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in tensions, for dancer, cello, and motion-sensitive live electronics

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*in tensions*, for dancer, cello, and motion-sensitive live electronics

By

Scott Rubin

A dissertation submitted in partial satisfaction of the

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in

Music

in the

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Committee in charge:

Professor Ken Ueno, Chair

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Abstract

*in tensions*, for dancer, cello, and motion-sensitive live electronics

by

Scott Rubin

Doctor of Philosophy in Music

University of California, Berkeley

Professor Ken Ueno, Chair

This paper is an account of the creative process that resulted in the dissertation for a PhD in music composition, *in tensions*, for dancer, cello, and motion-sensitive live electronics. The commentary is provided as a supplement to the performance that forms the primary work carried out for the dissertation. *in tensions*, written in collaboration with cellist Polina Streltsova and dancer Marie Albert in Paris as part of the Cursus program at the Institute for Research and Collaboration in Acoustics/Music, is an audio-visual performance that explores interdisciplinary interaction in analog and digital realms. The work interrogates the relationships between the two performers, their environment, and their roles in the performance space. The work's invention used a variety of tools crafted to facilitate the creation of performative material, as well as digital solutions for composing electroacoustic sounds that aim to communicate the fusion of these materials in real time. This dissertation will analyze the methods and performance practices that drove the collaboration, the structure of the work, and the materials that comprise the work's electroacoustic elements. Audio-visual documentation of the performance can be found at: <https://www.youtube.com/watch?v=6PVBuPrA0pA>

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## Chapter 1 - Introduction to *in tensions*

### 1.1 Background Information

*in tensions* is the result of an interdisciplinary collaboration that took place in Paris during the 2017-18 Cursus program at the Institute for Research and Coordination in Acoustics and Music (IRCAM). As part of the Cursus, each composer was offered an opportunity to create a performance consisting of acoustic and electroacoustic elements. Having worked with dance for a number of years prior to the Cursus, I made the decision to work with dancer Marie Albert and cellist Polina Streltsova. This dissertation will document the process we used to create the piece, including collaborative methods, creating the work's material, and the incorporation of technology for each of the work's four sections. *in tensions* premiered on June 16, 2018 in Salle 400 at le Centquatre during Manifeste in Paris.

The Cursus program at IRCAM is a training environment where composers are taught *informatique musicale*, methods for leveraging computers in music composition using digital audio workstations and programming environments such as MaxMSP, OpenMusic, SuperVP, and Pm2. They also learn best practices for studio work such as recording, routing, and computer management. Composers at IRCAM have access to state-of-the-art studios, a building full of supportive artists, engineers, and scientists hosting a gargantuan base of knowledge and history, and a wealth of technical support both in and outside the performance space.

In 2017, IRCAM hired Thierry de Mey as the faculty-mentor for the Cursus. de Mey is a composer and multimedia artist known for his work in film, his extensive collaborative relationships with numerous choreographers, and concert pieces that use unconventional gestural notation and motion sensors.

de Mey's presence as a faculty-mentor at the Cursus was crucial in the development of *in tensions*. Traditionally, students in the Cursus are offered the opportunity to write works for a musician soloist and electronics. Though IRCAM has facilitated research and performance opportunities with dancers in the past, interdisciplinary projects were traditionally outside the scope of the Cursus. de Mey brought his expertise and experiences in interdisciplinary collaboration to IRCAM. For de Mey, performance was not simply musicians interpreting a score, but the total audio/visual experience. He supported the ambitions of several Cursus students who expressed interest in working with dance, and helped facilitate their collaborations.

The musician soloists who perform at the Cursus concert are students at the Conservatoire national supérieur de musique et de danse de Paris (CNSMDP, or CNSM for short), and their participation is facilitated through a partnership between IRCAM and CNSM.

## **1.2 Background of Artistic Practice**

Upon arriving at IRCAM, I already knew that I wanted to create a performance for dancer and cellist. Having worked steadily to integrate musicians and dancers together into performance spaces since 2014, I had developed a set of artistic values that I sought to implement. These values included having collaborative workshop sessions to create rapport between the performers, producing improvisation-based material that the performers naturally embody over time, having the performers transcend the boundaries of what they're traditionally expected to do, and making a stage setup that facilitated these values. To illustrate the origins of these values, it is helpful to provide a little biographical information.

As a toddler, my parents enrolled me in Shotokan Karate for 8 years. Karate is a martial art that originated in Japan. This practice is based in form, self-discipline, and respect, rather than practical self-defense. A central part to Shotokan are the katas: set sequences of moves organized into a pre-arranged fight against imaginary opponents. The katas consists of kicks, punches, sweeps, strikes, blocks, and throws, included stepping, twisting, turning, dropping to the ground, and jumping. Though the kata are not seen as performance, demonstrating the kata requires complete psychological and physical commitment to the form, rhythm, and flow of movement. The kata are taught by the mentor showing the moves to the students, and the students repeating and demonstrating the kata by memory.

In middle school, I had the opportunity to learn the viola and play with the school orchestra. This experience included learning instrumental technique along with playing with a group under the direction of a conductor. As I improved musically, I started composing my own music for the orchestra, improvising melodies on my instrument, and occasionally conducting the orchestra. I found many similarities between the physical and psychological concentration required to conduct the orchestra and that to demonstrate katas. Both required a heightened sense of proprioception and spatial acuity, and an awareness to posture, position, and movement. They require the performer to project imaginary audio/visual worlds around their bodies. They are concerned not only with the sonic byproducts of their movements, but their bodies and interactions their movements produce. When an instrumentalists play, the focus is primarily on the sonic byproduct, not their bodies. We normally judge music based on how it sounds, not by



how the instrumentalist moves. Conductors, on the other hand, do not directly produce sound. They interpret the score through their bodies for others to see and interpret. The instrumentalists (and the public) see the conductor as the physical corporal representation of the score, and the orchestra's sound is an extension of the conductor's observed physical behavior.

The last part of my physical upbringing began during the second year of my undergraduate tenure at the University of Illinois at Urbana-Champaign when I started swing dancing. Swing is part of a family of dances that developed with the swing style of jazz music in the 1920-1940s. The style that I was most drawn to was Lindy Hop, which originated in the Harlem neighborhood of New York City in the early 1930s. Learning this social dance was similar to learning katas. Instructors would demonstrate a sequence to the students, and we would break the sequence down into smaller parts. The students would then memorize and repeat these sequences until they were mastered. At social events, however, these sequences were to be treated as mere building blocks within a larger improvised language. Lindy hop is an exchange of energy, musicality, and fundamental basic steps that are developed and contextualized in a social environment into a shared interaction between two dancers (who might be strangers) and the music. As a composer, I was fascinated by this exchange, and I sought to explore it, along with the lessons in focus and movement that I learned from conducting and doing karate, in my artistic work.

As a composer, I did not begin working with non-musical movement until 2014 when I wrote a piece for the New York City collective TENTH INTERVENTION. This work was scored for violin, dance, live video, and live electronics. The choreography for this piece was almost totally derived from the physical and gestural aspects of violin performance. This presented a rather one-way hierarchical relationship between the sound and movement with regards to their methods of development in that the violin movements effected the choreography, but never the other way around. In my proceeding interdisciplinary projects over the next several years, I strived to transition from this one-way relationship into more multidirectional models with more ambiguous hierarchical structures.

### 1.3 Set of Artistic Values

After my work with TENTH INTERVENTION, I continued to create collaborative interdisciplinary pieces. These works iterated and expanded on the previously outlined ideas, and by the time I arrived at IRCAM in September of 2017, I had a clear idea of what I believed would yield the most compelling artistic results and how I wanted to proceed.

Rather than creating the piece from a solitary paper-based working medium, I wanted to have a more collaborative and aural rapport with the performers. I sought to create a workshop environment with the performers where we could explore interdisciplinary ideas together. In past projects that had relied strictly on paper-based notation, my imagination acted as the work's limit. In collaborative in-person environments, my imagination is one of many foundations that construct the piece, and the result typically takes a form that none of the collaborators could have imagined individually prior to the workshop session. Along with the hybridization of ideas, these workshop sessions established a rapport between the collaborators that facilitated the formal rehearsal process. Since the performers helped to create the work, they felt a greater investment in the material and its performance. Lastly, this method helps the performers embody the material of the work during its creation. This encouraged them to take expressive risks with the material, increased their confidence in the performance, and empowered them to perform the work from memory.

