction. In music-making, tracking the state of the activity is a more elusive enterprise. Very few changes occur in the placement of external markers in rehearsal. The

flutists pick up their instruments and begin playing, but once they are playing they remain in position for the entire session.[73]

So how do flutists track the state of the activity for learning a new piece of music? If we view the task of performance as simply a reproduction of the notes represented on the score, it would seem that there would be no point in tracking the state of the activity at all. However, in the action tradition, music performance is seen as a real-time negotiation of musical understanding within the constraints of a work. When M and J are sight-reading *Masque*, they are both focused on playing the right notes and approximating the right rhythms. In this particular work, the parts are rhythmically complex and interdependent. Throughout the rehearsal process, the flutists penciled beat marks on the score so that they could listen to each other and coordinate the rhythms between parts. The pencil marks are one way of tracking the state of the activity. But there are other, less tangible cognitive processes to consider. *They were tracking the state of the activity by feeling, playing, listening, and watching (not necessarily in that order).* Remember that it is the *activity* we are conceptualizing, not the particulars of the content. It can be easy for us so heavily steeped in structuralism (or, the "product" tradition) to get lost in the differences between language and music. But we are theorizing activity, not sentences or phonemes, not musical themes or notes. So in order to assess the state of the activity, we need to examine which actions and activities mark the changes.

When sight-reading, they would first *set a pulse* that was intended to take them through the first phrase. Then they would sound the notes along the way to each penciled beat marker, which was lined up in real time with the pulse they set at the beginning. As they were sounding the notes,

[73] It is possible that some more subtle markers are used in rehearsal. I speculate that posture and facial expressions might give cues as to when a rehearsal is nearly over, or when another player may stop.

they would *listen* for the other flutist to fill in the other parts of the rhythm.[74] If one of the flutists held a note too long, missed a note, or rushed a passage, there was a danger of stopping. In session 092205, J comments that the parts for this piece are so intertwined that she had difficulty practising her part alone prior to the rehearsal.[75] As the flutists became more familiar with the work, they could incorporate more flexibility into the rhythmic interaction between parts. Indeed, as I noted in Chapter 2, they strived to achieve a sense of flexibility – a sense of the "conversation" between the two flute parts. They tracked the state of the activity in reference to each other and the score.

In performance, the musical sounds, the way the sounds are shaped (articulation, dynamics, tempo), the meaning of the way the sounds are shaped (the interpretive intent for a percussive articulation or a soft dynamic or a faster tempo), and the turns represented in the exchange (how each flutist alters his/her sound in response to the intentions "made visible/audible" by the other flutist) all contribute to the state of the activity. These signals are only relevant for a brief period of time while the activity is taking place.

As the flutists advanced through the piece, they monitored their progress by knowing where they were in the music. They performed the first note, the first phrase, the first movement, and so on. They annotated the events (to themselves internally) based on their expectations for what should occur in the short term (e.g. phrase one in response to J's delay) and in the long term (e.g. the first rehearsal, the dress rehearsal, the concert). For example, an internal annotation for the first session included a heightened awareness of the placement of beats and counting to facilitate sight reading of the music. An internal annotation for the final performance included other salient features of the performance: surprises, mistakes, or powerful moments like the "god moment" referred to by M

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[74] Not all scores are so complicated that they require beat markings; the flutists do not use beat markings in the C.P.E. Bach Sonata. However, we can use the presence of these markers to illustrate how the flutists monitor the state of the activity in this work, and then perhaps extend that understanding to other performance environments.
[75] This was the first session of part 2 of the study, after a five month break from rehearsing.

(92605 T16). These annotations (sometimes called “frames” or “scripts” (Clark 1996, p. 40)) allowed them to keep track of the *public events so far*. The score is a script in the sense that it provides some of the constraints within which the music is made. However, their awareness of what was said/sounded in context allowed them to track the state of the activity.

Summary

This chapter laid out some of the conceptual foundations of Clark’s *joint activity* theory and applied those concepts to music performance through a discussion of the Takemitsu data. The goal for this discussion is to propose a conceptual framework suitable for analyzing music performance without sacrificing the musical work, or as Cook would say, for conceptualizing the space between process and product. Though I have not done so here, one could engage the musical work using each of the concepts mentioned. Indeed, doing so would place evaluations of performance in their proper context. The current discussion is mostly confined to the type of inquiry that will build theory on practice. To that end, what follows in chapters 4 and 5 will address how music performance can be analyzed as activity (chapter 4) and the role that various coordination devices play in the unfolding of musical activity in rehearsal (chapter 5). However, as I mentioned earlier, this conceptualization can also be useful for designing rehearsal and practice techniques (See *Areas for Future Inquiry* at the end of Chapter 5).

Chapter 4: Event Structure

As I mentioned in chapter 3, participants in a joint activity coordinate their actions around a mutually identifiable set of goals. Joint activities in music performance can include macro-level, general activities like "rehearsing a work" and micro-level activities like "raising flutes." Macro-level joint activities can vary according to the level of formality, the degree of scriptedness, the level of verbalness, the degree of cooperativeness, and the type of governance. In addition, situations for making music in the WAM tradition, listed on page 78, can vary a great deal. If we agree that music-making is a social activity, our conceptualizations for musical interaction should begin with an attempt to identify the activities and events from which music emerges.[76]

Clark's representation for sections and boundaries allows a researcher to examine a communicative musical act or activity without losing sight of its context, thereby strengthening the observational power for any given moment. Each of the circles in Figure 3 constitutes a bounded event.

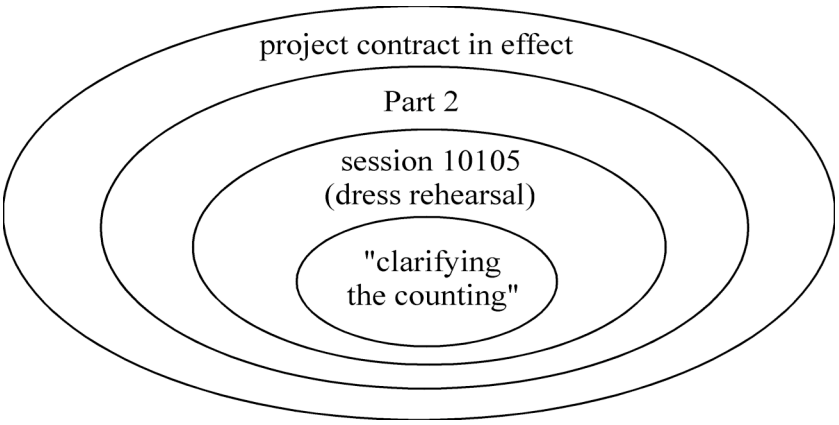

Fig. 3. Focusing in on the activity, "clarifying the counting"

[76] No attempt is being made here to conceptualize music composition. However, I would like to point out that "music-making" is an activity can include composition, performance, and active listening. The list of participants, activity types, and roles may vary for these different types of music-making, but essentially, the method for conceptualization would remain the same.

Part 1	Part 2
Jan. – Mar. 2005	Sept. – Nov. 2005
Public audience, Lillooet, B.C.	Pacific Northwest Music Graduate Students Symposium
Exploratory case study of the rehearsal process with an emphasis on motion and gesture	Exploratory case study of the rehearsal process with no motion capture and minimal intervention

Table 11: Audience and domain goals for parts 1 and 2

Each of the events represented in the diagram in Table 8 is bounded by a *negotiated entrance and exit* (see Clark's representation for identifying sections and boundaries on page 98) and defined by the goals for the event. The project contract defines the terms (shared goals) under which the flutists and researchers participate for the duration of the project. This contract (facilitated by the ethics consent process) is the most formal of the negotiated entrances and exits for events in the data. From there, we can tunnel into ever smaller events beginning with the two parts of the study. Part 1 (January – March) of the study differs from part 2 (September – November) in terms of the goals for both data collection and the final performance.

The performance at the end of part 1 was for a public audience in Lillooet, B.C. The flutists discussed their audience briefly in session 030305. J wondered how they would "sell" the piece to the audience. She described the audience as a "small town crowd." Both M and I replied to her comment. M said that the piece was "within a user-friendly program" and reassured J that he had "sold" Takemitsu before and knew what to say. I suggested that they should not need to "sell" the piece, that the music made sense as it was communicated by the flutists. They did not expect the audience to like modern music, so they discussed how to "sell" the work, how to make it "palatable" to the small town audience.

The audience for part 2, an assembly of graduate music students from the Pacific Northwest, was viewed much differently. In the dress rehearsal 100105, J wondered out loud if I had

photocopied the score as a handout. At the end of the dress rehearsal, J and M engaged in a brief discussion about taking risks with the music. They anticipated that some members of the audience would actually know the work, and that most would know the composer and the style of the music; a few may have even performed the piece. Their goal was to play the piece in a way that would fulfill the expectations of this more critical crowd. There was no mention of "selling" the work; instead, there was a greater emphasis on both precision, for the critics, and risk taking. for the performers in the audience.

Not only did the flutists goals for performance differ, but the data collection procedures for part 2 were substantially different than those used in part 1. Part 1 sessions all took place in the lab (Linguistics Annex) with motion capture capability. Each session had two cameras on the flutists, one to capture both of them, and one high definition camera on the upper body of M, who was wearing blue dots over his face, arms, and flute. As I mentioned previously, even though they were rehearsing *as normally as possible* under the circumstances, data segments were identified, and synchronization claps performed, based on the idea that their movements were being monitored and would eventually be analyzed. In terms of research design, this led me to focus my attention on sections of music that repeated (measures 11-17 and 25-31) or provided contrast (measures 22-24). As I mentioned in Chapter 2, a substantial part of my field notes for part 1 consisted of marking such passages for potential use in motion analysis.

The data collection for part 2 occurred in various performance halls and rooms around the Music building. Only one camera was used for all but the very last session in the Recital Hall, for which there were three cameras and, once again, blue dots. The goal for all but the last session of part 2 was to gather *realistic* rehearsal data. Therefore, there was less intrusion on the sessions; all aspects of the rehearsal process were equally valuable as data.

Tunneling further into the data for part 2, the second dress rehearsal (session 100105 listed in the diagram in Figure 3) differed from the first (session 092905, not listed), in terms of the venue, data collection procedure, and rehearsal process. Session 092905 was a dress rehearsal a few days before the performance; session 100105 occurred just a few hours prior to the performance. Session 092905 took place in the Old Aud. During that session, the flutists practised performing the work under odd circumstances. Not only were they in a different performance space, they had forgotten their rehearsal score, and I was experiencing technical challenges (finding electrical outlets, forgetting a digital tape). They both agreed that the somewhat jarring events surrounding the rehearsal were good practice for the heightened attention required in real performance situations. Dressed casually as in all other sessions, they ran through the entire piece. I observed that their gestures were larger, their coordination more obvious than in previous sessions. As a result of this, we "played with" their performance of the music, shifting performance roles, emphasizing and minimizing body motion, to see if we could break their sense of ensemble.

Their activities in session 100105 were more serious and focused. Initially they ran through the piece as if it was the actual performance. M was in concert dress, J was also wearing something formal, though she changed her blouse prior to the actual concert. I paid no attention to the flutists at all; I was preparing my own presentation while they rehearsed. They cultivated a common frame of mind for performance; they thought about their audience; they prepared their sounds for performance.

The activity "clarifying the counting" must be understood as situated in the context of the large scale goals for part 2, as well as the immediate context of a dress rehearsal two hours before the final presentation.

Clark's representation for identifying *sections and boundaries:*

> *Entry:* A and B go from not being in J to being in J
> *Body:* A and B are in J
> *Exit:* A and B go from being in J to not being in J
> Entries and Exits have to be engineered for each joint activity (p. 36).

As demonstrated above, this representation offers the researcher the ability to tunnel into increasingly smaller segments of data without losing sight of the larger context. For example, in the transcript below, two layers of activity are identified: the larger activity, "clarifying the counting" and seven phases of activity contributing to that goal.

Activity: "Clarifying the Counting in Measures 34 and 35"

ENTRANCE

(phase 1 entrance)
J: Have I been counting this correctly? (pointing to the score)
M: hmmm?
J: Whenever we have this . . .
M: uhhh
J: I'm feeling like I might be holding the gflat .. there (pointing)
M: I don't know, uh, why, am I coming in early?
J: no, we're playing it together, but I'm not sure if it's because you're following me or if I'm counting it correctly (laughs) that sort of thing
(exit)

(phase 2 entrance)
M: you want to try from there? (pointing to score)
J: OK
THEY BOTH RAISE THEIR FLUTES
J: 34
THEY BEAT TIME WITH THEIR BODIES
J: one (counting)
They play the two measures, M plays a wrong note
(exit)

(phase 3 entrance)
M: sorry, b (looking at his fingers on his flute, he tries a fingering)
J: (sings and claps fingers then speaks to herself) duuum baa dumm I know, I'm not going to do that
(exit)

(phase 4 entrance)
M: can we do it one more time?
THEY BOTH RAISE THEIR FLUTES
J: yeah
THEY BOTH BEAT TIME WITH THEIR BODIES
J: one (counting)
Train wreck: M gets to his b way before J plays her c#
(exit)

(phase 5 entrance)
M: <AAHH OOO AHH AHH *(WAVES HIS RIGHT HAND IN THE AIR)*>
J: <THAT'S WHAT I MEAN IT COULD BE ME JUST HOLDING TOO LONG>
THEY DON'T PUT THEIR FLUTES DOWN AT ALL AND WITHOUT ANOTHER WORD, TRY THE PASSAGE AGAIN. THEY BEGIN BEATING THEIR UPPER BODIES AND THIS TIME J DOESN'T COUNT.
THEY PLAY BOTH MEASURES AND THEIR PARTS LINE UP EXACTLY.
(exit)

(phase 6 entrance)
***J plays a g-flat, then the c-sharp to g interval three times, while tapping her foot**. M puts his flute up and holds his chin, listening.*
J: that triplet thing there
(exit)

EXIT
(phase 7 entrance)
M: (something mumbled behind his hand)
J: neither do I
M: so it's together -
THEY BOTH LAUGH LOUD.
(exit)

Table 12: Seven Phases of Activity in "Clarifying the Counting."[77]

It is also possible to focus on *single actions* within each *phase of activity*. An activity is a combination of actions that have an identifiable goal and/or negotiated content. An action is a single movement like, "raising flutes" or "beating time." The action, "raising flutes" can take on different

[77] In the transcript above, verbal and nonverbal acts are presented in different fonts to demonstrate the concept of balance. For an unbalanced activity, the leader's actions are marked in **Chicago font** (larger activity of "clarifying the counting") and **Britannic Bold font** (smaller phases of activity). COPPERPLATE GOTHIC LIGHT FONT indicates participatory balanced activity. **Baskerville semibold font** indicates autonomous balanced activity.

meanings in different contexts. It can mean, "time to stop talking and start playing," "this is the tempo we will use," "we're ready when you are," "we don't laugh at those jokes," "this [type of movement] is the character of the piece we are playing," and so on. In the activity above, the flutists raise their instruments twice, both times in response to a request from M to try the passage again. Maintaining an awareness of the context limits the possibility of misinterpreting the act.

