Developing Instrumental Sound Resources Through Collaborative Compositional Practice

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Introduction

There is a long history of composers and performers working together to achieve their creative goals and there are many examples within the specific context of contemporary music where extension of instrumental capabilities designed to further explorations of sound and timbre has often been the driving force. Perhaps one of the most renowned examples is the composer Helmut Lachenmann, who has explored much unchartered territory in new instrumental performance techniques, and is seen to work closely with performers in order to develop his instrumental sounds:[1]

> Principal flautist Gaby Pas-Van Riet was one of his few admirers….Delighted by her determination, laughter and passion, [Helmut Lachenmann] spoke of writing something for her one day. Ten years later, she received a phone call: the "something" had become an enormous double concerto for flute and trombone, eight male voices and orchestra. Before beginning rehearsals, Lachenmann invited Pas-Van Riet and the trombonist Mike Svoboda to his home to demonstrate a few tricks on their instruments. Characteristically, he bought himself his own trombone, and had Svoboda give him lessons.[2]

The composer Rebecca Saunders, whose music is marked by "a focus on the materiality of sound"[3] is known to work extensively with players to explore the capabilities of the instruments for which she is writing before beginning her compositions:

> A group of instruments can provide an infinite palette of sounds…where possible, I work closely with musicians to keep close to the physical reality of the instruments' core sounds.[4]

It is becoming increasingly common for composers and performers to document their collaborative work, thus providing a fast growing body of literature on collaborative compositional practice. Cellist Neil Heyde and composer Fabrice Fitch offer a significant contribution in their article "Ricercar: The Collaborative Process as Invention."[5] Heyde

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[1] For a concise explanation of *musique concrète instrumentale*, see David Ryan and Helmut Lachenmann, "Composer in Interview: Helmut Lachenmann," in *Tempo* No. 210 (1999), pp. 20-24.

[2] Richard Steinitz, "The inside-out concerto: Helmut Lachenmann's work has driven musicians crazy—but the result is worth it," *The Guardian* (November 25, 2005) http://www.guardian.co.uk/music/2005/nov/25/classicalmusicandopera, accessed Oct 14, 2012. This quote refers to Lachenmann's *NUN: Music for flute, trombone, orchestra and men's voices*.

[3] Robert Adlington, "The Music of Rebecca Saunders: Into the Sensuous World," *The Musical Times* Vol. 140 (1999), pp. 48-56.

[4] Michael Struck-Schloen, "The fragile balance of sound and silence: The composer Rebecca Saunders," *Rebecca Saunders* (Kairos 2001) 0012182KAI, [CD notes].

[5] Neil Heyde and Fabrice Fitch, "Ricercar—The Collaborative Process as Invention," in *Twentieth-Century Music* 4/1 (2007), pp. 71-95.

and Fitch explain the importance of their study to the field:

> In a musical culture that has understood the performer's role primarily as mediator between composer/piece and audience, very little attention has been paid to the performer's potentially significant mediation between composer and piece. When the latter interpretation of the role is brought into play early in the conception, the performer may take a vital, inventive stance in which "problems" (musical ideas) are formulated and reformulated in tandem with their "solutions". The composer– performer collaboration may thus become a site for the playing out of the dialogic aspects of artistic creation.[6]

Further recent research is documented in Michael Hooper's article "The start of performance, or, does collaboration matter?" (2012)[7]. Hooper explains the "programme of innovation"[8] involved in composer and performer collaborations and "some of the processes that emerge in the earliest stages of planning and contemplating new music"[9] as observed in initial meetings between the performer (Christopher Redgate) and composers (Dorothy Ker and Fabrice Fitch).[10] The article offers a comparison between different composers' approaches to collaboration and highlights the ways that composer and performer collaborations can begin:

> To begin, Ker gives a poetic idea: "a porous column of air" and asks "what is the minimum amount of energy required to get the oboe going?" In response Redgate demonstrates sounds that respond to Ker's poetic. (These sounds are different from those used in other meetings with different composers.) The way in which he chooses his sounds follow tangents from the initial poetic, and he is surprisingly systematic in the way that he demonstrates potential possibilities.[11]

Collaborations between composers and performers are by nature a highly personalized experience for their participants and therefore follow many varied formats and have wide ranging aims and objectives. My own first meetings with performers were very much along the same lines as the Redgate/Ker collaboration already referred to: I had an idea of some types of sound I wanted to explore and the performer demonstrated a range of possibilities/techniques both in response and in addition to these, and from there the process of exchange grew. For me a central concern was to develop a vocabulary of sounds that had the potential to form the basis of a compositional language for the works, and I hoped to facilitate this by making the collaborations an "open exchange" where each participant's ideas and experience informed the musical materials throughout the development of the compositions.

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[6] Ibid., p.72.
[7] Michael Hooper, "The start of performance, or, does collaboration matter?" in *Tempo* 66 (2012), pp 26-36.
[8] Ibid., p.27.
[9] Ibid., p. 28.
[10] Ibid., p.27.
[11] Ibid., p.28.

Context

The development of the solo works under discussion focused on a search for new sound structures and an exploration of instrumental sound resources pursued primarily through close consultation with the performer. A key aesthetic aim shared by both composer and performers was to explore sound quality as the primary source of musical content through extending instrumental capabilities. An extensive investigation of advanced performance techniques was made during the collaboration for each piece with the aim of identifying a number of specific sounds/techniques that could constitute the primary musical substance of the piece. Once found the collaboration focused on ways to extend and develop these, with the final works consisting of an interaction of these sound elements in their various forms.

The works were developed over extended time periods (six months for *Abrasion* and *Semblance*, nine months for *Transference*) giving the explorations into instrumental sound resources opportunity to deeply influence the works. My aim was for the process of collaboration to go beyond imparting compositional aims or gaining an understanding of an instrument prior to composing; to bring ideas into being and extend and shape them and, as far as possible, make the end result a reflection of each participant's creative input.

The performers

Both performers I worked with are dedicated to developing new repertoire with composers and extending instrumental performance practice. Flautist Richard Craig has collaborated on many new works with composers, focusing on the extension of instrumental resources:

> Over the past 6 years I have been active in developing new works with an emphasis on harnessing untapped acoustical anomalies as a starting point for collaboration, this, in a sense, is a reconstitution of the instrument rather than a deconstruction, over and above the accepted modes of performance. [12]

Séverine Ballon's work as both a performer and improviser is deeply informed by a desire to develop new sounds:

> As an interpreter and as an improviser, it was important for me to go into sounds and to discover where they take you, and also discover by them new materials.[13]

She has worked closely with many composers on developing new works, both in her solo career and as a member of Elision.

