Breathing in Composition and Performance

Portfolio of Original Compositions with Written Commentary

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Abstract

This thesis accompanies a portfolio containing nine compositions (2018–21). The research I carried out during these three years focuses on two approaches that explore changes in players' breathing and the effect those changes can have on music composition and performance. The first approach looks at how flexible and indeterminate changes in performers' breathing can regulate certain elements of a piece of music. The second approach also investigates indeterminate and undefined changes in players' breathing but with the aim of classifying particular modes of breathing that can be reproducibly employed in the context of composition and performance. Special emphasis will be given to the relationship between breathing, indeterminacy, and timing.

I begin this text by outlining the context and the phenomenological approach underlining my research (Chapter 1). I then present two categorisations of my compositions based on the way breathing is explored (Chapter 2). The first category of compositions focuses on three aspects that are shaped by performers' breathing: timing, movements of objects, and performer-performer interactions. The second category of compositions explores three insights that emerged in the process of composing and performing the first category of compositions, namely the threshold between exhaling and blowing, between voluntary and involuntary breathing, and the differences between four definitions of breathing. In the last two chapters (Chapters 3 and 4), I provide commentary on the first and second categories of compositions, respectively. In addition to providing my own interpretations and reflections, this commentary will include performers' feedback that highlight particular aspects of the pieces uniquely accessible to performers. This feedback will be used to trace the processes of inquiry and discovery that occurred throughout each work. A brief conclusion reviews the two approaches adopted and considers possibilities for future artistic explorations in the role of breathing as a compositional tool.

Table of Contents

Table of Figures

Chapter 1 Introduction

1.1 Background

My interest in breathing dates back to 2016 during my master's studies at the University of Leeds. As a composer and improvisor, I was looking for strategies that could overcome the type of timing imposed by bars used in conventional notation and that could provide musicians with flexible time units. During my early experimentation, my compositions used the length of players' breath to determine the duration of a pitch or a set of pitches. As a pianist, I was fascinated by the way the breathing of non-wind players could regulate the timing of sounds and was inspired by previous works that explored this theme. This is evidenced by the similarities my first pieces share with musical precedents, including James Tenney's *August Harp* (1971), where the tempo of the harp notes is determined by the duration of the harpist's inhalations and exhalations, Malcolm Goldstein's *Found Harmonies* (2011), in which string players match their up-bow to their inhalations and their down-bow with to their exhalations, and Michael Pisaro's *Mind is Moving (i)* (1995), where the pauses between the sections are regulated by the length of the guitarist's breaths.

My practice was grounded in what composer and dancer Eleanor Hovda defines as 'process' or 'breath time', namely, '"the time it takes to do something" rather than in metric or clock timing'.[1] Hovda conceives breathing as a malleable and subjective time span which can vary according to the performer and to the circumstances, as opposed to clock time which is fixed and objective. Similar to Hovda, who explored how the length of breathing could regulate dancers' movements, I explored how length of breathing could regulate the internal tempo of performers. My primary fascination with the pieces emerging from this approach was their flexible temporal dimension; performers' breathing

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[1] Eleanor Hovda, liner notes of *Journey Music*, recorded by Relache Ensemble in 1984, in *Eleanor Hovda Collection*, CD 3 (Innova, 2012), also available at <https://www.innova.mu/sites/default/files/liner-notes/808.htm> [accessed 3 May 2020].

was used as a non-metronomic pulse regulating the sequence of musical events. Rather than in the sound of the breath, my interest was specifically focused on the temporal aspects of breathing. Capable of functioning as both a voluntary and involuntary phenomenon, the duration of breathing can be determined by the performer, but it can also either be free from the performer's intention or be affected by external factors. The temporally indeterminate dimension of breathing is a focal point inspiring my research. My early works as a master's student are unified by a set of characteristics: a silent and steady type of breathing, sets of pitches traditionally notated, and soft dynamics. During my PhD studies, I aimed to explore modes of breathing that diverged from this earlier silent, steady mode. My exploration led to the development of new perspectives and strategies for using breathing as a compositional and performative tool. In the following sections of this chapter, I discuss the aims and context of my research, delving into relevant topics in experimental music and breathing itself as well as the methodology behind my work.

1.2 Research Questions

My work aimed to address the following two research questions:

- How can determinate and indeterminate changes in the players' breathing shape and be shaped by musical timing, performer-instrument interactions, and performer-performer interactions?

- How can compositions prompt performers to engage different types of breathing and how can these types of breathing as well as the transitions between them influence their performance?

The first question led me to develop a body of work that uses breathing as a regulator, shaping certain elements of the piece, such as timing (e.g., duration of sounds, onset and offset of notes, and length of sound sequences) and interactions (e.g., performer-object interactions, cue-response mechanisms amongst performers). The musical results emerging from these compositions

have been examined using a phenomenological method (discussed more extensively in section 1.5). I used this method to gather players' feedback on their experiences of my pieces and on the way their breathing changes and adapts to the tasks defined within the scores. The performers' accounts allowed me to identify different types of breathing and the strategies used to facilitate their execution. These insights inspired another set of works that addressed the second research question. Rather than exploring breathing as a regulator, this set of works aimed to investigate specific characteristics of breathing through composition and performance; some of these characteristics include the transition from one type of breathing to another, the changes in the performers' focus on their breathing, and the differences between indeterminate and determinate aspects of breathing. The first and second sets of works and the research questions they address will be discussed more thoroughly in Chapters 3 and 4, respectively. In order to provide context for this discussion, the following section will focus on the artistic precedents and perspectives informing my research.

1.3 Experimental Music

1.3.1 Overview of Concepts and Approaches

Experimental music is the research context within which my project is situated. In this section, I will draw out which aspects of this type of music relate to my works. Since its inception, a multitude of definitions have been ascribed to experimental music. Trying to define experimental music is challenging precisely because, as Jennie Gottschalk points out, 'it is not a school or a trend, or even an aesthetic. It is, instead, a position—of openness, of inquiry, of uncertainty, of discovery'.[2] What I find compelling in Gottschalk's observation is the link between experimental music and exploratory attitudes. When I investigate certain aspects tied to breathing and music, I often find myself in unknown territory, continuously questioning the procedures I employ. As one

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[2] Jennie Gottschalk, *Experimental Music Since 1970* (London: Bloomsbury Academic, 2016), p. 1.

would expect from an exploratory approach, the outcomes frequently diverge greatly from what I expected.

This aspect of unpredictability is the cornerstone of John Cage's definition of experimental—'an experimental action is one the outcome of which is not foreseen'.[3] Composer Joseph Kudirka inextricably links the experimental with experimental music by stating that 'experimental music may be viewed as an application of the experimental: experimental practices, processes, and procedures which either operate upon music and/or which function produce music as an outcome of their application'.[4] Through composition, performance, improvisation and other activities, experimental practices are tested and explored. Experimental music embodies the often undefined and unforeseen results of these practices. Underscoring the importance of indeterminacy in experimental music, Gottschalk treats it as one of five thematic arcs in a historical survey of the genre, defining it as such:

> Some other terms associated with this definition [indeterminacy] are chance operations, aleatory, circumstance, contingency, risk, openness, and uncertainty. The outcome may be unknown to any agent in the piece—performer, composer, audience—if those roles are in place, or to anyone in a position to compare the act to the outcome.[5]

As important as indeterminacy is to experimental music practices, experimental music is not exclusively characterised by indeterminacy. James Saunders, for instance, establishes constraints through sets of 'indicators', which can be employed in musical genres outside of experimental music but whose intersection fosters experimentalism.[6] Ascribing importance to constraints in experimentalism, artist and composer Brian Eno states that 'an experimental composition aims to set in motion a system or organism that will generate unique (that is, not necessarily repeatable) outputs, but that, at the

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[3] John Cage, *Silence: Lectures and Writings by John Cage* (Hanover: Wesleyan University Press, 1961), p. 39.

[4] Joseph Kudirka, 'Extending the Invitation: Composing Notated Experimental Music for Performance', (unpublished doctoral thesis, University of Huddersfield, 2012), p. 16.

[5] Jennie Gottschalk, *Experimental Music Since 1970* (London: Bloomsbury Academic, 2016), p. 2.

[6] James Saunders, 'Introduction', in *The Ashgate Research Companion to Experimental Music* (Farnham: Ashgate Research Companions, 2009), pp. 1–4 (p. 2).

same time, seeks to limit the range of these outputs'.[7] The approach described by Eno corresponds to the strategy I use in my compositional practice. I establish the conditions and the limits in which performers, musical materials, and other possible agents act and engage with each other. Using this approach, the results may be different from performance to performance but they are always situated within a circumscribed area of exploration. It is this notion of a circumscribed area of indeterminacy that constitutes the framework for my PhD research. My works engage this idea by using the breath to define an area of exploration with clear compositional and biologically defined boundaries while fostering indeterminacy through the inherently flexible nature of performers' breathing.

In addition to constrained indeterminacy, another point of overlap between my work and experimental music is the widely shared perspective amongst experimental composers that, as Saunders expresses so clearly, 'the idea or concept is as interesting (if not more so) than the sound'.[8] Discussing the development of experimental music in the UK during the seventies, Eno asserts that 'it [experimental music] made a point of being more concerned with how things were made—what processes had been employed to compose or perform them—that with what they finally sounded'.[9] Likewise, composer and performer Andy Ingamells expresses that 'when watching performances of experimental music I want to know what is written of the pages in front of the players, especially in the case of graphic scores […] where the visual content of the score is as compelling as its sounding result'.[10] In my work, I am interested in characteristics of breathing that do not emerge through the qualities of sound.

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[7] Brian Eno, 'Generating and Organizing Variety in the Arts', *Studio International*, 192.984 (1976), 226–33 (p. 227).

[8] James Saunders, 'Introduction', in *The Ashgate Research Companion to Experimental Music* (Farnham: Ashgate Research Companions, 2009), pp. 1–4 (p. 2).

[9] Brian Eno, 'Foreword by Brian Eno', in *Experimental Music: Cage and Beyond*, by Michael Nyman, 2nd edn, (Cambridge: Cambridge University Press, 1999), pp. xi–xiv (p. xi).

[10] Andy Ingamells, 'Performing the Compositional Act with Bouncy Castles, Soap and Shh', unpublished paper delivered at the conference 'TENOR Internal Conference on Technologies for Music Notation and Representation' (Monash University, July 2019), unpaginated, [also available at <https://www.researchcatalogue.net/view/1058718/1058719>].

The sounding result is a by-product of experiments that investigate the thresholds in between voluntary and involuntary breathing, the use of breathing as a time regulator, and the performer-performer interactions that emerge when players' breathing is used a response mechanism. An example of a piece that highlights the non-sonic and abstracted dimensions of my music is *From Exhaling to Blowing* (2020), discussed in section 4.1.2. This piece is a silent video piece, allowing external observers to perceive the changes in players' breathing only through the visuals provided and not through sound.

My compositional approach also intersects with experimental practices in regard to the role of the performer, which occupies an especially unique and important place in the annals of experimental music. The performer of experimental music is often asked to be exceptionally conscious, attentive, and faithful to the instructions in the score and to adopt an approach that might be defined as non-subjective during which, as flautist Christine Tavolacci explains, 'one remove[s] the self from the equation and take[s] action in the most basic sense'.[11] Pianist Philip Thomas asserts that 'the performance of such music must be free of interpretative impositions and instead be devoted to the actions required by the score'.[12] My practice embraces the attitudes described by Tavolacci and Thomas in that most of the instructions in my scores ask for clear and objective actions and tend to deliberately avoid what Thomas defines as 'interpretative impositions'. While certain, finer aspects of my pieces may be influenced by performers' choices and their idiosyncrasies, the basic instructions for the performers' breathing are usually not left to the performer. Rather, performers' breathing adapts and changes according to the context established by the score.

Performer and musicologist Cecilia Sun provides a useful distillation of this discussion thus far through the identification of four main musical characteristics of experimental music: 'chance procedures, graphic and verbal notation, radical

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[11] Christine Tavolacci, 'Some Informal Thoughts on the Performance Practice of Experimental Music', 9 (2013), in *The Experimental Music Yearbook* <https://www.experimentalmusicyearbook.com/Some-informal-thoughts-on-the-performance-practice-of-experimental> [accessed 10 Nov 2020].

[12] Philip Thomas, 'A Prescription for Action', in *The Ashgate Research Companion to Experimental Music* (Farnham: Ashgate Research Companions, 2009), ed. by James Saunders, pp. 77–98 (p. 80).

simplicity, and unorthodox performance requirements'.[13] While Sun's account is not intended to be fully comprehensive, the pieces in my portfolio emerge from this heritage and often involve the features listed by Sun. My pieces tend to engage indeterminate elements (including timings, sounds, breathing, and players' movements), text scores combined occasionally with graphic or conventional notation, a very narrow set of tasks and pitches, and musical situations that are often unfamiliar to the players.

Lastly, from a historical perspective, the pieces discussed in this thesis share characteristics of works from the musical movements of Fluxus and of the Wandelweiser collective, particularly as it applies to their sonic and visual outcomes. Although I have a strong musical connection with these artistic traditions, the research concerns that inform my practice often diverge from that of many Fluxus and Wandelweiser pieces that are similar sounding to mine. My research is specifically concerned with how indeterminate changes in breathing can affect performative parameters in my pieces (e.g., performers' actions, performer-performer interactions, performer-instrument interactions) and on the way the sounding results may reveal these changes. In this respect, my process is closed tied to composition and performance practices that investigate breathing and its relationship to timing, indeterminacy, physicality, and performer-performer interactions. The following section will discuss these composition and performance practices that were fundamental in the development of my own practice.

1.3.2 Breathing: Oliveros, Sdraulig, and Williams

While in some of my works breathing can be explicitly heard, my compositions are not primarily concerned with the sonic dimension of breathing and, therefore, differ from the works of composers who explore breath primarily as sounding material; such as Helmut Lachenmann, Michaël Levinas, Brian Ferneyhough, Salvatore Sciarrino, Dieter Schnebel, and Chaya Czernowin. As mentioned earlier, I share Saunders's sentiment that the idea or concept behind

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[13] Cecilia Sun, 'Experimental Music', *Grove Music Online* (2012) <https://doi.org/10.1093/gmo/9781561592630.article.A2224296>.

music is as interesting (if not more so) than its sound. Whether breathing is audible or silent, my purpose is to explore indeterminate changes in the performers' breathing, thresholds in between types of breathing, and timings of breathing.

My interest in these aspects was inspired originally by investigations into breath carried out by composer Pauline Oliveros. Oliveros delves into the topic of breathing and players' awareness of breath in many of her works. Three examples of her works revolving around the breath include: (1) *Sonic Meditations* (1971), a series of text scores that ask the performers to observe their own breathing before the beginning of each performance; (2) *Deep Listening: A Composer's Sound Practice* (2005), which includes several exercises on breathing; and (3) the score of *Rhythms* (1996), which lists a set of questions such as: 'What is the current tempo of your breathing?'.[14] For Oliveros, breathing is 'the door to the unconscious where a great store of energy lies ready to support or obliterate conscious efforts'.[15] Her understanding of breathing—as a tool that enhances the players' awareness of their own actions, the other players, and the performances space—has been central to the questions I address through my own practice.

Two other key musical figures who greatly informed my PhD project are composer Charlie Sdraulig and flautist Kathryn Williams. Across his works, *line* (2011–12), *breath* (2012), and *process* (2012–13), Sdraulig uses breathing in the development of cue and response systems to shape unpredictable interactions between the players. In a more recent work *one to one* (2018–19), Sdraulig uses one such response system by asking a violinist to modulate their playing according to an audient's breathing. The way Sdraulig conceives breathing significantly influenced the techniques I used to foster performer-performer interactions within my pieces for large ensembles (discussed in section 3.3). Regarding Williams's projects, the concern is with breathing and physical activity, breathing and timing, and questioning the way breath can be

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[14] Pauline Oliveros, *Anthology of Text Scores* (Kingston: Deep Listening Publications, 2013), p. 69.

[15] —————————, *Software for People: Collected Writings 1963–89* (Baltimore: Smith Publications, 1984), p. 151.

used as a limit. In Williams's project COMING UP FOR AIR (2017–ongoing), an open call for scores invites composers to write pieces lasting one breath:

> This project is an invitation to engage with restriction as a creative impetus, to consider the materiality of the flute, the physiology of breath and body as activating agencies for sound, and to explore equally the sounds possible during inhalation as well as the traditional spectrum of sounds produced through exhalation.[16]

It is the way this project links breathing with timing, restrictions, and the performer's physical body that I find so intriguing. In her collaborative project PIXERCISE (2017–ongoing) with composer Annie Hui-Hsin Hsieh, Williams performs a twenty-minute high-intensity interval training workout while playing the piccolo. Her breathing changes gradually throughout the performance, affecting the sound and timing of her playing. I found Williams's approach useful in my compositional process, particularly when investigating changes in the timing and mode of breathing.