Balance and Periodicity in the Activity, "Clarifying the Counting"

Musical activity is a continuous blending of joint actions (raising flutes, beating time, cueing starts and stops) taking place over time. This *continuous coordination* (Clark 1996, pp. 82-87) can be conceptualized by phase (as above), and along dimensions of variation for *balance* and *periodicity*. A *balanced* joint action is one in which the participants share equally in the execution of the activity. An *unbalanced* joint activity occurs when one participant takes the lead and the other follows. A *periodic* joint activity is one that is governed by a pulse or rhythm. Clark gives the examples of "waltzing, playing a duet, paddling a canoe, or marching in step" (Clark 1996, p. 82). Clark suggests that conversation is both *aperiodic* and *unbalanced*.

In comparison to conversation, musical activities seem *periodic* (coordinated by regular beats and rhythms) and *balanced* (coordinated by the actions of both participants equally), especially if our examples are "final performances" of already rehearsed works. However, in real life, musical performances are never "final"; rather, music-making is a negotiated activity that builds upon hours (days, weeks, sometimes years) of ongoing practice, rehearsing, and public performing. Musical understanding is negotiated before, during, and after play.

Notice the alternation of balanced and unbalanced activity in phases 2, 4, and 7. In phase 2, M leads the activity by suggesting they start from measure 34. J replies, "OK." This is an example of

the unbalanced conversational activity that Clark describes. Within this phase however, the flutists also raise their flutes together, at the same time, and they beat time with their upper bodies. During those balanced joint actions, J says two things, first "34" to indicate to the camera where they are starting, and "one" indicating the first beat of the measure. You can see the layering of both balanced and unbalanced activity at the same time here. The flute playing they do in this phase is periodic (governed by a common sense of the beat). Phase 4 can be understood the same way as phase 2, with a layering of balanced and unbalanced activity. Note, they are raising flutes and beating time while J speaks. The music and conversation acts are contributing to the same joint activity. In phase 7, we see something slightly different. M leads the conversation in that phase, but their laughter at the end could only be described as a balanced activity. It appears to happen on cue, and serves the purpose of closing off (negotiating the exit), of the activity, "clarifying the counting."

Phases 5 and 3 must be understood differently. In phase 5, the interjection of verbal activity into the flute playing is balanced. Both flutists interject simultaneously and they speak at the same time. They are both referring to a jointly salient error that occurred in their playing. Without discussing the error, they jump right back into performance, beating with their upper bodies simultaneously (and without comment from J). They play both measures and their parts line up exactly. I label this phase *participatory balanced* because they appear totally coordinated; there is no leader and follower for either the speech or the playing. Phase 3 I label *autonomous balanced activity* because the flutists are not coordinating; rather they are speaking to themselves; M trying fingerings on his flute, J singing and counting. Real world musical interaction is, in this model at least, a blending of balanced and unbalanced, autonomous and participatory actions.

If the activities and events of music-making are redefined to include both verbal and nonverbal acts (further defined by personal and public goals), musical activities may present as

either *periodic* or *aperiodic*. Music-making frequently references and is referenced by speech and other social actions. As mentioned above, the playing of instruments can occur seamlessly with a speech act. More importantly, *meaning can flow* between speech and instrumental acts. For example, in phase 5, the flutists were engaged in aperiodic musical activity. If we identify the phase by its coordinated entrance and exit and by the goal for that activity, we see that this is the case. The activity began when both flutists simultaneously exclaimed in response to an error they noticed while playing. The error was held in their attention throughout this phase of activity. They exclaimed, and then they played, and the whole time their goal was to resolve whatever they mutually understood as the error in that passage. And they succeeded. It wouldn't make sense, from a joint activity perspective, to think of the speech and playing as separate activities in this instance.

In phase 6, J made a comment about "that triplet" to M, assuming he had been listening to the way she was subdividing it when she was playing. Again, the speech referred to a jointly salient, mutually understood aspect of instrumental play. Of course, when they were playing with the intention to perform the work, their music-making was synchronized by a common sense of the beat, which they had *negotiated* through the use of various *coordination devices*, discussed in chapter 5.

This chapter presented three aspects of Clark's conceptualization that are relevant to understanding music performance as a negotiated joint activity. The first part of this chapter discussed event structure. Events can be identified and studied with an awareness of context – as embedded within larger events and incorporating smaller events. As I mentioned earlier, maintaining an awareness of context can result in fewer interpretive errors. The second aspect relates to the way events are identified. An event is identified by its goals – either the goal for the collaboration, or the set of personal and public goals held by the participants. This redefinition of a musical event makes is possible to include speech, body motion, and instrumental play as equally contributing musical

acts. This third aspect is perhaps the most striking of the three, since in most studies of music performance, only a "final" or "formal" performance is considered suitable data. Now it is possible to conceptualize musical activity leading to the negotiation of musical understanding – the space between process and product.

Chapter 5: Coordination Devices

The process of rehearsing a work involves the continued cultivation and negotiation of *common ground*. Common ground is established through a process of engagement in and monitoring of joint activities. As an activity advances, the participants build a common set of experiences and mutually salient coordination devices. Coordination devices can include "almost any device" that participants consider to be the most "jointly salient" solution to a coordination problem. Clark unpacks the coordination devices of language into different domains, each with a rich history of theoretical inquiry (Clark 1996, pp. 73-81). He discusses the use of language as a *signaling system* employing both conventional (including words, grammatical rules, conventions of use, and conventions of perspective) and non-conventional coordination.

The coordination of music-making, I suggest, can be viewed in a similar manner, as a signaling system with both conventional and non-conventional coordination devices.[78] Conventional devices include the materials of music (keys, chords, notes, ornaments), the rules for using and combining these materials, their conventions of use in composition, and the conventions of perspective that musicians take upon those materials.[79] Conventional procedures for musical negotiation can also include Brinner's (1995) somewhat broader constellation of concepts: the *interactive network* (the roles of the performers), the *interactive system* (the musical materials used), the *interactive sound structure* (the constraints and concepts surrounding the way the musical sounds are put together), and the *interactive motivation* (why people are induced to participate). Speaking

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[78] See Ingrid Monson, *Saying Something: Jazz Improvisation and Interaction*, Chicago: University of Chicago Press, 1996, for an introduction to jazz as a signaling system.

[79] Conventions of use includes our set of expectations about what a composer means by a particular marking. Conventions of perspective includes our set of performance practices. These two are not always the same. Consider how baroque scores are interpreted and re-interpreted to produce vastly different performances.

the same language, playing the same piece of music, and following the same procedural goals are also conventional procedures for negotiating music. The conventional coordination devices are important enough to conceptualize, but it is in the realm of the non-conventional coordination devices that we develop a deeper picture of the activity view of music making.

Clark offers four classes of problems for non-conventional coordination in the context of face to face conversation: ambiguity, contextuality, indexicality, and layering. *Ambiguity* refers to the way a set of words may or may not utilize the meanings suggested by their lexical entry or conventional use. *Contextuality* refers to the way a word may have a nonsensical meaning outside of its unique use in context. *Indexicality* refers to the way language inherently refers to aspects of the participants' common ground. For example, if my old friend from my UBC undergraduate days walks up to me and says, raising his pinky finger, "where's the bassoon player?" only he and I know to what he refers. *Layering* refers to the way meaning in an utterance can refer to a current contextual event, or to some other *layer* of the interaction (mimicking someone else's tone of voice, rehearsing a line from a script, offering a sample of prose).

That music is *ambiguous* is made patently clear by the number of possible interpretations of a work.[80] *Contextuality* in scripted music can refer, among other things, to the way a phrase is shaped in response to the way previous phrases were shaped. The music takes expressive shape (through dynamics, timbre, character, ornamentation) based on its unfolding in context. The *indexicality* of a musical sound or expression refers back to the common ground of its participants. *Layering* refers to the way a performance can be "about" or "within" another situation. I can perform Mozart's Concerto for Bassoon in a way that "mimics" the performance style of schools of playing that are not so fashionable any more, or I can perform it in a way that demonstrates my own state of

[80] See, Joel Lester, "Performance and Analysis: Interaction and Interpretation," in *The Practice of Performance,* edited by John Rink, Cambridge: Cambridge University Press, 1995, for a discussion of variation in musical interpretations.

interaction with the music. A performance is also layered within a larger activity such as, a concert, or a rehearsal, or a recording.

From this it follows that coordination devices facilitate the negotiation of musical meaning but do not in themselves contain that meaning. The devices offer a process through which musical meaning can be negotiated. Some will no doubt argue that the Mozart Bassoon Concerto "means" the same thing whether I am performing it according to our current understanding of Mozart period performance style (with wild improvisation and ornamental use of vibrato), in a style that M might jokingly label "Brahmsian" (with a heavy, vibrato-laden tone at a dynamic range of mezzo forte to forte, and no improvisation), in a "French" style (with a bright tone, faster tempi, and jaw vibrato), or in some manner that reveals my own real-time interaction with the music. Clearly, I do not believe the music to "mean" the same thing in these situations. The interaction[81] between me and the score will be qualitatively different in each circumstance. In addition, I may choose to interact with the score differently based on the goals and expectations of my fellow musicians or audience. The music takes its meaning in the way it emerges from the interaction between me and the score, me and my fellow musicians, and between me and my (real or imagined) audience.

Let us look then at some of the devices that flutists used to coordinate their negotiation of the music in the Takemitsu rehearsals. We can identify the devices using Clark's representation for coordination:

For two people, A and B, it is common ground that *p* if and only if:
1. A and B have some information that some basis *b* holds;
2. *b* indicates to A and B that A and B have information that *b* holds;
3. *b* indicates to A and B that *p*.

[81] I am defining "interaction" as both a social and cognitive process. In keeping with the event structure and layering, the process of engaging in meaningful musical acts can be studied at the level of my interaction with the score, with my fellow performers, between us and the audience, between us/audience and our nation, and so on.

To facilitate the discussion, I present four domains of coordination devices, the score, markings added to the score, real time bodily movements, and general principles.

Coordination Devices in the Data

Domain 1.

p = the work, *Masque for Two Flutes*
b = the score

The first basis for common ground is the score. The score is a conventional coordination device subject to the problem of ambiguity, as mentioned earlier. If the score is viewed as a coordination device, it simply defines the work that is being played. In the activity view, further definition must arise from other coordination devices.

Domain 2.

p = location of the eighth note beat
b = vertical pencil mark between staves

p = subdivision in three
b = triangle pencil mark

p = a feeling of continued motion
b = curved arrow over the bar line

The second basis for common ground includes the pencil markings that further define the score. This is a separate domain from the score itself because the pencil marks emerge from the interactions of the flutists rather than the composer's intentions for performance. The pencil markings addressed the problem of indexicality in the coordination of a musical performance of *Masque.* Three examples of these pencil markings are listed here (See Appendix D for more examples.). Many faint pencil lines can be seen extending from above the first flute part down into the staff for the second flute. These vertical lines were added prior to and during sight reading to

indicate where the eighth note beat falls. This type of pencil mark was employed because the rhythmic divisions of each beat were complex and difficult to coordinate. In the first movement (and for much of the second movement) of *Masque*, the time signature changes every measure. The main beats alternate between regular eighth and sixteenth notes, but the rhythms that are to be performed over those main beats can consist of triplet eighths or sixteenths, quintuplets, sextuplets, septuplets over one or two beats, dotted rhythms, and ties over the main beats to obscure the feeling of a pulse. The vertical pencil marks were negotiated by the flutists specifically to align their parts.

Similarly, the flutists penciled triangles over the last three beats of measures 2, 5, and 9, all of which had a 5/16 time signature. The triangles reminded the flutists to internally count the 5 16ths of those measures as 12123, rather than 12312 (as in measure 16). The internal counting of 1 was an "anchor" for the rhythms of the passage.

Another example of a pencil mark is a curved arrow that extends over the end of the staff. The curved arrow was a reminder to the flutists that they wanted to keep a feeling of moving forward into the music that continued on the next staff. The arrows in measure 17 of the first movement, for example, were necessary because of the triplet-eighth rest at the end of the measure. The flutists found they had a tendency to pause there, and the arrow reminded them to keep the momentum going.

The pencil marks are "keys" to understanding some of the indexical problems of performing the score. The vertical lines help the flutists to line up their parts. The triangles remind them to keep the same internal subdivisions. The curved arrows remind them of their goal to continue the momentum through the rests. Additional markings included rewriting a time signature (measures 20, 23, 32 Mvt. I), writing words in the score ("go" "SLOW" "hold-" "together"), increasing the size of

dynamic wedges, writing tempo markings below the second flute part (Mvt. II), technical reminders ("no vibrato" Mvt. II), circling dynamic markings, and writing in some note names.

Domain 3.

p = placement of the beat	*p* = arrival at the second 16th m. 30
b = upper body motion, foot tapping	*b* = M provides head nod

A third basis for common ground *occurs in real time*, through communicative gestures, gestures derived from the conventions of flute playing (conventional coordination devices), or through negotiated movements with a previously assigned or contextually derived meaning (non-conventional coordination devices). Communicative gestures include actions made either consciously or unconsciously to signal some meaning to the other participant.

In Part 1 of the project, the flutists disagreed about whether upper body motion or foot tapping was the best coordination device for the real time placement of the beat. Sessions 021105 and 030305 in the first phase contained the following discussions of beating motion:

Discussion one, session 021105:

M: I'm wondering, I want to try and be a little more visual with at least where I think the beats are
J: yeah I mean I'm tapping my foot… I don't know if you can see it at all
M: nope
(*laughs, tosses head up*)
J: oh OK, that's OK
M: so I might just be, I might keep it more upper body I think
J: yeah OK
M: uhh
(*slight pause*)
J: just make sure you're not subdividing any weird triplets or anything; just stick with the big beats
M: right alright

Discussion two, session 030305:

M: that was good I thought. oo! I like it when we do this
(*makes large beating motion with flute in the air, mimicking their marking of the beats*)
J: (*laughs*)
M: (*laughs*)

These sessions both took place in the first phase of the study, and in a sense they marked the beginning of the conscious use of body motion to coordinate the performance. In these brief discussions we witness them disagreeing on conventions for body motion in ensemble performance. J stated that she was tapping her foot; M was using upper body motion. Their goal was to establish a common placement for the beat. They managed their differences by negotiating the terms under which upper body motion would be used, namely, to mark only the "big beats" (the eighth-note beats), not the "triplet subdivisions."