> I like to have this open collaboration, in which the interpreter really gives ideas and some inspirations and a path. I love when composers get inspired by things you show them, and get ideas with them that I would never have had.[14]

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[12] Letter from the performer, 2012.

[13] Jennie Gottschalk, "Elision: transference (6): Séverine Ballon," in *Sound Expanse* (webpage), http://www.soundexpanse.com/transference-severine-ballon, 2011, accessed October 14, 2012.

Having a shared purpose with the performers provided the necessary start point for our collaborative work. I was also lucky that my collaboration with Séverine Ballon spanned the development of two new works, thus enabling us to forge deeper artistic connections through our explorations of the instrument: by the second collaboration there was a clear understanding between us of the types of sounds and techniques we wanted to work with. The benefits of forming strong personal relations in collaborative artistic work would seem obvious (it can allow the development of a shared aesthetic and an understanding of each others aims and objectives) but the impact when this is absent can be more damaging than perhaps thought:

> If the instrumentalist has no personal relation with the composer, he will not necessarily know what the composer is looking for. If there is a passage that is not instantly playable, the interpreter can do a lot of damage by declaring it impossible to play. Many composers have suffered from not having trusting relationships with players. The ideas of a composer may be excellent but need some fine-tuning. However, after the flat assertion that something cannot be done, the composer may abandon what could have become a whole new world.[15]

Prior to these collaborations, my own experience of working with performers had consisted of shorter periods of collaboration at the start of the compositional process, followed by a period alone writing the piece.[16] To a certain extent, this kind of limited access to performers can put constraints on forming the creative links that are potentially so beneficial to composer performer collaborations.

Developing instrumental sounds and techniques

My work on *Transference* with Séverine Ballon, explored and developed aspects of cello sound through a discourse around notated and non-notated ideas, relating to specific playing techniques:

> MB: How would you describe our process of working together?
> SB: The first piece we did together was very much about first getting to know each other. I didn't know your music and you didn't know my playing. Then we experimented, and it was wonderful because we had a lot of time to work with the cello and find very fine techniques and sounds, which were some of my ideas and some of your ideas. It was really a collaboration, it was actually both of us working, me showing you sounds and you asking me things, also both of us wanting to develop sounds and having ideas for sounds. We took time to develop a language and to develop some new techniques for the cello, something which is really rare in new music, and to work on developing special sounds which are perfect for your music.[17]

For a number of months we worked periodically in this manner, a process that opened up a world of cello sounds whose fragile and delicate qualities were, to my mind,

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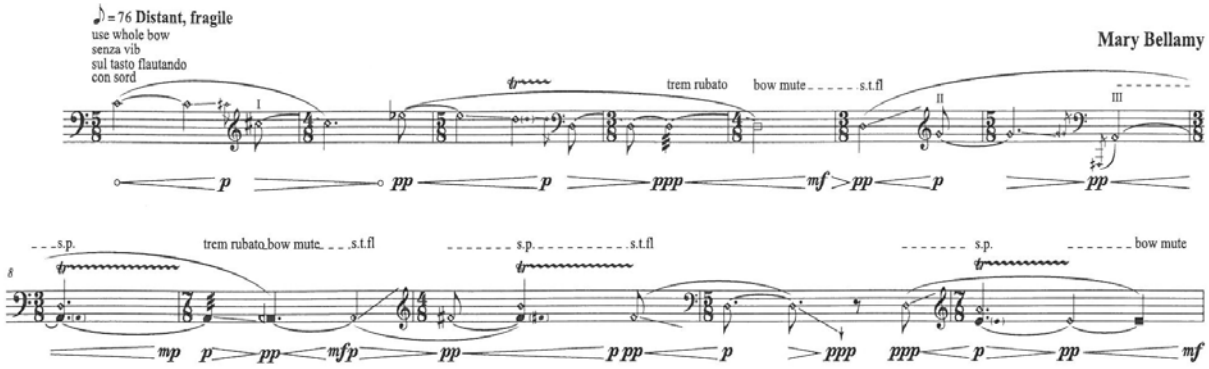
[14] Gottschalk, Op. cit.
[15] Anssi Karttunen, "Discovering the music around me," in *Finnish Music Quarterly* II (1999), pp.16-21.
[16] I participated in the Blue Touch Paper Scheme (2001) and Inventions (2005), both collaborative projects with the London Sinfonietta.
[17] Transcribed conversation between composer and performer, 2010.

uncharacteristic of the instrument and which later became the defining sounds in *Transference*:

> MB: How do you think your own vocabulary of sounds influenced the way we worked?
> SB: I like certain types of sound, multiphonics and ones without a clear pitch; air sounds and very delicate sounds, so I can imagine you liked these sounds. Of course I am very familiar with these sounds. I think you were inspired by that?
> MB: Yes, I was very drawn to those types of (delicate) sounds and they do dominate the piece…[18]

Through discovering this rich resource of sounds our work together became focused on those sounds that operate on the verge of audibility (air sounds or half-harmonics) and complex sounds characterised by a degree of instability (multiphonics belonging to Séverine's own unique repertoire of cello sounds). My interest stemmed from the way these sounds allowed the cello to become a sounding body of different harmonics and overtones which, depending on the string used and the point on the string where they are produced, are at times rich and complex and at other times distant, fragile and indistinct. The start of the piece takes Severine's air sounds and develops these into a displaced line created by the combination of pitches that fall on nodes and produce very clear harmonics and pitches that fall between nodes resulting in more hazy, unstable tones. The lowest string is de-tuned to A flat below the normal C which impacts on the harmonics produced at the nodes on this string but also effects the overall sound quality (see Example 1).

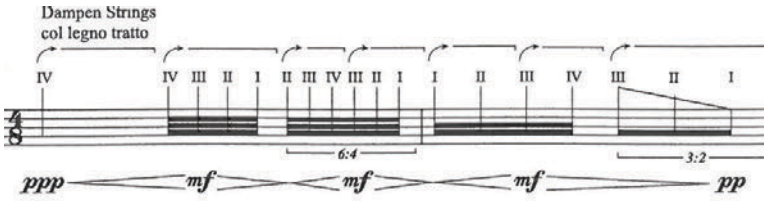


Example 1: *Transference,* mm. 1-12.