This method of creation is common in the field of Western contemporary dance. Typically, a choreographer and dancers enter a studio with a collection of ideas with which to experiment. The piece then grows out of these experiments, and the dancers memorize the work as they go. Dancers do not have the luxury of reading notation during the performance, so the constraint of memory is ever-present in their work.

Another aspect of my value system is the usage of improvisation-based material. Since I wanted to avoid paper-based notation systems, we sought to create complex interactions through the development of very simple ideas. As a performing musician, I have always loved music improvisation sessions where intricate textures spiral organically out of a small seed or concept. These developed ideas are free from the constraints of complex notation and instead rest embodied in the memory of the performer (or a recording), ready to be accessed and developed further if needed.

The concept of embodiment in this performance stems from the work of Dewey and Shusterman. In particular, my fascination with embodiment is an extension of Dewey's concept of art as "the live creature" and creating continuity between artistic experiences and quotidian events (Dewey 2005). Dewey argued against spiritualizing art, proposing that acts of the glorification of art sever it from ordinary life. This, however, conflicts with the ritualistic aspect of the typical Western classical music concert experience and its etiquette regarding the composers, performers, and audience members. In *in tensions*, I sought to create a performance atmosphere that would be simultaneously remarkable yet consciously seamless with reality. Though I accepted that the production would be framed by the typical concert experience (taking place in a theater with a stage crew, etc.), I wanted to work with the performers to craft moments that were under our control so that they would mesh seamlessly with the silence and darkness that would bookend the piece, and at the same time create an immersive experience for the audience.

It was also in this vein that I decided to avoid the use of music stands on stage. To me, the music stand is a symbol of separation between the performer and the work that severs the work's connection from reality and into the realm of framed scripted behavior. Though *in tensions* was scripted from start to finish, the absence of music stands dissolves this frame and creates the illusion that the performance is spun out of the performers themselves, rather than an external reference.

Shusterman's work on embodiment is found in his theories regarding somaesthetics, which sought to evaluate the body as a locus of sensory-aesthetic appreciation (Shusterman 2011). One fundamental branch of somaesthetics, which Shusterman called analytical somaesthetics, is a theoretical framework that aims to explain the nature of bodily perceptions, and how perception functions to inform our knowledge and construction of the world. He applies and consolidates somaesthetics into a framework to discuss art, arguing that his theory is able to describe inner body perceptions, body awareness, and the use of body to style oneself and express values (Shusterman 2012).

With regards to Shusterman's definition of art, he acknowledges Dewey's work, with some notable supplements. Dewey defined art as dramatization (Dewey 2005), and Shusterman adds that this dramatization would need to reconcile the aesthetics of historicism and naturalism. Given the frame of a theatrical performance, and the experiential content that is framed, art must synthesize the ritualistic and cultural act of framing with the experiential intensity of the art being framed (Shusterman 2002).

*in tensions* looks at performers as not only the producers and stylizers of the work, but receivers of the experience that the work creates. The work demands certain bodily postures, states of heightened physical and psychological awareness, and interactions which create these dual roles. The abandonment of music stands, and the focus placed on improvisation and performance from memory brings the performers closer to this duality. Instead of the performers' attention being monopolized by an instruction sheet, their focus is within the work itself: interactions with their own actions, the other performer, and their own psychological states of being. The act of performing the work itself is an act of receiving the experience.

When we observe someone performing from memory, I believe our somatic empathy is stronger with that performer. We can better relate to the experiences that they're experiencing as a performer than if they're visibly following instructions. The performer's decision-making process seems more internal and less dictated, creating a more visceral experience for the audience.

The last aspect of my value system are performers that traverse the boundaries of what they're traditionally expected to do. In my experiences, most musicians in the field of contemporary music are expected to walk on stage, bow, and play the music as it is notated in the score. They usually do not take part in the early stages of the creation process, and they're identified by their instrument (a work is said to be scored for the instruments, not the musicians playing them).

In many music and dance environments, the performers are confined (and usually confine themselves) to their assigned role. In music, they do not normally interact physically through touch nor do they effect each other's performance aside from minute adjustments in tempo and balance. In this project, I wanted to blur and transcend these boundaries. The musician should be able to move and perform with their body outside the strict confines of cello performance, and the dancer's movements should have a sound-producing element. I believed that focusing on these aspects would aid in deconstructing the musician-dancer labels inherently assigned to them by their respective objects (or lack thereof).

To remain honest to this value system, I needed to construct a stage setup that facilitated it. This meant that the stage was to be absent of music stands, and that any visual aid should not be visible from the audience's point of view. Thus, the performers' memory would be a necessary constraint in the compositional process. Working with this constraint presented some issues regarding how material would be created and represented.

This being said, the score for this piece would have to serve a specific function. Given that most dancers do not read choreography during performance, my goal with the score was to make it memorizable for both performers. Doing this would render the score useless during the performance itself. Therefore, I viewed this document as a tool to reference and sequence the material. It would be an artifact/byproduct of the collaboration, but not the record of it as a final product. Its design would be meant to facilitate its function: to be studied out of time, and not to be read/performed from in real time. It would aid the performers' memory by facilitating aural transmission. Thus, the score would make frequent references to supplementary video recordings. These recordings were captured during the workshop process and demonstrate performative behaviors.

## 1.4 Overview of Goals and Strategies for Collaboration

I use the word ‘behavior’ to refer to the general conduct of the performers. For instance, a film director can instruct an actor to behave in a deceptive manner without giving the actor explicit lines to say. Thus, the director provides a system of limited flexibility while granting the actor agency to choose the best action in a given moment and situation. Behaviors in my work are governed by sets of rules permitting a limited system of actions, and I would rather show performers these rules than tell them. Through referencing videos in the scores, performers can infer their own low-level rules (pitches, rhythms, quality of movement, etc.) from an analysis of high-level behavior descriptors (move as if your spinal column is made of concrete). Since the majority of the piece does not make heavy use of non-flexible acoustic sound/movement sequences, I believe this communication method is effective for this specific situation. This method of communication serves to empower performers to make live decisions based on their moment-to-moment interactions. Additionally, it alleviates the performers’ stress of learning specific notes and rhythms. Since behavior is felt, and not executed note by note, the performers’ tasks are more interactive, and less systematic.

Moving onto the actual concert, I wanted more control over the ritual of musical performance in general. In other words, I didn’t want the musicians to enter the stage smiling at the applauding audience under full lights. Rather, I wanted a more theatrical approach: the artists entering already character. By the time the audience sees them, the performance has already begun. In fact, the performers only acknowledge the audience after the performance has finished. The performers were to be perceived as if they’re behaving in the privacy of their own homes, uninhibited by social norms. They were not to acknowledge that they were giving a public performance, or that the performance even existed. It was to be simply behavior – as if the audience were gazing at an aquarium, with the fish inside being unaware of their global environment. This idea, known as the invisible fourth wall, is common in Western realist theater and dance. Though theater and dance are blocked and choreographed in ways keep the audience’s point of view in mind, the performers themselves do not acknowledge the audience’s existence in effort to keep the illusion of realness.

Unfortunately, the invisible fourth wall is rarely styled or even considered in the Western contemporary music world. The majority of concert experiences simply ignore it, putting focus on the music itself, and less on the total experience. Since my work considers the psychological journey of the performers, I wanted to use the invisible fourth wall as a performance parameter.

Thus, to honor the performers' characters, I needed to prevent any unintended interaction between the performers and the audience.

Artistically, I wanted to make a performance about relationships: those amongst the performers themselves, their individual and collective wills and desires, and their environments. When we typically hear music, we tend to focus on the sound that the performer makes. I was interested in developing the performers as characters who behave in a way that produces sound and movement, where these are the byproduct of physical and psychological behavior, not the default result of a situation. Methodologically, I wanted to create material that was an extension of my own improvisational practices with dancers – mixing different approaches to improvisation, different systems and logics of interaction, and thereby really sculpt the relationships amongst the performers' characters. I felt that this would create a compelling dimension of physical and psychological drama in the piece that would go beyond sound and movement. Thus, I need to learn how to use psychological drama as a compositional parameter.