While beating motion provided one type of coordination device in domain 3, other types of real time coordination devices were also employed. For instance, in session 092605, M provided a gestural key for placing the second sixteenth-note of measure 30 in the first movement. Here is the discussion:

J: I like when you gesture on that F
M: yeah
J: that helps me know exactly when to come in the B there
M: <OK should we make that>
J: <much better>
M: a *god* moment, just in case, so no matter what happens there (*through side of his mouth*)
like if I sort of give a little nod there we know *pllttthhh*
(*hand chop towards score*)
we're back on there
J: yeah... sure

His "little nod" made visible his arrival at F in measure 30. It is interesting to note that the key was in use prior to being labeled "a *god* moment." J said that M's nodding gesture helped her to find her place. Labeling this gesture a "god" moment gave them a very powerful common expectation of arrival for that measure in future performances. Even if the performance was to go poorly up to that point, there was a good chance that M's nod would pull it together. This is an example of a physical

gesture being used in a non-conventional manner.

Process

Gesture use is also constrained by the *state of the activity*. The need for body motion to indicate a common sense of the beat changed during data collection. In sessions 092905 and 110305, the flutists maintained the sense of ensemble without upper body motion to mark the beats.

In session 092905, the flutists were asked if they could "break" the sense of ensemble. They suggested trying to play without moving their upper bodies. However, they managed to play the entire second movement without beating cues and they reported that the performance was successful. In session 1110305, the flutists performed sections of the first movement with a moveable whiteboard between them, obstructing their view. They performed the piece coherently with and without upper body motion even in the rhythmically-challenging passages in measures 11-22 and 25-31 of the first movement. How might this be explained? What coordination devices are they using?

Clark might suggest that the flutists had built up many layers of common ground upon which to interact. By the end of the study the flutists reported that they "knew the piece really well." They had built up their common ground through many activities and coordination devices (discussions, repetition, experimentation; and the score, pencil markings, breath cues, and gestures respectively). At the end of the process, they were able to perform the piece with an unmarked score (092905), and without beating motions (092905, 1110305). In addition, the content of their gestural interaction changed over time and in response to context. The physical gestures were used in real-time, not as a script, but as a means of *communicating* within the set of shared experiences and understandings in the context of this work. Once they had experimented with these devices, they could set them aside or use them to develop the "big picture," (030305) the "conversation" (092905) in the music. I do

not intend to suggest that the score *must* be set aside, or the markings erased, once the music is learned. It is simply evidence that the interaction between the musicians and score changed over time.

Domain 4.

p = maintaining/developing a sense of ensemble
b = "being visible with" breath and motion to facilitate ensemble playing

The fourth basis for common ground consists of the *general principles* flutists hold for performing in ensembles. One example of such a principle is their aim to "be visible with" their intentions for performance (e.g. breath, ensemble cues). The flutists use body motion with an in-breath to make visible for other performers their choice of tempo and timing for an entrance. The flute is often used as a conducting baton for cut-off, beating, and entrance cues, leaning into crescendi (growing louder for emphasis), narrowing the volume of motion for decrescendi (getting softer). This *principle for performance* (and others like it) are systematically taught and transfer well between groups of flutists, between woodwind instrumental groups, and with some negotiation, between all instrumental groups. The flutists describe their training (092905):

M: chamber music, I mean, in chamber music in particular, I mean, **we're taught to be very visual** and to sort of rely on not just what we hear but also ah… what we, what we see, and especially for music like this where
J: <and the gestures we make, the breathing we do>
M: <where I think yeah yeah> like you know like the gestures and the phrasing are not necessarily you know, clear. They're not four bars or whatever
L: mmhm
M: you know, so we do, I think, this piece in particular requires a lot more physicality
J: but it is something you learn. Its not something that we're doing naturally. <This is something>
M: <there is an intuitive process,> you're right. I mean you know like,
J: yeah but its a *learned* intuitiveness
M: yea yea yea you know
J: you know, like I remember being in flute lessons at 13 years old and my teacher going "OK we're gonna practise duets now," and teaching me these types of things
M: yeah

J: **"breathe together so we start together"**
(*conducts with the arm holding flute*)
"and watch me through the cut off"
M: yeah
J: and things like that
M: yeah , I teach , I teach "ensemble"
J: yeah, yeah,
M: with my kids , like I teach them how to respond to certain gestures and to know what they are
L: yeah
J: how to play with other people, so
M: and for them to do it them themselves, yeah
J: and then eventually it becomes natural
M: or not …

So, the flutists have a set of general principles for coordinating ensemble playing that are systematically taught. They mention these:

p = maintaining/developing a sense of ensemble
b = breathe together, watch the other player

However, we can also identify some other principles common to wind playing.

p = maintaining/developing a sense of ensemble
b = listen

This larger equation can be said to cover *conventions of performance* such as, "being visible with [x]," where *x* could be drawn from any of the following: *Intent* for: breath, beat, articulation, dynamics, character.

Intent

As noted above, the flutists must *intend* "to perform the work" or to "clarify the counting," in order to be considered as participants in the activity. While this may seem obvious, an act can take on different meanings in different domains or layers of activity, depending on the way intention is interpreted.

Ensemble A-and-B is doing joint action *k* if and only if:
0. the action *k* includes 1 and 2;
1. A intends to be doing A's part of *k* and believes that 0.
2. B intends to be doing B's part of *k* and believes that 0.

A coordination device such as, "being visible with [*x*]," (where *x* could be drawn from any of the following: *Intent* for breath, beat, articulation, dynamics, or character) gives a clear indication of the role of intent in ensemble coordination. At a higher layer of observation we would say the flutists *intended* to participate together throughout the project. However, if we return to phase 3 in the activity, "clarifying the counting in measures 34 and 35" discussed in chapter 4, we have already identified the flutists as simultaneously engaged in *autonomous* acts. This type of contradiction is best dealt with by considering the role of intention in layered activity.

(phase 3 entrance)
M: sorry, b (looking at his fingers on his flute, he tries a fingering)
J: (sings and claps fingers then speaks to herself) duuum baa dumm I know, I'm not going to do that
(exit)

Phase 3 of the Activity, "Clarifying the Counting"

In context of the overall project, we would define phase 3 as a moment in which the flutists needed to turn inward and focus on individual concerns such as fingering choices (M) and counting strategies (J) *for the purpose of satisfying their larger goal* (their project commitments, the performance for Part 2, the dress rehearsal, and "clarifying the counting"). Their *intent* was to contribute to the larger goal. Their actions, however, were *autonomous*, in that they were not trying to coordinate their speech or performance activity here. Their *intent* in phase 3 was to *not* be visible with breath and body motion; the lack of coordination contributes to the larger goal of the rehearsal.

Clark's conceptualizations for identifying *participatory* and *autonomous* acts allow a researcher to deal with complexities and contradictions like the ones identified above. In different domains and at different layers, actions can take on very different meanings.

Conclusions

Clark's conceptualizations for language use allow a researcher to analyze and interpret music-making with greater observational power. Viewing music-making as a joint activity emphasizes the variety of actions involved in cultivating musical understanding, and constrains those actions and activities within the layers of personal, public, and shared goals for the interaction. This perspective differs from the traditional simplified view of music-making as a single coordinated act that is derived from a score. In the traditional view, gestures, for example, are often measured in order to reveal the performer's interpretation of a work. While some of that information may be contained in a gesture, the separation of a motion from its context can result in unfortunate oversimplifications of musical activity.

Areas for Future Inquiry

The conceptualization scheme offered here presents many possibilities for future research on music performance. As I mentioned earlier, I see two broad categories of inquiry that stem from this work. The first is theoretical inquiry of the kind I work toward in this dissertation. To that end, several important themes beg further investigation. One area of inquiry identified above is the role of *balance* in the negotiation of musical understanding. To what extent are the activities of different ensembles balanced? Is there ever a discrepancy between the balance of verbal and nonverbal acts within an ensemble? What are the conventions and/or constraints on balance in verbal and nonverbal musical activity? Does the balance of leadership in an ensemble change the perceived effectiveness of the rehearsal? the sense of group satisfaction?

Another area of inquiry involves coordination devices and domains of coordinated activity. Is there a way to determine a relation between the use of particular coordination devices and the stage

of preparation of a work? What principles or discussions surround the choice of "upper body motion" or "foot tapping" in different contexts? Can performance styles and/or schools of playing be identified by choices that are made in domain 3? What other domains of activity constrain the discussion of coordination devices? To what extent (if at all) are the coordination devices in domains 2 and 3 derived from those used in other kinds of music-making activities (e.g. conducting, composing, theorizing)? Future research in domain 4 might identify principles of performance that accompany instrument groups and/or schools of playing (e.g. the Maxym school, the Schoenbach school, the Tabuteau school, the Moyse school). One might also examine the extent to which coordination devices become conscious through training. Can coordination devices be further divided into implicit/explicit or conscious/unconscious signals? How would inquiry into coordination devices shape performance activity?

Yet another set of questions arises from an investigation of the role of audience in a performance, or the problem of *layering*. This question has been addressed as primarily a cultural matter. Small, for example, critiques the WAM tradition of separation between the performers and audience. Sometimes musicians attempt to bridge the distance between themselves and the audience by actually speaking before or after they play; other times, "innovative" performances will minimize or remove the physical distance between performer and audience. But to my knowledge, no one has asked, in a formal manner, how the audience shapes the performance. There is some folk theory about the "energy" an audience gives a performer, but no formal conceptualization of the layers of relationships involved in music performance. Clark's conceptualization offers a structure within which to examine questions of audience and layering.

This last question points to the second general category of inquiry I have hinted at throughout the last few chapters, performance inquiry. Performance inquiry differs from theoretical inquiry in

its purpose and manner. Performers routinely "experiment" with role play, positioning, signals, mimicry, and so on. Most of the time, the experiments are drawn from personal experience and presented in an informal manner – "let's try this…." The results are only measured in experiential terms: did that change make a difference for how the music felt/sounded? Differences need not be measured in "good" and "bad" terms. Rather, a range of experiences are remembered for potential use in the future. For example, the acoustics in a performance space will have certain characteristics. Performers will exploit those characteristics anew for each concert. I recently watched a dress rehearsal of a well established quintet in the Recital Hall at UBC. Each member of the quintet would have performed in that space dozens of times, perhaps even as members of that ensemble. And yet, they spent a good portion of the rehearsal experimenting with positioning on stage. Perhaps the piece they were performing required a certain acoustic balance that they felt could be achieved through re-positioning the players. Some general principles guided their decision making (the shape of the ceiling), but for the most part each experiment was approached as a new experience.

A conceptual structure like Clark's offers a way to expand the range and depth of such performance experiments so that performers can deepen their understanding of their performance manners, experiences, and situations. I mention a few examples in Chapter 3 where the flutists in this study benefited from the focused inquiry into gesture use and roles. Experimenting with roles is a regular part of rehearsal technique for large and small ensembles. Each time a tricky entrance appears, instrumentalists will determine who is the proper lead for that moment. In Beethoven's Eighth Symphony, for example, the woodwind section must play together like a large clock. The entire section must follow the conductor while playing a regular eighth note rhythm for an extended period of time. While the conductor is the main leader, the group must negotiate how it will perform together so tightly. When I performed the piece, we discussed how we would coordinate our body

motion and articulation so that we all moved, breathed, and articulated in precisely the same way. This took tremendous concentration, but it worked. In that case, we agreed there would be no leader. If we followed the oboist, the eighth notes would not sound simultaneously. A conceptual structure like Clark's can provide rehearsal techniques that are compatible with those performers already use. At the same time, the systematization of these techniques can provide a greater range of options for understanding and experimenting with music performance.

Chapter 6: Considerations for the Field of Performance Scholarship

Part 1: Analysis and Performance

"*where there's mystery, there's no mastery*" - Yogi Bhajan

While Chapters 2 through 5 present methods for studying the more objective, or inter-subjective side of performance knowledge, there is a more subjective side, consisting of experiential knowledge developed by performers of the highest level in the course of many years. This experiential knowledge can be imparted, over long stretches of apprenticeship, to other committed and gifted individuals. The more subjective dimension of performance knowledge is also important to study, since it is specifically why students seek out certain teachers. Often labeled "mystical" or "intuitive," performance knowledge has not yet been systematically explored, conceptualized, debated, or discussed as a *field of knowledge.* What follows is an attempt to identify some core values for the field, and to suggest some directions for future inquiry. Please remember throughout this chapter that I am not referring to a new way for us to think about performance in relation to musical objects (works), as many others have done previously in the discourse of musicology and music theory. Instead, I believe the time has come for us, as performer-scholars, to move beyond an exclusive focus on the musical work and the demands it makes on us. What is needed is a more inclusive model of the cognitive strategies underlying expert performance, a model in which the role of the musical work is kept in perspective. I believe the time has come for a new branch of scholarly inquiry that paints a more complete picture of *what we do* as musicians – and, by extension, of *who we are.*

Clark's thesis on language use gives us a conceptual lens through which to understand aspects of music performance that go beyond an analysis of the score. An important feature of that

conceptualization is that it can be used as a structure through which to experiment with musical sound. By experimenting with roles, audiences, contexts, coordination devices, and states of the activity,[82] musicians can explore the way a performance is shaped, thereby fulfilling Cook's (2001) requirement for a conceptualization capable of dealing with the relation between the score and the performance. We need not polarize the activities of analyzing and performing. Nevertheless, it may be useful to briefly examine some of the differences in the way the activities of performing and analyzing constrain studies in music cognition.

The activities of analysis and performance structure different kinds of knowing of music. Recall that in Clark's view, language is a by-product of human activity. The goals, setting, common ground, and state of the activity all contribute to the way meaning is negotiated.[83] I, as a bassoonist, "know" music through many layers of interaction (e.g. with my instrument, with myself, with my colleagues, with my audience). I know middle C as a left hand responsibility. My personal goal is to play middle C with a full sound. Middle C requires twice as much breath pressure as the C an octave below. As a result, my embouchure must compensate for the increased pressure by opening up, not biting. I know middle C is in tune when my body is energized, but not tense, and I feel the resonance in my mouth, chest, and hands. If I am tense, the pitch will be high. If I am slack, it will be flat.

If I am playing middle C in an orchestra, say, on the last note of a C major symphony that ends on the tonic in root position, I am probably playing first bassoon, not second. I anchor my pitch inside the tones of those who are playing an octave or two below me. It is their job to set the pitch

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[82] In case it is not clear, the musical work is the basis for any experiment with roles, audiences, contexts, coordination devices, and states of the activity. The musical work provides the material through with to examine the way a specific leading gesture shapes the outcome of the phrase, the way positioning effects balance, and so on. It is my view that the conceptualization captures the way instrumentalists already work with music while at the same time making the process more systematic.

[83] Hopefully it is clear that the activity shapes not only the language, but what is understood by each participant by way of the role the language plays in the activity. I suggest that music is understood in a similar manner, when we take into account the various understandings that arise from a musical performance (for more on these understandings, see the interactional semiotics views of Monson, Berliner, Brinner, and the work of Cumming mentioned in Chapters 1 and 3).

for the rest of the ensemble. I listen downward; my C is a shade of color added to that of the basses, cellos, and second bassoon. My C should not draw attention to itself. I feel and perform its function in relation to what goes on around me.