The passage works on the principle of using subtle variations of finger pressure (lightly pressed, half pressed and normal stopped notes) to continuously transfer sounds between the different registers of the instrument. This is combined with different degrees of bow pressure (*flautando* to *distorted*) and bow position (moving between *sul tasto* and *sul pont* (and beyond) to further convey this movement between registers. In mm. 6-12 the bow moves position in conjunction with the transferring of the sound between registers via the stopped notes from over the fingerboard to near the bridge, then further to on the bridge to bowing the mute itself and then back again. This takes place as one gradual and fluid bow movement whilst simultaneously the stopped notes move between

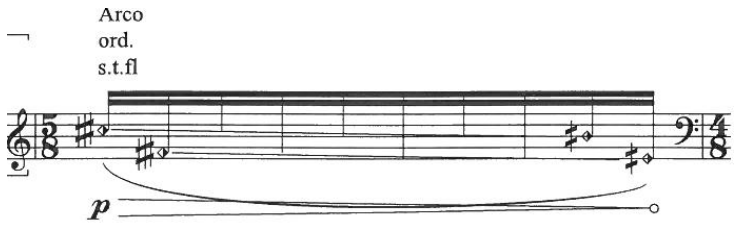
[18] Ibid.

high and low register via harmonics, half-harmonics, and artificial harmonics. The bow movement described transfers the sound across the instrument from strings and body to the bridge via the mute. A similar process of transference is created a few measures later through circular bowing on dampened strings and is used as way of transferring the sound across the strings through the fingers which act as the muting device and extend the function of the string (see Example 2).



Example 2**:** *Transference*, mm. 22-23.

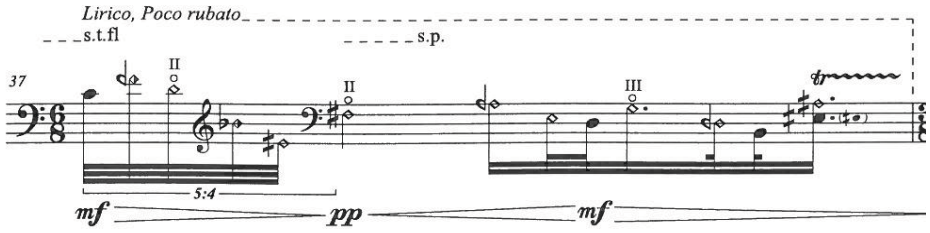
Each of these instances of bow movement is further enhanced through glissandi occurring in conjunction with the various bow positions which produce an audible rendering of the transference process (in effect capturing the sound as it moves between registers) in accordance with the amount of finger pressure and the position of the bow. These include glissandi between single notes as seen in Example 1, but also between two note combinations (see Examples 3 and 4).



Example 3: *Transference,* m. 24.
This provides a means of doubling the sense of transfer, as the sound both alternates between a higher and lower sound whilst simultaneously moving downwards.

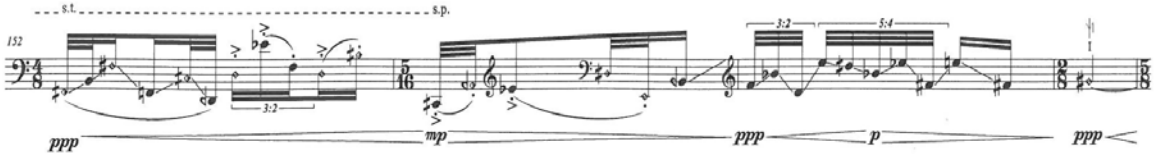
Example 4: *Transference,* mm. 14-16.
In mm. 16, one finds a slow transfer of a sound in one bow movement, from extreme high range the lowest possible point, with the string muted between thumb and forefinger.

As Séverine and I worked together we explored ways our chosen sounds could be extended to take on new qualities using different bowings, finger positions, and pressures, and also through developing the speed and density of material; what was initially a slow transference of sound between registers gradually increases in speed during the rest of the piece (see Example 5).



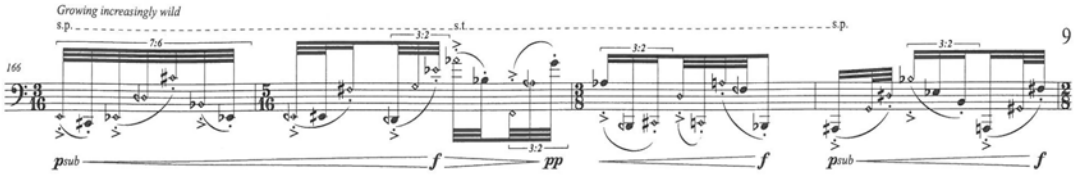
Example 5: *Transference,* m. 37.

The combination of lightly pressed and half pressed notes continues to create the effect transference of sound between registers. The movements of the bow are the same as at the opening, but now the transference is more clearly audible as it happens more frequently and in closer succession (see Example 6).



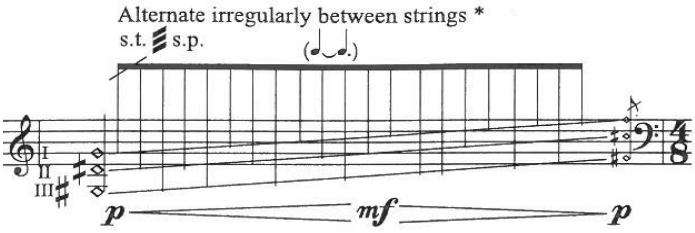
Example 6 : *Transference,* mm.152-154.

This process reaches its peak at the end of the piece where harmonics, half-harmonics and normal stopped notes occur in close succession dispersed across the full range of the instrument and in conjunction with continuous bow position movement and bow pressure changes (see Example 7).



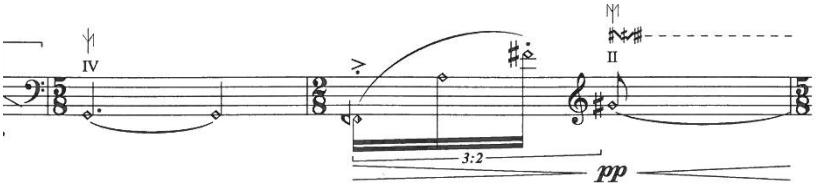
Example 7: *Transference,* mm. 166-169.

A similar process of development is applied to the alternating glissandi seen in Example 3, which incorporates the transference of sound across three and four strings and at greater speeds (see Example 8).