My first step to creating a rapport with the performers was to lead them through some breathing exercises. As basic as this may seem, it made a huge difference. First, I instructed the performers to face each other, sitting, with no instruments, and to breathe in unison, carefully considering the rhythm and quality of the breath. There was no leader or follower, and they needed to synchronize in real time. After a few minutes of this, the next phase was to improvise counterpoint using the same parameters to make some contrasting textures. Finally, I asked them to mix the unison and counterpoint. At this point, the performers had caught on and were creatively exploring the concept. The next step was to repeat this sequence, though the cellist was permitted to use her bow and the C-string as an extension of her breath, and the dancer was allowed to use one entire arm to do the same. The goal of this exercise was to build an artistic trust between the performers. I wanted them to feel comfortable playing off each other as if being extensions of each others' minds. It was important to me that they were comfortable taking artistic risks, supporting each other, and propelling each other through the piece.

Eventually, we opened the exercise to more technical possibilities, but I found that it was still best to restrict performance techniques while exploring this concept. It was easier to be creative in this exercise if the performers didn't have to decide what to do, but rather only how. When working with only a few parameters, rather than a world of possibilities, the performers experienced less decision fatigue - that is, the stress of constantly producing novel material is reduced when some basic constraints are put into place. At this moment in the collaborative

process, limiting the improvisation to only 3 or 4 sonic or movement parameters was easier than total free improvisation.

In later workshops, we discussed and experimented with several methodologies of interdisciplinary free improvisation. I mentioned earlier my thoughts regarding the relationship between gesture and music with the conductor-instrumentalist relationship, and my desire to work with embodiment, focus, and interaction in this piece. Though my interest in dance was fueled by fascinations with this interaction and its intuition-based application as a method of musical communication, this relationship is one-to-one with regards to gesture mapping. There are effective and ineffective gestures a conductor can make based on their goals, and there are accurate and inaccurate sonic interpretations of these gestures. Of course, dance has the affordance of transcending this relationship. Though dancers are not limited to using their upper body as conductors generally are, they (dancers) are free to interpret (or provoke) music in ambiguous ways. Dancers are not held accountable to an orchestra, and are able to provide another layer of interpretation to the music that is not strictly function, but may be more abstract. The dancer's movements are not judged by its direct service to the music, but rather the nature of its abstract relationship to it.

In these workshops, we aimed to formalize methods of ambiguous interpretation with the goal of creating movement-sound relationships that were evident without being literal.

During previous work with dancers, I had come to consider three general methods of interdisciplinary interpretation:

1. interpretation of audible or physical gesture
2. interpretation of labor to make gesture
3. interpretation of internal emotion of the labor

These methods seek to consider individually the gesture, the labor of the gesture, and the emotion behind the labor. Gesture here refers to the sonic result of a musician's behavior or the kinesthetic effect of a dancer's movement. The gesture's labor describes the energy and focus of the physical movement required to produce the gesture. For example, a steady saturated noisy sound on the cello is produced by a tense and highly-controlled right arm while staccato gestures are generated with small flicks of the wrist. Lastly, the internal emotion of the labor attempts to uncover its intensions. What is the artistic goal of the performer at that moment? On the dancer's side, a gesture might be slow, lyrical, and graceful, though it could require an enormous effort



and strength to execute, and the internal emotion required to produce this effort could be an intense psychological strain. Considering these entities aims to consider individually what the artist is doing, how they're doing it, and why they're doing it. What a person says, does, and means should all be considered.

The interpretation of these entities is performer-specific. It will depend on the physical and emotional capacities of the performer. The above methods of interpretation are not necessarily mutually-exclusive. They overlap on a spectrum where performers are free to juxtapose, interpolate, and blend interpretations to create a complex relationship amongst themselves and their co-performers.

## **Chapter 2 - Overview of Analysis**

### **2.1 Title**

The work's title arose from a play on words. During the composition process, the collaborators and I heavily reflected upon the intentions of the performers' characters on stage. We didn't want the material of the work to come across as seeming arbitrary, so we carefully considered the gaze, eye contact, and motivations of each performer during each section of the piece. What are the relationships between the performers and their inner selves, and between each other? In this regard, the performers are in a state of tension with themselves and their environment.

Audio-visual documentation of the performance can be found at:

<https://www.youtube.com/watch?v=6PVBuPrA0pA>

## 2.2 Approach to Electronics

The audible electronics in this work originate from two sources and serve five main functions:

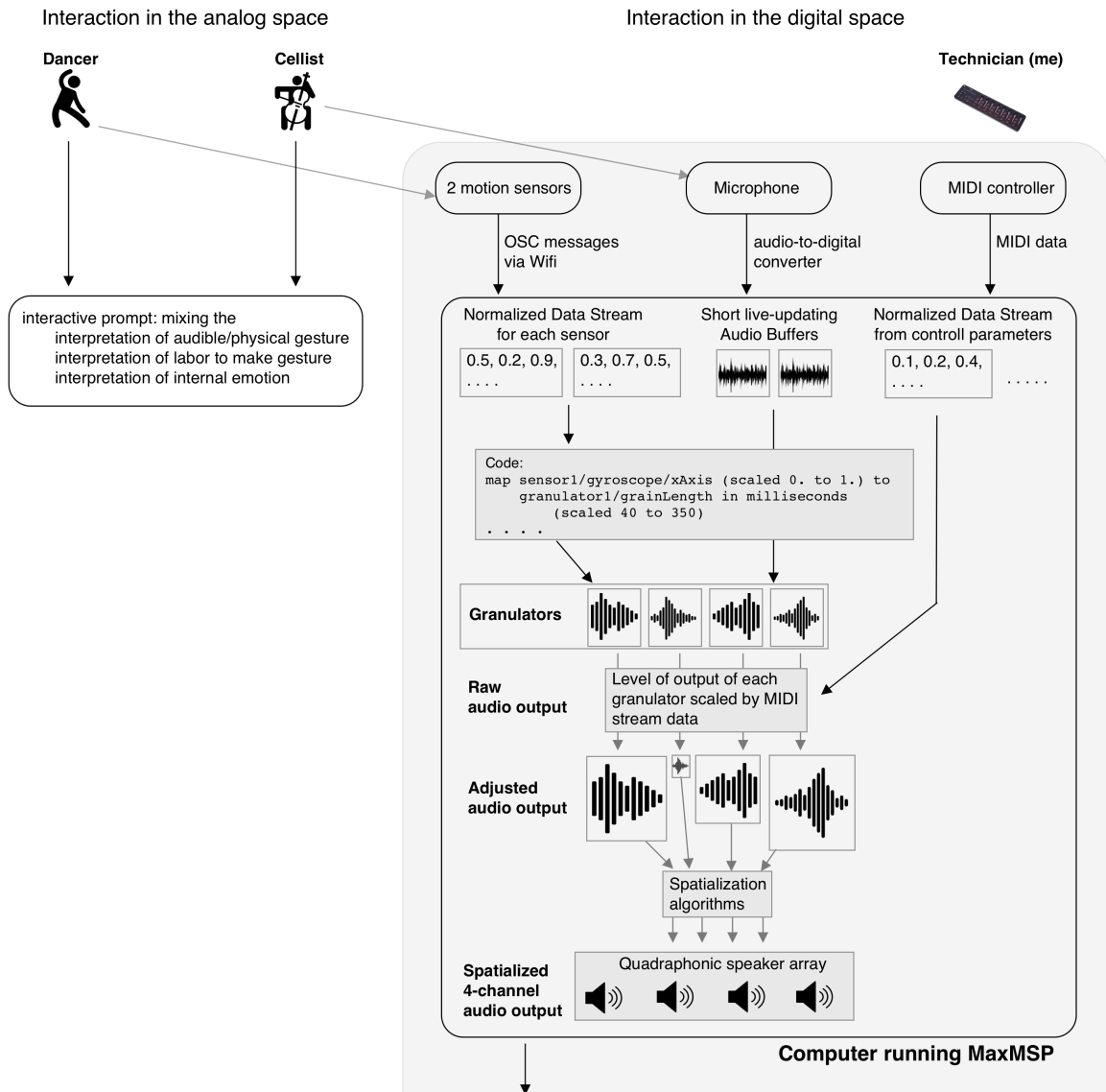
1. Background sound to establish the general atmosphere to support the on-stage actions
2. Articulation/punctuation of structurally important moments
3. Expansion of the cellist's sound
4. Foreground acousmatic material
5. Audible digital interface between the cellist and the dancer

The first 4 functions originated from pre-fabricated soundfiles that were triggered in real time by the technician (myself), and the last function was generated in real time using data streamed live from two Bitalino R-IoT motion sensors that were worn on the dancer's arms.