The act of playing middle C on the bassoon encompasses not only attention to different dimensions of musical structure (harmony and texture) but also intonation, coordination, and expressive character (shade of added color, not drawing attention to itself). It is fair to say that while *performance* normally involves attention to musical structure *and* musical interaction in real time, *analytical writing* often involves attention to structure alone, and may involve a level of abstraction that exceeds the capabilities of real-time processing.[84] When we perform, we are engaged in a broader range of cognitive tasks, all at once, than when we are writing up a formalist analysis. I emphasize *writing* here because it is in the writing stage that analysis becomes especially narrowly focused. When we are engaged in the cognitive act of analysis, the experience can be just as rich as in a performance.

A further distinction between the *narrow* and *broad* perspective on music cognition introduced above can be drawn from the literatures on embodied cognition, the cognition of expertise, situated cognition, and cognition in lived experience. Performing music involves what is sometimes called "online" cognitive processing or "smooth coping." This model of cognitive processing is not based on reasoning; rather, it is based on interaction. Wheeler (2005) puts the argument this way:

> … it would seem to be mysterious why our experience of smooth coping contains no subjects and no objects, and no experience of having thought about and planned each movement, if what is actually chugging away "underneath" that experience is a Cartesian system of internally located knowledge-based reasoning algorithms that produce planned sequences of movements by drawing inferences from a detailed perceptual model of an external world of objects. Any subagential [unconscious] explanation that turned on the presence of such states and mechanisms would be

[84] Analytical writing does not always have these characteristics, but formalism is still prevalent in music theory and analysis.

phenomenologically off-key, and thus worthy of suspicion (227).

Wheeler's suspicion of the "Cartesian system" is that it does not seem intuitively plausible as a model for cognition in lived experience. Recall earlier discussions of the "product/process" debate in the literature of music theory. Generations of scholars in the Western tradition have asserted that good performance is a product of theorizing about and analyzing music. Clearly, Wheeler would disagree.

However, there is also a vast literature that recognizes the necessity of *something beyond reason* in the highest achievements of music, be they in performance or composition or improvisation. The idea of genius as creating its own rules (or finding unprecedented connections among things) is basic to European aesthetics. The emphasis on rationality extends only to the attempt to explain results, treated as things: texts, artifacts. If you press most music scholars, they will say that there are ineffable, inexplicable aspects of musical activity at the highest level, and even musical products at the highest level, that can only be generated or even appreciated in some holistic, imaginative way. Reconciling this aesthetical perspective on performance with the cognitive-empirical approach requires that the mechanisms that underlie the former be made sufficiently explicit so as to generate predictions that could be validated through observation of performance. The reliance on "the mysterious" as an explanation for cognitive processing in music performance would seem to leave Wheeler, and others like him, unsatisfied.

Likewise, though many instrumentalists have been trained to speak from the same aesthetic perspective as that mentioned above, teaching performance at the highest level requires that that, or any other aesthetic perspective, be realized in specific instructional techniques. For example, the teachings of Stephen Maxym seem to contradict the "performance mystique" invoked therein. Maxym once told me, "My dear, when I am through with you, you will be able to play anything the

conductor ever asks of you." His confidence in his ability to impart all of the necessary skills for performing suggests that for him performing music at the highest level was not some ineffable, inexplicable achievement. Indeed, there was no mystery in learning to play the bassoon at all. Every minute detail of experience was accounted for and practised until the musical activity that took place "online" was a highly skilled communicative interaction.

Performance "Mysticism"

I studied with four different bassoon teachers in the course of my undergraduate degree (1985-1990). Each teacher had a different approach to the instrument and to the teaching of music. In my early years, I worked on many basic études for bassoon and played very similar kinds of études for each of my teachers. One teacher encouraged me to analyze the harmonic content of every measure of my étude before attempting to play it. He evaluated my performance in lessons on whether or not I performed *correct phrase groupings* (among other things). Another teacher asked me to visualize my sound as a grapefruit and project that visualization to the upper left-hand corner of the music studio. This teacher encouraged me to work with sound quality and to *resonate inside* of whatever phrase I was attempting to sound in real time. A third teacher asked me to play the first 8 measures of an étude approximately 25 times, each time following his *emotional direction* for performance (e.g. "play as if you are upset about the death of a loved one"; "play as if you just won the lottery," etc.). Later in my training (1993), when I was performing the *Prelude* of Bach's Cello Suite No. 2 in D Minor for Azzolini, I was instructed to follow the melodic line in a circular motion, allowing for the heaviness of notes to impact the *momentum of the motion in the phrase*. The momentum would determine when I could breathe without interrupting the musical line; I could adjust the momentum in real time to facilitate breathing and other technical and musical issues as they arose. Azzolini asked me to realize *the sonic metaphor in the music*. Each teacher taught me a

different aspect of music performance (highlighted in italics).

Each of the approaches in this passage represents a "knowledge world" relevant to performing the music. The first teacher encouraged me to internalize the harmonic motion of each study I played. So, he would ask me to pencil in the chord functions of the arpreggios, and then play the passage with an interpretation that was informed by the harmonic motion. This approach emphasizes the notes, and the relations between notes. My interaction with the score was centered around those concepts. A very different basis for interacting with a score was presented by the second teacher, who was more concerned with my sound than with the harmonic shaping of the phrases I was playing. This teacher was teaching me to round out my tone and make it more consistent throughout a phrase. By telling me to think about a grapefruit, he was getting me to adjust my body/bassoon to produce a pleasant round sound. He could equally have said, visualize your sound like a the shape of helicopter or elephant, and the effect would have been different. By telling me to project the sound to the upper corner of the studio, he was asking me to hold that shape throughout the phrase. The bassoonist term for that is "resonating." The two approaches presented so far are not mutually exclusive, of course. The first provides some justification for shaping the phrase, the second some awareness of resonance throughout the phrase. Using one technique without an awareness of the other might lead to a less successful performance of the passage.

The third teacher was working on a different aspect of performance, that of emotion or character in the sound. A group of notes has more than just a harmonic motion and an accompanying set of sounds. It has an emotional meaning or an inherent character that can be realized. This emotion or character is a product of the interaction between the performer's narrative – her imagistic and experiential life – and the music. Maxym emphasized this imaginative aspect when teaching the Mozart bassoon concerto. He lit up his eyes, bounced around in his chair, and twiddled his fingers in

the air while discussing filigree. His goal was to get me thinking about a lively, jovial, slightly devious character and to project that from my imagination into my sound.

Every technique mentioned so far impacts on a performer's *style*. The first teacher was drawing on stylistic elements of the teacher Marcel Tabuteau.[85] The second was trying to teach a style of bassoon playing that would be most suitable for orchestra – a consistent, full, round sound. The third teacher (and also Maxym) was trying to connect my imagination with the style of the composer. Azzolini was also interested style, this time in the music of J. S. Bach. However, he was drawing a more abstract set of metaphors, a circle, and momentum.

Fig. 4. Circular motion in the opening of J. S. Bach's 2nd Suite for Violoncello

This graphic representation is not totally accurate to my understanding of what Azzolini was teaching, but it will serve as a starting place for description. The metaphor he used was of a spiral circling inward and upward; not a series of circles. The circular motion was ongoing, spiraling from one measure to the next and not necessarily moving forward, but getting larger in intensity. When the notes go up, one plays them with the metaphorical feeling of moving upward, against gravity. The balance of loudness and tempo, combined with the upward motion of the notes, gives one the impression of going up (at whatever pace one sets). Then at the top, there is a *slight* (all of these

[85] I have not even remotely done the Tabuteau school of playing justice here. For an impressive account of the Tabuteau style of wind playing, see: David McGill, *Sound in Motion: A Performer's Guide to Greater Musical Expression* (Bloomington: Indiana University Press, 2007).

ideas are meant to be played very subtly) holding or pause. The downward notes move with a natural inertia. These metaphors seemed suitable to the more abstract nature of the music of J. S. Bach.

From a scholarly point of view, the problem with performance knowledge is that it comfortably encompasses so many different ways of understanding music: reasoning, metaphor, resonating, and characterizing. Each of the approaches could equally be applied to any passage of music discussed in the lessons above, indeed to any passage of music deemed worthy of being studied and performed. And the approaches are interconnected; a performer will focus on any number of similar techniques to shape her experience of making music. Identifying a "performance perspective" may seem next to impossible.

So how do we begin to develop a meta-perspective on the performance of music? Once again, it may be helpful to return to social science. The mistake of many researchers, in my view, is to have asked what should performers really and definitely know, given that what is *real* is, principally, a score (and the structure of the work it represents). In order to arrive at a suitably broad perspective on performance cognition, we need to identify the epistemological values and ontological foundations that will adequately characterize the activity of music making. We will define these values and foundations by drawing on ideas from intuitively plausible areas of social and cognitive science.

Epistemological Values: Pragmatism and Generalism

There are many forms of pragmatism in qualitative research (see pp. 34-35). Most involve a mixed methods approach to inquiry and a recognition that knowledge is situated. Rather than beginning with an analytical tool or theoretical structure and using it to understand a problem, the pragmatist begins with a problem then looks to a range of possible methods for investigating it. For the pragmatist, "knowledge claims arise out of actions, situations, and consequences rather than

antecedent conditions (as in positivism)" (Creswell 2003, p. 11). In a similar way, most performers explore a range of approaches in order to sound good. This pragmatism is reflected in the variety of approaches to performance discussed above. The knowledge world employed by each teacher simply reflects one of the relevant perspectives on the "problem" of performing the music. Each is incomplete in itself, yet offers a framework through which to experiment in musical sound.

Pragmatism, then, can be seen as a core value for methodologies aiming to explore music performance. Another core value, generalism, reflects the reality that musicians must reconcile a wide range of theoretical approaches to understanding music *while not forcing any one in particular*. Performers are often caught between competing scholarly views (i.e. disagreements about the "correct" interpretation of a musical work, disagreements about style and "authenticity"), and must learn *to deal in the middle ground and be flexible and responsive to an emergent performance in real time*. The activity of performance necessitates an open mind on intellectual debates about music. A musician is as likely to read the Baldwin passage (quoted in chapter one), the Davidson passage (quoted in chapter one), an analytical treatise, or a poem, or she may view a picture that captures in some way an experiential reality suitable for exploring the music.

Likewise, Gerald Weinberg's definition of scientific generalism (2001) draws a distinction between the "interdisciplinarian" – one who colonizes a discipline with a paradigm from another discipline, and the "generalist" – one who looks for laws at a higher level of generality to explain the commonalities between both paradigms. The generalist, in his view, is not asking "How do we know that what we know is true?" but "How do we come to hold the ideas that we hold as knowledge." The generalist is interested in discovering systems of thought and communication without getting caught in the trap of trying to assess which paradigm is more true than the rest. For the generalist, "the most dangerous pitfall . . . is imagining that one system of paradigms is more "real" than the

others." Weinberg's generalists are "like the fox, who knows many things…. They… carry a single paradigm, …one taken from a much higher vantage point, one from which the paradigms of the different disciplines are seen to be very much alike, though often obscured by special language…" (Weinberg 2001 p. 34).

Though the generalists to which he refers belong in the field of the natural sciences, it may be helpful to use his definition to reflect on the activity of knowing music for performance. Paradoxically, the performer's understanding of a work must come from a vantage point that is simultaneously higher and more personal than any single paradigm of musical thought. She must "know" the context of the composer and a performance history of the work.[86] She must have some theoretical/analytical knowledge about the musical materials[87] and be able to encounter any social or critical references contained in the music. More importantly, she must know the music through an imagistic practice of sounding and self-positioning.[88] Without the self-positioning, her performance will sound at best contrived and stilted, at worst, incoherent. Multiple ways of knowing must be realized through her own engagement with the music if she is to be fully present in performance. And multiple paradigms of musical thought turn to her performance for support.

In sum, a pragmatist views knowledge as situated; to solve problems, she uses whatever works at the time. A generalist, on the other hand, takes a high enough perspective to reveal the common ground between disparate ways of thinking. Both of these values are consistent with the cognitive activity of music performance and should therefore be embraced at the methodological level of cognitive inquiry on music performance.

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[86] This performance history can be formal, as described in Bowen (1999), or informal through observing and discussing performances with colleagues.

[87] This knowledge in many cases is cultivated in formal settings and applied informally in practice. The flutists, for example, discuss using analysis for course work, but not in performance. Moreover, they anecdotally report that the analyses they have done on pieces they have performed often serve to justify performance decisions they had already made through a process of experimenting with the music.

[88] See Naomi Cumming, *The Sonic Self*, 2000.

Ontological Foundations: Experiential Realism

In the passage above, I argue that pragmatism and generalism are suitable epistemological values to shape cognitive inquiry on music performance. Likewise, a performer must find a way to reconcile her physical reality as both a subjective actor and a "medium" through which general musical "truths" can be communicated.

The ontological foundations of objectivism have been summarized this way: there exist laws outside of the human experience to which rational thought processes ideally conform; imagination is a separate cognitive process, lesser than reason; bodily sensation and imagination cannot be trusted as a source of sense making in the world.[89] The relativist ontology, on the other hand, argues that there are no "absolute" truths; that all meaning is relative to some frame of reference, like language or culture. We have already established that neither of these positions resonate with instrumental practice.

Mark Johnson (1987) outlines a middle ground between traditional objectivism and relativism.[90] His *experiential realism* is grounded in the idea that bodily sensation, imagination, and understanding are interconnected. For Johnson, *structures of bodily experience* form the basis for reason.[91] What follows is an extended explanation of the experiential realist view as it pertains to matters of cognition in music performance.

According to Johnson (1987), categorization, schemas, metaphoric and metonymic patterns of cognitive activity, and the necessity of "narrative unity"[92] form the fabric of the human conceptual system. Categorization is not a matter of "necessary and sufficient conditions" but a way that

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[89] Johnson, *The Body in the Mind,* 1987. See also, Lakoff, *Women, Fire, and Dangerous Things*, 1987; Johnson, *The Meaning of the Body: Aesthetics of Human Understanding*, 2007.
[90] Johnson, *The Body in the Mind*, 173.
[91] Johnson, *The Body in the Mind*, 139.
[92] Johnson, *The Body in the Mind*, 171-2.

humans have of ordering the objects in their worlds based on relevance and "comprehensible *kinds.*" He uses the terms "schema," "embodied schema," and "image schema" to refer to the aspects of cognition that are "not propositional," nor "merely physiological processes[,] but have a reality as structures or patterns of mental representations."[93] These "image schemata" are not images in the sense of pictures, but include information from multiple sensory modalities, including kinesthetic senses.[94] These schemas can be "transformed" or projected into basic conceptual operations that mimic sensory interaction in the world.