While there are several other composers, performers, and artists who have greatly influenced my research inquiries, it was the works of Oliveros, Sdraulig, and Williams that, above all, helped establish the subject of my research while also providing a repertoire of compositional and performative approaches concerned with breathing. The contributions from these artists significantly informed my process of creating pieces that investigate aspects of breathing. My project contributes to scholarship by extending their work in novel directions specifically with regard to structuring the compositional and performative role of breathing.

1.3.3 Systematic Approaches: British Systems Music and Wandelweiser Collective

I will now discuss two musical trends that have had a defining influence on the techniques and the formal strategies I use in my compositions. These trends

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[16] Kathryn Williams, 'Profile: Kathryn Williams', interview, *Tempo*, 73.288 (2019), 109–11 (p. 110).

are British systems music and the systematic approach of the Wandelweiser collective. Some characteristics of the work by composers Christopher Hobbs and John White, both associated with British systems music, are central to my own practice. These include the limited set of elements used in a piece, the lack of aesthetic preferences in favour of systematic procedures, the unusual instrumentation employed, and in certain cases, the way the performers' breathing is used. Comparing elements of minimalism between British systems music and the American composers Steve Reich, La Monte Young, and Terry Riley, musicologist and clarinettist Virginia Anderson observes that: 'British composers leavened their 'systems' processes, like their experimental indeterminacy, with humour, musical and non-musical reference, and unusual instrumentation'.[17] Considering these features, it might be useful to reflect upon two music examples; the first one is Christopher Hobbs' *One Note* (1966) for any combination of bowed string or wind instruments. The score instructs performers to play just one note throughout the whole piece and to match the duration of their note to the duration of one bow or one breath. The second one is John White's *Drinking and Hooting Machine* (1968) where performers are asked to blow into similar-sized bottles and to use their breath as a pulse to regulate actions. The limited set of musical materials in Hobbs' *One Note* and the unusual instrumentation in White's *Drinking and Hooting Machine* mirror trends in my own works, which often restrict the number of actions or sounds performed and which ask the players to use ordinary objects as instruments (e.g., ping pong balls, marbles, paper, and grass) or to realise unusual instructions with their instruments.

Composer Michael Parsons' perspective on English systems art and music might further illuminate the relationship between my work and these composers. According to Parsons, two central features of systems art are the use of pre-existing principles to determine the relationship between the elements and the intention of working in series.[18] Both features characterise my work, although, as

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[17] Virginia Anderson, 'Systems and other Minimalism in Britain', in *The Ashgate Research Companion to Minimalism and Postminimalist Music*, ed. by Keither Potter and others (Farnham: Ashgate Publishing Limited, 2013), pp. 87–106 (p. 87).

[18] Michael Parsons, 'Systems in Art and Music', *The Musical Times*, 117.1604 (1976), 815–818 (p. 815).

I will reinforce shortly, my intention of working with series does not translate into purely serial forms as it does with other systems composers. Regarding the first feature, I use pre-existing principles to determine the relationship between elements by approaching the same idea from multiple angles in a single piece or across two or more works. For instance, if from one section to another, I were to change instructions on breathing, my predisposition would be to retain the musical materials and instrumentation. Inversely, if I were to change instrumentation, I would likely retain the breathing instructions. This approach is in contrast to several others in contemporary music that employ a wide range of musical material and techniques. By limiting the number of changing variables at any one time, I can test how one or, at most, a few variables (e.g., timing, interactions, and sounds) can be influenced by simple alterations to the rules and elements involved. For instance, in one of my pieces, *Breathing, Moving, Playing* (see Chapter 3.1), I use the same chord sequence throughout all four sections while only changing instructions for the player's breathing and speed of movement between chords. Moreover, by inverting instructions from one section to another, I limit the number of tasks and the types of relationships between breathing, moving, and playing that are investigated. The first section, for instance, asks that the duration of the player's breath dictate the speed of movement between chords while the second section asks that speed of movement between chords dictate the duration of the player's breath. This inversional transformation of instructions allows me to develop a deeper understanding of how two phenomena, in this case breathing and chord transitions, can relate to each other; what changes when one phenomenon regulates the other? I also invert instructions across pieces for the same purpose of focusing attention on a limited set of relationships. This can be observed when comparing the instructions for two ensemble pieces *Couples or Groups* and *Couples II* (see Chapter 3.3); in the former piece the breathing of one performer regulates the instrumental sounds of another performer while in the latter piece the inverse occurs, the instrumental sounds of one performer regulates the breathing of another performer. Referring back to Parsons' observation, this inversion of instructions functions as a pre-existing principle that determines the relationship between the elements. The inversional

approach to instructions is also a central example of how I constrain the number of elements and relationships in my piece. Indeed, the reader will find variations on the theme of inversional and combinatorial transformations of instructions throughout this thesis. It is in using these methods that my work adopts a systematic character reminiscent of British systems composers. In fact, some pieces, such as Christopher Hobbs' *One Note* (1966), are not just similar in character to my work but also in specific instructions; *One Note* (1966), like my piece *Couples II,* involves matching the duration of notes played with the duration of breaths. Given my interest in interpersonal dynamics, though, *Couples II* involved different performers matching one another's notes and breaths while *One Note* involved a single performer matching their own note with their own breathing (or bowing). As evidenced by this example, I do not simply mimic previous British systematic pieces, but rather I extend the context of those systematic pieces in areas which inspire me and incorporate my own specific concerns.

Thus far, the discussion of my work relates most to Parsons' first central feature of systems art, the use of pre-existing principles to determine the relationship between the elements. Parsons' second central feature of systems art is the intention of working in a series, a feature I also incorporate in my compositional process.[19] A central influence on my use of series is derived from practices of the Wandelweiser collective. Discussing the use of series by Wandelweiser composers, James Saunders highlights the purpose behind their use of series and the questions they address in adopting a serial approach:

> Typically, serial work presents multiple articulations of a central formative principle or group of principles. By experiencing multiple versions of a work, these principles may emerge through comparison, whilst each part may retain its autonomy. Serial approaches challenge the need to address why only one prioritized result of the creative process is required, and question what is gained by presenting multiple articulations of a principle or set of materials.[20]

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[19] Michael Parsons, 'Systems in Art and Music', *The Musical Times*, 117.1604 (1976), 815–818 (p. 815).

[20] James Saunders, 'Testing the Consequences—Multipart Series in the Work of the Wandelweiser Composers', *Contemporary Music Review*, 30.6 (2011), 497–524 (p. 498).

The Wandelweiser composers, in other words, employ a serial approach by investigating the same format, material, or idea from multiple, distinct perspectives; it is by observing a phenomenon from several angles that they explore the many possibilities a single concept may offer. Manfred Werder's *ausführende* series (1999–ongoing) provides an example of a Wandelweiser piece that thoroughly exploits such an approach. This work is totally comprised of series within series. The project title *ausführende* refers to a series of nine scores, each using the same materials and concepts but arranged for a different number of players from one to nine. Each of these scores consists of a total of 4,000 pages to be performed in succession. The work is performed incrementally, with one or more pages performed at a time by performers from anywhere in the world at any time. In this way, each score can be said to comprise of a series of 4,000 pages, with at least one page realised in every performance. Moreover, each page is itself a complex of series; there are 8 lines on each page lasting one minute each and within each line there are five 12-second units. It is within these units that one finds the only indivisible elements of the work: a single digit number to represent an action performed or the punctuation mark of a period to represent silence. This work exemplifies a comprehensive, strict use of series, imbuing the work with a high degree of internal consistency found throughout both macro and micro layers of the project. Other Wandelweiser pieces, such Sam Sfirri's *Beckett Pieces* (2011), use serial methods with less stringency. Sfirri's work is a series of fifteen short text scores, each using a different quotation by Samual Beckett as source material for deriving performer instructions. Each piece has a different set of instructions, which are often reshaped only slightly from piece to piece. Similar to my piano piece *Breathing, Moving, Playing* (see Chapter 3.1.2), one set of Sfirri's instructions asks performers to match the duration of their note to the duration of their exhalation. In each piece, instructions are sparse, ranging from one to a few sentences, and focus is placed on only one or two musical parameters (including number of actions/sounds, duration of tones, duration of breathing, or onset of notes). As can be seen, this work does not just exemplify the use of series in Wandelweiser music but also the use of limited sets of elements, experimental indeterminacy, and non-musical references, all features

that Virginia Anderson associated with British systems music. As *Beckett Pieces* demonstrates, there exists an overlap between the systematic and serial approaches of British systems music and of the Wandelweiser collective.

Most of my pieces incorporate serial procedures influenced by either British systems music or the Wandelweiser collective. In the aforementioned piano piece *Breathing, Moving, Playing*, each of the four sections can be regarded as four versions of the same piece; the immutable content of the piece is the chord progression with each 'version' (or section) exploring a different relationship between one's breathing and a musical parameter (e.g., duration of chordal transitions or the duration of chordal decay). A serial character, therefore, is already invoked by a single iteration of four sections; the repeated chord progression is the unchanging backdrop upon which a different relationship between breathing and a performative parameter is made audible to both performer and audient. Like Werder's *ausführende*, this piece also consists of embedded series although to a much lesser degree than in *ausführende.* In *Breathing, Moving, Playing*, not only can the sections 1, 2, 3, 4 be regarded as a series on its own but the 'long versions' of this piece are also series that duplicate the sequence '1, 2, 3, 4' and rearrange the contiguous ordering of sections (e.g. 1 2 3 4 4 3 2 1). The most macro level at which we might observe series in this piece is at the level of alternative versions. After the performance of the original long version, I composed three other versions with different juxtapositions of the '1, 2, 3, 4' unit of sections: (1) 1 2 3 4 1 2 3 4, (2) 4 3 2 1 1 2 3 4 and (3) 4 3 2 1 4 3 2 1 (for further discussion, see Chapter 3.1.1). These versions represent an on-going series with no definitive end. The outlook I share with British systems music and the Wandelweiser collective is that premeditated redundancy in music is a valuable tool that does not equate to redundancy in information, as one might expect, but to unearthing hidden gems that might otherwise go unnoticed in a web of constantly shifting sounds and actions. This redundancy is at the heart of the serial approach.

In my other piece, *From Exhaling to Blowing*, the form of a series is exceedingly transparent. One action, a slow transition from exhaling to blowing, is directed towards six different objects, one at a time. In effect, this piece features six different versions of the same process, each version with a different

object on which to blow (water, paper, cotton thread, static grass, flame, or dandelion). This piece highlights a previously cited observation by Saunders which is that, in serial work, formative principles arise through comparison. Saunders also asks 'what is gained by presenting multiple articulations of a principle or set of materials'.[21] From my perspective as both the composer and performer of this piece, what was gained was a more thorough understanding of the transition and distinctions between exhalation and blowing and the different ways that this process can be made visible with the use of responsive objects. The following observation by Sol LeWitt is also relevant here: 'Serial compositions are multipart pieces with regulated changes. The differences between the parts are the subject of the composition'.[22] As a compilation of the same action applied to multiple objects, *From Exhaling to Blowing* can easily be interpreted as a 'multipart piece'. In this case, the differences between the parts are the subject of the piece not so much because they point to the differences in the physical parts (or objects) but because they refer to that recurring effort to transform the act of exhaling to that of blowing. By framing the piece in serial parts, the differences among the parts are that which highlight the topic under investigation: the control (or lack thereof) of our exhalations and the differential force we can apply to it.

One last significant point of convergence between my approach and the systematic approaches mentioned above relates to a general attitude or philosophy towards the role of composer. Among composers of systematic music, particularly that of the Wandelweiser collective, there is a commonly-held perspective that dynamics and instructions should be applied judiciously and sparingly, if at all. This minimalist approach to annotations in the score (and to the notation of the score itself) has the effect of highlighting the systematic structure underlying the work. Conversely, the addition of layers of performance instructions can often have the effect of disguising the systematic approach applied to a piece. In *From Exhaling to Blowing,* for instance, the specification of blowing techniques, dynamics, and articulation that change over time would

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[21] James Saunders, 'Testing the Consequences—Multipart Series in the Work of the Wandelweiser Composers', *Contemporary Music Review*, 30.6 (2011), 497–524 (p. 498).

[22] Sol LeWitt, 'Serial Project #1 (ABCD)'. *Aspen Magazine*, 5/6 (1966).

obfuscate the simple serial, list-like form of the piece and the single
performative act or effort under scrutiny. In reference to the trend of minimal
performance instructions, Parsons observes that systematic approaches feature
strong independence from aesthetic choices or the 'free choice' of the
composer or performer: 'A musical system [...] is not modified by free choice,
but involves a willingness to accept the unforeseen'.[23] It is not that I am
disinterested in dynamics, sound, or the particular manner in which
performance is executed. It is that I prefer, along with several of my precedents,
that dynamics, sound, and performance techniques serve as signifiers for (and
artefacts carrying rich information about) the unique context in which the piece
was realised. Using this approach, I, along with other composers, treat these
aspects as natural and inevitable by-products of the performance, offering great
potential for insights and discovery that might otherwise be curtailed by
prescribed instructions. In an interview with Saunders, Werder discusses the
minimalist approach he has applied to his scores since 1997. He refers to
instructions on dynamics and sound as 'the author's composed preferences'
and refers to the material that emerges in the absence of these instructions as
'context specific material':

> The phrase 'für sich, klar und sachlich. einfach' [to itself, clear and
> objective. simple] replaced all further indications on dynamics, sound
> qualities etc. since 1997. In general I wanted to write a music where
> the used material—sound and absence of sound—were just there as
> material (and not as an author's composed preferences). The used
> material could be seen then more precisely as context specific material
> (the accidental qualities of performers, instruments, the site) [...].[24]

As in the case with my scores, Werder's aesthetic preferences around
dynamics and sound qualities are minimized; they are either implied or
unspecified. Similarly, in my pieces, dynamics, articulation, and sound quality
are never specified. Instead, they emerge from and in specific relation to
musical scenarios that I help construct and that I wish to explore.

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[23] Michael Parsons, 'Systems in Art and Music', *The Musical Times*, 117.1604 (1976), 815–818 (p. 816).

[24] Manfred Werder, 'Manfred Werder', interview, in *The Ashgate Research Companion to Experimental Music*, ed. by James Saunders (Farnham: Ashgate, 2009), pp. 353–57 (p. 353).

Up until now, I have focused on the similarities between my compositional approach and the systematic approaches of composers who have greatly influenced me. However, as I mentioned earlier, there is an important distinction between my own systematic approach and that of the aforementioned groups of composers. While I am influenced by and incorporate several of the systematic procedures of British systems and Wandelweiser composers, the force that drives my compositional decisions is my phenomenological approach (discussed in detail in section 1.5). When using this approach, my decisions on the content and systematic treatment of instructions is guided by my discussions with performers and my analysis of their feedback. Revisions of sections and whole pieces are shaped by this composer-performer dialectic. Alternative versions of pieces are designed, therefore, not to exhaust all possibilities but to further investigate some insights or questions that emerged from my experience and that of my performers. Regarding specific instructions for a piece, the same principles apply; if a performer does not experience the relationship between breathing and bodily movement that I intended, for instance, then I would alter the instructions instead of retaining the symmetrical structure of a strict inversion. In other words, I prioritise the experience of the performers and me (specifically the potential for such experiences to yield valuable insight) above the satisfaction of a strict systematic procedure. Compared to my music, strictness in the execution of systematic procedures is more commonly seen in British systems music and, especially, in Wandelweiser music. My use of the phenomenological method is perhaps the central reason why my music is generally more flexible in its use of systematic or serial procedures compared to that of Wandelweiser or British systems music.

Notwithstanding these differences, my approach is still closely related to the these well-established systematic trends. Along with the composers who have influenced me, I share an inquiring and experimental mindset that explores an idea by continually testing possibilities, or hypotheses, with unforeseen outcomes. I liken my process to following a trail of possibilities; one possibility leads me from one version or section to another (often slightly) different version or section of a piece. Like the aforementioned systems composers, I use a systematic approach to help isolate the variable of interest from the details that

surround it and, to assist in this, I minimize the prescription of aesthetic preferences in my scores and in my collaborations with performers. Where there are aesthetic decisions to be made, I opt for making those decisions with my performers and in response to their feedback, as will be discussed in the following section.