Details on each source and function will be explained in context further along in the analysis. Regarding digital interface between the cellist and dancer, its motion-sensor-driven design is illustrated on the following page.

The design of the live electronics aimed to create a digital relationship between the performers by producing layers of sound using a process that combines the data generated by the dancer with audio generated by the cellist. OSC bundles from the R-Iot sensors is streamed via a Wifi network to a computer running MaxMSP. Each bundle includes information from the sensor's gyroscope, acceleration, and relative position modules, all in 3 dimensions. After calibration, the data is smoothed and normalized. During the piece, this data is mapped onto control parameters which control an array of granulators (code inspired by friend and Berkeley alum Rama Gottfried). Each mapping is preprogrammed in presets that are called by a cue triggered by the technician. Within each preset, parameters from the motion sensors is scaled to control parameters of the granulators. Each granulator is paired with a buffer containing pre-recorded cello or samples of found objects. The goal with creating these samples was to produce sonic textures that blend the cello sound with more concrète sounds in real time using the same sensor data. Aesthetically, each preset was scripted by grouping the granulators in pairs to achieve a sense of counterpoint. After the sound from each granulator has been produced, the pairs were grouped and their gain was scaled using faders from a MIDI controller. By doing this, the technician is able to perform the live electronics, adding another layer of dynamicism. In summary, each preset uses 3 pairs of sensor-controlled granulators that are mixed in real time by the technician.

The decision to use a collection of pre-prepared samples instead of exclusively live buffers was to ease the processing load on the computer. Therefore, many of the cello sounds were crafted in improvisation sessions and recorded to achieve a balance of blend, spontaneity, and computational stability.



# Chapter 3 - Analysis of *in tensions*

## 3.1 Section 1

This section is organized into five scenes, and the score prescribes the approximate relative amount of each technique the performer should play and how these techniques are mixed for each scene.

dedicated to *Thierry de Mey*  
*in tensions*  
 for *Polina Streltsova and Marie Albert*  
 special thanks to *Alice Boivin*

Scott Rubin  
2017-18

SECTION I  
(for alternative visualization, see appendix 1)

performance techniques

■	Chemin 1: (path1-480.mov)	cello: artificial harmonics on high string, begin with static tones or slow glissandi, become more erratic dance: liquid texture, flowing lyrical shapes with arms
■	Chemin 2: (path2-002-480.mov)	cello: extreme bow pressure on muted strings, quick twisting motions, fast creaking sounds dance: slow trembling tense motions
■	Chemin 3: (path3-002-480.mov)	cello: fast trills on low string, explosive fast glissandi, quick changes in bow pressure dance: hands connected, strange shapes with elbows

"Chemins" (paths) are dynamic behaviors that develop over time. They can be blended together and build off each other. Do not try to synchronize the progression of behaviors with the other performer. Rather, interpret their articulations, not what they're doing, but how they're doing it. This is to be performed in a trance-like focus. Do not look at the other performer. Cellist should look straight ahead, dancer should not focus visually on the cellist.

The percentages indicated in each time segment indicate the approximate proportions of "chemins" that are played during that section. The arrangement of colored boxes underneath indicate a possible rhythm for this proportion.

\*1: Lights down, trigger first soundfile, lights fade up. Cellist enters with cello from SR, deadpan. Does not acknowledge audience. Walks to SR chair and sits, ready. Dancer enters SR, also deadpan. Walks to SL chair, does not acknowledge audience or cellist. Dancer sits, and waits for a few seconds before making the first gesture, which cuts the first soundfile.  
 \*\*1: The live electronic sounds for this section are created with motion sensor data and pre-recorded sound samples. There are 3 types of sound for each preset, and their level is controlled with the 3 right-most faders of the KorgNano. The sound technician's job here (along with hitting the cues, which trigger soundfiles and dsp configurations) is to perform this part in a way that makes for compelling improvised counterpoint with the dancer and the cellist.  
 \*2: Performers both stop their actions immediately and shoot their right arms out to the right while intensely staring straight ahead.  
 \*3: Performers both stop their actions immediately and shoot their right arms out to the right, at the same time suddenly turning their head 90 degrees to the right.  
 \*4: Performers both stop their actions and look at each other, attacca section 2

These techniques are documented in short video clips (indicated in the box in the upper-left part of the page marked "performance techniques") that future performers would study and interpret. Each video clip demonstrates an archetypal behavior created by the performers, which may be elaborated on in real time. The first two scenes are denominated by the first behavior, which are characterized by agile glissandi using artificial harmonics on the high strings on the cello with a liquid, lyrical, and flowing texture in the dancer's arms. Interjecting this texture is the second behavior: fast twisting and creaking sounds using extreme bow pressure on muted strings, and slow trembling tense motions for the dancer. Gradually, the first behavior is phased out and the second behavior takes more presence. Towards the end of the section, the third behavior is

brought in. This behavior consists of fast trills on the low string with explosive glissandi and quick changes in bow pressure, while the dancer creates oblique shapes with her hands and elbows that twist and snap.

The notation technique employed in the score was designed to communicate the structure of material in a guided improvisation. Each behavior is represented by a color so the performer can get a general sense of the presence of each behavior in each scene, and the temporal relationships between the behaviors. The performers are not asked to memorize the precise rhythmic position of each behavior, but rather to internalize the feel of the interaction between them.

The performative material for this section was generated during the breathing improvisation sessions described in section 4.1 of this document. We focused these restrictions on three dynamic techniques/behaviors for each performer which develop over a given duration. The goal was not that the performers copy each other or switch techniques at the same time, but respond to how the other is behaving. They used these behaviors independently to create counterpoint, to bounce ideas back and forth, and to contextualize each other's actions. This exercise became the foundation for the first section of the piece.

The performative materials in this section originate from my questions regarding the relationships between the performers and the performance space and how this relationship may be perceived by the audience. How is psychological space different from physical space? When we go to a concert, do we assume the performers believe they're in a concert hall? During operas or theatrical productions of Western realist theater, we know that the performers' characters believe they're somewhere else; somewhere with a different set of affordances. My goal of approaching a more theatrical environment lead me to construct a situation where the audience would ask themselves: Do the performers know that they're in a performance? Do the performers know that there's an audience? Where are the performers psychologically? What are the rules of their psychological space and how do they function inside of it. Are the performers aware of each other? Are they in the same imagined space? What is the relationship between them?

The performers enter the space separately and do not acknowledge each other's existence. They each sit on an angle so as not to face the audience directly. The goal of this seating arrangement is to communicate to the audience the visual of each performer resting in their own psychological space. The audience can sense a connection between the performers in their improvised interactions, but they (the audience) are not certain of the exact nature of this relationship.

The electronics for this first section start during the brief introduction. Under darkness, the audience hears a beeping sound followed by a drone, signaling the beginning of the piece (cues 1 and 2). The performers enter during this drone and calmly sit down. After the cellist sits, the dancer gestures and the drone is cut. This “mickey-mouse” relationship is shown for a brief instant to let the audience link the dancer’s actions to the electronic sound, though this relationship is almost immediately subverted. In this work, I wanted to constantly change the relationship between the dancer (who is visibly wearing motion sensors) to the electronic sound. If the relationship is too constant, it will simply become banal. If the relationship is constantly orthogonal, the audience will cease to be interested. However, if it’s constantly fluctuating around the thresholds of perception, the audience will continuously update their understanding of the relationship.