He gives the example of an image schema: "*Path-focus to end-point-focus.* Follow, in imagination, the path of a moving object, and then focus on the point where it comes to rest, or where it will come to rest."[95] We have no problem understanding *path-focus to end-point-focus* literally as well as figuratively. We project this structure from experience to new situations in order to understand them. Our experience of *path-focus to end-point-focus* is non-propositional. However, we use the image schema *path-focus to end-point-focus* in propositional and figurative thought processes. In music, for instance, we understand a key centre as a *path-focus* and the passage from dominant to tonic as *path-focus to end-point-focus.* This is a very basic "imaginative" characterization, and other more music-theoretically sophisticated approaches unpack the theory of embodied cognition (though in this context it is often re-coined the theory of cognitive metaphor) in musical materials.[96] In the domain of performance we can characterize *path-focus to end-point-focus* as a cognitive process in a number of different contexts. Indeed, doing so will offer a meta-perspective on cognition in one area of music performance. From there, we are more free to choose

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[93] Johnson, *The Body in the Mind*, 23-24.
[94] Johnson, *The Body in the Mind*, 25.
[95] Johnson, *The Body in the Mind*, 26.
[96] See: Mark Johnson and Steve Larson, ""Something in the Way She Moves" - Metaphors of Musical Motion," *Metaphor and Symbol* 18, no. 2 (2003); Lawrence Zbikowsky, *Conceptualizing Music: Cognitive Structure, Theory, and Analysis* (New York: Oxford University Press, 2002).

how we conceptualize music making.

For example, one of my journal entries contains this discussion of the air stream:

> Once my torso is full (weighted from below, not above), I imagine a stream of air rising from that pool in my torso through the center of my body, into the center of my mouth, through the center of my lips, into the center of my reed, which is a small straw and resonating chamber.[97]

This visualization of air focused on a path from the "pool" in my lower torso to the centre of my bocal,[98] demonstrates the use of an image schema projected onto the experience of playing bassoon. Whether I'm playing a dominant-tonic bass line motion (which I could very easily be doing here simultaneously), or projecting a visualization onto my air stream, I'm drawing on my image schema for *path-focus to end-point-focus* or, SOURCE-PATH-GOAL as it is sometimes labeled elsewhere.

Notice that there is more than one set of cognitive metaphors operating in this journal excerpt. There is the *centre-periphery schema*, the *torso as container metaphor*, and the *schema of vertical balance*, with the *metaphor of the lower body as an anchor*, of me *being weighted from below*. Multiple metaphors are operating at once in my understanding of how air is channeled through my body to create sound. Indeed, there is ample support throughout this dissertation for the idea that patterns of bodily and sensory experience play a dominant role in shaping the performer's approach to knowing music. We could say that the ontology of experiential realism is *phenomenologically resonant* with instrumental practice and offers much *explanatory power* for studies of cognition in music performance.

In sum, experiential realism is the view that cognition is rooted in patterns of sensory experience in the world. This vantage point is high enough to incorporate multiple paradigms, cultures, and individual differences. It is coherent with the values of pragmatism and generalism and

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[97] Journal excerpt, 6/23/06.

[98] The bocal is the metal tube at the front end of the bassoon. A reed is placed on the bocal, and one blows through the reed to make sound.

forms a suitable foundation for cognitive inquiry on music performance.

Coda: Rethinking Creativity in Light of the Experiential Realist View

It is not uncommon to find people who view instrumental performance in the WAM tradition as lacking creativity.[99] In this view, only composing or improvising is considered a creative musical act. R. Keith Sawyer (2003) addresses the question of creativity in performance by presenting a continuum of "improvised" to "ossified" musical styles. While he recognizes that performing from a score may involve some creative activity, his definition of musical creativity still emphasizes the generation of "new" musical materials. Creativity is often viewed as a mysterious process of channeling a higher mind than that of reason (so as to discover a new note that would not be predicted by rules), or defying tradition to shock the audience into feeling something "new."

Johnson, on the other hand, views creativity as a "process of generating new connections *among* ideas" rather than an absence of rationality or a defiance of rule-governed logical thought. Creativity is possible *because of* the connection between experience and imaginative projection:

> ... we can say at least this much: creativity is possible, in part, because imagination gives us image-schematic structures and metaphoric and metonymic patterns by which we can extend and elaborate those schemata. One image schema (such as the PATH schema) can structure many different physical movements and perceptual interactions, including ones never experienced before. And, when it is metaphorically elaborated, it can structure many nonphysical, abstract domains. Metaphorical projection is one fundamental means by which we project structure, make new connections, and remold our experience.[100]

It may be worthwhile to consider exactly what creative cognition in music performance might look like in light of Johnson's revised definition of creativity. We might say that creativity in music

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[99] Lest the reader be tempted to think this statement overblown, I attended a lecture in 2004, given by a tenured professor of music, in which it was argued that cello playing was not a creative activity. The professor asserted that cello playing is nothing more than following a set of directions on a score, in a manner not unlike paint-by-numbers.
[100] Johnson, *The Body in the Mind*, 169.

performance is not necessarily the generation of 'new' musical materials (notes, harmonies, rhythms), but *the ability to draw meaningful connections between musical materials such that the transform of those materials in real time conveys something* - anything relevant - to fellow musicians, to continue the narrative of the self, or to the audience.[101]

Part 2: Extension (Virtuosity Redefined)

Francisco J. Varela and his collaborators[102] were part of an ongoing trend to bridge high and low levels of inquiry (the body/mind problem) in cognitive science. His *systems* perspective recognizes cognition as a result of the interaction between an autopoietic life form and its environment.[103] Autopoiesis is the term for the system of self-generation inherent in all life forms. More recently, a dynamical systems approach has been used to conceptualize life at many layers of existence, from solitons, to neurons, to organs, to bodies, to groups.[104]

In his proposal for a new scientific methodology, "neurophenomenology," Varela combined methods from Eastern philosophy and with a pragmatic approach to Western phenomenology, and agreed with Husserl that it is possible to discover deep aspects of cognition through systematic

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[101] Of course, one could also view composing this way, since musical materials remain the same. It is when something creative is done with them that they become what we might call a musical work, or performance.

[102] See: Francisco J. Varela, *Principles of Biological Autonomy* (New York: North Holland Press, 1979). Humberto Maturana, and Francisco J. Varela, ed., *Autopoiesis and Cognition: The Realization of the Living*, vol. 42, *Boston Studies in the Philosophy of Science* (Dordecht: D. Reidel Publishing Co., 1980); Francisco Varela, Evan Thompson, and Eleanor Rosch, *The Embodied Mind: Cognitive Science and Human Experience* (Cambridge, MA: The MIT Press, 1991).

[103] Varela's "enactive" model of cognition takes a slightly different perspective than the "embodied" model proposed by Johnson and Lakoff. I see evidence for defining embodied cognition as follows: our patterns of understanding the world arise from sensory experience and recurrent patterns of activity. The enactive cognition perspective can be defined as the way we use the environment to structure our cognition. Both of these perspectives rely on the fact that we have bodies that engage in regular actions, which in turn shapes our cognition. So, the embodied cognition perspective is still quasi-representational in that we are talking about cognitive architectures based on basic level categorization, image schemata, and metaphor. Whereas the enactive cognition paradigm doesn't deny those structures, but suggests that we use the world to structure our cognition.

[104] For some of the latest research in this area, please see: Patricia Carpenter and Chris Davia, "Mind and Brain: A Catalytic Theory of Embodiment" (in press). An outline of the theory can also be found online at: <http://www.psy.cmu.edu:16080/~davia/mbc/>.

introspection.

> "I … take my cues from Husserl's style as an eternal beginner, always willing to start anew; this is the hallmark of phenomenology itself, (but it has not always been the case in practice)... This will provide the bridges to cognitive neuroscience discussed here ... I take quite literally the importance of seeing experience as a first-hand description. As B. Besnier has recently remarked, we should not "...neglect this essential guiding principle of phenomenology, namely, that it advances by description ...of an experience that one must therefore re-do"."[105]

In his book, *Ethical Know-How: Action, Wisdom, and Cognition,* Varela analyzes the cognitive processes governing expert action (1999). He begins by defining three "minds": expert, beginning, and virtuosic. The expert mind is a cognitive process of immediate coping in patterned and repetitive ways, carried out without much conscious awareness (e.g. eating, brushing teeth). The beginning mind includes the cognitive processes of analysis, of reasoning, and of problem solving. Varela argues that these "beginning mind" strategies are the least evolved aspects of our cognitive functioning, coming into use only when we encounter obstacles and difficulties in the world. The virtuosic mind operates from *extension*. *Extension* is the cognitive skill of projecting from previous experience into the present situation to govern decision-making in the moment. This requires attention and intelligent awareness.

Varela bases his categorization of cognition in expert action on the writing of Mencius, a 4th century BCE Confucian philosopher.[106] Mencius outlines four purposes for human action: 1) actions that arise from a desire for gain, 2) actions that arise from habitual response patterns, 3) actions that

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[105] Francisco J. Varela, "The Specious Present," 1.
[106] For a more thorough treatment of Mencian extension, see: Edward Slingerland, *Effortless Action: Wu-wei as Conceptual Metaphor and Spiritual Ideal in Early China* (Oxford: Oxford University Press, 2003), 144-148.

arise from following rules, and 4) actions that arise from extension.[107] In his view, only "actions that arise from extension" are considered truly *virtuous.*[108]

The cognitive process of extension refers to the ability to apply what we know to be good from one situation to another situation where the right action might not be as clear. The cognitive process of extension is different than simply applying rules or making decisions. It involves "rich description" – the ability to draw meaningful feeling from a multi-faceted experience and apply that knowledge to the new situation. This requires *attention*, and Mencius confirms that it is *not* possible to act in a good way without attending to the situation, and *intelligent awareness* – the ability to engage in a "middle way" between rational analysis and spontaneous action. In the middle way, a person is "intelligently aware" of his or her actions not through deliberation, but with real-time awareness. The awareness is something an individual can only experience; it cannot be adequately measured, but it can be systematically cultivated through practices that are centuries old. According to Mencius, all humans have the capacity to operate from extension, but it does not happen without training the mind.

In the Buddhist tradition, there are many exercises designed to develop intelligent awareness. Small activities like breathing and eating are practised in a meditative space in order to cultivate awareness. Large skills like archery, martial arts, and mandala making are also practised with the explicit intention to develop skill through intelligent awareness. Varela would agree that it is possible to do these acts with and without *virtuosity*.

Similarly, it is possible to "sound good" or play a musical instrument without attaining

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[107] Varela, *Ethical Know-How*, 30.

[108] Varela's book deals with virtuosity as a moral skill applied to every day living. In fact, he takes care to distinguish between ethical action and playing a musical instrument, saying that ethical action is more than just a skill like playing a musical instrument. However, from a general systems perspective, the cognitive processes involved in living virtuously if viewed from a higher vantage point follow similar patterns as those of performing with virtuosity. Though virtuosity has been previously been defined relative to a variety of social and cultural performance values, here it is being defined as a cognitive skill.

virtuosity. In Mencius' terms, this level of musical activity can be compared to the "village good person" with whom one cannot find fault, who acts according to the expectations of his village fellows but who is not operating from extension. Varela quotes Mencius: "The village honest man may behave properly by all accounts, but is not virtuous if he is not attentive to his actions."[109] If we extend this line of argument to its conclusion for music performance, the "beginning mind" processes of analysis, reasoning, and problem solving exist only to bring a person to the next level of cognitive skill. The cognitive process of *extension* is required of musicians who wish to reach a level of mastery that allows them to "play" in real time with others. In order to shape music in response to the audience and environment, we must develop the cognitive skill of reflective awareness of physical performance as well as performance skill per se. From this meta-perspective, she has more power to choose how she responds to her musical environment.

The Missing Piece: First Person Experiential Inquiry

When a musician works for hours with her instrument, she pays attention to her *sound*, her *resonance*, and the relationship her sound has with her embodied *experience* of making music. Experiential inquiry is widely used in the cultivation of expertise in music performance, though the discourse surrounding this form of inquiry takes place in lessons, master classes, and rehearsals – rarely in written form. Even pedagogical treatises rarely go into detail on qualitative/experiential matters. Yet, all of my teachers taught from experience. All had cultivated elaborate first-person accounts of shaping musical sound.

Future research in the field of performance inquiry must account in some way for the introspection and awareness cultivated extensively through the practice and performance of music.

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[109] Varela, *Ethical Know-How*, 29.

Throughout the dissertation (especially in chapters 1 and 2), I have referred to the ways in which my research has interacted with my experience of making music. As a window to future work in this direction, I would like to present some of my first-person experiential inquiry on music performance.

Since 2002, I have been keeping a practice journal to assist with my progress on the bassoon. The last two years of journal entries have a targeted purpose: to develop the cognitive skill of reflective awareness of physical performance. I present some of the experiential themes from this journal as an example of the kinds of reflection that may take place during instrumental play. The goal is not to provide "truths" about what musical experience is or should be. Neither are the set of categories nor the examples within them complete. Rather, my goal is to provide a brief overview of a few *processes of attention and awareness* that were taught to me by my teachers.

Experiential Categories

Interaction is the lens through which I examine myself as a "person-music" system.[110] I look for "life" in the sound. Life in this sense is not about the "right" pitch or loudness, but about the interaction between me and sound I am making. Sometimes this occurs in the form of identifying a *rhythmic gestalt* to guide my practice. This rhythmic gestalt does not represent rhythm in quantifiable terms (such as eighth-notes, dotted sixteenths, etc.), but in the *meanings* or *worlds* contained in or projected onto the desired musical sound. It is a feeling for placing rhythms in a way that is communicative of human states. For example, this unedited excerpt from 6/27/06:

> measures 1&2 are a unit. 3&4 are a unit. 5 **invades** 4, coming in slightly early for emphasis, stay resonant in those low note gestures, they are **digging into some experience** or feeling, stay resonant downward into the lowest notes, and come up very slowly to the breath, using the d to set up a breath that is in character with the expression. begin the c# slow but into time very soon, emphasize the g, and eflat and g again and the next eflat. this is a **lop-sided rhythm for**

[110] See also: Gertina van Schalkwyk, "Interactive Workshop: A Person-Music System at Work," *Systems Research in the Arts* III (2001); Gertina van Schalkwyk, "Research in Music Psychology as a Whole System of Emergent Properties," *Systems Research in the Arts* II (2000).

> **emphasis on a destabilizing emotion**, or the effects of that destabilizing emotion on the human expression. 13-16 are a resolution or incorporation of that material. a "conclusion" in the rhetorical sense. and this is also the end of the piece, so that is fitting.

This passage records a few of my thoughts about *how to portray* "the effects of [a] de-stabilizing emotion on the human expression,"[111] by the following: "come in slightly early," "come up slowly," "begin slow but into time very soon," and "set up the breath."

In other passages, I discuss my body as a "music-making system" and apply specific operations to it. For example, if I have a fast passage that I want to sound lighter, I focus on lifting my fingers, instead of pressing them.[112] If I have a need for greater clarity and definition of the notes, I focus on pressing my fingers. If I need to articulate a soft note in the low register, I press my left foot to the ground at the exact moment I articulate the low note.[113]

Maxym used to teach his students to breathe in the character of the musical expression.[114] This is an example of the performer as "music-making system" – the breath and musical intentions are aligned. To acquire this level of control over the body requires years of practice, and I would add, the ability to operate from *extension* as discussed above.