Example 8: *Transference,* m. 112.

Each of these examples shows processes of transferring sound both between registers and across the instrument. The multiphonics, another sound introduced to me by Séverine during our work together which features in the piece, offers a way of distributing or splitting sounds across registers simultaneously, as a sustained chord containing various partials. The instability of these sounds creates a combination of pitches in different registers, whose clarity varies as the sound is sustained (the slow bow movement, *sul pont* bow position, and light finger pressure invite a complex sound the components of which vary with subtle changes in bow movement, pressure and position) thus creating an element of continuous transference of sound between different partials of the multiphonic. This aspect of the sound is enhanced later in the piece by focusing on certain nodes of the string which allow small glissandi between three different multiphonics, points creating transference of the sound between three different multiphonics, as well as between the individual parts of each multiphonic (see Example 9).



Example 9: *Transference* mm. 161-162.

My second collaboration with Séverine began in 2011, a year and a half after we worked together on *Transference,* and focused on the development of another solo cello work *Abrasion*. This second collaboration followed a different process than the first.

> MB: How did our collaboration on *Abrasion* differ to our work together on *Transference* and were there any similarities?
> SB: The second collaboration, because we knew each other and because you knew everything about the cello already, wasn't about searching for sounds, it was about getting textures. It was a really different process because we didn't meet that often for the second piece and because it was already clear which materials you wanted to use. You brought many ideas. There were things you brought that weren't from me, for example the tapping sounds, and also a lot of big, loud parts, they were also your idea. [19]

[19] Transcribed conversation between composer and performer, 2012.

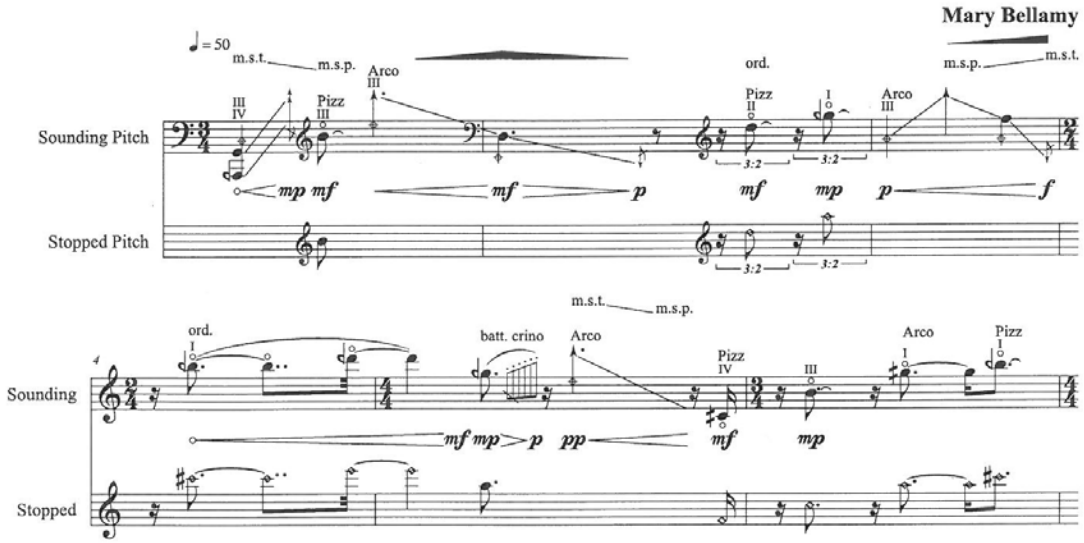
Despite the differences in the working process this work is greatly influenced by my introduction to aspects of Séverine's playing during our first collaboration:

> SB: What I love about this piece is that it is really a piece done for my playing, so when I play it, it feels so much like my body…another interpreter would understand everything, but they would maybe not feel completely within their sound world.[20]

Whilst many of the sounds used in *Abrasion* are very different than those of the earlier cello piece, there is an underlying link between the works in that each explores the cello's facility for varying sound quality through forms of bow movement and finger pressure. Just as *Transference* dealt with ways of moving sound between registers, *Abrasion* features many different bow actions as a way of creating movement in the sound.

> SB: We worked a lot with sounds which are not completely defined, for example half pressed sounds. You also worked a lot with bow motion, which is like a sort of spatialisation of the sound and a way of keeping the sound moving all the time. There were also a lot of damped sounds so you were always on the edge of something audible.[21]

Many of the techniques for creating this spatialisation are combinations of hand and bow movement and these are often made deliberately distinct, dividing the cello into two clear parts (see Example 10).



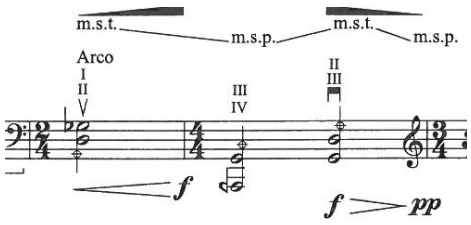
Example 10: *Abrasion*, mm. 1-6.

The example above from the start of the work shows the basic approach to creating movement in the sound, which the piece explores through various subsequent

[20] Ibid.
[21] Ibid.

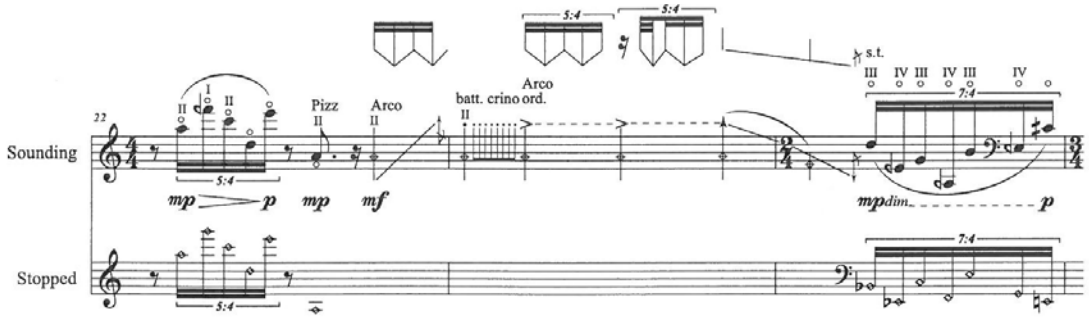
developments. Diagonal bow movements across dampened strings shown in Example 10 occur in conjunction with glissandi and varying bow pressures and allow a continuous transformation of the sound, both in register and timbre. The combination of dampened lower two strings (which includes de-tuned C-string) with glissandi as far along the string as possible and simultaneous bow movement vertically along the string from *molto sul tasto* to *molto sul pont* creates both noise (the sliding of the bow hair against the string which is made audible by muting the string with the hand) and pitch (some rise in pitch is discernible from the glissandi despite the string being muted). Both types of sound are in constant transformation due to the movement of the bow and hand. In addition there is the noise of fingers against the string as they slide along it. As the bow pressure increases contact with the string is created which releases partials from the string as well as an amount of general distortion thus generating further transformation of the sound. Here, then the spatialisation and movement of sound, to which Séverine refers above, are created through actions of the bow and hand together, both of which create changes in timbre. Variations on this bowing technique used in the piece include the following:

1. bow movement between *molto sul tasto* and *molto sul pont* on dampened strings without hand glissandi:



Example 11: *Abrasion*, mm.11-12.
The sound is a result of the combination of bow moving diagonally against string and some partials and distortion. The movement of the sound arises entirely from the bow here.

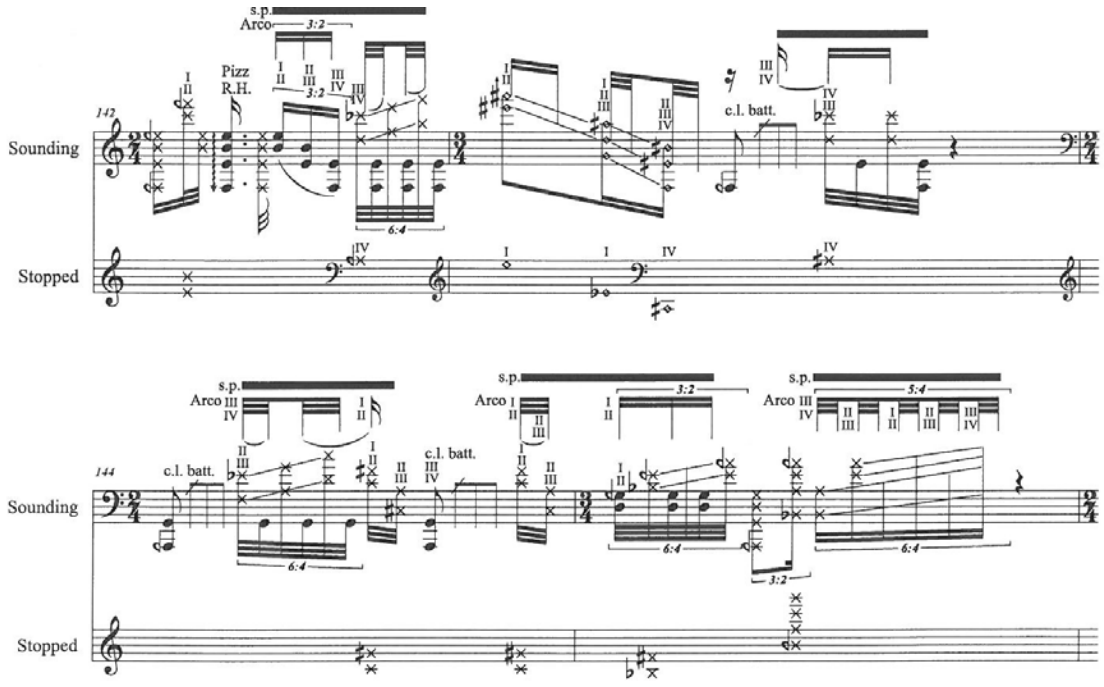
2. Bow motion without extra pressure:



Example 12: *Abrasion*, mm.22-24.

Here faster bow movements back and forth between *molto sul tasto* and *molto sul pont* are rhythmically defined and accented. The resulting sound is a soft brushing of the bow hair against the string, here interspersed with *battuto crino*, which also contains a lot of the sound of the bow hair when used with dampened strings.

3. Moving the bow in double stops across all four strings with extra bow pressure in conjunction with stopped notes or finger percussion:



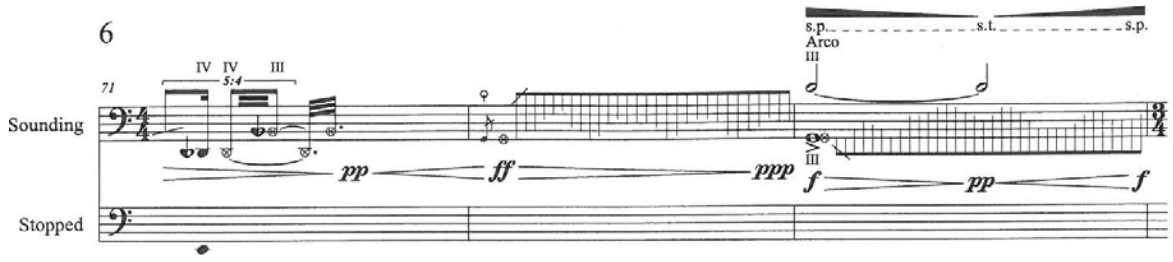
Example 13: *Abrasion,* mm. 142-145.

Here the bow movement is a "sawing" action across all four strings in different double stop combinations (III/IV, II/III, I/II). The sul pont bow position and the use of extra pressure throughout means a lot of distortion is created and many partials are present in the sound. The simultaneous finger percussion in the left

hand adds a layer of additional "noise" to the sound. As this occurs at different positions along the string some change of pitch is also present in the sound.