The acousmatic interruptions (cues 8, 10, and 12) signal that the performers share a larger encompassing space that imposes certain rules at given times, though the audience at this moment is still not certain if the performers themselves have a personal relationship. During the first interruption, the performers synchronously hold out their right hands while staring straight ahead in a trance-like gaze, breathing heavily in unison. This simple action displays the labor behind their actions, creates a momentary sense of intimacy with the performers’ physical exertion, and is choreographed enough so that the movement and its motivation contrasts from the surrounding improvised material. The acousmatic omnipresent origin and harsh nature of the sound temporarily shift the control of the sound from the performers to their collective environment. The second interruption is similar to the first. Finally, at the third interruption, the performers finally make eye contact, establish a psychological connection, and we move on to the next section of the piece.

The live electronics in the first section use motion sensors described in section 2.2 of this document. The soundfiles sampled by the granulators originate from the improvised material in the cello part mixed with concrete sounds. Each scene during this section uses six dynamically-configured sensor-driven granulators, each paired with different samples. These granulators are then paired and mixed with a MIDI controller which the technician plays live to create improvised counterpoint with the other performers. An example of a preset can be found on the following page.

The soundfiles triggered during this section (cues 5, 6, 7, 9, and 11) serve as background sound to establish the general atmosphere to support the on-stage actions.

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```



## 3.2 Section 2

The second section of the piece begins as the dancer walks towards the cellist and approaches her from behind. The dancer's right hand makes contact with the cellist's bow arm, and the left hand rests on the top of the cellist's head. My idea for this section was to create a physical power dynamic that gradually increases in ambiguity and dissolves. Though the section seems to begin with the dancer manipulating the cellist's body, the three entities (dancer, cellist, cello) soon merge into one undulating form, producing a multidirectional flow of energy.

While the first section focused on the performers as individuals and the semi-related worlds of each one, the second section presents them together in a more private situation. They are not performing for anybody, only themselves and each other.

One challenge in creating the performative material was negotiating the balance between the dancer's actions, the cellist's actions, the visual result, and the sound. We aimed to create a situation which would give the musician control over the musical material while interacting physically with the dancer. Additionally, we tried to achieve a physical rapport where the dancer's energy would extend through to the cello's sound, and the cellist's gestures would be reflected back into the dancer's choreography.

My solution was to create a complex musical texture using very simple technical demands indicated by a text score. I tuned the C-string of the cello down an octave to the point where subtle variations in the performer's bow articulations would have an abnormally large effect on the pitch and timbre of the string, effectively magnifying the relationship between the physical gesture of the cellist and the resulting sound. The cellist here uses a wide array of sequenced techniques to activate the string, working to form a physical medium between the dancer and the cello. The dancer's energy is transferred to the instrument, and the instrument's physical requirements for sound production are transferred back to the dancer. The acoustic sound in this section exists not purely for its own sake, but as a compelling byproduct of an intense physical interaction.

Balancing the movement and sonic material of this section was difficult because of how intertwined they were. Normally, musicians are very conscious of their movements, and they train to move in certain ways which produce the 'best' sound for the given situation. Disrupting this unexpectedly can cause massive discomfort and insecurity for the musician. In my work as an improviser, I have interacted physically with dancers while playing my viola, but I had not yet

tried to incorporate these relationships with other collaborators within the framework of composed performances. Exploring this idea with Polina and Marie required a lot of time and trust as we worked to simultaneously create beautiful choreography and provoking musical situations.

It was important in this section to create a fixed form so the performers would know how to interact and when. Given the intense physical interactions involved, I wanted the performers to be confident in their knowledge of the moment-to-moment action. Thus, this section yields a simple A-A' form. The first sequence is represented in the first two systems of the section, and its compressed repetition is on the third system. This sequence can be broken up into 3 phases for the cellist: 1) long col legno tratto gestures, 2) the addition of rapid left-hand percussive tapping on the fingerboard, and 3) more erratic col legno battuto gestures. From the dancer's starting position, she begins with a direct action that gets directly translated into the cellist's bow. However, this action-reaction relationship gradually becomes obfuscated. The cellist's rapid left-hand movements are transferred into the dancer's body and the dancer shifts around the cellist; the figures become one dynamic wiggling mesh.

The electronics here work similarly to the arrangement in section 1, with the addition of some subtle delay and reverb on the cello to thicken its live sound. There are cued soundfiles which serve to punctuate and support the section's form and acoustic textures. The motion sensors are configured to produce similar sounds throughout the section, gradually building tension with the soundfiles. Thus, the live electronic presets begin with a single configuration, and the subsequent presets are extensions of that configuration. Rather than the technician improvising counterpoint with the performers, the electronics for this section flow in a single trajectory to build momentum into the third section of the work.

SECTION 2

**Part 1 (Measures 13-14):**

- Dance (~22" / \*1):** move the cellist's head slowly with both hands, smooth, gentle, and intentional. LH on cellist's head, RH on cellist's RH, occasionally more active RH movements.
- Cello (~17" / \*1):** col legno tratto on the IV, *ff* and slow, ad lib slow changes in bow placement to get rich overtones, transfer dancer's movements into bow movements. more active changes in bow placement, occasionally make strong verbal bowing gestures.
- Elx:** dsp4

**Part 2 (Measures 15-18):**

- Dance (~25" / ~5" / ~7" / (2"):** more active RH movements; some active movement that activates the cellist's bow; climactic movement.
- Cello:** continue like before, but tap string repeated w/ LH, more repetitive circular bowing gestures, occasional jété; wild reckless bow movements, unpitched percussive sounds; extreme bow pressure, col legno, tense heavy erratic movements.
- Elx:** dsp5 (measures 15-16), dsp6 (measures 17-18)

**Part 3 (Measures 19-21):**

- Dance (~13" / ~9" / ~7" / 1" / 4" / 1" / 3"):** return to calmer state, use material from beginning of section, but more developed; increase intensity, use more space; climactic movement, transition to section 4, in front of the cellist.
- Cello:** col legno tratto on the IV, *ff* and slow, ad lib slow changes in bow placement to get rich overtones, occasionally make strong verbal bowing gestures; brief moments of extreme bow pressure, col legno, tense heavy erratic movements; continue like before, but tap string repeated w/ LH, more repetitive circular bowing gestures, occasional jété; brief moments of extreme bow pressure, col legno, tense heavy erratic movements; continue like before, but tap string repeated w/ LH, more repetitive circular bowing gestures, occasional jété; extreme bow pressure, col legno, tense heavy erratic movements.
- Elx:** dsp7 (measures 19-20), dsp8 (measures 20-21)

*Musical notation snippet (Measure 18):* *ff*, *ritc.*, *fingered pitches, not transposed, very noisy and a little sloppy*.

3.3 Section 3

The transition between the second and third sections is gradual. The dancer distances herself from the cellist and the performers explore the space as individuals. Their interactions change from being explicitly physical to more implicitly interpretive, meaning that they are not affecting each other directly through touch, but more through hearing, seeing, and interpreting across a distance.

My aim while composing these transitions was to seamlessly traverse through material of varying origins (some mixture of predetermined aspects and improvised aspects). For instance, in the bebop, compositions usually begin with the head (or main melody) and continue afterwards with improvised solos played over a pre-composed harmonic progression. It isn't difficult to detect whether a given moment of music is written or improvised. One clue to this is the instrumentation of the melody: if many musicians are playing the line in unison, given that it's difficult to improvise fast figures in unison with another musician, chances are it's written. Improvised solos have the possibility to be more complex and individualistic.

While creating *in tensions*, I did not want to haphazardly mix fixed material with notation that allows for larger degrees of improvisation because I believe it jars the focus of the performers. I perceive that musicians react visibly differently during performance in each case (especially if they're reading a score). Seeing this reaction as an audience member (just speaking from my own experiences) is akin to watching actors briefly going off-script in an otherwise written dialog. The performers change their focus as their set of possible actions rapidly and temporarily fluctuates, and they must change their decision-making cognitive processes in real time. Musically, these large transitions unintentionally shed light on the mediations between the musician and the score, which I try to avoid.

This being said, in my experience, some musicians are able to transition between fixed and improvised material quite well, but most don't. Those who specialize in performing music that contains large sections of guided improvisation (such as the works of Anthony Braxton or John Zorn) have trained themselves in adapting their creative focus in real time. Performing these works require the players to exhibit high levels of performative sensitivity as it is possible for the musical situation to change rapidly and unexpectedly. This particular agile sensitivity may not be found in performances of more fixed, notation-intensive music.