Resonance, also discussed in the journal excerpt above, is closely tied to *interaction* as an experiential category. When I "extend my mind into the air stream" or "into the tone," my awareness stays with the air stream or tone. If my mind wanders, that sense of presence, resonance, is gone from the tone. But awareness of the tone is more than just an objective assessment of the tone quality. It includes a performance world that the tone is intended to represent. The resonance reflects the state of being portrayed in the sound. "Here I am in G minor" is a comment that connects my

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[111] Because I would like to draw attention to the thought processes themselves, I have decided not to include a score or reveal the title of the work I was practising that day.
[112] A technique taught to me by Stephen Maxym.
[113] A technique taught to me by David Carroll of the New York Philharmonic.
[114] See the unedited journal excerpt for a reference to breathing in character.

personality to the key of the piece. *I resonate* an idea, a feeling, or state in the music. The absence of resonance can lead to statements like, "I'm just crashing through the music."

Resonance is relevant for the details and the "big picture" of a work. Maxym used to teach his students not to play *geographically*. The bassoon has the great fortune of being able to make huge intervallic leaps between octaves. If the mind follows the notes up and down, the support falters and the *resonance is lost*. In the same way, one reflection contains the following statement, "don't get caught up in the face of a faster rhythm." Keep the overall resonance of the work grounded; remain in the same geographical/temporal/musical location unless there is a musical reason to move with the mind. Earlier, in my list of teaching examples, I recalled how one teacher asked me to visualize my tone the size of a grapefruit and project it to the upper left-hand corner of the room. This visualization was intended to encourage the development a resonant tone. The key to developing resonance was to learn how to visualize a shape in my sound, and to maintain that shape as I played a phrase. Holding a resonant tone is not so challenging. But maintaining that state of resonance through a phrase can be quite challenging. Each time a note changes there is the possibility that the mind will wander. When the mind wanders, there is a risk of losing the resonance in the sound. One way to strengthen the skill of resonance is to learn how to attend to the physical sensations of playing. If I can feel the tone holes beneath my fingers, feel the vibrations of the tones in my head and chest, and maintain that sensation through the phrase I am more likely to succeed at resonating. Note that resonance seems to be, in my experience at least, a cognitive ability.

Embodiment: Paying attention to the body is a central aspect of developing technique. Performance requires physical awareness. It requires internal listening, repetition, and "feeling" the relationships between notes. For example, instrumentalists develop repertoires of "licks" or passages that lie nicely under the fingers. These licks are often passages of music that are practised repeatedly

to test the instrument or to warm up. An instrumentalist feels how well the instrument is responding by running through a few of these licks. In my journal, there are many references to "*feeling the relationships*" between notes. The opening motive Eb4 – C4 – Ab3 in Rimsky Korsakov's *Symphonic Dances* requires a feeling relationship with the bassoon. I feel through the instrument if everything is set up correctly; I feel the air pressure through the tone holes; I feel the coordination of right pinky with left thumb on the flick key and the speed of air through the half-hole. Any disconnect between my physical sensations and the sound could prove momentarily disastrous.

A second category of embodiment includes the projection of figurative thought onto physical experiences; "how" something is played versus "what" is being played. There are many metaphors layered onto the physical body in my performance journal. Common metaphors for the body include: the *torso as container* (tooth paste tube, balloon) or, the *air stream as path*. I focus on these metaphors often during warm-ups and times when my breathing feels restricted. In terms of posture, I often refer to an experience of feeling centered, or weighted from below. When I am sitting, I feel anchored in the hips. When I am standing, my weight is balanced "in the bottom half." This increases my sense of stability, which allows more freedom for my breathing and finger technique.

The metaphor of the anchor covers other aspects of music-making. Sometimes I refer to "anchoring" the pitch between intervals, another way of maintaining resonance, discussed earlier. I also "anchor" certain notes in fast passages so that the passage sounds more smooth and coherent. *The imaginative projection of my experience of being anchored assists with many aspects of understanding and performing the musical sound.*

Ensemble: When I practise with a group of musicians, my list of cognitive tasks and priorities varies according to context and process. If the group is sight reading, I will read while counting, watching, and listening. If we have practised the piece before, and I have dealt with the technical

requirements of my part, I will listen while watching, counting, and reading. My task as a bassoonist is to engage my sound with the sounds of others in what I hope to be a perfect and complimentary balance of voices, rhythms, gestures, and timbres. I attend to my part in the context of a larger whole, where *our music is only complete when we are together*. My pleasure as a musician in this context comes from the integration of parts to form a larger whole. This is also true in my experience of Korean P'ungmul drumming. Reflecting on practise:

> ...Today when we were learning new rhythms for the third movement, I observed myself attending to individual players. I directly watched three different *changgo* players (at different times) and coordinated my bodily motions with each one of them individually. One of the *changgo* players in particular has very good technique and when I watched him, my arm moved faster and with a greater snapping motion that resulted in a louder and more precise sound. But I could also attend to the entire group by staring vaguely into the center of the circle. I could see/feel/hear the general waving of arms with sounds and observe/experience my body's participation in the activity of performing these rhythms. My sounds were "completed" in the group music. Furthermore, my sounds were not "mine" in the sense of me expressing something.[115]

While one can easily imagine a bassoonist "expressing" her part in *The Rite of Spring* by Igor Stravinsky, or even more in a solo concerto or chamber ensemble, in the P'ungmul group, it makes no sense for me (a novice *puk* player) to be "expressing" anything or adding anything "novel" to the sound. Here, the musical goal is to coordinate in a larger ritual symbolizing unity in group activity. The role of my instrument, the *puk,* is to reinforce "grounding" aspects of the more complex *changgo* rhythm. "Self expression" is de-emphasized in this context.

Summary

As many researchers have already pointed out, "the field of performance inquiry" does not yet exist. There are many reasons why this is the case, all of which have been covered in various

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[115] P'ungmul drumming class reflection, 10/26/06.

sections of this dissertation. In order for the field to develop fully, it is my belief that we must begin to study music cognition from a broader perspective, one that is phenomenologically resonant with the day to day realities of instrumental practice. Rather than adopting critical and theoretical lenses developed in existing fields of music scholarship, it may now be time for us to turn inward and develop a scholarly discourse around performance knowledge, taking all of its forms into account. Third-person inquiry in any of the designs presented by Creswell (1998, 2003) – biography, phenomenology, grounded theory, ethnography, case study, and mixed methods – can be used to emphasize different aspects of the knowledge cultivated in and through practice. Observational research built on the framework developed by Herbert H. Clark can be used to investigate the joint activity of music making and develop an account of the way musical understanding is negotiated. Theories of embodied and enactive cognition can be employed to cultivate a meta-perspective on cognition in music performance. First-person experiential inquiry, only touched briefly here, can be further developed and enhanced as a discipline critical to the cultivation of musical expertise. With this vast array of research methodologies all stemming from a consistent philosophical foundation we can then begin to define the bounds of the field of performance inquiry.

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Appendix A – Flute Biographies

M, Flute

"A mind-blowing flautist"

- Sarah Petrescu, Victoria Times Colonist

"M's playing verged on the superhuman. I cannot imagine a finer performance – nor a more convincing one.

- Derek Barker, Music in Victoria

M is a Vancouver native, holding music degrees from the University of B.C., le Conservatoire de Musique de Montréal, and the Sydney Conservatorium of Music in Australia. He is the winner of numerous honours, including the CBC Pacific Spotlight and Debut Young Artists competitions, and has participated in various international music programmes, including the European Mozart Academy, the World Youth Orchestra of Jeunesses Musicales, the Verbier Festival, and the Stockhausen Courses in Kürten, Germany. He has performed with many of B.C.'s major music institutions, including the Vancouver Symphony, Vancouver Opera Orchestra, the Vancouver New Music Ensemble, as well as the National Arts Centre Orchestra (Ottawa) and the Sydney Sinfonia (Australia), and has collaborated with many highly respected musicians, such as violinist Dmitri Sitkovetsky, cellist Steven Isserlis and Icelandic pop star Björk. Recent and upcoming projects include performances with the Vertical Orchestra, the Orchid Ensemble, and zheng virtuoso Mei Han.

An outspoken advocate of new music, M has worked with numerous Canadian and international composers, including Peter Maxwell Davies, Peter Liebermann, Jia Guoping, Klaus Ib Jørgensen, Gilles Tremblay, Keith Hamel and Giorgio Magnanensi. In February 2005 he gave the North

American premiere of Stockhausen's solo flute piece *Ypsilon*, and has given the local premieres of works by Brian Ferneyhough and Kaija Saariaho. As principal flute of Victoria's Aventa Ensemble, M can be heard on the ensemble's debut CD recording (*Music of Gilles Tremblay*), and will participate in a cross-Canada tour with Aventa in the Spring of 2007. He presently collaborates with pianist Rachel Kiyo Iwaasa in their duo *Tiresias*, which will record its first CD in 2007, featuring the music of Barbara Pentland and Murray Adaskin, and new commissions by Rodney Sharman, Jennifer Butler and Jocelyn Morlock. In 2005, M co-founded *Redshift*, a new music society dedicated to presenting upcoming Canadian composers and unusual public music events.

J, Flute

A native of Connecticut in the United States, J began playing the flute at age 11. While in high school, she played principal flute with the Norwalk Youth Symphony, ending her tenure with a final concert in New York's Carnegie Hall and winning the Friends of the Norwalk Symphony prize. She also participated in the Connecticut All State Music Program for three years, winning their 1995 flute competition and placing 5th in their 1996 vocal competition. Upon graduation from high school, she won the Charles Walgreen Scholarship to study with Leone Buyse and Lorna McGhee at the University of Michigan School of Music, where she earned a Bachelor of Music degree. In addition to playing with their University Symphony Orchestra, she performed as principal flutist with the Michigan Pops Orchestra and as flutist with the Wolverine Winds quintet in concerts throughout Michigan. In the summer of 2000 J played for the summer season of the Rome Festival Orchestra in Italy. A firm advocate of music education, she worked as a band director for two years in the Westport, Connecticut Public Schools, and has led workshops and classes for middle and high school students in both Connecticut and Michigan.

In 2002 J moved to London, England to study at the Royal Academy of Music on the William Rayner Scholarship. While in London she played with the RAM Sinfonia under Sir Charles Mackerras and as soloist with the Goodenough Chamber Orchestra. Her research into the flute's English performance history both earned her a Master of Music degree from the Academy and is the basis of her continued research at the University of British Columbia in Vancouver, Canada, where she is studying for her Doctor of Musical Arts degree on full scholarship. J is currently principal flute in the Burnaby Symphony Orchestra in British Columbia, and duo partner with flutist M.

Appendix B – Ethics Approval

see next pages

The University of British Columbia
Office of Research Services
Behavioural Research Ethics Board
Suite 102, 6190 Agronomy Road, Vancouver, B.C. V6T 1Z3

CERTIFICATE OF APPROVAL - MINIMAL RISK AMENDMENT

PRINCIPAL INVESTIGATOR:	DEPARTMENT:	UBC BREB NUMBER:
Eric A. Vatikiotis-Bateson	UBC/Arts/Linguistics	H04-80558

INSTITUTION(S) WHERE RESEARCH WILL BE CARRIED OUT:

Institution	Site
UBC	Vancouver (excludes UBC Hospital)

Other locations where the research will be conducted:
N/A

CO-INVESTIGATOR(S):

Brian D. Fisher
Linda Kaastra
Robert Pritchard
Martin Arthur Oberg
Johanna Tan
Tyler Peterson
Jesse Read
Kathryn McAllister
Sidney S. Fels

SPONSORING AGENCIES:

Natural Sciences and Engineering Research Council of Canada (NSERC) - "Determining communicative event structure in human-robot interaction"

PROJECT TITLE:
Determining Event Structure in Communicative Interaction

Expiry Date - Approval of an amendment does not change the expiry date on the current UBC BREB approval of this study.
An application for renewal is required on or before: April 26, 2008

AMENDMENT(S):	AMENDMENT APPROVAL DATE: December 10, 2007

Document Name	Version	Date
Consent Forms:		
Consent1b_112907	4	November 29, 2007
Consent1c_112907	4	November 29, 2007
Consent1a_add1_112907	1	November 29, 2007

The amendment(s) and the document(s) listed above have been reviewed and the procedures were found to be acceptable on ethical grounds for research involving human subjects.

Approval is issued on behalf of the Behavioural Research Ethics Board and signed electronically by one of the following:

Dr. M. Judith Lynam, Chair
Dr. Jim Rupert, Associate Chair
Dr. Laurie Ford, Associate Chair

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Determining Event Structure in Communicative Interaction

Dr. Eric Vatikiotis-Bateson, Principle Investigator
Jesse Read, Brian Fisher, Co-investigators
Linda T. Kaastra, Tyler Petersen, Jason Brown, Doctoral students

Letter of Information: Stimulus Production Study

You are invited to participate in a stimulus production study. Dr. Vatikiotis-Bateson (Principal Investigator) or one of his assistants will read through the consent form with you and answer any questions you may have about your participation in the project. This project is funded by the National Science and Engineering Research Council of Canada (NSERC).

Project Goals

The aim of this project is to deepen our understanding of communicative event structures in music performance through study of how musicians communicate with each other and their audience via the combination of movement and sound. By examining musical gestures, we will learn more about the process of making (and learning) music.

You are welcome to participate this study if you are an instrumentalist with five or more years of musical training (e.g., private lessons, conservatory). If you have any questions about participating, please feel free to ask one of the researchers.

Participant Duties

You are asked to spend 40-60 minutes in face-to-face music practice with another musician, playing either a traditional instrument or a collaborative wind instrument — the Tooka.*

During data collection, you are asked to wear a headset with infrared LEDs (*light emitting diodes)* attached via a lightweight head gear. The LEDs allow precise 3D motion capture of head motion. In addition to motion capture, your performance is recorded using high quality video and audio equipment. Performance is unstructured and not constrained by any experimental conditions.

You may be asked to comment on your observations and feelings about the performance session, and to complete a questionnaire about your experience. These observations and comments will assist the researchers in making accurate assessments of the motion capture and recorded data.

You have the option to take part in several sessions in order to cultivate an ongoing musical

rapport with your assigned performance partner. You also may participate in a focus discussion group on music performance issues arising from the study.

There is a $10.00 remuneration for each session.

* The Tooka is a hollow plastic tube equipped with a pressure sensor, finger buttons, bend sensor, and touch sensor all wired and programmed to work with MIDI sounds. To play the instrument, both players blow into the hollow tube and press buttons to select notes or sounds.

Safety and Confidentiality:

Blowing into a hollow tube at the same time as someone else can spread germs. The Tooka tube is sterilized before and after each session to minimize risk of infection. If you have any doubts about your health, you should inform the experimenter *prior* to the experimental session. The session can then either be postponed or performed on traditional instruments. There is absolutely no obligation to participate when ill.