1.4 Performers

1.4.1 Who Are the Performers?

When I ask 'Who are the performers?' what I really mean is 'Who are the performers for me?'. In this section, I do not intend to present a philosophical argument defining a performer in the abstract; rather, I intend to describe the wide spectrum of performers that are invited to and are capable of performing my pieces as well as my reasons for ensuring that the criteria for performers fosters inclusivity. I designed most of my pieces so that they can be performed by musicians, amateurs, and non-musicians; intensive musical training is usually not required for my pieces. This interest in engaging performers from diverse backgrounds resonates with the inclusive approach of Oliveros starting in the sixties. In the introduction to her *Sonic Meditations*, for instance, she specifies that 'because of the special procedures involved, most all of the meditations are available to anyone who wishes to participate regardless, or in spite, of musical training'.[25] Here, she even alludes to the possibility that musical training may be a hindrance not an advantage, as it is often framed. Indeed, the types of activities in *Sonic Meditations* are often focused simply on a person's capacity to listen with open ears, so to speak, a task that may, in fact, be more difficult for musicians who are trained to listen and judge sounds in particular ways.

While almost all of the pieces discussed in this portfolio ask at least some of the performers to play instruments, for most pieces minimal to no musical training is necessary. For instance, in *Couples or Groups*, players of either wind

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[25] Pauline Oliveros, *Sonic Meditations* (Baltimore: Smith Publications, 1974), unpaginated.

or non-wind instruments must only produce two distinct pitches with no specifications on the quality or technique used to produce those pitches. Such as a piece may require minimal musical training. The piece *Moving Objects* only requires that marbles or ping pong balls be blown across piano strings to produce shapes. This piece does certainly require a skill if the shapes are to be achieved but it is not a skill that is considered 'musical' or that is taught to musicians as part of a standardised program. It is a skill that I imagine anyone from virtually any background might possess and, indeed, it is hard to imagine what type of person may be particularly adept at meeting the challenges of such a piece. There are also activities in my pieces that do not depend on musical training or on performing challenging tasks. In *Couples II*, one group of performers are 'breathers' whose goal is simply to match the duration of their breathing to the duration of the sounds produced by the performer with whom they are partnered. Given that 'breathers' are being asked to manipulate breathing in potentially unfamiliar ways, they may find themselves developing a new skill or set of skills around active listening and matching one's breathing to an external source. However, as every living human is breather, the eligibility criteria for performing this piece is vastly inclusive. A similar scenario applies to my piece *From Exhaling to Blowing* where a performer must simply transition from normal exhaling to blowing within one breath, while always directing their exhalation upon an object or medium, such water or a cotton thread. Again, such a piece requires skill but it is a skill that can be developed by virtually anyone (or at least a wide range of people) with the intention to execute the task faithfully; the barrier to entry is purposefully set low so as to accommodate as many performers from as many backgrounds as possible.

The fact that most of the performances documented in this thesis involve trained musicians is not by design and is a reflection, more than anything, of the network of colleagues with whom I am surrounded and the groups of people who are either most willing to perform my pieces or whom I am most capable of gathering for rehearsals. As is the case with many musicians in academia, we must be especially proactive about engaging with 'outsiders' in order to include them in our musical projects. While my attempts to include non-musicians as performers of my pieces are still limited, I have made some specific efforts to

engage with them. In particular, I led two workshops with non-musicians on preliminary versions of *Couples II* and *From Exhaling to Blowing.* One of the most useful insights from these workshops was that the non-musicians approached my breathing instructions quite similarly to the musicians. This provided me some reassurance that the breathing instructions I would ultimately incorporate in the final scores were accessible and performable for non-musicians.

My decision to design pieces that are performable by musicians and non-musicians alike is related not only to musical precedents, such as the work of Oliveros, but also to my phenomenological approach as a composer (defined in Chapter 1.5). The phenomenological method I use throughout the entirety of my compositional process, from stages of ideation to post-performance feedback, places paramount importance on an individual's experience and the value of its description. According to this approach, an understanding of a particular event or material is deepened when one engages with descriptive accounts of the same event as experienced by a variety of people. By working with performers from a wide range of backgrounds, I am able to gain insight on ways that different people realise the same set of instructions, how they engage breathing, how they respond to the challenges of tasks, and how their background in extramusical areas, such as yoga, dance, and meditation, may be helpful in certain cases. What aspects in the experience of my pieces are most conserved or reiterated among individuals and what aspects are most susceptible to individual subjectivity? This process of questioning provides me with a wealth of information not only about whomever encounters my pieces but also about the potentiality of my pieces in the world. Through phenomenological lens, I ask how my pieces are embodied, how they live in the world not just as an abstract set of instructions but as lived experiences. Therefore, while the experiential accounts of my pieces to date are limited to a relatively small sector of the general public, I have designed my pieces with the mindset that this reservoir of experiential accounts has the potential for great diversification.

1.4.2 Relationship Between Composer and Performer

As a composer, my ideal relationship with performers of my pieces is one of close collaboration, with performers playing an integral role in my creative process. In such a relationship, I may begin a collaboration by introducing to the performer a draft of a score, a set of instructions, or simply an idea that I am considering. This serves as a point of departure from which the performer and I embark upon a joint path of discovery. In this process, the performers are just as likely as I to propose solutions and alternative options. The interpersonal dynamics of this collaboration is generally non-hierarchical and horizontal.

This ideal relationship between composer and performer is one that I strive for in my pieces but the closeness to which I achieve such a model depends on a variety of factors. The nature of the collaborations mentioned in this thesis vary based on factors not limited to the performers' interests, the number and geographic proximity of the performers, the length of collaboration, the instrumentation used, and the degree to which the topics of the piece facilitate collaboration. Throughout my years as a doctoral student, I observed several tendencies associated with these factors that influenced the degree to which my collaborations conformed to my ideal. I observed that the smaller the ensemble size, the more that my relationship with performers modeled my ideal. Likewise, the larger the ensemble size, the more likely it was to incorporate aspects of traditional, hierarchical, composer-performer models that I typically avoid. In addition, the longer the collaboration with performers and the closer the geographic proximity (e.g., in-person versus remote), the more horizontal the composer-performer dynamic. Lastly, the more my musical interests in a piece overlapped with that of the performers, the richer the collaboration.

Collaborations for which more than one criterion was satisfied in favor of the ideal model were also more likely to achieve the ideal. For instance, for my solo piano pieces *Breathing, Moving, Playing* and *Moving* Objects, I worked in-person with the performer Kate Ledger for over a year and Kate and I shared similar research interests. I believe it is, in large part, because of this combination of factors, close physical proximity, long collaboration time, and shared interests, that our relationship matched exactly to my ideal. As will be discussed in more detail later (see sections 3.1.1 and 3.2.1), Kate proposed

ideas and alternatives that were integrated into the core structure of these pieces. She was, therefore, a truly integral part of the creative process underlying my pieces. On the other hand, in my pieces for large ensembles, *Couples or Groups* and *Couples II*, my relationship with performers was rather hierarchical; fixed scores were presented to them, the pieces were recorded during the first rehearsals, and the performers realised the instructions without having been actively involved in their composition. I adopted an approach, so far from my ideal, in response to the logistic challenges of gathering and organizing a large number players. These examples exhibit a pragmatic flexibility on my part. In the case of the ensemble pieces, my interest in observing larger-scale dynamics of a collective and of interpersonal relationships among performers superseded my preference for intensive collaborations. I am not implying that working with large ensembles negates the possibility for long-term, close collaboration but, in my particular context, such collaboration was not practical. The collaborations with Kate and with these large ensembles represents two ends on the spectrum for my ideal composer-performer relationship. Other pieces discussed in this thesis lie somewhere in between. For instance, in *Four Sections* and *Neck and Ball,* I collaborated intimately with solo performers or duos but only for short time periods. As a result, their feedback during rehearsals influenced the final instructions or the manner in which the piece was executed but not at a fundamental level, as was the case in my long collaboration with Kate. In rehearsals of *Neck and Ball,* for instance, saxophonist Marco Spagnolo demonstrated that an average interpretation of the instructions may not always achieve the desired goal. In order to achieve the goal of making a ping pong ball bounce up and down on the opening of a saxophone neck, Marco and I had to discover what performance techniques resulted in the right relationship between embouchure, force of airflow, and ping pong ball movements. This then affected the instructions and insights needed for future performers. Then, there are pieces of mine for which collaborations of any kind were impractical and a product of completely unforeseen circumstances. The CoVid-19 pandemic was just such a circumstance and it was during the initial height of the pandemic that I, in my social isolation, composed and performed two solo pieces during which my

body was the instrument of breath, *From Exhaling to Blowing* and *From Observed to Involuntary* (see Chapter 4.1).

These examples reveal a wide variety in the types of relationships I ultimately formed with the performers of my pieces. However, what I hope they also reveal now (and more convincingly throughout my thesis) is my strong intent to collaborate with my performers and my ever-present interest in their experience. To that end, I will conclude by noting that even when my performers have had little to no influence on the content of instructions presented to them, they are still involved in my compositional process through their experiential feedback, collected between or after performances. My analysis of their feedback is crucial for my development of future pieces and my revisions of current pieces. In this way, I ensure that I do collaborate with my performers in every piece, whether such a collaboration occurs in an ideal manner, from the beginning to end of my process behind a piece, or whether it occurs through question and answer dialogue after performances. As will be discussed in the following section, this latter method of collaboration is rooted in phenomenology and its application to artistic practices.

1.5 Phenomenology

Phenomenology is a philosophy founded by Edmund Husserl at the beginning of the twentieth century and further developed by Martin Heidegger, Amedeo Giorgi, Max van Manen, and Maurice Merleau-Ponty, among others. Martyn Denscombe describes phenomenology as 'an approach that focuses on how life is experienced', observing that 'it is not primarily concerned with explaining the causes of things but tries, instead, to provide a description of how things are experienced at first hand by those involved'.[26] The primary intent of the phenomenological approach is to 'describe the essence of a phenomenon by

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[26] Martyn Denscombe, 'Strategies for Social Research: Phenomenology', in *The Good Research Guide*, 4th edn (Maidenhead: Open University Press, 2010), pp. 93–105 (p. 95).

exploring it from the perspective of those who experienced it so as to understand the meaning participants ascribe to that phenomenon'.[27]

In the last decades, phenomenology became a research tool widely used in studies that investigate performers' experiences. For instance, in dance studies, Shantel Ehrenberg applies phenomenology to interview a group of professional dancers and to explore kinaesthetic experiences, dancers' engagement with visual self-reflections, and chorographical and technical perspectives.[28] Musicologists Patricia and Christopher Holmes offer three main reasons to explain why phenomenology is a suitable method of inquiry in music performance: (1) descriptions of performers' experiences offer new insights and knowledge about an exact event, (2) focus on performers' corporeality and their awareness of a particular situation highlights the performers' experiences, and (3) some aspects of the performance are revealed only through performers' descriptions of their experiences.[29] Phenomenological descriptions are useful tools to intuit the 'essences' or essential features of a phenomenon. In my project, players' accounts of their experience of a musical situation are crucial to understanding how performers engage with their own breathing and with the breathing of the other players. Particularly as regards one's own breathing, players' descriptions shed light on aspects which cannot be easily experienced by external observers, including other performers, the audience, and myself as the composer.

The method used in my project can be described as an interpretative phenomenological approach. According to Holmes and Holmes, interpretative phenomenology 'incorporates the necessary flexibility to be an effective technique for data analysis' and allows the researcher 'to understand some of the mystery associated with the idiosyncrasies and "presence" of the performing

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[27] Arianne Teherani, with Tina Martimianakis and others, 'Choosing a Qualitative Research Approach', *Journal of Graduate Medical Education*, 7.4 (2015), 669–70 (p. 670).

[28] Shantel Ehrenberg, 'Foregrounding the Imagination: Re-reflecting on Dancers' Engagement with Video Self-recordings', in *Performance Phenomenology: To the Thing Itself*, ed. by Stuart Grant and others (Cham: Palgrave Macmillan, 2019), pp. 133–64.

[29] Patricia Holmes, and Christopher Holmes, 'The Performer's Experience: A Case for Using Qualitative (Phenomenological) Methodologies in Music Performance Research', *Musicae Scientiae*, 17.1 (2012), 72–85.

artist'.[30] This approach employs a series of procedures, such as flexible interviews, conversations, and analyses of self-reported experiences, all of which aim to shed light on a person's subjective awareness of a given context. Simply put, the central task of interpretative phenomenology is gathering and analysing people's feedback. Upon using and studying this approach, a team of performance scientists from the Royal College of Music (Terry Clark, Tania Lisboa, and Aaron Williamon) concluded that one essential benefit of this approach is that it enables the interviewees to talk freely and 'to discuss relevant topics of concern to them that may not have previously occurred to the interviewer'.[31] This conforms to my own experience of using this method; analysing performers' accounts often brings to light aspects of my pieces which I had not previously contemplated. This dimension of discovery facilitated by interpretative phenomenology is paramount to my research. This method invokes the act of searching for the 'gem', defined by Eatough and Smith as 'the singular remark which jumps out at the researcher or a small extract from an entire interview'. The gem has the capacity to '*illuminate* and enhance interpretation and understanding' through both explicit and implicit modes of expression.[32] Adopting a semi-structured interview approach in my own research, I extracted gems that illuminated how performers' experience the breathing of themselves and others, the relationship between their breathing and musical materials, and alterations in their breathing elicited by tasks within the score. On occasion, insights emerged clearly through the performers' accounts. In other cases, the accounts seemed more elusive, compelling me to ask the performers more questions about their descriptions or to explore the same topic with other performers.

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[30] Patricia Holmes, and Christopher Holmes, 'The Performer's Experience: A Case for Using Qualitative (Phenomenological) Methodologies in Music Performance Research', *Musicae Scientiae*, 17.1 (2012), 72–85 (p. 80, p. 78).

[31] Terry Clark, Tania Lisboa, and Aaron Williamon, 'The Phenomenology of Performance: Exploring Musicians' Perceptions and Experiences', unpublished paper delivered at the conference 'International Symposium on Performance Science' (Portuguese Catholic University, 22–23 Nov 2007), p.37.

[32] Virginia Eatough, and Jonathan A. Smith, 'Interpretative Phenomenological Analysis', in *The Sage Handbook of Qualitative Research in Psychology*, ed. by Carla Willig and Wendy Stainton Rogers, 4th edn (London: Sage Publications Ltd, 2017), pp. 193–211 (p. 201).

In addition to these reflective procedures, there is another principal component of interpretative phenomenology known as 'free imaginative variation'. Linda Finlay describes it as 'freely changing aspects of the phenomenon in order to distinguish essential features from particular or incidental ones'.[33] This procedure coincides with the process of identifying the peculiar aspects of the phenomenon. With its origins in Husserlian 'descriptive phenomenology,' Pnina Shinebourne states that 'the notion of "imaginative" hermeneutics [interpretative] connects to Husserl's concept of "imaginative free variation"', a stage in which the researcher changes 'different elements of a phenomenon to explore which aspects are necessary and which contingent'.[34] I find this approach useful in identifying the peculiar aspects of a specific musical situation, which, in my case, pertain largely to the type of breathing experienced by the performers, as well as to the interactions between performers or between performers and instruments. This method of experimenting with a work to discern the contingent from the necessary fosters a space of creative and imaginative engagement that I find particularly useful for extracting novel research questions to be investigated compositionally. In particular, I find that the dialogic framework of 'free imaginative variation' makes it especially easy to work on alternative versions of the same piece, and one can even say that the approach encourages this type of revisionist practice. I found this phenomenological technique to be particularly useful for projects that evolved over long periods of time, during which I could work on several versions of the same piece. This occurred in the collaboration with pianist Kate Ledger (see 3.1.1 and 3.2.1), in the pieces composed and performed by me (see 4.1.1 and 4.1.2), and in the work *Four Sections* (see 4.2). Through the use of 'free imaginative variation' I alter aspects of a single piece of music to not only derive compositional insights for present or future works, but also to better understand the degree to which changes of contingent elements of a piece affect relational dynamics (performers' interactions with people and instruments) and performative phenomena (breathing).

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[33] Linda Finlay, 'Debating Phenomenological Research Methods', *Phenomenology & Practice*, 3 (2009), 6–25 (p.14).

[34] Pnina Shinebourne, 'The Theoretical Underpinnings of Interpretative Phenomenological Analysis (IPA)', *Existential Analysis*, 22.1 (2011), 16–31 (p. 28).

All the projects discussed in this thesis have been informed by the aforementioned interrogative and free imaginative variation procedures of the interpretative phenomenological method (see Chapter 3 and 4 for analysis of players' feedback). While perhaps already apparent, it is important to note that this method is engaged in all stages of the artistic process. Not only does this blur the boundary between the process of my work and my work itself, but also calls upon me as the researcher to actively participate with not only the living, breathing collaborators of my piece but with the artefacts of our interactions, namely the experiential feedback they provide. For instance, in Shantel Ehrenberg's phenomenological inquiry on dancers' perceptions, the writer, informed by Kvale and Brinkmann's research methods, actively relates to the accounts of her interviewees by 'entering into a dialogue with the text, going into an imagined conversation with the "author'' about the meaning of the text, seeking to develop, clarify and expand what is expressed in the text'.[35] Likewise, in this thesis, I will engage with performers' observations in order to reveal processes of discovering and questioning that occurred throughout my collaborations.