The last example given above shows a separation of left hand and right hand actions: bow movement is indicated above the stave and the left hand finger percussion on the stave. These two components are played simultaneously and therefore form one overall sound combination. Varying degrees of separation of right hand and left hand actions are explored throughout the piece as a way of creating further spatialisation and movement of sound by splitting it texturally, as follows:

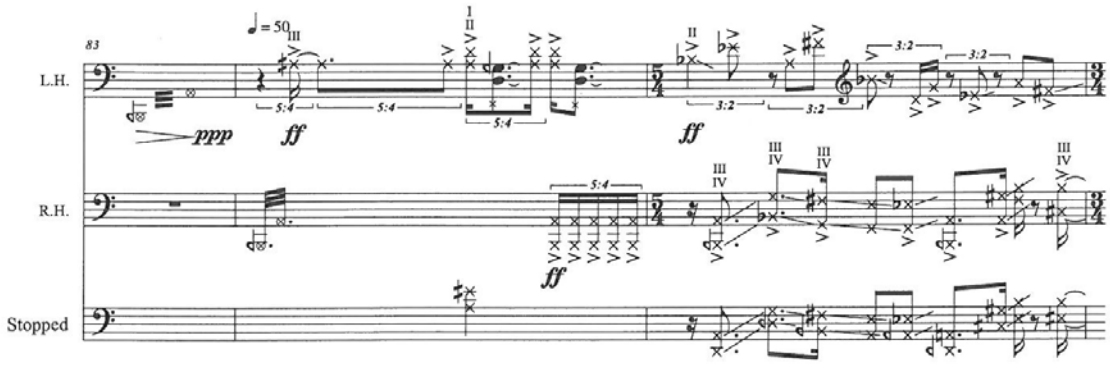
1.The combination of finger percussion with bow movement:



Example 14: *Abrasion*, mm. 71-73.

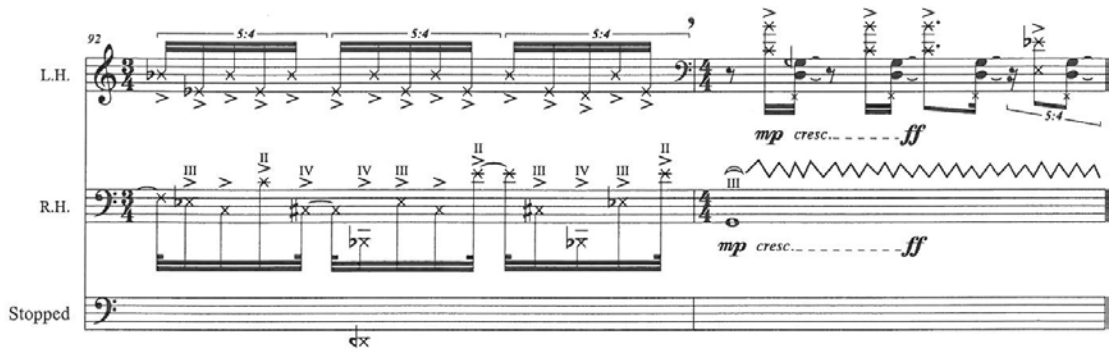
Here the two sound elements are quite separate through their opposing percussive and sustained sound qualities. Forms of movement are present in both parts through the traveling of the finger up and down the string in the left hand and the movement of the bow between *sul pont* and *sul tasto* positions in combination with decreases and increases in bow pressure.

2. Splitting the cello into upper and lower strings with the two hands being assigned a pair of strings each:



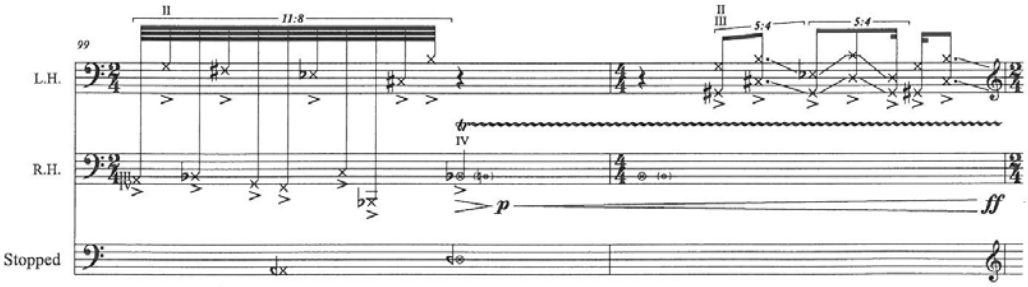
Example 15: *Abrasion*, mm. 83-85

In mm. 92-93 the two hands play similar material featuring finger percussion forming a two part rhythmic texture which occasionally breaks into more separate parts through the introduction of more opposing sound elements:



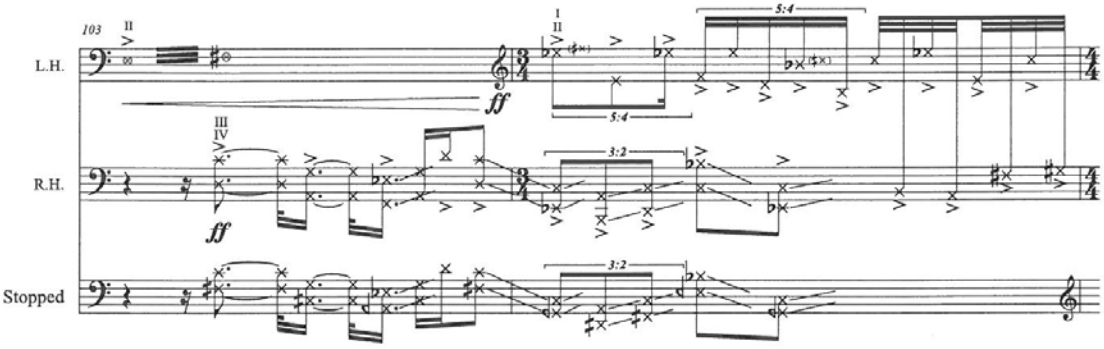
Example 16: *Abrasion*, mm. 92-93.

In m. 93, the right hand part performs a rubbing action on the third string with the fingernail, simultaneously with left hand finger percussion shown in the staff above. In the example below, synchronized left hand and right hand finger percussion breaks into separate distinct sound elements with left hand finger percussion rhythms and right hand finger percussion trill (see Example 17).



Example 17: *Abrasion*, mm. 99-100.

This material is subsequently reversed and switched between the hands a few measures later (see Example 18).



Example 18: *Abrasion*, mm. 103-104.

In each of these examples there is a focus on sound and noise combinations and on creating audible movement of the sound through bow and hand motion. The impetus for many of these sounds stems from the close contact I had with Séverine's playing during our work together. I was inspired by all the variations of bowing she demonstrated to me, in particular her use of very slow bowing in combination with specific bow placement on the string.[22]

> MB: I think for me, those ideas grew out of knowing your playing. It was my response to having worked with you before on all the different bowings you showed me.
> SB: Which is really a collaboration. I love working like that with composers: I bring many ideas and the composer takes them and writes their piece with them, that's really a collaboration to me…I think as an interpreter you know your instrument so well and because I improvise I develop sounds and I have my own sounds. It's very important for me to show them because it's a way to develop my instrument, so that's actually what we did together. In the second collaboration you developed the sounds like I never would have imagined.
> MB: Working with you I was able to visualise your playing so much, so when I was writing those sounds where the bow is moving in particular ways I could imagine how it would look and that influenced how I worked with those sounds.[23]

In this respect the sounds used in *Abrasion* and the way they were developed were closely linked to the collaboration, particularly in a physical sense: the opportunities the collaboration gave for seeing how the various bow and hand movements worked together for example, and the contact with Séverine's playing style.