In most cases, in my work, I do not want to see how a performer reacts to material; the performers themselves should be the material (as is the case with dance or theater). In my work, I would rather try to hide or smooth-over transitions of focus, usually through changes in scenography (as in section 1 to section 2), or through the interpolation of material (as in section 2 to section 3).

This being said, the material for this section was more predetermined than that of previous sections, and I wanted to keep the music easily memorizable. Therefore, I employed a very simple couplet form (A B A' B' - C D C' D' - C'' E) and very simple materials. The phrases were ordered in a sequence which facilitates simple transitions between various playing techniques on the cello.

Likewise, the movement here was choreographed, not freely improvised. During the gestation period of the piece, I envisioned the sound for this section long before the movement (after all, I was trained as a composer). I knew that the dancer would be free to move more throughout the space rather than being confined to a chair or in the cellist's vicinity, but I wasn't quite sure what kind of movement was needed. So, I asked Alice (and later, Marie) if she would choreograph the section herself. I sent her a mock-up recording of the cello and electronics, and explained the

## SECTION 3

$\text{♩} = 114$   
 very noisy and a little sloppy  
 fingered pitches, not transposed

ord, place LH on bridge, place finger on IV  
 just in front of the bridge, tug at string  
 with finger to change pitch like a motor  
 ad lib LH rhythm and stagger bows

*fff* sempre

22

23

ord, place LH on bridge, place finger on IV  
 just in front of the bridge, tug at string  
 with finger to change pitch like a motor  
 ad lib LH rhythm and stagger bows

*ricc.*

24

25

$\text{♩} = 57$   
 sounding pitch  
 unstable harmonic on III

*rubato* harmonic must be stable

*ff*  
 ad-lib very high harmonics on I  
 ord

*p* *mp*

26 (dsp9)

27

28 (dsp9)

3

The musical score consists of four systems of music. The first system (measures 22-25) is in 4/4 time with a tempo of 114. It features a dense, noisy texture with instructions for 'fff sempre' and specific bowing techniques. The second system (measures 24-25) continues the texture with a 'ricc.' (ritardando) marking. The third system (measures 26-27) changes to a tempo of 57 and includes 'rubato' and 'harmonic must be stable' instructions, with dynamics ranging from *p* to *mp*. The fourth system (measures 28-29) returns to a 4/4 time signature and includes a '3' (triple) marking and dynamics from *fff* to *p*. A 'dsp9' (digital signal processor) effect is indicated at the start of measures 26 and 28.

structure of the music. She ended up combining and refashioning elements from the first section of the piece, extending the movements through her entire body, traversing the stage, and providing counterpoint to the cellist's material and structure.

The electronics in this section make heavy use of soundfiles that were triggered in synchrony with the cellist as she progresses through each subsection. Additionally, I made light use of a simple feedback-delay module that employed very short delay lines to produce a hint of audio feedback. This signal was then fed into a convolution reverb module to change the spatial aspect of the sound, alternating between a dry tight space for the punchy repetitive chords and a wetter wider space for the longer gestures in the high register.

The motion sensitive electronics were used more modestly in this section, subtly fading in only during specific subsections, thus transitioning the dancer's movements in and out of the audible domain. I wanted the electronics here to focus more on the cellist, to punctuate and support her playing. My aim for this section was to separate the movement mechanisms from the sonic

mechanisms, which were previously more intertwined. I did this for the sake of global structural balance, and I'll elaborate more on the large-scale form in chapter 4 of this manuscript.

### 3.4 Section 4

In the few years leading up to this project, I had fallen into the habit of ending pieces by introducing material unrelated to the rest of the work; by writing passages that follow a totally distinct logic system which forces the audience to abandon all of their previously-held expectations, creating an ending that inspires more head-scratching than applause.

My original idea to end *in tensions* was for the dancer to return back to her chair, and for the cellist to abandon her instrument and approach the dancer with the bow. The dancer would position her body in a cello-like shape, and the cellist would bow the dancer's body as if it were a cello. During workshop sessions, this idea proved too literal and shallow.

We then tried using the bow in less-literal ways, such as moving with the bow or having the performers bowing varying surfaces of the other's body. However, this too seemed uninspiring, restrictive, and a bit forced. We felt that dancing with an object (especially a cello bow, with all its significance) was tough, and the image was too direct. Polina had some training as a dancer, so eventually we decided to move away from using an object and explored ideas of two performers simply moving together.

When perceiving this ending, the audience's schema of Polina is reconfigured as she moves with Marie. With the exception of entering the stage at the beginning of the performance, Polina has stayed seated, therefore affirming our perception of her role as the 'cellist'. She was defined by her instrument and credit in the program booklet. It's only at this moment that the audience is confronted with her agency as a mover, and moreover as a dancer, as she engages with the other performer without the object that has until now defined her function. So what is Polina's label now? How has her character changed? Has she gone through some sort of transformation? Has her relationship with the other performer changed?

Additionally, why is the cellist dancing? In recent years, I've been reevaluating my judgements regarding performances calling for physical performers; that is, musicians who do more than just play their instruments on stage as part of performances that acknowledge the bodies of the performers as a parameter. This might include walking, acting, dancing, and performing in ways that go well beyond their conservatory curricula. While this practice might seem innovative by

the part of the artist, I believe it should be done with extreme caution. Contemporary composers do not often realize how attached musicians are to their physical instruments/objects (maybe with the exception of singers and percussionists), but once musicians are asked to perform on stage without the object that defines their role, they demonstrate a different focus, usually breaking their performative character from 'musician' to one of an amateur or tourist. Most of the time, in my humble opinion, it doesn't work.

Even while walking on stage, one can see the difference between a musician and an actor or dancer. If one watches an actor or a dancer walk across a stage in character and compares that to a musician (non-singer, non-percussionist) performing without their instrument, the musician's movements awkwardly blend quotidian features mixed with how they believe actors or dancers would move. Dancers and actors carry a gaze, intent, and posture distinct from those of instrumentalists. Dancers and actors are taught to be in character while performing, and instrumentalists are not. This character is displayed in their face, the confidence in their step, and the details of their posture.

So why ask a cellist to dance? Why do interdisciplinary work with instrumentalists and dancers? Why create interdisciplinary performances if I was never 'trained' in interdisciplinary performance practices? I am not a choreographer, and it would be unlikely that a choreographer would be commissioned to write music for an orchestra.

I believe the difference between amateurism and a convincing performance is the nature of the collaboration and the experiences of the collaborators. Polina has had training and experience as a dancer. She has participated in courses and workshops, and she has studied and critiqued her movements. She was not a tourist in a dance environment. When I work with dancers and choreographers, they check and counter my ideas constantly, and I am always open to their critiques and input. Interdisciplinary work demands that the collaborators be aware, sensitive, humble, and inclusive to the other disciplines.

Then why wasn't the dancer asked to play the cello? I believe the difference is found in the relation of the performer to the physical musical object. Transforming from instrumentalist to dancer means the subtraction of an object, and going from dancer to instrumentalist means the addition of an object. When dancers approach an instrument, it is often with an attitude of novelty and carefulness not to break what they perceive to be a priceless object. When musicians approach their own instruments, it's done with swift over-learned motions. Of course, one can

compose with the differences between these approaches, but if they're not taken into account, I find that the performers' default focus overrides other more important aspects of the work.

As of October 2018, I have done two workshop sessions where a dancer handled my instrument, but in neither case did they play it like an instrument. I asked that they treated it like an inexpensive but emotionally significant quotidian object. I feel that this attitude reads well from the audience's perspective and narrows the focus gap between the performers.

Going back to the piece: to begin exploring choreographic possibilities, Thierry de Mey suggested that we create a collection of body-images, and focus on finding interesting transitions between them. This way, one can create a fluid network of related shapes and the result will approach something more abstract.

The 4th and final section of the piece begins when the cellist stops playing and puts down her instrument. The music that follows is simply a soundfile that is cued as the cellist releases her last note, fading in with the same pitch and gradually transforming the timbre away from the acoustic world and into the electronic one.

Polina crosses over to Marie, who has already approached a pose that is mildly cello-like. Marie's hands are folded across her body, with the left hand bent up vertically, and the right held across her stomach. Polina stops behind Marie and calmly places her (Polina's) hands on her (Marie's) arms. For a moment, we see the image of the body-cello, though this is quickly lost.