In adopting this method of interpretative phenomenology, I have also constrained the types of knowledge that inform the discussions throughout this thesis. The primary site of knowledge feeding these discussions is the experiential and reflective accounts of the actors involved in my pieces, the players, the audience, and me as the composer. The insight gained from these accounts are further circumscribed by the object of research, in this case, the way in which breathing can shape and be shaped by compositional practice. As such, I do not attempt to centre my discourse around other schools of thought with extensive scholarship around breathing, such as yoga, meditation, wellbeing, and sports science. This approach may be in contrast to others adopted in PhD arts dissertations concerned with breath. For instance, Kathryn Williams' doctoral thesis 'The Visibility of Breathing: Flute Performance Practice, Collaborative Composition, Performance Art, and Resilience' (2021) investigates breathing in flute performance and does so, in part, by integrating

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[35] Steinar Kvale, and Svend Brinkmann, 'Preparing for Interview Analysis', in *Interviews: Learning the Craft of Qualitative Research Interviewing*, 2nd edn (Thousand Oaks: SAGE Publications Inc., 2009), pp. 189–200 (p. 192).

knowledge from disciplines such as wellbeing, asthma, freediving, running, and yoga.[36] My reduced integration of these extra-musical fields is not intended to negate the relevance of these research areas in my practice but rather to narrow the topic of my research and to prioritise the participants' voices. This latter point is especially important in light of phenomenological research where the participants are the experiential experts. By focusing attention on the participants as opposed to the knowledge gained from other disciplines, I avoid discussions on aspects that are not directly relevant to the participants' experiences.[37] In elaborating this decision, it might be helpful to consider the perspective of nurse researcher Sherrill Ray Snelgrove on the interpretative phenomenological approach: 'Performing a preliminary literature review rather than extensive review offered a framework for understanding the topic area and preserving the inductive enterprise'.[38] She also explains that an inductive approach corresponds to 'drawing meaning from the data rather than imposing a priori constructs on them'.[39] In my own research, I also found an inductive approach to be more productive than a prescriptive, deductive approach. Following a more deductive approach, I began my research by investigating breathing across research areas outside of music (e.g., yoga, meditation, ethics, philosophy, and sports science). However, the direct relevancy of this

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[36] Kathryn Germaine Williams, 'The Visibility of Breathing: Flute Performance Practice, Collaborative Composition, Performance Art, and Resilience' (unpublished doctoral thesis, University of Huddersfield, 2021).

[37] The bibliography (p. 123) in this thesis consists of a wide range of sources. Some of them relate to perspectives on breathing from disciplines not thoroughly discussed in my doctoral project. These include actor training, yoga, meditation, sports studies, philosophy (e.g., Luce Irigaray's work on breathing).The bibliography also includes composers' music that explored mainly the sonic qualities of breathing (e.g., Sciarrino, Chernowin, and Lachenmann). These sources were consulted and examined. However, because of differences in my methodology and my interest in breathing as a compositional device more so than in the quality of sounds produced by breathing, these pieces are not relied upon explicitly in the writing of the thesis. The bibliography, therefore, provides the reader with an overall picture of the disciplines and compositions that are intensely interested in breathing, all of which I have referred to during my process of research but not all of which are integrated explicitly into the discussions of this thesis.

[38] Sherrill Ray Snelgrove, 'Conducting Qualitative Longitudinal Research Using Interpretative Phenomenological analysis', *Nurse Researcher*, 22.1 (2013), 20–25 (p. 23).

[39] ——, (p. 21).

initial literature review was limited and I did not feel that the insights gained from this review significantly transformed my approach to the experimental and experiential aspects of breathing as a musical regulator. Instead, I found that using players' feedback enriched my research and revealed countless observations and possibilities that simply could not arise from undergoing a broad literature review. Through focusing on players' feedback, I also avoided misinterpretations or overinterpretations of the meaning and effect of my pieces as well as the collection of data not directly related to the research questions explored in this thesis.

1.6 Outline of Contents

In Chapter 2, I discuss the system I use to categorise my pieces in relation to the research agenda, and how this categorisation informed my practice. The first category of pieces is divided into two subgroups based on the compositional approach used: (1) 'Pieces that Use Breathing' and (2) 'Pieces that Interrogate Breathing'. The second category is divided into five subgroups of pieces, which, in one way or another, originated from the first category. This is followed by an examination of the pieces, with the first and second subcategories divided into Chapters 3 and 4, respectively.

The category 'Pieces that Use Breathing,' covered in Chapter 3, looks at breathing as a tool that shapes certain aspects of the piece. Section 3.1 discusses two pieces that use breathing as a time regulator, namely by dictating the timing of the players' actions, the duration of the piece, and the speed of physical movements. Section 3.2 examines two pieces that use the force of air produced by blowing to trigger movement. In this case, breathing does not regulate timing, but rather the movements of objects, which then shape the performers' responses. Section 3.3 discusses breathing as it relates to performer-performer interactions. I start by examining and manipulating two ensemble pieces by Charlie Sdraulig. My manipulations involve reversing Sdraulig's instructions on performers' interactions and their breathing in order to derive insights on how to approach breathing and cue-response mechanisms in an ensemble context.

Chapter 4 begins by introducing four definitions of breathing formed by extrapolating and developing insights from Chapter 3. These definitions specify different types of instructions on performers' breathing and are used to analyse the second subcategory, 'Pieces that Interrogate Breathing'. Section 4.1 analyses two pieces that explore transitioning from one type of breathing to another through sounds and visuals and then discusses these types of breathing in relation to the 'breathing definitions'. In Section 4.2, this is followed by a discussion of a work that is primarily interested in the distinctions between the four definitions of breathing. Lastly, in Chapter 5, the thesis is concluded with reflections on my compositions, the insights and discoveries I achieved through my research and practice, and an outline of potential future directions and projects.

Chapter 2 Breathing: Two Categorisations

2.1 Categorisation of my Pieces

In 2020, I started categorising my pieces into subgroups in order to clarify the connection between my research questions and my compositions. There are a total of nine pieces discussed in this thesis; these nine pieces are divided into two subcategories based on their associated research questions:

- 'Pieces that Use Breathing' addresses the first research question, 'How can indeterminate changes in the players' breathing shape musical timing, performer-instrument interactions and performer-performer interactions?'
- 'Pieces that Interrogate Breathing' addresses the second research question, 'How can compositions prompt performers to engage different types of breathing and how can these types of breathing as well as the transitions between them influence their performance?'

In this thesis, I call the binary grouping above the 'first categorisation'. After creating the first categorisation, I created a 'second categorisation' that further subcategorises the first categorisation:

1. 'Pieces that Use Breathing':
    1.1 'Breathing as a Time Regulator'
    1.2 'Breathing as Blowing That Shapes Performer-instrument Interactions',
    1.3 'Breathing as a Tool That Shapes Interactions Between Performers'
2. 'Pieces That Interrogate Breathing':
    2.1 'Transitions From One Type of Breathing to Another One'
    2.2 'Differences Between Four Types of Breathing'

My categorisations and the way I relate to them is greatly influenced by composer and performer Andy Ingamells's categorisation scheme in his PhD thesis (2017). Adapting a diagram by Fluxus composer George Brecht,

Ingamells groups his own compositions according to their closeness to three 'magnets': reading, playing, and character. Ingamells expressed that he used this diagram to 'reflect upon my work as the project progressed'.[40] Like Ingamells, I used my categorisations as tools for examining my work as it developed. They enabled me to discern connections between the techniques used and to trace alternative paths. The discussion of this chapter will revolve around the first and second categorisations in order to provide the reader with a thorough understanding of the rationale and structure behind this organisational system.

It is worth pointing out that some of the pieces included in one category may share aspects with pieces in another category. For instance, when works in 'Pieces that Interrogate Breathing' use breathing to regulate certain temporal aspects they overlap with the intentions of 'Pieces that Use Breathing'. In her doctorate thesis (2021), Kathryn Williams expresses that her categorisation procedures 'are starting points for this exploration and are not intended to trivialise the interconnected nature of these categories'.[41] Likewise, my categorisations should be conceived as having ever-changing boundaries that are interwoven with each other and with potential for future expansion and modification.

2.2 First Categorisation: Pieces That Use Breathing Versus Pieces That Interrogate Breathing

As mentioned previously, the first category of pieces is divided into two subcategories based on the research questions they aim to address and the approach they take in addressing them. In this section, I provide a more thorough overview of this category of pieces and the criteria for their groupings.

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[40] Andy Ingamells, 'Grandchildren of Experimental Music—Performing the Compositional Act by Creating Intriguing Situations in which Musical Sound May Occur' (unpublished doctoral thesis, Birmingham City University, Birmingham Conservatoire, 2017), p. 5.

[41] Kathryn Germaine Williams, 'The Visibility of Breathing: Flute Performance Practice, Collaborative Composition, Performance Art, and Resilience' (unpublished doctoral thesis, University of Huddersfield, 2021), p. 35.

Below, I have listed the two subcategories again but with a breakdown of the main compositional aspects and techniques used to explore their associated research questions.

- 'Pieces that Use Breathing': These compositions explore how indeterminate changes in the performers' breathing can shape the timing within a piece (e.g., the duration of notes, the speed of performers' movements, the time length of pieces), the performers' responses to a set of objects moved by the force of their blowing, and the interactions between two or more performers within an ensemble.
- 'Pieces that Interrogate Breathing': This set of pieces aim to reveal the more indeterminate and undefined changes in performers' breathing (such as changes that occur in the threshold between two or more types of breathing) through compositional and performative tactics that encourage the emergence of divergent modes of breathing.

While the specific implications of the research questions and the tactics used to address them in each subcategory are different, the temporal dimension of breathing is always at the core of my project. Timing and breathing are interwoven in all my pieces, across all subcategories. Given the ubiquity of this theme in my work, the temporal aspects of breathing will be discussed often in relation to both subcategories of pieces. The diagram in Figure 1 provides a visual representation of these two compositional approaches and subcategories of pieces, encompassing all nine of the pieces discussed at length in this thesis.

Figure 1 Diagram of the First Categorisation

In the six pieces plotted on the left orange side, some aspects, such as timing, performer-instrument and performer-performer interactions, are regulated by the players' breathing. Meanwhile, the three pieces grouped on the right side of the diagram may use breathing to regulate certain aspects like timing, though the questions they address focus more on indeterminate characteristics of breathing. These include undefined types of breathing between exhaling and blowing, voluntary and involuntary breathing, and the transitions from one type of breathing to another.

2.3 Second Categorisation: Five Subgroups

The second categorisation adds another layer of groupings by dividing 'Pieces that Use Breathing' into three subcategories and 'Pieces that Interrogate Breathing' into two subcategories (see Figure 2). In this section, I describe each of these five subgroups and briefly discuss their respective pieces. My discussion will proceed from the left side of the diagram and then move to the right side, discussing the subcategories on each side from top to bottom.
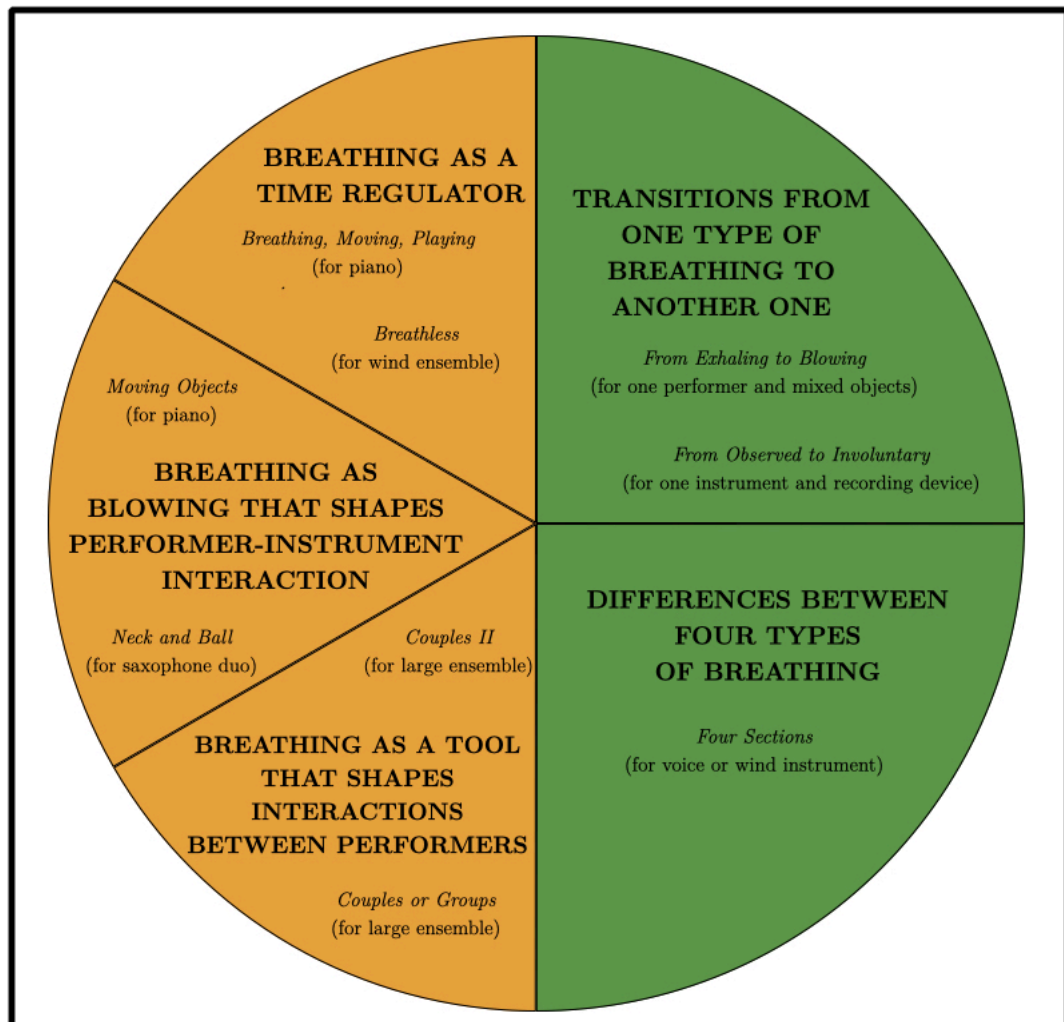
Figure 2 Diagram of the Second Categorisation

1) Breathing as a Time Regulator. During my master's studies, I used musicians' breathing either to dictate the duration of sounds or to mark a segment of time in which non-wind players are required to perform a set of musical actions. Throughout my PhD, I explored this topic further through a series of techniques, including using the players' breathing to regulate the speed of the players' physical movements and vice versa, using the duration of sounds produced to regulate the duration of breaths; using the length of wind players' held breath to determine the number of actions they can perform. The category 'Breathing as a Time Regulator' is a pair of two pieces listed below that feature these techniques:

- *Breathing, Moving, Playing* (2020). In this piano piece, I investigated different techniques that use the players' breathing as a time regulator. The piece is divided into eight sections; in each section, the pianist follows different combinations of instructions for their breathing. These instructions include asking performers to use their breathing to regulate the speed of their physical movements, to use the speed of their physical movements to regulate their breathing, and to use the duration of the piano sounds to regulate their breathing.

- *Breathless* (2019–20). In this piece for wind ensemble, I wanted to create a situation in which the wind players do not use breathing to produce sounds with their instruments. Instead, they are asked to use their held breath as a length of time during which they perform an indeterminate number of actions. This piece lasts one breath. After inhaling simultaneously, the musicians hold the breath as long as they can while performing as many actions as possible before exhaling. When they cannot hold their breath anymore, the players exhale independently and stop playing.

2) Breathing as Blowing that Shapes Performer-Instrument Interactions.

After exploring the technique of using breathing as a time regulator, I searched for more ways the players' breathing could be used to shape interactions and timings. This subcategory of pieces represents my experimentation with tasks that require performers to make a set objects move by blowing on them and to interact with the objects by altering their blowing. This category includes pieces that are markedly different from the two works discussed above namely due to the difference between exhaling and blowing. Degree of intention, control, direction, focus, and timing are all factors distinguishing blowing from exhaling. As might be expected, these distinctions engender different musical outcomes between the 'Breathing as Time Regulator' and 'Breathing as Blowing that Shapes Performer-instrument Interactions' categories (discussed further in section 3.2). Below are the two pieces that fall into the 'Breathing as Blowing that Shapes Performer-instrument Interactions' category:

- *Moving Objects* (2019–20). The piece is divided into three sections and was performed by and collaborated on with Kate Ledger. In each section, Kate performs a different task. In the first two sections, she blows on either ping pong balls or marbles placed on the strings of a grand piano in order to form a set of shapes or sequences of colours prescribed by the score. In the last section, a set of marbles flow down the strings of a grand piano. The score asks that the marbles do not touch the dampers and, as a consequence, Kate constantly blows on them, attempting to push them towards the bridge.