I continued to explore sounds as having tactile, physical qualities in my collaboration with the flautist Richard Craig on *Semblance,* for bass flute. Timbral transformation to move sounds through different registers, and layering sound elements polyphonically (splitting the instruments into two parts), both of which are important features of the two earlier works, are further explored in this work. Working with Richard on a range of sounds at the start of our collaboration demonstrated the potential for the bass flute to reveal the physical actions of the performer in its sound quality: the breath revealed in certain complex multiphonics and the range of articulations and forms of attack that contain "physical" components in their execution (for example the tongue and breath against the mouthpiece aperture and the amplification of the breath by inhaling and exhaling into the mouthpiece aperture):

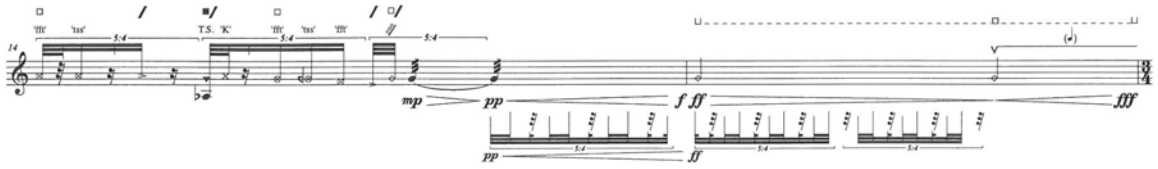
> MB: How would you describe our process of working together?
> RC: The process was deliberately very thorough and focused on approaching issues of notation, extended techniques and communicating both our thoughts regarding the eventual outcome.
> MB: As a performer how did you find our working process?
> RC: It was a challenge to communicate techniques I had developed and describe these in terms of an internal physiognomy, as well as making them relevant to the composer's wishes and aims.

[22] The rich source of sounds can be heard at: http://www.youtube.com/watch?v=Uy1Gc_Ag9ro, accessed July 24, 2013.
[23] Op. cit.

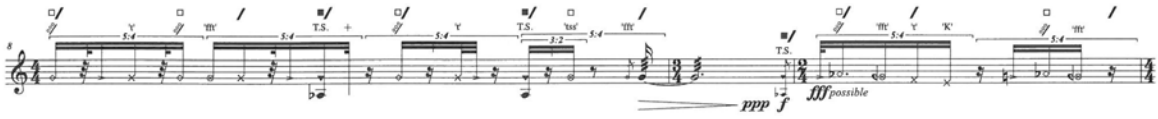
> MB: How much did your own experience as a performer influence the way we worked together? To what extent did your own "vocabulary" of sounds influence this?
> RC: From discussions early on in the process, we quickly arrived at material which was preferable, and in knowing this I could focus on the particular techniques which would be of interest. One could say that with the composer I distilled potential material which would be used in the work. My past work informed the direction of this piece in that the experiences that I have amassed as a performer give me insight as to how my vocabulary would work within certain contexts i.e. would the physical demands of a particular section impinge on the total performance, if so how does one arrive at a compromise.[24]

Through the process of distilling potential material referred to above we arrived at three types of sound/technique we both felt had the capacity for development and exploration: the rich harmonic and multiphonic possibilities, the potential for different degrees of breath and tone to be present within the sound and forms of attack and articulation that had percussive qualities.

The piece features almost continuous changes in mouth position: many passages of the music include changes from normal to breathy (mouth tilted away from the aperture) to very breathy (mouth tilted even further away from the aperture) and then back again to normal position and beyond to closed (mouth covering the aperture). This builds on a natural quality of the bass flute, whose tone is breathy even when played in normal mode due to its size, and creates something equivalent to the bow position changes seen in the two cello pieces already discussed: a continuous transformation and movement of the sound. Changes in mouthpiece position occur during sustained sounds as seen in Example 19, but also during pasages of separate articulations, where the mouthpiece position changes on successive attacks (see Example 20).



Example 19: *Semblance,* mm. 14-15.

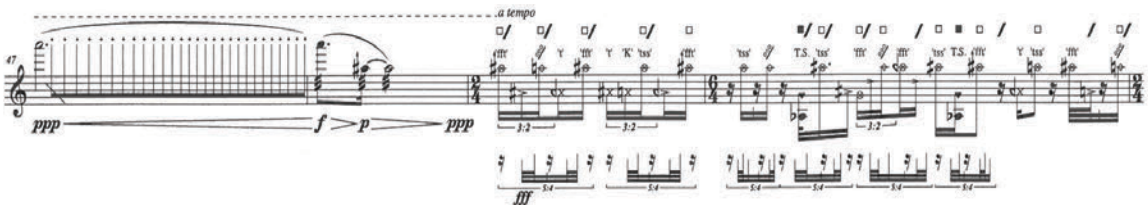


Example 20: *Semblance*, mm. 8-10.

Here movement of the sound into lower and upper registers is achieved through various techniques: jet whistles that project the sound upwards through the harmonic series and

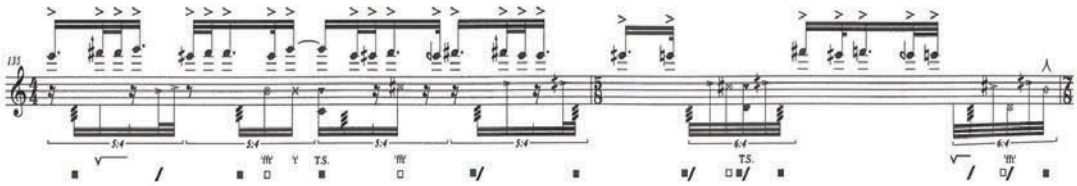
[24] Transcribed conversation between composer and performer, 2011.

tongue slaps that project the played pitch a major seventh lower. This is comparable to the use of variations in finger pressure on the cello in *Transference* to take the half harmonics into different registers and is later emphasised by *actual* movement between registers in the notated material (see Example 21).