What starts as Polina moving Marie's right hand like a bow turns into a more abstract bidirectional physical conversation. This choreography was developed through a series of workshops. The performers practiced moving together, changing their rhythms, speeds, and positions.

Like section 2, what is perceived at first as a unidirectional flow of information (the establishment of a clear power structure) gradually breaks down into a complex conversation with both performers simultaneously leading and following. The initial 'cello' image is freely developed to the point where it becomes unrecognizable. The audience is left with the abstract movements of the performers.

At the end of the piece, they synchronize for the final moment choreographed with the soundfile. Until this moment, they have been moving orthogonally to the sound, with neither affecting the



other. There are two loud bangs in the end: the first signals that the performers raise their hands together, and at the second, they throw their hands down, turning away from the audience as the lights cut to total darkness. The final moment was choreographed as a device to end the performance with a simultaneous action of lights and movement with an ambiguous cause and effect. Did the performers' gesture activate the sound, or the inverse? The audience is left with a dark, omnipresent, pre-recorded resonance of breathing and a heartbeat, the sounds of humans beings mimicked by the machine. Finally the sound fades to silence and the performance ends.

Instead of having the performers 'break' character to signal the work's end, I wanted the piece to end with an event triggered from the exterior. I feel this ending is theatrically stronger because it preserves the integrity of the performers' characters. The performers themselves never visibly break. They retransform under the cover of darkness.

## Chapter 4 - Global Form and Concluding Thoughts

The global form of the work can be broken down into 4 sections. The chart below characterizes each section according to various relationships between performative entities:

	<b>Metaphysical relationship between performers</b>	<b>Psychological relationship between performers</b>	<b>Visible/audible relationship between performers and environment</b>	<b>Nature of the flexibility of the music and movement</b>
<b>Section 1</b>	Individual worlds, connected through omnipresent electronics	Unclear. We're unaware of any power structure or hierarchy.	Complex relationship facilitated by motion sensors	Material seems flexible, controlled improvisation
<b>Section 2</b>	Performers are spatially together, fused	Clearer. The dancer starts the section in a physical position of power.	Less complex, more direct relationship. The movement and sonic material directly reflects the performers' physical and audible interactions	Material seems flexible, controlled improvisation
<b>Section 3</b>	Return to more individual worlds	Unclear. We're unaware of any power structure or hierarchy.	More substantial presence of pre-recorded sounds. Electronic sound is more cello-centric.	Material seems less flexible, less improvised
<b>Section 4</b>	Performers are spatially together, fused	Clearer. The cellist starts the section in a physical position of power.	All sound is pre-recorded. No direct relationship between performers and sound until the end.	No flexibility in sound, movement seems flexible, controlled improvisation.

This chart outlines ideas that are alternated (such as the metaphysical relationship between the performers), and those that are on a more linear path (such as the nature of the flexibility of the music and movement). While the piece fluctuates between the individual and fused worlds of the performers, there's a global gradual transition between the performers controlling of the sound and the eventual severing of this relationship (except for the final cadence).

*in tensions* is a work about relationships and behavior, and employs a large suite of methods to present byproducts of these behaviors convincingly. By using collections of improvisation workshopping techniques, motion sensors, acousmatic composition, and different styles of notation, the performers were able to create, craft, learn, and perform the work in a way that facilitates the work's goals. The digital tools used to create the live electronic sound were selected to serve these goals to creatively draw connections between the sound and movement.

The underlying concepts and themes explored in *in tensions* governed the creation and rehearsal process. In other words, the piece is about its creation methods as well as its performance. It critiques values of interdisciplinary artistic practice, theatricality, and movement and sound improvisation. The work questions the performers' roles as bodies, characters, and artists in a performative space.

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# in tensions

for dance, cello, and electronics

Scott Rubin

2017-18

in tensions  
for dance, cello, and electronics

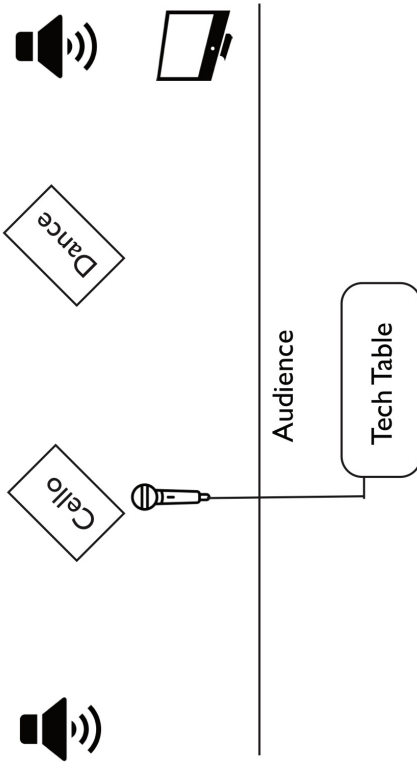
Scott Rubin  
2017-18

Dedicated to Thierry de Mey

Written for Polina Streltsova and Marie Albert, with special thanks to Alice Boivin, in collaboration with the Cursus at the Institut de Recherche et Coordination Acoustique/Musique (IRCAM) and the Conservatoire national supérieur de musique et de danse de Paris (CNSM).

duration: 10 minutes

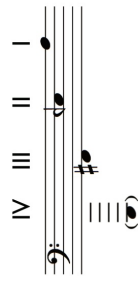
Staging



There are two chairs on the stage, equal distant from the audience, both rotates approximately 45 degrees stage left. Further stage left, there is a computer monitor (or laptop) that is networked to the main computer on the tech table. This stage monitor serves to give visual cues to the performers, so it should be positioned so that it is visible to them but not to the public. There are to be no music stands on stage.

\* Aside from the information given on this monitor, this piece is to be performed from memory.

Cello Scordatura



Specifications:

- II Pitch is tuned to the 7th harmonic (lowered an octave) of the 3rd string (F#).
- Or, tune to the first pitch of the part4.wav soundfile
- IV Pitch is approximate. String should be low enough so that the pitch can be controlled simply with bow pressure and speed

ii

a new universe  
do they know us  
a tension, an omnipresence  
a system, flowing

into intimacy / privacy / struggle / hierarchy  
an energy, intensions flowing through bodies / objects  
a system, melting into the void

into a space to breathe, move, work, perform  
do they see us  
melting into the void

into the inner sublime  
without sound, just our vibrations  
without objects, just our vibrations  
without goals, just our bodies  
vibrations and projections, echoing inside our bodies, together

## Tech rider

### Configuration of the Electronics:

The electronic part consists of amplification of the cello and cued sound files played back from software created in Max/MSP (available from the composer). Additionally, two motion-sensors (R-LoT by Ircam) are strapped to the dancer's forearms, one on each arm. These sensors are loaded with an application that streams the sensor's data to Max/MSP via a local wireless network provided by a router.

### Amplification:

A cardioid condenser microphone should be used to amplify the cello. Amplification levels will be controlled within the Max patch.

### Notation of the Electronics:

Electronics are notated in the score on a separate staff at the bottom of each page indicating cue numbers and MIDI control.

**\*The role of the technician for this piece requires improvised performantive mixing. See score for details.**

### Technical equipment required:

#### 2 Computers:

- 1 running Max/MSP, 1 to serve as a stage monitor

#### MIDI Controller to control levels (e.g. KorgNano)

- 1 Audio Interface (minimum of 1 mic-level input with phantom power, 2 outputs)

- 1 Cardioid condenser microphones and stands

- 2 R-LoT motion sensors with elastic bands to fasten devices to forearms.