- *Neck and Ball* (2020). In the first of two sections, a saxophonist removes the neck of their instrument and places it upside down. A ping pong ball with a set of instructions written on it is placed at the end of the neck. The saxophonist blows into the mouthpiece and makes the ball move, altering their blowing according to the instructions the performer sees on the moving ball. In the second section, two saxophonists, in the same context as the first section, react to the instructions on each other's ping pong ball.

3) Breathing as a Tool that Shapes Interactions Between Performers. This category consists of two pieces for large ensemble that explore how breathing can be used to shape interactions amongst players. Here, breathing and/or sounds of one set of performers are used to regulate the timing, performative gestures, and musical parameters of another set of performers. Listed below are the two pieces that fall into this category:

- *Couples or Groups* (2020). While this piece is for open instrumentation, it asks that half of the ensemble consist of wind players and the other half of non-wind players. Non-wind players breathe independently and use the duration of their own breathing to regulate the duration of the sounds they produce. Each wind player moves through the performance space and chooses one non-wind player. When the wind players arrange in front of the non-wind players, they attempt to match their breathing to the non-wind players' sounds, playing the same note the non-wind player is playing.

- *Couples II* (2020). Written also for open instrumentation, this piece divides the ensemble into two groups. The first group consists of 'players' that perform two sounds each. The second group consists of 'breathers' that move through the performance space and arrange themselves in front of one of the players. The breathers then match the onset/offset, duration, dynamics, and timbre of their breaths with the sounds played by the performer. Specifically, the breathers match their inhalations with the first type of sound played by the performer and their exhalations with the second type of sound played by the same performer.

4) Transitions from one type of breathing to another one. Moving from 'Pieces that Use Breathing' on the left side of the diagram to 'Pieces that Interrogate Breathing' on the right side, this subcategory and the next one discussed focus on certain aspects of breathing through the use of sounds and,

in one case, visuals. This specific category includes two pieces that investigate the transition from one type of breathing to another. I arrived at this topic after working on 'Pieces that Use Breathing' and realising, particularly through feedback from the performers, that there are several different types of breathing that performers experience in my compositions, and that their differences are worth exploring. The following are the two pieces included in this category:

- *From Exhaling to Blowing* (2020). This piece for solo performer explores the transition from exhaling to blowing. The performer slowly alters their breathing, starting from a regular exhalation to what can be thought of as full blowing. The performer exhales and blows in front of several objects that react differently according to the changing degrees of the their airflow. The final result is a silent video. The visible movements of the objects reveal these changes in the performer's breathing.

- *From Observed to Involuntary* (2020). This piece for one instrument and recording device explores the transition from an observed type of breathing (a type of breathing in which the players are asked to observe their own breathing without manipulating it) and involuntary breathing (during which the performers are not aware of their own breathing). The performer records their breathing using a microphone for one hour. During the first twenty minutes, the musician observes their own breathing and, during the following forty minutes, they attempt to distract themselves from their own breathing. Lastly, the player plays the recording through their headphones and uses the timing of their recorded breaths as cues to play two notes on their musical instrument. The timing of the notes intend to trace and, thereby, unveil changes in the timing of their breathing.

5) Differences between four types of breathing. Extending the investigation of transitions between types of breathing, the piece in this group explores the

differences between four types of breathing , which I defined with the help of performers' feedback.

- *Four Sections.* This piece, written for one singer or wind player, consists of four sections. In each section, the performer breathes and sings or plays following different instructions on their breathing. The differences between types of breathing become evident through the performers' breathing sounds and the sounds produced by their instrument or voice.

2.4 Reflections upon the Categorisations

These categorisations emerged from several endeavours that I collectively classify as experimentation. Originally, I grouped all my pieces according to the types of breathing the musicians perform and experience within my works, but found that this initial categorisation scheme lacked the deeper structural organisation needed to foreground the context and purpose of this project. Conversely, these final categorisations serve as a tool I use not only to analyse my pieces but to trace the development of my project throughout three years. Importantly, I consider these categorisations to be open-ended, with great potential for stimulating further inquiry and exploration. Some of potential extensions or developments using these categorisation tools will be taken into account in 'Chapter 5 Conclusions'.

Chapter 3 Pieces that Use Breathing

In this chapter, I will discuss the pieces belonging to the category 'Pieces that Use Breathing', which address the first research question, how determinate and indeterminate changes in the players' breathing shape certain musical parameters. As mentioned in Chapter 2, the three approaches and aims of this set of pieces are segregated into subcategories, reiterated below:

(1) **Breathing as a Time Regulator**. Though all pieces are interested in breathing as a time regulator, this group of pieces is especially focused on this point.

(2) **Breathing as Blowing That Shapes Performer-Instrument Interactions.** Here, performers use blowing to trigger movements of objects with which they interact.

(3) **Breathing as a Tool That Shapes Interactions Between Performers.** This set is interested primarily in the role breathing can play in cue-response systems within an ensemble context.

Each of the sections of this chapter will be dedicated to discussing one of these categories in depth and their associated pieces, beginning with 'Breathing as a Time Regulator'.

3.1 Breathing as a Time Regulator

In 2016, I developed an interest in how the duration of performers' breathing can be used regulate the duration of sounds. At that time I mostly wrote duo and ensemble works for non-wind players. One of these is *Breath II* (2017), a piece for guitar and piano that provides each player a sequence of determinate musical actions. Each player moves independently from one action to another one, using the lengths of their own inhaling, breathing pause, and exhaling as malleable bars to shape the timings of their actions. The approach taken at that time was largely influenced by Pauline Oliveros. Indeed, many of the indications

I gave to the performers were similar to the ones employed by Oliveros in *The Tuning Meditation* (1971): 'The duration of pitches is determined by the duration of a comfortable breath'.[42] Similarly, the works I composed from 2016 to 2018 ask non-wind players to breathe comfortably and regularly, allowing the breathing to increase in length, but without manipulating, stretching, or contracting it.

During the first year of my PhD, I decided to explore this approach with wind players as well. Similar to the works written during my master's studies, my early compositions for wind players involve a steady and comfortable type of breathing. This initial exploration was greatly influenced by two flute works, Eleanor Hovda's *Breathing* (1983) for nine flutes and James Klopfleish's *326 Breath* (2015) for one performer. In Hovda's *Breathing*, the musicians are asked to 'change from pulse time to breath time'.[43] In Klopfleish's *326 Breath*, the flautist should perform 326 breaths, whose durations are free. In both cases, the duration of performers' actions are related to the length of their steady breathing. I found that the works I composed from 2016 to 2018 that adopted this strategy produced rather similar dynamics and duration of pitches across my works; the durations tended to be long and dynamics were usually soft.

One project that encouraged me to extend my exploration of the breath as a time regulator is Kathryn Williams's series COMING UP FOR AIR (2017–ongoing), which invites composers to write pieces that are only one-breath long. Her restriction of a single breath led to a collection of one-hundred works that considerably vary in terms of duration. For instance, the shortest piece written for her call is Max Erwin's *Inventory* (2018), lasting one second, while the longest one is Mark Dyer's *Memento for Kathryn* (2018), lasting two minutes and twenty-two seconds. In the works written for Williams, there are often situations where breathing is neither steady nor comfortable. Rather, breathing may stretch, contract, and alter, producing unpredictable effects on timings, actions, and dynamics. The variety of works written for COMING UP FOR AIR

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[42] Pauline Oliveros, *Four Meditations for Orchestra* (Kingston: Deep Listening Publications, 1996), p. 3.

[43] Eleanor Hovda, *Breathing*, for nine flutes (Collection 119, University of Maryand, Baltimore Country, 1983), digitised by I Resound Press, <http://iresound-pubs.umbc.edu/HovdaBreathing3D2021/>, p. 4.

greatly inspired how I interrogated breathing and timing within my practice. Using COMING UP FOR AIR as my departure point, I intended to widen my approach by investigating the following techniques:

- Using the length of breathing to regulate the speed of the movements.
- Using the speed of movements to regulate the length of breathing.
- Using the duration of the sounds to regulate the length of breathing.
- Stretching out the length of the wind players' held breath as long as possible.

In the section, I discuss two pieces, *Breathing, Moving, Playing* (2020) and *Breathless* (2019–20), which apply the techniques listed above. Written in collaboration with pianist Kate Ledger, *Breathing, Moving, Playing* (2020) differs from my earlier compositions in that it does not explore how the length of the performers' breath determines the duration of the sounds. Rather, it uses the pianist's breathing to regulate the speed of their movements and vice versa, and it uses the decay time of the piano chords to regulate the duration of the pianist's breathing. Meanwhile, *Breathless* (2019–20) for wind ensemble extends a technique used in my early works for non-wind players. In these early works, the length of the performers' steady pause between inhaling and exhaling is used as a flexible measure. In *Breathless* (2019–20), I ask performers to engage a type of breathing that is not as comfortable; the performers stretch the length of their held breath as long as possible in order to perform as many actions as they can within that time span. Unlike my earlier works for wind instruments, *Breathless* also does not ask performers to breathe into their instruments and instead asks performers to produce sounds through percussive techniques. I wanted to exclusively test out the capacity of breathing as a time regulator, rather than breathing as a means to produce sounds. The next two subsections are dedicated to a providing a detailed analysis of both *Breathing, Moving, Playing* (2020) and *Breathless* (2019–20).

3.1.1 *Breathing, Moving, Playing* (2020): commentary

Breathing, Moving, Playing (2020) is one of the two piano pieces written for pianist Kate Ledger. Kate and I worked together over several months, clarifying ideas, exchanging opinions, discovering fresh insights, and questioning our observations. The final outcome is a solo piece lasting twenty-one minutes and divided into four sections, each one played twice but in palindromic order: 1, 2, 3, 4, 4, 3, 2, 1. Below is a description of the sections:

- Section 1: The length of breathing (inhalations and exhalations) regulates the speed of movement from one chord to another chord.
- Section 2: The speed of movement from one chord to another chord regulates the length of breathing.
- Section 3: The duration of the chords regulates the length of breathing.
- Section 4: The duration of the chords regulates the length of the inhalation and the speed of movement from one chord to another chord regulates the length the exhalation.

In all sections, Kate plays the same sequence of chords but in each section the score instructs Kate to play, move, and breathe in different ways. The questions which directed the development of the sections are:

- How can Kate's breathing regulate the timing of her playing without determining the duration of sounds?
- How can her breathing be regulated by elements of the piece?

These questions were addressed through rehearsals, workshops, and discussions. Through our exploration and experimentation, other aspects I had not initially considered emerged, including the way the chords alter Kate's breathing, how Kate's awareness of movements and breathing changes throughout the sections, and how these factors affect the musical result.

In this analysis, I will first focus on the set of chords used and on why Kate and I chose them. Second, I will discuss each section of the piece in order to

clarify the differences between them. Third, I will explain my rationale for repeating the sections of the piece.

The set of chords shown below is the last version from a series of experiments conducted by Kate and I over several weeks. The sequence of chords follows the circle of ascending fourths: C, F, Bb, Eb, Ab, Db, Gb, B, E, A, D, G. Every chord is made up of eight, nine, ten, eleven, or twelve notes, and each chord includes major triads that follow the sequence listed above (even though various extensions are also part of the chords). The number of notes for each chord is intended to stretch Kate's fingers widely, and in certain circumstances the large intervals of ninths and tenths prevent her from playing all the written notes. Consequently, many of the chords are impossible to be performed correctly by Kate as her hand span enables her to stretch up to ninths, and just occasionally to tenths.

Figure 3 Sequence of Chords in *Breathing, Moving, Playing*

This sequence of chords has been chosen mainly for two reasons. Kate, an expert pianist interested in the way her body behaves under pressure, asked me to write a set of demanding chords that forces her to alter her bodily movements and posture. While as a composer I often limit performers to the use of only single notes, I also tend to be rather flexible with choosing musical materials and appreciated the opportunity of deriving fresh insights from using these large chords. I was particularly interested in how the challenges inherent

in performing these chords would affect Kate's breathing and vice versa (discussed later in this section).

While the sequence of chords remains the same throughout the piece, the instructions for the performance of these chords in relation to her breathing differ for each section. In section 1, the length of Kate's inhalations and exhalations regulates the time it takes for Kate to transition from one chord to another. In particular, the speed at which Kate moves her arms and body from one chord to another chord closely follows her rate of inhalations and exhalations. Her movements are essentially in time with (or in parallel with) her breathing at every moment. The goal is complete synchronisation of breathing and movement, with Kate's natural breathing dictating the timing of her movement between chords. Kate is asked to breath comfortably and naturally and to avoid consciously manipulating her breath even as she is tracking breathing and pairing them with her movements. After the first chord is played, the piece initiates a repeated set of actions during which the playing of two different chords is coordinated with the stages of one full breathing cycle. This cycle can be broken down into four basic steps:

(1) Kate inhales = Kate transitions from chord 1 to chord 2
(2) Kate holds her breath = Kate plays chord 2
(3) Kate exhales = Kate transitions from chord 2 to chord 3
(4) Kate pauses before her next inhalation = Kate plays chord 3

I used the equal signs above to emphasise that the activities on either side of the equal sign are concurrent, beginning and ending at the exact same time and moving together at the same rate. Given that Kate is asked to breathe comfortably and is not trying to extend her held breath any longer than she would otherwise, the duration of her held breath is rather short (usually around 1–2 seconds). In addition, the pause before her next inhalation represents the short, natural pause (again, around 1–2 seconds) in a normal breathing cycle during which one has expelled all the air that they can from her their lungs.
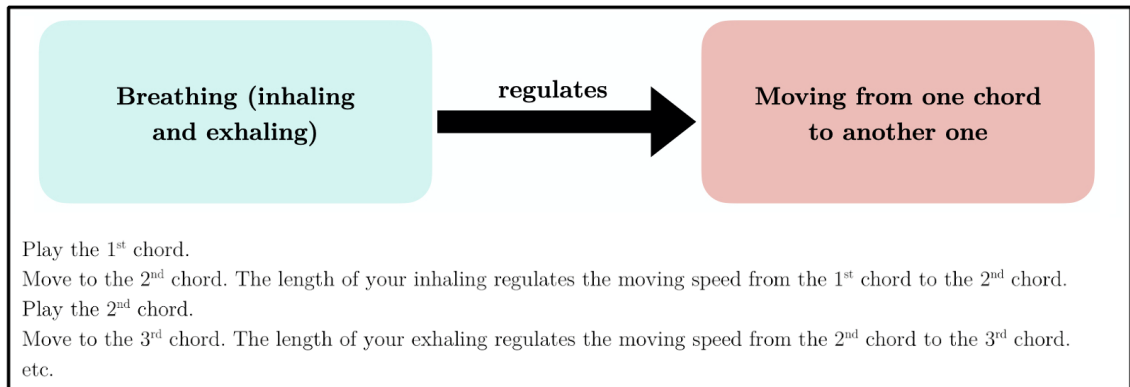
Figure 4 Instructions of *Breathing, Moving, Playing* - Section 1

In section 2, the instructions are exactly the same but inverted. Kate uses the speed of her transition from one chord to another chord to regulate the length of her breathing. She is asked to move from one chord to another at a speed that feels natural to her and to synchronise the rate of her breathing with the natural speed of her movements.
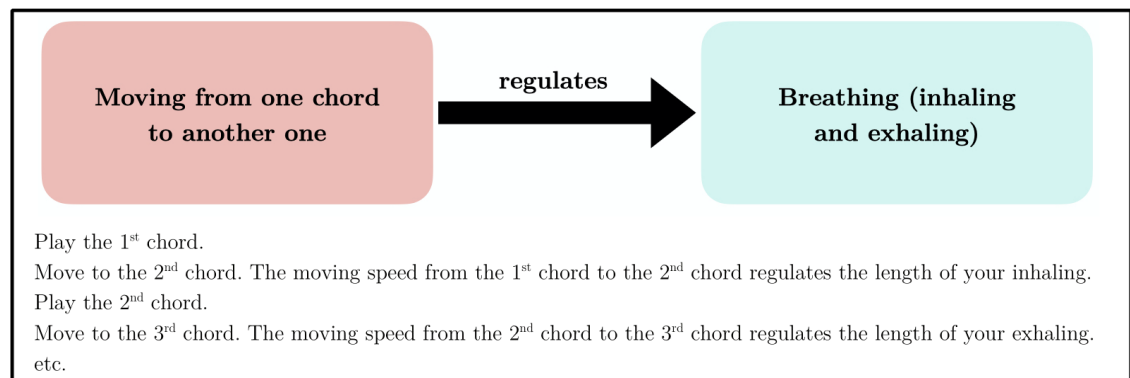
Figure 5 Instructions of *Breathing, Moving, Playing* - Section 2

My intention in these two sections was to explore alternative ways a player's breathing can regulate timing and to observe how the immediate juxtaposition of sections with inverted instructions on the player's movements and breathing would affect the overall results of the piece. The pairing of these two sections back to back provoked three central questions:

- What is the length of Kate's breathing? How should breathing lead movements?
- What is the speed of Kate's moving? How should moving lead breathing?