Example 21: *Semblance*, mm. 47-49.

Sounds are moved further into the upper and lower registers so that gradually the bass flute is opened up from an initial single pitch to its full range (see Example 22).



Example 22: *Semblance,* mm. 135-136.

The formation of two separate layers this process creates, emphasised by the use of changing mouth positions in the lower part and a constant mode of playing in the upper part, turns the bass flute into a polyphonic instrument, similar to the treatment of separate right hand and left hand actions in *Abrasion,* and carries the same aim of creating movement of sound (both in register and timbre).

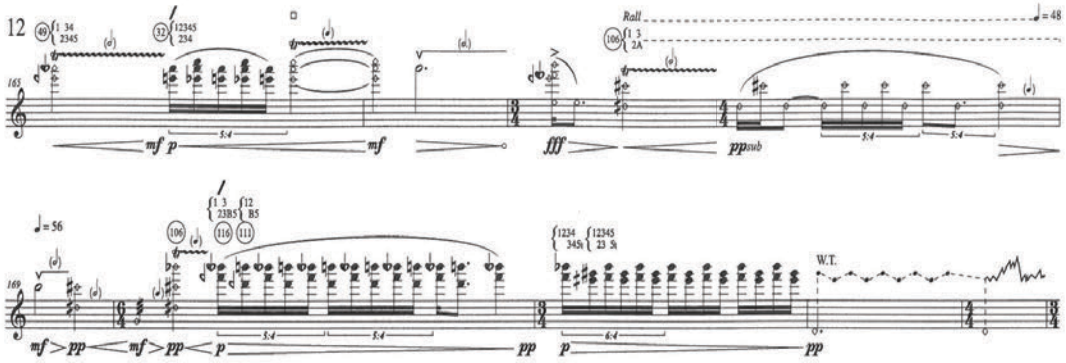
During the collaboration Richard and I worked extensively on finding the right context for the sounds we had chosen, looking at ways of interspersing, layering, and accumulating these sounds in ways that would allow them to combine effectively and work well in performance.

> RC: Performance of contemporary music is often physically demanding, and the management of energy, or its potential, is an element that a composer assumes but rarely has insight into. In this case I was able to generalise and provide feedback on the effect of notation, technical issues and how one could communicate the general form of a work in a more effective way.[25]

As in the cello pieces already discussed I chose sound elements and techniques that projected movement of the sound and the multiphonics that end the work contain this quality too. The nature of the bass flute is such that it is impossible to sustain a

[25] Ibid.

continuous, even, complex multiphonic. Movement between upper and lower parts of the multiphonic occurs naturally, creating movement and transformation in the sound, both between registers (to upper and lower parts of the multiphonic) and in its timbre (different pitches of the multiphonic have different strengths and tone quality and this can be heard as the multiphonic is sustained) (see Example 23).



Example 23: *Semblance,* mm. 165-173.

The instability within the multiphonics, which creates the movement in the sound, is emphasized at times by alternating between two closely linked multiphonics, creating movement both within the individual multiphonics and between multiphonic pairings. The vertical and horizontal movement of sound this creates is comparable to the use of glissandi between close multiphonics used in *Transference* shown earlier in Example 9.

Conclusion

My work with Séverine led me to explore the compositional potential of cello techniques such as half harmonics and and string multiphonics. Both these sounds are by their nature unstable and complex containing different elements of sound and noise and different degrees of audible pitch. They are sounds that are constantly altering and transforming. These formed the basis of the collaborative work on *Transference,* which became an exploration of these very delicate cello sounds. Coupled with the exploration of these techniques was the investigation into different types of bowing and the effect these had on further transforming the half-harmonics and multiphonics. In particular we looked at bow techniques that generated some movement in the sound and offered a way of fluidly transforming sound, and in doing so could build on the unstable nature of the sounds themselves. The compositional language that emerged and indeed the structural form of the finished work reflects this explorative process. The piece has an evolutionary quality, with sounds gradually changing during the course of the piece through subtle adjustments in technique. Sounds are initially explored through their projection into different registers, and then altered through different bowing and finger pressure, which creates a change in their sound quality. Gradually as the piece progresses they are moved into new territory to take on quite different forms.

In *Abrasion* the cello techniques explored centered around independent actions of the right and left hand (the bow and the stopped notes). During the collaboration, we extended our exploration of bowings to those that can move position along the string in conjunction with various hand movements along the string to produce a spatialisation of the sound. Various forms of these are used throughout the piece. As a result, the compositional language focuses very little on actual pitch material (many of the sounds are created using dampened strings) and more on different types of actions by the performer on the instrument. The exploration of various combinations of right and left hand actions create a number of different "textures" during the piece and divides the cello into two parts where contrasting sound elements are assigned to upper and lower strings.

In *Semblance* the collaborative process examined different combinations of breath and tone through subtle adjustments in mouth position and the effect of combining these simultaneously with different forms of articulation and different multiphonics. The result was, as in *Transference,* a variety of sounds that were not completely defined, and were unstable or variable. The piece focuses on the way these types of sound bring physical aspects of the instrument to the foreground, and focuses on bringing out the instability in their sound qualities. The collaboration also involved an exploration of ways of layering sound elements in polyphonic textures through splitting them into opposing registers and incorporating independent left and right hand actions (similar to assigning elements to strings in *Abrasion*), thus building on the complexity of the sounds themselves. The resulting piece is a gradual expansion in a variety of ways: in register, in combination of techniques, and in textural density. The effect of the collaboration on my compositional language was to draw me to explore physical qualities of the bass flute, in particular the ways sound elements can alter through different projections both across and into the mouthpiece aperture and how this can be utilized to transform sounds as they are played.

Through all my work with performers discussed here I have been brought into contact with the material qualities of instruments. The collaborative process through which each piece was developed and the resulting performer-instrument relationship explored has generated a tactility of musical materials that forms a key part of each piece. The performers' own vocabulary of sounds as informed by their performance repertoire and research into contemporary performance practice has also been a key contributor in this process. In addition, the dialogue that emerged through the working process instigated a gradual formation of ideas between composer and performer (relating to sound elements, aesthetic concept, and compositional strategies) that also informed the resulting pieces. This combination of influences and processes impacted on my compositional language and shaped the works discussed here in many positive and inventive ways. The resulting works are the creation of both myself and the performers with whom I collaborated and in this respect are examples of a way of working that reflects the interdependence of composer and performer roles in current contemporary music.