- 1 Network router, with ethernet connection to Max/MSP, and wireless WIFI connections to R-LoT sensors and stage monitor

- 2 loudspeakers and stands

- 1 tech table (this should be positioned close to the ensemble, not in the back of the house)

### Note to the performers

Due to the non-traditional nature of the work, many performance techniques were created during intense training sessions. As is typically the case with dance, many of these techniques were documented with video clips that should be studied by those who wish to perform this work. Any questions should sent to the composer at [shrubin2@gmail.com](mailto:shrubin2@gmail.com)



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dedicated to *Thierry de Mey*  
**in tensions**  
 for *Polina Streltsova and Marie Albert*  
 special thanks to *Alice Bolvin*

Scott Rubin  
 2017-18

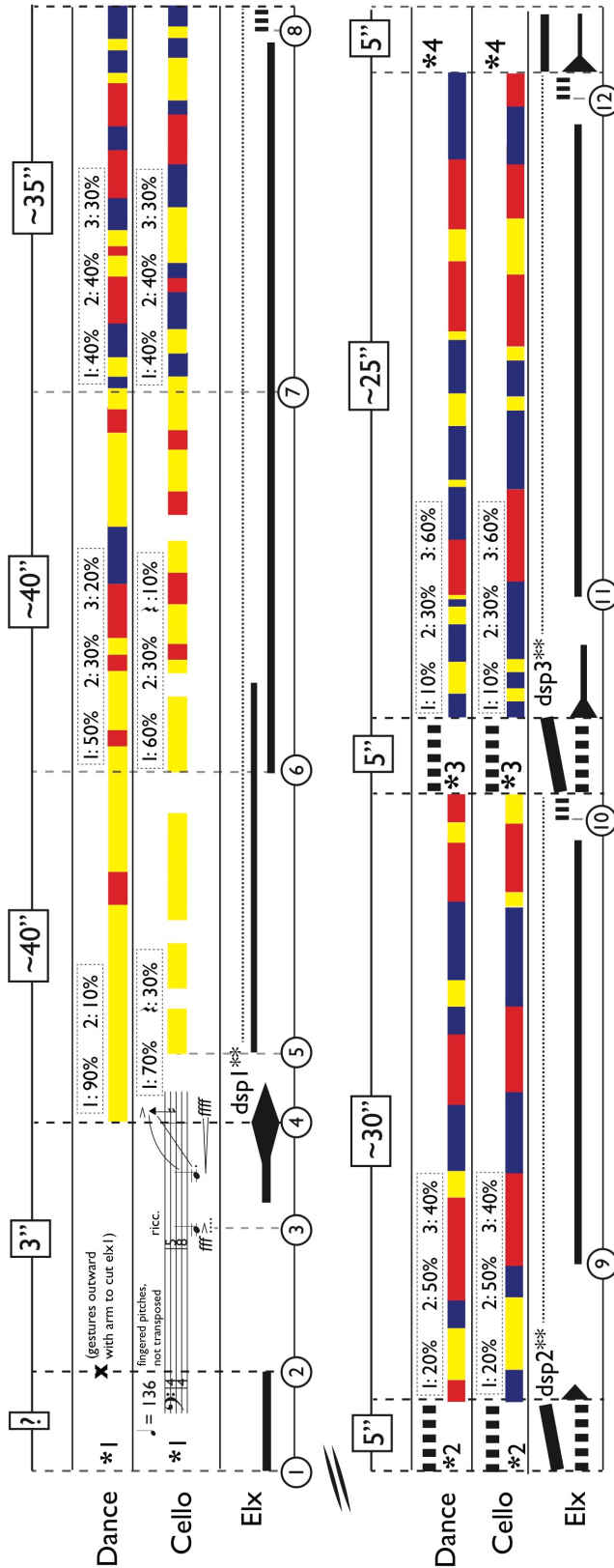
**SECTION I**  
 (for alternative visualization, see appendix I)

**performance techniques**

	Chemin 1: (path1-480.mov)	cello: artificial harmonics on high string, begin with static tones or slow glissandi, become more erratic dance: liquid texture, flowing lyrical shapes with arms
	Chemin 2: (path2-002-480.mov)	cello: extreme bow pressure on muted strings, quick twisting motions, fast creaking sounds dance: slow trembling tense motions
	Chemin 3: (path3-002-480.mov)	cello: fast trills on low string, explosive fast glissandi, quick changes in bow pressure dance: hands connected, strange shapes with elbows

"Chemins" (paths) are dynamic behaviors that develop over time. They can be blended together and build off each other. Do not try to synchronize the progression of behaviors with the other performer. Rather, interpret their articulations, not what they're doing, but how they're doing it. This is to be performed in a trance-like focus. Do not look at the other performer. Cellist should look straight ahead, dancer should not focus visually on the cellist.

The percentages indicated in each time segment indicate the approximate proportions of "chemins" that are played during that section. The arrangement of colored boxes underneath indicate a possible rhythm for this proportion.



\*1: Lights down, trigger first soundfile, lights fade up. Cellist enters with cello from SR, deadpan. Does not acknowledge audience. Walks to SR chair and sits, ready.  
 Dancer enters SR, also deadpan. Walks to SL chair, does not acknowledge audience or cellist. Dancer sits, and waits for a few seconds before making the first gesture, which cuts the first soundfile.  
 \*\*: The live electronic sounds for this section are created with motion sensor data and pre-recorded sound samples. There are 3 types of sound for each preset, and their level is controlled with the 3 right-most faders of the KorgNano. The sound technician's job here (along with hitting the cues, which trigger soundfiles and dsp configurations) is to perform this part in a way that makes for compelling improvised counterpoint with the dancer and the cellist.  
 \*2: Performers both stop their actions immediately and shoot their right arms out to the right while intensely staring straight ahead.  
 \*3: Performers both stop their actions immediately and shoot their right arms out to the right, at the same time suddenly turning their head 90 degrees to the right.  
 \*4: Performers both stop their actions and look at each other, attacca section 2

SECTION 2

	~22"	~17"	~20"
Dance	* I	move the cellist's head slowly with both hands, smooth, gentle, and intentional	LH on cellist's head, RH on cellist's RH, occasionally more active RH movements
Cello	* I	col legno tratto on the IV, fff and slow, ad lib slow changes in bow placement to get rich overtones, transfer dancer's movements into bow movements	more active changes in bow placement, occasionally make strong verbal bowing gestures
Eix	dsp4	(13)	(14)
* I: Dancer walks behind cellist (who sits calmly) and slowly places her hands on cellist's head. Dancer keeps her visual focus on the cellist. Cellist's eyes remain open but plays as if she's in a trance,			
Dance	~25"	~5"	~7"
	(15)	(16)	(17)
Dance	more active RH movements	some active movement that activates the cellist's bow	climactic movement
Cello	continue like before, but tap string repeated w/ LH, more repetitive circular bowing gestures, occasional jété	wild reckless bow movements, unpitched percussive sounds	extreme bow pressure, col legno, tense heavy erratic movements
Eix	dsp5	(15)	(18)
Dance	~13"	~9"	~7"
	(18)	(19)	(20)
Dance	return to calmer state, use material from beginning of section, but more developed	increase intensity, use more space	climactic movement, transition to section 4, in front of the cellist
Cello	col legno tratto on the IV, fff and slow, ad lib slow changes in bow placement to get rich overtones, occasionally make strong verbal bowing gestures	continue like before, but tap string repeated w/ LH, more repetitive circular bowing gestures, occasional jété	extreme bow pressure, col legno, tense heavy erratic movements
Eix	dsp7	(19)	(21)

SECTION 3

$\text{♩} = 114$

very noisy and a little sloppy  
fingered pitches, not transposed

ord, place LH on bridge, place finger on IV just in front of the bridge, tug at string with finger to change pitch like a motor ad lib LH rhythm and stagger bows

23

ord, place LH on bridge, place finger on IV just in front of the bridge, tug at string with finger to change pitch like a motor ad lib LH rhythm and stagger bows

24

ricc.

$\text{♩} = 57$

sounding pitch unstable harmonic on III

25

ad-lib very high harmonics on I ord

harmonic must be stable

rubato

26

dsp9

27

28

dsp9

29

3

SECTION 3-2

*ff*

ad-lib very high harmonics on I

ord

(29)

20" staggered bows

(30) (dsp9)

(31)

*f*

*mp*

*pp*

fade out wet-cello (32)

Dancer approaches and holds a pose:  
right hand crossed calmly over the stomach,  
left hand limp on the left shoulder.

*msp*

*sp*

*sp*

Fade out into soundfile...

## SECTION 4

The sound for this section is a pre-recorded soundfile.

Cellist calmly puts down instrument, approaches dancer downstage, who is holding a pose (crossed arms). Cellist forms a connection to the dancer's arms, and choreography starts.