- How do the chord shapes affect this?

Two other points have to be highlighted in order to clarify the timing of the chords and how the chords relate to moving and breathing in sections 1 and 2 of the score:

- In section 3, movement from one chord to another is performed during the pauses within a breathing cycle (the pause after a full inhalation and the pause after a full exhalation).

- In sections 1 and 2, the chords are only played during the two natural pauses within a breathing cycle, which occur (1) while holding one's breath after a full inhalation and (2) and while waiting to inhale after a full exhalation. Here, 'playing the chords' strictly refers to the time during which Kate's fingers are pressed down on the keys and do not include the transitions between chords.

- As a consequence of the previous point, the duration of the chords is indeterminate yet bound to either the length of time Kate holds her breath (as in section 1 when breathing is the leader) or the quickness with which Kate play the chords (as in section 2 when movement is the leader). The duration of the chords is, in other words, a by-product of the relationship between breathing and moving.

In the following extract, Kate indicates that the instructions of sections 1 and 2 made her question the speed of her movements and highlights the difficulty of matching the length of her breathing to the speed of her movements. She also observes the way the awareness of her body and her breathing changes depending on the instructions:

> Matching the breath to movement needs careful thought,
> whichever way around it is! So with section 1, I have to allow
> the breath to lead, which takes a small moment of articulation
> in my awareness. It's very Feldenkrais! He refers to this as
> "differentiation" and is vital for repatterning. In Section 2, at
> first, the fact that movement dictates the breath made me

wonder how and why I would change the way I move. When movement regulates (section 2) getting there too quickly is a danger so I have to take more time. Or if I'm already in the correct register, I have to complete my inhalation or exhalation quickly! Timing these perfectly needs practice. It will eventually become a ballet of breath and movement. However, I ended up being quite playful with it, where the quicker I hop about, the more my breath responds.[44]

Kate observes that awareness of her movements and her breathing changes according to the action that regulates the relationship between moving and breathing.

Moreover, Kate's observations unveil a central issue, namely that moving is different from breathing; in piano playing, moving usually requires a player's awareness while breathing is normally an involuntary activity. In our rehearsals, I noticed that the first and second sections sounded more similar to another than what I had originally intended. I speculate that this might be due to the natural inclination for one to slow down a process as one directs more awareness towards that process. In the case of sections 1 and 2, Kate is asked to achieve a coordination between breathing and movement that requires hyper-awareness of both breathing and movement. Kate's hyper-awareness of the speed of her movements between chords may not have influenced the timing within the sections significantly; after all, as a pianist, she is highly trained to coordinate her awareness, conscious control, and speed of movement. However, it may be that, given the usual involuntary nature of breathing, Kate followed a natural impulse to slow down both sections in order to maintain, or as a result of, an unusually heightened awareness of breathing. With both sections being played at a rather consistently slow and steady tempo, it was difficult to perceive a difference in the role of breathing as the leader (section 1) versus movement as the leader (section 2). In order to provide more contrast between the sections, I suggested that Kate try adopting type of awareness of breathing and moving that did not modulate the way she would normally perform both activities; in this way, Kate would conceive both breathing and moving as more or less automatic processes that she non-intrusively observes and tracks. Anticipating that 'automatic breathing' would be inherently longer than

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[44] Kate Ledger, email correspondence (27 April 2020).

'automatic movements', I suggested also to slightly lengthen her breathing in section 1 so that this inherent difference in the rate of breathing versus movement could be accentuated. I expressed these suggestions in the following notes I gave to Kate:

> In Section 1, breathing is spontaneous, steady, and does not involve any conscious manipulation. In relation to this type of breath, I'm thinking now about a sort of meditation exercise in which I adopt a deep and steady breathing but without holding my breath for too long. What happens if you play the 1st section in a way that inhaling and exhaling are stretched but the pause is short or even absent? As chords are played while you're holding your breath, they would last for a really short amount of time, just for the time you need to change from inhalation and exhalation. For Section 2, and half of the Section 4 (moving speed regulates breathing) I'm wondering if maybe exaggerating even more the moving speed might help. I'm imagining a movement that I make but I'm not aware of it. For instance, just the automatic act of opening a door. When I match my breath to that movement my awareness of that movement completely changes. I'm wondering if it is possible to almost "memorise" rapid movements between the chords so that they become automatic patterns. By seeing my arms / hands that move rapidly and automatically I have to match my breath to those movements, almost if the movements are separate entities. In this case, maybe chords would sound even more imprecise, they would last for a very short amount of time, and they would not be controlled at all as you don't have the time to prepare them. Also, your breath would sound much more chaotic and faster.[45]

In response to this, Kate indicates that:

> I really like the changes to section 2 (and 4) and I think this would really highlight some risky areas, plus how tricky it is to do! Being aware of an automatic movement and not changing it is something I try to do in yoga and meditation. I think this would contribute some interesting consequences.[46]

In another email she adds that:

> I think 2 works really well. I'll be rather slap dash and pianistic with them if that's ok. The breathing is hard here! But good to do. I'll make sure it's accurate and matched well.[47]

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[45] Federico Pozzer, notes gave to Kate Ledger, email correspondence (27 April 2020).
[46] Kate Ledger, email correspondence (18 June 2020).
[47] Kate Ledger, email correspondence (3 July 2020).

Conceiving movements as automatic made complete sense to Kate. She linked this approach to yoga and meditation practices, and she realised that when adopting this mindset her playing was more likely to be rapid and immediate while tracking her breathing became more challenging. Our solution led to satisfying results; as intended, the difference between roles of breathing and moving in sections 1 and 2 become more explicit. In section 1, where breathing leads movement, Kate's movements are slow, dynamics are very soft and balanced throughout the section (see 0:00 and 1:22 of the video recording). In section 2, where movement leads breathing, the chords are shorter and louder, and Kate's movements are considerably faster than those in section 1 (see 1:26 to 1:37). Towards the end, from 1:35 to 1:37, her movements become so fast that she loses control over her playing and is unable to correctly prepare each chord.

In last two sections of the piece, the length of Kate's breathing is dictated by the time it takes for the chords to decay. In the pieces written during my master's studies, the length of the steady breathing of the performer was used to regulate the duration of the notes. In this piece, the instructions are inverted. My reason for doing this was to explore how players' movements are affected by carrying out challenging instructions related to their breathing. Before delving into analysis of these sections, there are two main points of divergence between sections 3 and 4 that the reader should keep in mind:

- In section 3, movement from one chord to another is performed during the pauses within a breathing cycle (the pause after a full inhalation and the pause after a full exhalation).

- In section 3, the speed at which Kate moves from one chord to another chord is free and does not dictate the length of her breathing. In section 4, the speed at which Kate moves from one chord to another chord dictates the length of her exhalations.
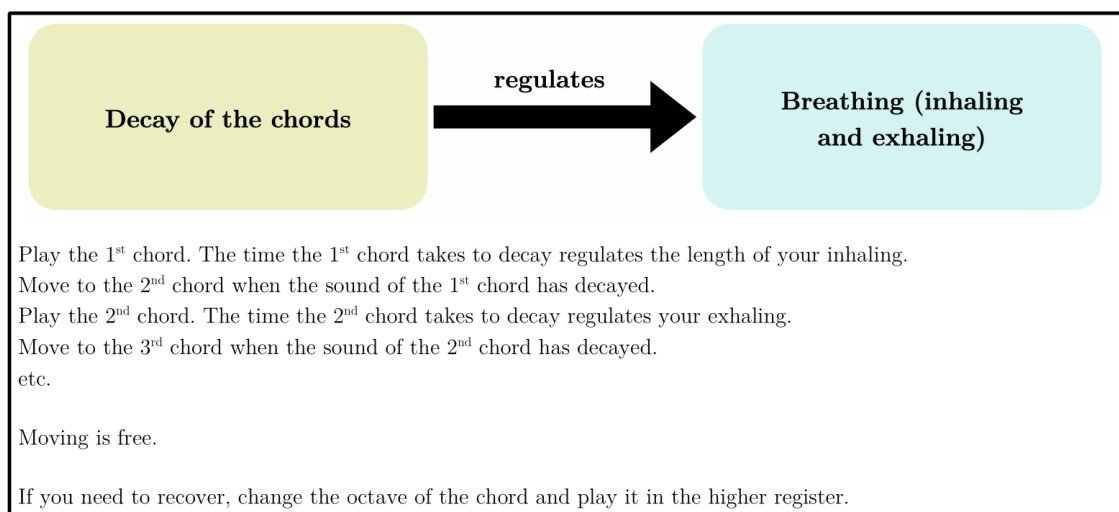
Figure 6 Instructions of *Breathing, Moving, Playing* - Section 3

In section 3, the total duration of chordal decay regulates the length of Kate's inhalations and exhalations. When I gave Kate the instructions of section 3 she observed that:

> This is really hard! As the chords are low and dense, they take so much longer to decay, so my breath is really stretched. The movement to the next chord also has to happen before the next inhalation/exhalation, so there's a real urgency to get to the next chord. It has to be planned carefully, with movement being judged then a quick dash to the next shape [...] perhaps adding awkward shapes to the chords adds another layer of difficulty.[48]

In this email excerpt, Kate is referring to the first versions of the piece in which the set of chords was different, but the instructions on how breathing should be matched to playing were the same. Kate emphatically expresses the inherent difficulty involved with stretching out her breath to match the duration of the chords in the lowest registers and its effect on the speed of her movements. Here, the relationship between chordal decay and length of breath does not alter just her breathing but also her movements as she feels urgency towards the end of an exhalation to move to the next chord/inhalation. In order to assist Kate in managing her breathing and to enable the emergence of more indeterminate elements in the piece, I allowed her to change the register of notated chords in sections 3 and 4. Given that the chords in the low registers last significantly

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[48] Kate Ledger, email correspondence (6 April 2020).

longer than the chords in the high registers, the differences in the chords' duration could considerably challenge her breathing to a degree that may be inhibitory. This solution of open-registers provided more flexibility in Kate's breathing and more unpredictability with not only register but with other aspects, such as dynamics. In the following extract, Kate talks about the link between dynamics, breathing, and playing during the performance:

> When duration is in charge, I have to strategise a way through. It's hard! Changing the octave and trying to play quietly (with this ruining clarity a lot of the time) affects how I move. I also don't have that time to prepare as I'm low on breath, so I'm snatching and perhaps playing too loudly, therefore jeopardising the next chord![49]

When following instructions, there are times when Kate feels that she does not have adequate time to prepare the chords. Therefore, although she is aware of the fact that softer dynamics generate more comfortable situations, she is pushed towards a point where she loses control over dynamics. Unpredictability can also be found in her movements as it is the urgency behind needing to inhale that results in her moving to the next chord with considerable rapidity.

In section 4, the instructions are slightly different; the time the chord takes to decay regulates the length of Kate's inhalation and the time it takes to move from one chord to another regulates the length of Kate's exhalation.

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[49] Kate Ledger, email correspondence (27 April 2020).
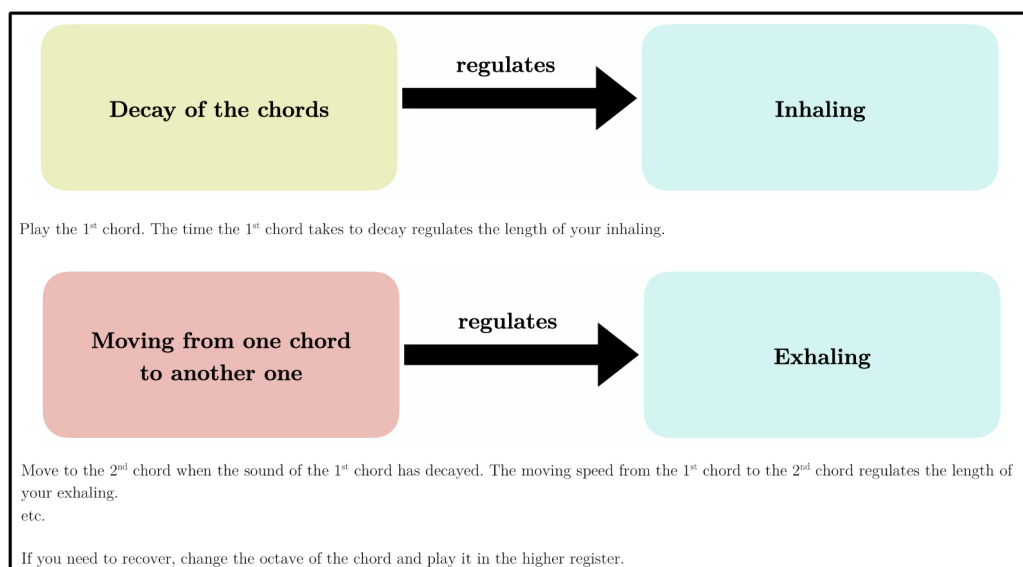
Figure 7 Instructions of *Breathing, Moving, Playing* - Section 4

The instructions in this section were motivated, in part, by my curiosity as to what might arise from combining two types of instructions, previously employed separately in sections 2 and 3, within the same section. It is important to note, though, that while the instructions of section 3 ask Kate to match both her inhalations and exhalations to the duration of the chords, the instructions in section 4 ask her to match only her inhalations to the duration of the chords, while her exhalations are matched to the time it takes for her to transition between chords. Interestingly, when the project started, I anticipated that section 4 would be the most challenging for Kate because the length of inhalation would have been really stretched while the duration of the exhalation would have been really short, causing an evident imbalance between the two breathing phases. However, Kate reveals that her breathing was more comfortable in section 4:

> Section 4 is a bit easier as the movements/exhalations allow
> me to recover. However I need to be careful I still fit with the
> movements and not exhale too quickly/ slowly.[50]

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[50] Kate Ledger, email correspondence (27 April 2020)

Kate indicates that, in section 4, the movements from one chord to the next are moments that allow her to restore, although she still must be careful about matching the length of her exhalation with the transition time between chords.

The first version of the piece consists of the four sections discussed above. After recording it, Kate and I reflected upon the way breathing changes across these four sections, especially in the last two, where she performs the most demanding instructions. To explore situations in which her breathing might be further altered I proposed that Kate extend the duration of the piece. In the version included in this portfolio, Kate plays all the four sections twice, repeating them in a reverse order, as in sections 1, 2, 3, 4, 4, 3, 2, 1. This solution significantly affected the way her breathing shapes the resulting sound. In the final version, during the first time Kate plays section 3 (1:42 to 5:17), she never changes the registers used. Conversely, during the second time she performs section 3 (15:20 to 18:54 of the video recording), Kate often changes the register of the chords in order to ease her breath. Performing sections 3 and 4 and then 4 and 3 one after the other pushed Kate to change the register more often in order to give herself a break from consecutive long inhalations and long exhalations. Another aspect to be taken into account in the final version is the way the amplitude of her own breathing changes. The second time she performs section 2, from 19:00 to 19:13, her breath becomes louder and slightly longer than when performed the first time from 1:26 to 1:37. In the following extract, Kate indicates that this longer version led her to significantly alter her breath:

> I really like this extended version. The repetitions push me to my edge, and this is when you get interesting results. If it was fully doable I don't think we would be fully exploring the material.[51]

Kate points out that performing the eight sections pushed her to the limit. This version is more demanding in terms of breathing and the body's physical capabilities. It fosters changes in the breath, dynamics, and register that did not emerge in the shorter version.

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[51] Kate Ledger, email correspondence (5 Jan 2021).

After recording the final version of the piece, I provided Kate with other long versions for possible future performances. These versions consist of the same eight sections discussed above but arranged in different orders:

Version a) 1, 2, 3, 4, 1, 2, 3, 4
Version b) 4, 3, 2, 1, 1, 2, 3, 4
Version c) 4, 3, 2, 1, 4, 3, 2, 1

I expect these sequences of sections to yield varying results depending, in large part, on the degree of challenge that each demands. For Kate, sections 3 and 4, which matched the duration of breath to the duration of chords played, were significantly more challenging than sections 1 and 2, which matched duration of breath with the transition time between chords. Unlike the version that was performed (sections: 1, 2, 3, 4, 4, 3, 2, 1), these alternative versions do not place the hardest sections back to back. Therefore, one inquiry addressed in these variant sequences is whether versions of the same length can be restructured so as to provide relief for Kate and how this might alter performative outcomes. For instance, would following the hardest sections with easiest sections in the middle of the piece, as in Version a (1, 2, 3, 4, 1, 2, 3, 4), provide Kate enough relief to perform the second half similarly to the first half? Would this particular ordering diminish Kate's reliance on quickly decaying, high-register chords that provide Kate relief by decreasing the duration of inhalations? Would this version decrease registral variety or would it actually increase registral variety as Kate would be choosing register based on preference more so than biological necessity?