There are no other known risks to participation in any aspect of this study. The LEDs of the motion capture system (OPTOTRAK) operate in the near infrared frequency range and may become warm to the touch. However, the LEDs are shielded for heat and do not come closer than 20 cm to any part of your body. The recorded sessions and completed questionnaires is kept on record for analysis. All identifying information is kept strictly confidential., All identifying information is kept strictly confidential in a locked file, accessible only to Dr. Vatikiotis-Bateson. Each participant is assigned an identification number. All data collected for this project are kept on protected servers at UBC. Access to the data is limited solely to Dr. Eric Vatikiotis-Bateson and his research team.

Consent Form: Stimulus Production Study

You understand that you are participating in a study about interaction in musical environments. You understand that you will be video taped during music making, and that your music performance, words, movements, and comments will be analyzed by a small team of researchers. You have been assured that all information obtained during the course of this study is strictly confidential, and that your identifying information will be kept separate from the stored data at all times.

Data Use Declarations (Initial one or more)

I. _____ You agree to let the researchers video tape you making music with another person. This includes motion capture of certain body motions, such as head, and video and audio recording of you and another person.
You agree that the data recorded via instruments and questionnaire may be analyzed and the results published as part of the described study of communicative event structures.
You understand that your identifying information is to be kept separate from your comments and from the video and motion capture data gathered during the study, and that ***at no point*** will anyone be allowed access to your identifying information.

II. _____ You agree to allow samples of the recorded data to appear in publications about this research. You understand that your face may be shown to others, but without any additional identifying information.

III. _____ You agree that the video recordings may be used in subsequent perceptual evaluation studies in the current project. By initialing here, you give permission for the video recording and motion data of me during musical performance to be observed by others.

You are voluntarily signing this consent form and are receiving a copy for your records. You understand that you can withdraw your participation at any time, and can contact Dr. Eric Vatikiotis-Bateson if you have any further questions or comments about your participation in the study. If you have any concerns about your rights or treatment as a research subject, you may contact the Research Subject Information Line in the UBC Office of Research Services at 604-822-8598.

Name: _____ Date:_____

Printed Name: _____

Statement of Investigator:

You have carefully explained the experimental procedures of the study outlined above. You certify that, to the best of your knowledge, the participant understands the nature of the study, the stages under which data may be used for further analysis, and the benefits and risks involved to participants in the study.

_____ Date:_____
Signature of Investigator

Appendix C – Transcript Excerpts

012105 – T1

J: .. and so its fitting the gesture within the pulse that we've marked. And so I don't know exactly how accurate its coming out if it was to be measured mathematically with
M: I'm sure there'd be lots of loose ends
J: having the notes all fitting in time
M: But I think there'd be lots of loose ends in a polished performance too I think I mean its really I think, you know (looks at J)
J: I mean like you said when we first got here this is about gesture (to M)
M: it is yeah, I I
J: this piece
M: I honestly think it is
J: its about the musical gesture its about the shapes and its about the rep. its about the sound. Its not about how it fits to a metre.
M: hmm. I reckon in the end it probably should sound quite improvisatory
J: I'm sure it will
M: yeah
J: yeah
M: shakuhatchi-ish. Do you want to go from the top again?

030305 – T2

L: do you guys know what a masque is what masque means? (from the side the researcher asks a question)
M: um /
J: who's gonna look this one up before Saturday (laughs)
M: I don't know. I guess me. I'm gonna..
L: I have it here
M: you do
L: yep
M: what is it?
L: a masque was originally a form of dramatic entertainment in 16th and 17th century England. It initially contained no dialogue, but featured instead lavish scenery costumes and fancy music. In the context of contemporary concert music the masque may be thought of as a dramatic piece reflecting internal dialogue without programmatic reference.
M: rubs stomach and head <uuhh>
L: (laughs) internal dialogue with no programmatic reference
J: so we're basically supposed to be schizophrenic. Two voices inside of one head (laughs)

L: (laughs)
M: well I don't understand this idea of non programmatic dialogue. I mean that's sort of a contradiction, isn't it?
L: ya internal dialogue with no programmatic reference ya
M: sort of rhetorical in nature like we should have a
J: without a programmatic reference meaning there's no specific story he's putting to it. its just some sort of abstract dialogue
M: or do you think the in some kind of way
L: interior dialogue
M: OK or do you think the gestures are supposed to be sort of like, correlate to the undulations of speech or something..
J: well they kind of do
M: yeah I suppose / in a Japanese sort of way
J: alright
M: <ea>
J: where is that spot
M: oh yeah
J: ok this is measure 13 which I guess corresponds to 27

030305 – T3
J: yeah / / I'm trying to think of how we're gonna sell this to the audience.
M: uuhmm
L: I don't think you'll have to sell it too hard; its really quite nice
J: well we're doing this in I'm not gonna name names cause we're on camera but we're doing this in a very small country town population of about 2000
M: I think it'll be OK its within the context of a very, you know, user friendly program you know
L: and its interesting music because it is, you know, there is dialogue in it
M: yeah
L: its non tonal but there is dialogue that's pretty clear
J: I hope so
….
M: alright
J: alright lets run it
M: yep
M: if we could maybe try to be more dynamic with the gestures and stuff like that
J: yeah, I started thinking about it too much
M: we're starting to be very accurate right now I think, you know the
J: yeah
M: the accuracy is starting to be very good but I think we're losing the um the spontaneity that. which is all I've been doing for the last..

J: that comes so easy in Bach
J: laughs
M: laughs
J: alright This is the run through
….
L: what's at the top of measure fifteen? something = 60?
J: 8th
M: yeah, its an accelerando into 8th note = 60
J: yeah I'm not sure how much of that we were doing but I think as long as there's give and take
L: no you did you did an accelerando. it sounded good
M: yeah
J: ok good
L: uhh and then it goes back to 8th note = 38 again
M: yeah back to 38
J: yeah it keeps just going back and forth
silence
J: yeah it seems that uh the gesture is working, the conversation is working
M: yeah
J: and so if we don't get quite what it says on the page, I think we're alright. At least for Saturday
M: whispers a laugh or shhh

030305 – T4
J: alright at 7
They try it
J: cool
M: <something> how bout like a da ya (large gesture)
J: yeah
M: like sort of like a Doppler effect almost
M: can we do it one more time?
J: yeah

030305 – T5
J: well that part was better, better
M: yeah
J: whooph..
M: I most of it worked pretty well,
J: most if it did I'm wondering if we can make these / I mean this doesn't have the rhythmic craziness of the first one but it has dynamic stuff all over the place and I'm wondering if we can do more of the WAAAwaawa (large gesture) you know
M: yeah yeah especially in this the "rite of spring" section here I think
J: (laughs) yeah / /
M: actually can we do the "rite of spring" section?
J: mhm

M: from measure 20

030305 - T6
M: I don't know, do you think that's too affected Linda?
L: hmm?
M: do you think that's too affected?
J: just didn't feel like a triplet
L: do it again?
M: its kinda eh maybe its better when it just ends
J: it just sound like four notes
short silence
J: yeah
M: what do you reckon, what are we doing?
J: 38 again
They begin much less body motion
J: yeah, if we if we slow them down it doesn't it doesn't feel like a triplet anymore
M: yeah it dies in the <something>
J: one more time with the triplet?
M: <mm>
J: sorry I didn't play it right. that last one?
They play
M: (flute down)
J: and then yeah, (flute down)
L: these are these little statements come back a lot. they're just little / uh answering things that repeat
J: mmhmm
M: mmm
L: and I don't think they need to be played with all that much
M: yeah
L: you know?
L: they're uh
J: yeah
L: in some ways they're anticlimactic to the big open
M: yeah
J: mmhmm yeah they always come after something huge
L: yeah yeah / yeah
J: and separate
M: hmm they give me the willies I love them
J: (laughs)
L: yeah
M: (sings) its sort of like really like I don’t know like bird calls out of a Salvador Dali movie or something its like (gestures)
J: did Salvador Dali do movies?
M: I don't know. Probably not.
J: (laughs)
silence
L: cool

M: yeah well do shall we run it?

030305 T7
M: <mm> top of the second movement
J: (interrupts) oh right there, let's do the swell, I didn't do it either but
They begin at measure 5
M: (interrupts) OH. there's a staccato on it…
J: I know
M: Bizzare
J: how should we …
M: (tries it a few times)
J: (sings) yeah ha ha ha
M: (snicker) lets just go from that bar
J: alright at 7
They try it.
J: cool
M: <something> how about like a da ya (large gesture)
J: yeah
M: like sort of like a Doppler effect almost
M: can we do it one more time?
J: yeah
J: only we need to make sure we move it together
M: yeah OK
J: (sings with subdivisions) na na na
M: (sings) na na
J: yeah
M: right on?
J: yep
J: the same thing with that on that (points to score)
M: yeah but that, that with the two notes though ?
J: alright
M: (tries the passage, with swell) its similar to the first one we had
J: (tries swell with staccato at end) something like that
M: um
J: (tries again)
M: want to go from the high A
J: yeah the pick up to 9
They play.
M: now we didn't line up
J: yeah
M: can we do it again?
J: yeah / / and (body motion to count in)
They begin.
J: lets do that again. I didn't get the switch to mezzo piano there
M: oh right by the tremolos?
J: yep

M: OK
J: 12
They play.
J: lets do it again
 interesting breath cue by M
They play.
J: can we just do that, the beginning of the line
They play.
J: you know the first few times we did that we landed we switched notes we stopped the trill right together and then the past few times we've done it we haven't.
M: yeah
J: lets just try it again
M: you know why, cause I'm thinking about it now
J: don't think about it
M: (shrug) alright umm 25?
J: I guess (laughs)
J: yeah lets try 25
J: you know what it is,
M: what
J: I think our trills are like,
M: we're actually, I think they're perfectly, they're really well lined up except that
J: no I don't think they are lined up ‘cause
M: well, the thing is you don't go back down to the D
J: you would be going to the D
M: I go back down to the note and you hold your note
J: that's how its getting off then
M: maybe… I think
J: no that's how its getting off cause I'm hitting that note from A D / that would be the problem
M: you reckon
J: yeah that’s me / its all my fault
M: I don't think its, I don't even know if we're that <co-or> I don't know, no lets go can we go right from the tremolos?
J: yeah
M: I'll just pay more attention
J; nonononononono I was totally not thinking about that so / do what you were doing
They begin.

J: yeah that was perfect
M: (laughs heheheheehe)
J: (bows to M)
M: (laughs ah haha with upward gesture of head)
J: (laughs)
M: uumm
J: um should we go back to 25?

M: yeah yeah yeah
J: OK
M: watch we'll never hear that again
J: (laughs) but we've got it documented
M: huh? oh yeah that's right
J: blue dots and all
They begin again and seem to look at each other to signal to go on, then they stop.
J: I didn't count that right aaand I forgot to do the mezzo piano
M: I forgot to do the mezzo piano. I thought we counted OK
J: no I didn't count right at the very end that's all
M: oh
J: alright from that spot again, 29?
M: that it? yep
they begin
J stops
J: I was wondering / well when we have this its with successive dynamics
M: mmm
J: so should our swells be in relation to that succession
M: yeah they should. totally
J: like we shouldn't make that swell as big as that one
M: no no no
J: which I think we are
M: yeah
J: lets do that
M: alright
J: and it happens again like here here
M: yeah
J: and lots of other places
M: where
J: there and there
M: yeah
J: can we just try it from there?
M: actually, lets get into it so I have a chance to forget
J: hehe
M: see if I remember
J: alright do 29 again
M: 29
They play.
J: oh thats another one of those baaAAaa
M: (sings along)
J: yeah. Lets do 33
M: yeah
They play.
M: oh its not in tune. we were perfectly in tune when we did it now we swell and we push it out of tune
J: mmm its alright lets do it again

They do it again.
J: one more time I didn't do it right
They do it again, going on.
M: sorry that's not very fair of me (laughs, referring to his quiet dynamic, easier in the low register. does some very quiet whisper tones)
J: hey that was fine lets to the last one?
M: ahhh the sticker came off one second
J: (laughs)
M: raa haa Stay. ok last two of them
J: last three bars?
They play.
M: I think its cool if we take a bit of time at the end
J: meaning, after we've done that last one? or between them
M: no just a (sings with gesture) laa di like just the last triplets
J: OK lets do the last two gestures again
They play.
M: I don't know, do you think that's too affected Linda?
L: hmm?
M: do you think that's too affected?
J: just didn't feel like a triplet
L: do it again?
M: its kinda eh maybe its better when it just ends
J: it just sound like four notes
Short silence
J: yeah
M: what do you reckon, what are we doing?
J: 38 again
They begin much less body motion.
J: yeah, if we if we slow them down it doesn't it doesn't feel like a triplet anymore
M: yeah it dies in the <something>
J: one more time with the triplet?
M: <mm>
J: sorry I didn't play it right. that last one?
They play.
M: (flute down)
J: and then yeah, (flute down)
L: these are these little statements come back a lot. they're just little / uh answering things that repeat
J: mmhmm
M: mmm
L: and I don't think they need to be played with all that much
M: yeah
L: you know?
L: they're uh
J: yeah

L: in some ways they're anticlimactic to the big open
M: yeah
J: mmhmm yeah they always come after something huge
L: yeah yeah / yeah
J: and separate
M: hmm they give me the willies I love them
J: (laughs)
L: yeah
M: (sings) its sort of like really like I dont' know like bird calls out of a Salvador Dali movie or something its like (gestures)
J: did Salvador Dali do movies?
M: I don't know. Probably not.
J: (laughs)
Silence
L: cool
M: yeah well do shall we run it?
J: lets run the second movement

021105 – T8
M: I'm wondering, I wanna try and be a little more visual with at least where I think the beats are
J: yeah I mean I'm tapping my foot. I don't know if you can see it at all
M: nope (laughs, tosses head up)
J: oh OK, thats OK
M: so I might just be, I might keep it more upper body I think
J: yeah OK
M: uhh
J: just make sure you're not subdividing any weird triplets or anything just stick with the big beats
M: right alright
J: alright its OK uh should we start at maybe 14
M: 14 again would be great just 14

030305 – T9
J: (interrupts) Oh OK, but I've, let's do it again
M: that was good I thought. oo, I like it when we do this (makes large beating motion with flute in the air, mimicking their marking of the beats)
J: laughs
M: laughs

021105 – T10
J: yeah I think it time we gotta solidify this
M: repetition is good. repetition is good
J: that's right. that's right (laughs)

M: repetition is good (laughs)
M: its Friday afternoon

021105 – T11
J: shoot I'm / / / (gets pencil) breathe (marks it in score)
M: have you seen the cartoon with the big cat suffocating?
J: no (laughs)
M: and the little cat goes up to him and smacks him across the face and goes, "breathe stupid breathe. you forgot to breathe again" and he goes huuuhaahh "thanks George"
J: I think I've seen that yeah. hehehehe