Another inquiry of these alternative versions is how temporal patterns across a performance can be influenced by the rearrangement of sections. In section 3 of the original version, for instance, Kate quickly transitioned between chords as both her inhalations and exhalations were matched to the decay of chords. Meanwhile, her timing between chords was much longer in section 1 as the transition time between chords was dictated by the length of inhalations and exhalations. Likewise, the duration of chords in each section varies depending on whether it regulates breathing or whether it is regulated by the speed of

transition between chords. With each section predisposed towards a distinct temporal scheme in performance, any difference in the ordering of sections also produces a difference in the overarching pattern of temporality across a sequence. Therefore, we can expect that versions with adjacent sections and with inversional symmetry, such as Version b (4, 3, 2, 1, 1, 2, 3, 4) will feature more temporal consistency towards the middle of the piece while versions with no adjacent sections (Versions a and c) will feature greater variety of temporal dynamics across the piece even if those patterns of predictable given the repetition of the first sub-sequence (Version a: 1, 2, 3, 4, 1, 2, 3, 4 and Version c: 4, 3, 2, 1, 4, 3, 2, 1).

Contemplating on *Breathing, Moving, Playing,* two final reflections emerge that I find particularly significant. The first one concerns the instructions in the score. The instructions intend to alter both breathing and movement of the performer. Similar techniques have been used by composers Pauline Oliveros and Adam Overton. For instance, Oliveros reveals that she started matching her breathing patterns to accordion playing in 1969: 'I began to translate the breath rhythms and the slow natural motions of T'ai Chi to my solo improvisations'.[52] On the other hand, Overton's series of electronic sound performances *Medi[t]ations* (2003–2005) questions the connection between breathing and performers' bodies without involving movement or synchronisation. Overton creates a situation in which there is a 'static performer in an extended state of breath-based meditation—a performer not-performing, trying to neither think nor control the body'.[53] In *Breathing, Moving, Playing*, the simple task of matching movements with breathing resulted in Kate's multiplicity of experiences, resulting from a complex, myriad of relationships between breathing, moving, and piano sounds. With all this in mind, I consider one of the most interesting insights emerging from this piece to be how the length of a performer's breath can shape the timing of playing without directly determining the duration of the piano sounds. By varying instructions related to breathing, movement, sound,

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[52] Pauline Oliveros, *Software for People: Collected Writings 1963–80* (Baltimore: Smith Publications, 1984), p. 148.
[53] Adam Overton, 'Invisible Performance of the Virtuosic Body', *Contemporary Music Review*, 25.2 (2006), 173–82 (p. 176).

and duration, unpredictable results emerged across multiple parameters, from dynamics to timing. Moreover, working on this piece with Kate helped me to reflect upon aspects that I did not previously consider, namely the differences between the type of movements that can regulate breathing, the type of movements that can be regulated by a performer's breathing, and the way piano sounds (in this case, decay time) can be used to affect the performer's breathing and playing.

3.1.2 *Breathless* (2019–20): commentary

In *Breathless* (2019–20) for wind ensemble, I wanted to explore a situation that might be potentially unfamiliar to wind players; I asked a wind ensemble to use their breath only as a time regulator, rather than as a tool to produce sounds with their instruments. The performance requires that wind players, at the same starting point, inhale through their nose and hold their breath as long as they can. While holding their breath, they are asked to perform as many actions as possible. The actions can involve any sort of percussive sound that does not require breathing, such as tapping different parts of the instrument (e.g., inside, on the rim, and behind the bell using either fingernail or flesh), slamming the valves down, and clicking the keys. When the players are unable to hold their breath any longer, they exhale independently through their mouth and not into their instrument. One central motivation for working on a piece where wind players are asked not to blow into their instrument revolves around wind players' already heightened awareness and control of their breathing. Through working with and interviewing wind players and singers (see 3.2 and 4.2 for interviews with clarinettists Andrew Sparling and Heather Roche), I developed an appreciation for how these musicians are more acutely aware of their breathing and of how their breathing supports their playing in comparison to other musicians. In light of their already intimate relationship with breath and its connection to performance, I felt that placing wind players in an unusual relationship with their breathing would create an especially fruitful context, through which novel insights on breathing as an action-regulator could emerge.

The piece was performed by thirteen players of the wind ensemble of Isola Vicentina (IT): flute, clarinet, two saxophones, five trumpets, trombone, baritone horn, and two tubas. After the rehearsal, I asked the performers how holding their breath affected the timing and choice of their actions. One of the most common responses I received from them was how the act of holding the breath enhanced the awareness of their own playing:

> It was interesting to observe how the act of holding my breath pushed me to be aware of the sounds and of the actions I was performing.[54]

This was a strikingly pervasive theme throughout the performers' feedback; in particular, performers noted that their awareness increased in association with stretching the amount of time they held their breath after inhalation.

Reviewing the recording, two aspects stand out. Throughout the rehearsals, the players adopted an exploratory approach, experimenting with actions that I had not considered when formulating the instructions, including assembling and disassembling the instrument. Interestingly, the duration of the performers' held breath was approximately the same for each player, except for the baritone hornist and the clarinettist. The piece has been rehearsed four times and its total duration has remained highly consistent amongst the rehearsals.

My approach in this piece bears similarities with others taken in experimental music. One of the pieces greatly influencing the development of my instructions for *Breathless* is David Pocknee's *Gray Winter Grimes* (2017), written for Williams' COMING UP FOR AIR project. Pocknee's piece lasts one breath and prescribes a vast number of actions, making it unlikely that the performer will be able to get through all of them within the same breath. The similarity between Pocknee's piece and my work is the use of breath as the limiting factor for how much of the instructed task will be completed. In the case of *Gray Winter Grimes*, the flautist is asked to choose between two approaches and one of these is to 'complete as much of this piece as possible in one breath'.[55] Likewise, in *Breathless*, the players should perform as many actions as they

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[54] CC, feedback collected after the performance (31 Aug 2020).
[55] David Pocknee, *Gray Winter Grimes*, for flute (unpublished score, 2017), unpaginated.

can within one breath. However, there are two main differences between my work and Pocknee's piece. The first one pertains to the notation; in Pocknee's score, the order of the events and the movements of each finger are specified, whereas in my piece both the order and the choice of actions are left to the performers. The second difference lies in the way one's breathing and instrument are employed. In Pocknee's piece, the performer blows into their instrument to produce sounds and performs as many sounds as they can within the same breath. Contrarily, in *Breathless*, the performers never breathe into their instrument and are asked to stretch the pause between inhaling and exhaling.

It is worthy to note that not all versions or drafts of *Breathless* produced equally interesting outcomes. In another version of *Breathless,* rehearsed by the wind ensemble of Isola Vicentina, the length of the piece remains the same but, instead of asking players to perform as many actions as possible, the instructions ask players to perform a determinate number of actions in one breath, 25 actions to be exact. I specifically chose the number twenty-five because I believed that this would give more than enough time for players to perform all actions in one breath, each breath lasting an average of 40-45 seconds. My expectation was that, with ample time to perform the activities, players would initially perform actions with more leisure and then gradually increase the speed of their actions as they perceived time running out. Hence, I expected that such a context would naturally produce an accelerando as players became increasingly aware of the need to exhale and the pressure of completing all tasks in one breath. However this desired outcome was not achieved in either of two rehearsals of this version. The accelerando did not occur; instead, players approached the performance in a more controlled manner than expected. Pauses between actions were rather consistent in duration and the actions were performed more methodically, with performers focused on counting down the number of actions required. In addition, several players performed all 25 actions relatively quickly and exhaled as soon as they were done. Consequently, the players' held breath, as well as the duration of the performance, was significantly shorter in this version compared to the original version. From this unexpected outcome, I gained insight on how, based

on the natural inclination of performers, instructions may lend themselves to more or less controlled interpretations. In this case, it appeared that the natural inclination of the performers was to approach the task of completing a determinate number of actions in a list-like, controlled fashion. Meanwhile, when the number of tasks was open-ended and bound only by the maximum number of actions possible, the natural inclination of the performers was to approach this task as a challenge, a competition with oneself or with others that facilitated frenetic indeterminacy.

I conclude this section with one final consideration regarding the connection between the extent and variety of performers' feedback and the duration of the pieces performed. The performers' comments on *Breathless* were highly consistent and revolved around a narrow set of topics. My presupposition is that the short time span of the piece restricted the players' capacity to track alterations in their breathing and in their musical actions, leading to a reduced overall quantity and the variety of observations they could provide in their feedback. This idea is supported by my collaborations with other musicians. For instance, in *Breathing, Moving, Playing*, which lasts twenty minutes, the performer provided an exhaustive account on the way their breathing affected their playing. A similar amount of feedback was collected in other pieces that also use the performers' breathing as a time regulator, such as *Couples or Groups*, lasting eight minutes and thirty seconds (see 3.3.1). It may be that, given the unfamiliar context of breathing solicited by my instructions, performers first require a certain amount of time to sink into their new relationship with their breathing in order for certain realisations to reach the threshold of awareness.

3.2 Breathing as Blowing

During the second year of my PhD, I became interested in how blowing, as opposed to normal breathing, can affect performative parameters. Specifically, I was fascinated by some Fluxus works in which the performers blow on a set of objects and respond to their movements by altering their blowing. One of these compositions is George Brecht's *Octet for Wind* (1964) where wind players blow

on a toy sailboat placed on the water inside a large pan. Equal numbers of wind players seat themselves on opposite sides of the pan. Blowing through their instruments, the players blow the boat away from themselves in an attempt to push the boat towards the group on the opposite side while playing popular tunes. The piece ends when the sailboat reaches one of the ends of the pan. Here, the performers' breathing is not used as a silent regulator but rather as a physically exertive action characterised emphatically by sounds, visuals, and humour. What I found extremely compelling in this work is the way the timings in the piece are shaped by the reciprocal relationship between the act of blowing and an object's movement. Initially, the airflow projected by the performers' blowing directs the movement of the sailboat. However, because performers are ultimately attempting to push the boat to the opposite side, the players then respond to the movements of the sailboat by shaping their musical actions and timing in a way that will help them accomplish their goal. Eventually, the sailboat has the last word, its movement towards one side of the pan ending the piece and dictating its duration.

Another work which deeply influenced me was Alvin Lucier's *Self Portrait* (1989) for flute and wind anemometer. In Lucier's piece, the flautist plays long tones in front of the anemometer, triggering the blades of the wind anemometer to move. Here, the visual dimension of breathing is heightened by the use of a light placed on the opposite side of the wind anemometer. The light beams through it and as the performer blows, some parts of performer's body are revealed. Similar to Brecht's work, here the performer alters their airflow in order to move the objects. However, rather than generating playful and competitive interactions between the performers, *Self Portrait* focuses on illuminating the solo performer's breathing, a phenomena that is, quite literally, often buried in the noise; the extremely intimate relationship between the solo performer, their breathing, and the multi-directional movement they generate is at the core of the piece. In an interview, Kathryn Williams remarked that *Self Portrait* requires 'extreme control and manipulation of the performer's breath'; its challenging nature only adds to the heightened state of focus that both performer and

observer directs towards the breath.[56] These pieces vary considerably from my pieces that use breathing as a time regulator. In *Octet for Wind* and *Self Portrait*, blowing does not directly regulate the timing of performers' actions. Rather, the movements of the objects, which are consequences of the performer's airflow, shape the timings of the performers' actions. In other words, there is a more indirect relationship between breath and musical timing, with moving objects acting almost like intermediary players that affect musical timing in some way.

Inspired by these musical precedents, I began testing out tasks that require performers to use the force of their blowing to trigger movement in objects. I carried out this investigation using varying instruments (e.g., flute, guitar, piano, saxophone, snare drum, and voice) and objects (e.g., paper, ping pong balls, marbles, and cards). This experimentation resulted in two pieces, *Moving Objects* (2019–20) and *Neck and Ball* (2020), which will be discussed in 3.2.1 and 3.2.2, respectively. Both pieces specifically question how the performer's blowing serves to trigger movements of objects and to shape the interaction between the objects and the performers. In *Moving Objects*, a piano piece written for Kate Ledger, the pianist blows on a set of ping pong balls and marbles placed inside of a grand piano attempting to form the shapes indicated in the score. In *Neck and Ball*, a saxophone duo explores how a ping pong ball placed at the end of the neck of the saxophone can be moved by the player's airflow and can be used as a score to instruct the performers on how to change their blowing. In both these pieces, blowing has the potential of becoming an integral part of the resulting sound. This in contrast to most of my other works that revolve around breathing, during which inhaling and exhaling are usually silent. In fact, in *Moving Objects*, the performer's blowing may be louder than the sound produced by the instrument.

Thus far, in discussing these pieces, I have relied on our intuitive connotations for the term 'blowing'. However, it just takes a moment of thought to realise that the distinction between blowing and breathing, particularly exhaling, is quite blurry and open to interpretation. Therefore, before discussing

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[56] Kathryn Williams, 'Profile: Kathryn Williams', interview, *Tempo*, 73.288 (2019), 109–11 (p. 110).

my pieces in depth, I will spend some time considering the distinctions between exhaling and blowing as these distinctions, even if still flexible, will help distinguish this group of pieces from the ones previously discussed and will enrich the discourse around these pieces in the next sections.

Ethnomusicologist Lindsey Copeland makes a useful distinction between exhaling and blowing, observing that 'whereas exhalation is often involuntary, non-directional and relaxed, blowing exceeds exhalation in its intention, direction and force'.[57] Copeland contrasts the intentional, controlled, focused nature of blowing with the involuntary nature of releasing air when exhaling. During my PhD, I interviewed wind players, experts in breathing and blowing, in order to gather feedback on this distinction. In October 2020, I asked clarinettist Heather Roche if she could define the difference between exhaling and blowing. Roche replied:

> […] in a lot of ways exhaling and blowing are the same thing—but I am going to guess what you mean is that exhaling refers to a release of air from the lungs, while blowing is a more of a forceful pushing of air. Blowing I would say, as a verb, I *always* associate with playing the clarinet. If I blow in normal life it's for a very specific action: to blow out a candle, or to blow on hot soup. In fact, I can only think of blowing as associated with heat, somehow. It makes me think of pursed lips, focused air—much like when I'm playing the clarinet.[58]

Roche acknowledges similarities between exhaling and blowing but she observes how they differ in terms of releasing air versus pushing the air forcefully out of the lungs. She also underscores how the position of the lips change during blowing.

Another significant difference between exhaling and blowing concerns timing (also discussed in section 4.2). During a conversation with clarinettist and singer Andrew Sparling, Sparling considered the timing of exhaling versus blowing. He defined breathing used in daily life as 'resting breath' and indicated that:

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[57] Lyndsey Copeland, 'The Anxiety of Blowing: Experiences of Breath and Brass Instruments in Benin', *Africa*, 89. 2 (2019), 353–77 (p. 356).

[58] Heather Roche, email correspondence (14 Oct 2020).

> Breathing in and breathing out are in normal life usually the same
> length of each other and that is the resting breath. But in clarinet
> playing, when you put the instrument in your mouth you change
> that relationship because when breathing out is not exhaling, it is
> blowing, less air when it's quiet and more air when it's loud.[59]

Although he talks about breathing in the context of clarinet playing, he clearly indicates that clarinet playing is tied to blowing whereas exhaling is tied to what he describes as 'resting breath'. In regard to timing, Sparling observes that blowing lasts longer than exhaling. The difference in duration between Sparling's 'resting breath' (exhalation) and blowing suggests that a similar discrepancy in the duration of blowing versus exhaling may exist in other spheres of daily life (e.g., blowing on a pinwheel, blowing up a balloon, blowing off dust from a table, blowing out birthday candles) as the pursed lips involved in the act of blowing allow the individual to increase control and extend how long they can expel air. Naturally, there are activities during which this durational discrepancy between exhaling and blowing might vanish or lose relevancy, as may be the case with activities that intentionally extend exhalations, such as yoga and meditation.[60] Others activities, such as swimming or underwater diving[61] and running, blur distinctions between blowing and exhaling in regard to both temporal dynamics and physical mechanics.[62] However, excluding exceptions such as these, it is easy to see how blowing,

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[59] Andrew Sparling, interview by Federico Pozzer (Zoom Meeting, 30 Sep 2020).