092905 T12
L: OK so I'm going to ask a really wacky question , to what extent is it psychic? because you know you breathe together. somehow you know the sound that's going to come out of her flute , right
M: right, I think part of its the fact that we play the same instrument I mean we understand the idiosyncrasies of
J: the physicalities of it
M: yeah uhhm I think part of it is we've been trained as musicians to be very
J: to do this
M: chamber music, I mean, in chamber music in particular, I mean we're taught to be very visual and to sort of rely on not just what we hear but also a.. what we what we see, and especially for music like this where
J: and the gestures we make, the breathing we do
M: Where I think yeah yeah like you know like the gestures are the phrasing are not necessarily you know, clear they're not four bars or whatever
L: mmhm
M: you know, so we do, I think this piece in particular requires a lot more physicality
J: but it is something you learn its not something that we're doing naturally this is something
M: there is an intuitive process, you're right I mean you know like
J: yeah but its a learned intuitiveness
M: yea yea yea you know
J: you know like I remember being in flute lessons at 13 years old and my teacher going OK we're gonna practise duets now, and teaching me these types of things
M: yeah
J: breathe together so we start together (conducts with the arm holding flute - left)and watch me through the cut off
M: yeah
J: and things like that
M: yeah , I teach , I teach ensemble
J: yeah, yeah,

M: with my kids , like I teach them how to respond to certain gestures and to know what they are
L: yeah
J: how to play with other people, so
M: and for them to do them themselves, yeah
L: some
J: and then eventually it becomes natural
M: or not
L: right
J: well
they both laugh

030305 - T13
J: yeah it seems that uh the gesture is working, the conversation is working
M: yeah
J: and so if we don't get quite what it says on the page, I think we're alright. At least for Saturday
M: whispers a laugh or shhh

092605 - T14
L: um, so one of the things that I'm curious about is, um does this piece have a real like, something about it that makes it unique in terms of performing? like is there a theme or a message or a quality of a character or something that you're trying to bring out? um, in the music
J: the piece overall or this movement
L: or yeah, each movement individually, or I'm just curious uh,
M: um, well I think in rela, the two movements in relation to one another, for me I'm like the first one to me strikes me as being very improvisatory and very call-response . um whereas this ones really about more of a rhythmic component, its more about "being together"
J: mhmm
L: so you would say maybe there's two characters in the first movement and one in the second? does that make sense or not?
M: or maybe at least in the second movement two characters that are in agreement , or
J: well, not necessarily agr, I mean there are definite things where we're not together but we're still within a, there's steady pulse and then there's playing together I mean the first movement you could get away with not counting essentially, as long as you knew how the parts interacted
¤<367252>M: yeah right
J: [you wouldn't want to but]
M: [I think its mostly]
J: you but thats the feeling that it gets, it doesn't feel like it moves in a steady time, its just parts interacting going back and

forth. This (second movement) has a flow.
M: yeah
J: even when its slowing down, speeding up
M: yeah
J: that sort of thing thats what I find, even in the moments of silence I feel like they are the end of one thing and a breath into something else
M: its funny though, they're both I find they're both utterly natural though, don't you think, like you can relate there's something almost sort of nature-like about both of them in a sense like , ones extremely ordered and the other is extremely, not chaotic but, you know
J: mhmm
M: well, free. but, I don't know, but in terms of like are you talking like, is that what you're talking about ?
L: well [I'm just curious] what's going through your minds
M: [like musically]
L: musically. like is it about this idea of pulse and pacing
M: [mm]
J: [no]
L: no
M: no but for this movement, I mean like the imagery that I have associated with it is almost sort of like pantomime
J: yeah that works
L: hmm
M: you know just sort just really... bizzare, quasi surreal, sort of pantomime but extremely coordinated and very deliberate
J: mhmm
M: you know
J: yeah ... I mean for me, yeah those things, the pulse and everything they're important , but they're important for helping realize the musicality of it
L: mhmm
J: the expression of it. I mean there's so many dramatic things that happen in both movements, you know that
M: mmm
J: that only serves to help that, you know its just a road map for creating it in some, you know, way that Takemitsu envisioned it. You know, so , so I'm try, so I use it to try to get into that more and to try to feel that expression more. I don't know
M: yeah
J: how else to phrase it
M: naya its sort of a key to unlocking the bla bla.
J: yeah (they look at each other)
L: do you see it more as a moment to moment thing, than an overall shaping ?
M: gosh
J: no, I see it as both. I mean you have those moments that connect

to other moments but there is an overall arch of these different ideas that happen . . and create overall lines and shapes I find.
M: hmm
J: so there are and there are definite sections . you know all of a sudden it stops and then something new starts
L: mhmmm yeah there are these little. yeah
J: so
L: hmm
J: yeah (to M) comments:
M: no, I like that, the sort of cellular approach but its kind of...
J: kind of the whole organism
M: yeah
L: but it, don't , do you think, and I'm just curious what you think, it doesn't have the same sense of shape as like a sonata form movement would.
M: no
J: well thats
L: so there is something totally
M: [and thats - something¤<545431>] I'm taking a very sort of um
J: loose hehehe
M: I suppose segmented approach to this piece, but I suppose with the unconscious understanding that these segments sort of make a ... yeah, I mean my approach formally to this is completely different than the way I say play
L: yeah
M: a Mozart sonata or something
J: yeah, if we were analyzing this for a theory class it would be completely different
M: I wouldn't analyze it for a theory class
(they both laugh loud)
L: why not
M: huh? I'd be bringing in my Mozart sonata.
L: hehehe . Is this harder? Is this harder to analyze?
M: um. . . I would s. I approach this piece, and I would say I approach a lot of contemporary music in general, with an intuitive sense of the form. I mean, not its not so much important that I understand the mathematics, like how it breaks down into sort of ultra formally and things like that, but that I have a general shape of of how the arch works. I mean, that might be the stereotypical performance major approach response, but
L: well, ¤<607129>
M: I think, in a lot of ways, its, I mean I take a , this piece in particular I think I take a very sort of intuitive approach to form wise. so I don't need to understand the, you know the mechanics of everything, in order to play what I consider to be convincing.
L: well, its interesting that we would think that somehow the numbers would have more formal importance than . . the more

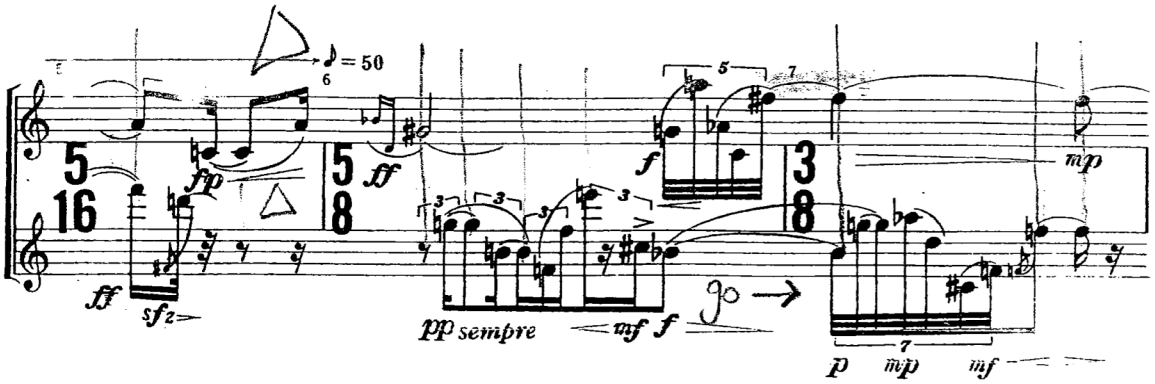
intuitive or gestural approach. That somehow we give more credibility to the numbers anyway, but that may not be necessarily where the music's coming from, just in my humble opinion
J: well, I don't know, I know that when I perform a piece, and when I get to know it inside and out just from a performance stand point, like what we're doiing with this one,
L: mhmm
J: when I actually go and analyze something, lets say I coincidentally have to do it for a class,
L: mhmm
J: usually my analysis only serves to support what I already had discovered intuitively about the piece.
M: yeah thats true [yeah its kind of rewarding that way]
J: you know, [um there are things that you sense almost instinctually]
L: right
J: that, when you analyze it, you say , of course, duh you know
L: yeah, oh thats why...
J: it was there always
M: or if you you know aha vindicated,
L: yeah
J: thats right , I've got it right. uhuh. which is kind of sad that your interpretation has a right and a wrong, but anyway.
M: well
L: ok, thanks. just curious.
M: shall we play it again?

092905 – T15
L: I have a question. What are you doing when you trade roles? what happens?
J: I'm, watching him for everything
M: I'm giving.
L: so , what are you giving?
M: uhm, cues I guess and
J: a lot of beats
M: yeah, I'm giving a lot of beats. I mean just because, I suppose thats my default whenever I take over something that I'm not entirely used to. Um and I was just sort of thinking, cause if I was the leading role, I was just sort of being very visual through, like when she was playing alone as well. Not that I'm dictating anything...
J: no no no totally
M: just to sort of see to establish my own sense, my own (hands in forward outward motion in front of face) where the beat is, so

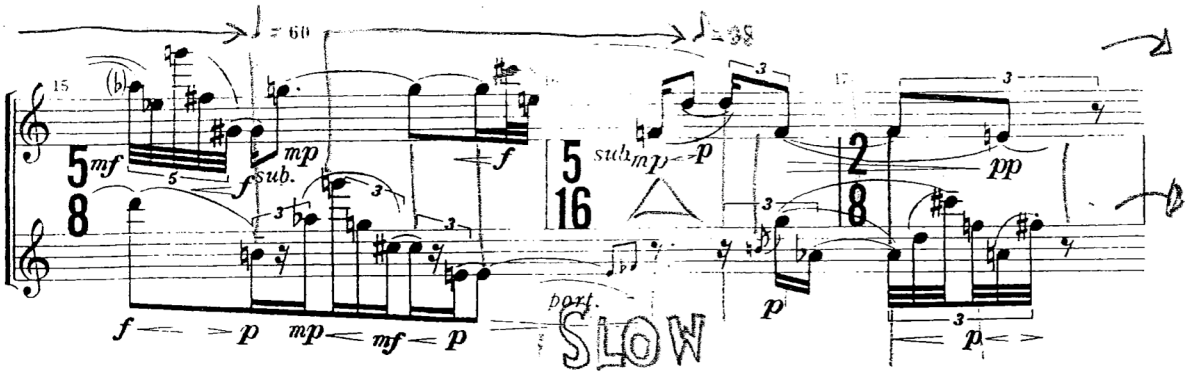
092205 – T16
J: I like when you gesture on that F .
M: yeah
J: that helps me know exactly when to come in the B there
M: OK should we make that
J: much better
M: a god moment, just in case, so no matter what happens there (through side of mouth) like if I sort of give a little nod there we know pllttthhh (had chop towards score) we're back on there
J: yeah... sure

Appendix D – Score Markings

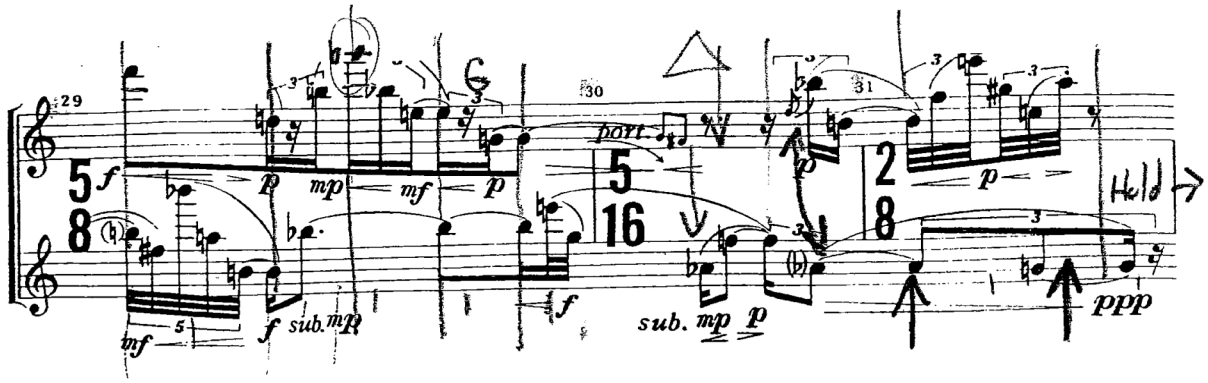
The following excerpt is taken from the rehearsal score for movement I, *Continu*, measures 5-7. Notice the beat marks, triangles, and the word, "go →".



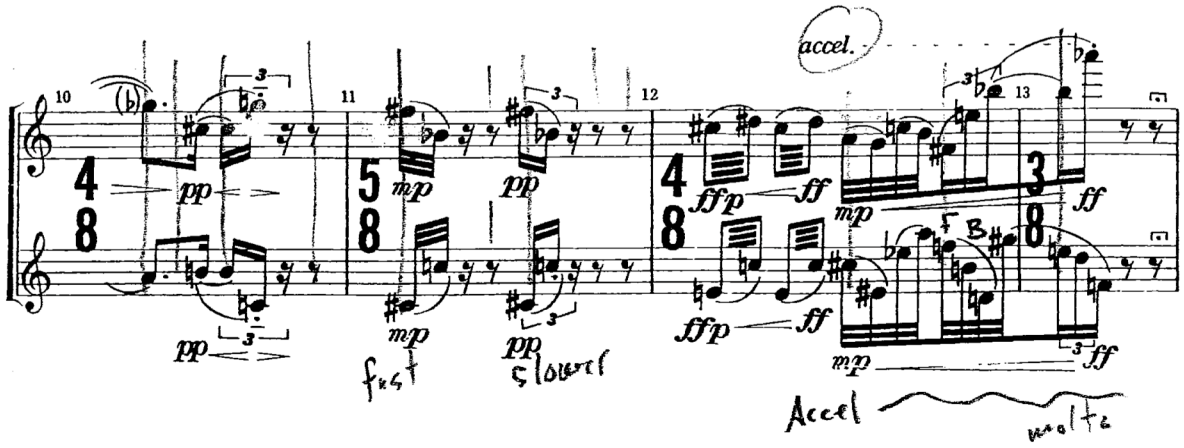
The second excerpt, from the same movement, is of measures 15-17. Notice the tempo fluctuations (at the top), beat markings, the emphasis on "SLOW", and the arrows at the end of measure 17 that remind the flutists to keep the feeling of motion through the rest at the end of the bar.



A similar excerpt is this one, still from movement I, measures 29-31. Notice the beat marks, a note reminder (G), and arrows indicating how the notes line up between parts. Again, an arrow and the word, "Hold" over the bar line. The next measure (not included here) has the word "together" with a square bracket around both parts. This is one of the few times the flutists actually articulate at the same time in this piece.



From the second movement, Incidental, here is measures 10-13. Notice their beat markings and tempo markings. The terms, "fast," and "slower" are not tempo markings in this case, but reminders that the first set of intervals are 32nd notes, and the second set are 16th notes.



Finally, in the second movement, measures 22-25, with a performance marking indicating "No vibrato. In this case, the flutist penciled in the English for the score directions (*Sans vibr.*_____) closer to the second flute part, between the dynamic marking and the staff.