[60] Victiora and Caldwell describe types of meditative breathing exercises and their effects in psychotherapy. Focus is applied on the effects of extended breathing, applied to inhalations, held breaths, and exhalations, and the manner which exhalations can aid and be coupled with the act of letting go. Himmaut Kaur Victoria, and Christine Caldwell, 'Breathwork in Body Psychotherapy: Clinical Applications', *Body, Movement, and Dance in Psychotherapy: An International Journal for Theory, Research and Practice*, 8.4 (2013), 216–28.

[61] Päivinien and others observe the importance of long exhalations into water while swimming and the coordination between long exhalations and movements that are necessary for providing adequate airflow to the lungs. Marja Päivinien, with Kari Keskinen, and others, 'Swimming-induced changes in pulmonary function: special observations for clinical testing', *BMC Sports Science, Medicine and Rehabiliation*, 13.55 (2021) <https://doi.org/10.1186/s13102-021-00277-1>.

[62] Lande explores the purpose of deep, long, and regular breathing while running, particularly its importance in coordinating bodily activities and to avoid hyperventilation. Brian Lande, 'Breathing like a Soldier: Culture Incarnate', *The Sociological Review*, 55 (2007), 95–108.

with the greater force, intention, and control it often involves, would last longer than an average exhalation.

Collectively, Sparling, Roche, and Copeland's perspectives are helpful in marking a distinction between exhaling and blowing and between this set of pieces, 'Breathing as Blowing' and the previous set, 'Breathing as a Time Regulator'. Moreover, their perspectives as well as my own reflections on the distinguishing factors mentioned here (intention, focus, control, position of the lips, and timing) served as a creative resource, inspiring me to create *From Exhaling to Blowing* (2020), discussed in section 4.4.1. For now, though, I will be focusing on pieces that revolve specifically around blowing, starting with *Moving Objects* (2019–20) in the following section.

3.2.1 *Moving Objects* (2019–20): commentary

In *Moving Objects*, pianist Kate Ledger blows on a set of ping pong balls and marbles placed inside a grand piano. The objects triggered by her blowing move along the strings and produce sounds. The final result is a piano piece which lasts thirty minutes and consists of three different sections. As mentioned previously, blowing is different from breathing in that it is a voluntary act which involves control, focus, and intention. The performer can gauge and project their airflow in order to move the objects towards a certain direction and with a certain speed. However, throughout my project, I realised that the movements of the objects—triggered by blowing—cannot be fully controlled or manipulated by the performer. The indeterminacy and uncertainty tied to the act of moving objects by blowing on them was the starting point for this piece. Kate and I worked on the piece throughout five months, experimenting with parameters, such as durations and constraints. Our goal was to explore the types of possible interactions between Kate's airflow and the given objects, as well as the resulting sounds prompted by these interactions. In the text that follows, I will discuss each section separately, focusing on the type of task Kate performs and the choices with which she is confronted. I will then conclude this commentary by elaborating on my collaborative process with Kate–a process that was integral to the development of the finalized version of this piece.

In section 1, a set of ping pong balls is placed on the middle-register strings. The score of this section consists of nine pages, each page displaying a shape formed by the ping pong balls. The performer blows on the ping pong balls to form the shapes within the given time limits.
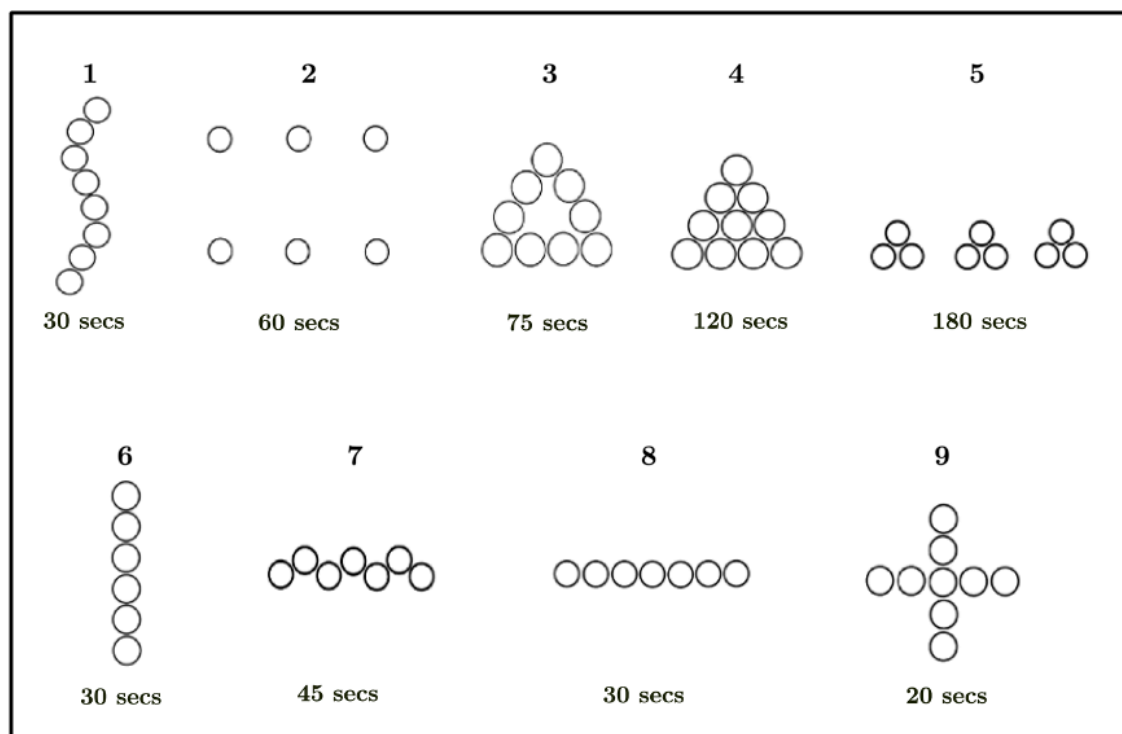
Figure 8 Shapes in *Moving Objects* - Section 1

In Figure 9, the numbers above the shapes indicate the performance order while the numbers below the shapes indicate the time limit in seconds. Certain shapes are more or less difficult to accomplish depending on their vertical form, the inclination of the piano's stringboard, and the allocated time limits. Throughout the rehearsals, Kate and I experimented with different shapes and time limits in order to observe how attempting to form each shape led her to react and blow differently. The way the shapes are matched with the time limits was informed by Christian Wolff's solution in *Duo for Pianists I* (1957) where two pianists play sets of sounds within given time brackets, and the time brackets vary from 1/16th of a second to thirty seconds. In this piece, Wolff matches the larger sets of notes with the short time limits and the smaller sets of notes with the long time limits. Philip Thomas and Emily Payne point out that:

> Wolff gives little consideration to the relationship between time bracket and content, with some of the shortest periods of time requiring more activity than some of the longest periods. Pianists must negotiate a continuum between having a great deal to play in a short space of time […] and needing to play very little […] across longer periods.[63]

Borrowing Wolff's strategy, I decided to stretch out the time limits assigned to the easiest shapes, such as the triangles, and to contract the time limits assigned to the most challenging ones, such as the cross and the vertical lines. This decision enhanced certain interactions between Kate and the objects, yielding different results in terms of dynamics and sound. For instance, I only assigned 30 seconds (with time limits ranging from 20 to 180 seconds) to the snake-like shape 1, one of the more difficult shapes to form. When Kate forms this challenging shape (0:41 to 1:15 of the video recording), her airflow is consistent and loud, and the movements of the ping pong balls produce continuous and fast ascending and descending chromatic sequences across the piano strings. On the other hand, while forming one of the easiest shapes, the three little triangles composing shape 5 (6:02 to 9:12), Kate's breathing becomes really soft. There are more pauses in between the sounds and very tiny movements of the balls touching each other. The chromatic sequences are slower, and the balls tend to shake in between the strings. Throughout the collaboration, Kate and I also experimented with different time limits. In this final version of the piece, the time limits used in section 1 vary significantly; the shortest time limit lasts twenty-seconds while the longest time limit lasts 180 seconds. Originally, the time limits were more contained, ranging from forty-five to ninety seconds. However, this limited range of durations restricted the variety of interactions between the performer and the objects as well as the resulting fluctuations in sound and dynamics. After rehearsing one of the first versions in which the time limits were more compressed, Kate asked me to provide her with comments about the sounding result. The following is an extract from my reply:

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[63] Philip Thomas, and Emily Payne, '"We also like to be surprised": Disruption, Provocation and Surprise in the Music of Christian Wolff', *Circuit*, 30.2 (2020), 27–45 (pp. 29–30).

The first two figures are very similar in terms of effects. Both figures cannot be realized properly because of the gravity and the small incline of the instrument. Shape 1 which resembles a 'S' leads you to blow loudly and on different parts of the strings, and to move her head quite often leading to loud chromatic sequences of the balls and clear attacks of the sounds. In Shape 2, dynamics are slightly softer. There are more pauses. Balls tend to move one at a time, and sometimes, the chromatic sequences are replaced by bigger intervals. Shapes 3, 4, 5 are very similar. This set of three shapes leads to situations that are very different from the previous one and from the following ones, particularly in the last shape (Shape 5). Dynamics become very soft, particularly in shapes 4 and 5. There are more pauses. Chromatic upward and downward sequences are combined with soft percussive sounds of the balls. In Figure 5, the chromatic sequences are very slow, blowing is really soft. Blowing sounds and balls sounds seem to be almost isolated, and not one a consequence of the other. The following two shapes 6 and 7 seem to lead you to react differently; dynamics are louder, breathing is more consistent, chromatic sequences become clearer and more rapid and in both cases there are small vibrating sounds of the same balls waving between the strings. In Shape 8 (horizontal line) there are loud dynamics, wider registers, and it seems that a melodic line emerges and repeats once or two. In the last figure (the cross), the change is evident: chaotic and very loud blowing and balls / strings sounds, long and wider chromatic sequences, no pauses. I think the cross figure makes a nice conclusion. It's very different from the others. I'm not completely sure about keeping both the vertical line and the S horizontal shape as at least to me they seem quite similar. But maybe altering the time limits might produce some interesting situations that would enable to us include both.[64]

In this extract, I acknowledge that the shapes produce different outcomes but I also express concern about shapes 6 and 7 as they seemed to push Kate to behave quite similarly, whereas my intention was for her to react differently. In response to my description, Kate states that:

I know what you mean here. The last four pages seem a bit clunky and perhaps too similar to each other? They feel more tiring to carry out, and this isn't just the timing or breathing. There's a difficulty to them that feels hard and (in a good way) annoying. However, there's something quite nice about the imbalance of this. You could perhaps even exaggerate it. I thought about there being a really nice "setting up" in the form of these simple tasks, but then they become more disruptive or hard to maintain. Perhaps playing with the time lengths would help here. The movements that you detect as being harder, or clunky, are actually the ones that could be exposed more.[65]

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[64] Federico Pozzer, notes gave to Kate Ledger, email correspondence (16 Sep 2020).
[65] Kate Ledger, email correspondence (21 Sep 2020).

Initially, the time limits for shapes 6 and 7 were seventy-five and fifty seconds. Following Kate's suggestion, I contracted the time limits for shape 6, which became thirty seconds, and for shape 7, which became forty-five seconds. The result was rather satisfying; performing shape 6 (9:15 to 9:49) led to a situation where Kate's soft blowing was juxtaposed with loud middle-register chromatic sequences, interspersed with small movements of one or two balls moving along the same string of the piano. In contrast, during the performance of shape 7 (9:50 to 10:46), Kate's blowing is loud and rapid and, instead of chromatic sequences, contrasting melodic motions occur in the right and in the left part of the stringboard. By simply contracting the time limits for these shapes, we were able to produce results for shapes 6 and 7 that varied to the degree we desired.

In section 2, a set of two, three, or four coloured marbles are placed on the middle-register strings. The score of this section consists of eighteen pages, each one consisting of a sequence of colours. Kate blows on the coloured marbles to arrange them as shown in the pages, and then adds or removes one or two marbles with her hands as needed before starting the next sequence. The pages can be performed in any order and the order should be selected randomly. The time limit for each page is forty-five seconds.
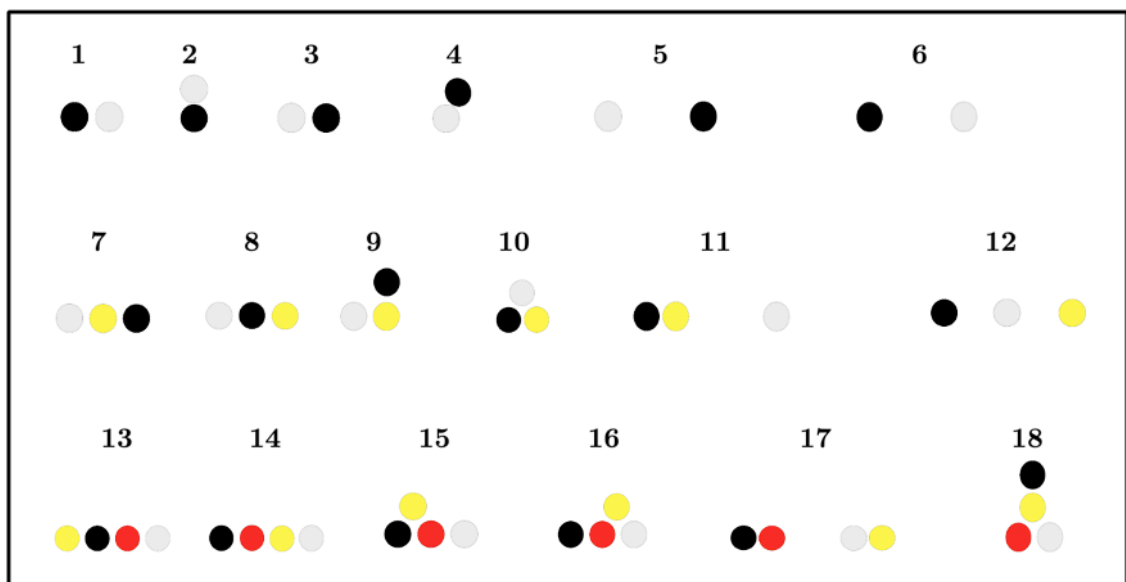

Figure 9 Sequence of Colours in *Moving Objects* - Section 2

There are four main differences between this section and the previous one; in this section, Kate uses marbles instead of ping pong balls, each shape is

formed within the same time limit, the number of objects varies from two to four, and the order of the page should be selected using any chance operation. Part of the reason I chose these different objects and constraints was to ensure sonic contrast between sections 1 and 2. One of the differences that produced an evident change in terms of sound is the ordering of the pages. Allowing the pages to be selected at random led to unexpected interactions between Kate and the marbles. For example, on certain occasions Kate does not even have to change the position of the marbles at the onset of a new page, opening up the possibility for spontaneous, playful decision-making on the part of the performer. For instance, from 14:42 to 15:30, Kate has to arrange the marbles as they were arranged in the previous page; a white marble on the left side and a black one on the right side. However, as the sequence of colours was already achieved during the previous task, she adopts a playful approach; she starts making each marble move along one string, waiting for the next sequence to occur. Elements of indeterminacy also emerged from the physical relationships between the dimensions and weight of the marbles, the piano strings, and the force of Kate's blowing. For instance, at 17:53, the yellow and white marbles stuck together along one string in the middle of the stringboard. Kate blows harder but the marbles initially do not move and only the piano strings react to her airflow. In fact, the high density of the marbles forces Kate's airflow to remain strong and consistent for much of section 2 and, as a result, her blowing is often much louder than the sounds of the marbles or the piano strings. In addition, within this section, ascending and descending chromatic sequences are always loud and rapid due to the greater force of airflow needed to move the marbles in comparison to the ping pong balls. Another difference between sections 1 and 2 lies in the frequency in occurrence and the directionality of these chromatic sequences. While in section 1 ascending and descending sequences usually occur one after the other, in section 2 there are long pauses in between each sounding event. After one of the first rehearsals, I asked Kate how she experienced her interaction with the ping pong balls versus the marbles. She replied:

> I'm very aware of the different way the marbles are blown
> compared to the ping pong balls. The two feel like completely

> different energies, like two movements to a piece. I like this a lot. The first section feels very fluid and my movements are almost directed from a higher point in relation to the strings. The marbles are much slower and so my movements and the way I blow is different. I've learnt quickly how to move between these two ways of moving—all quite instinctive without too much "technique" being applied. This is what I wanted so I'm super pleased.[66]

In this excerpt, Kate indicates that the difference in weight between the ping pong balls and the marbles led her to exercise two different types of blowing and moving that quickly became instinctive. In the following excerpt, Kate further reflects upon the differences between the two first sections, touching upon how the ordering of pages imbues section 2 with a formless or endless quality:

> It's interesting to see the difference between sections 1 and 2. 2 feels more sustained and pressed down, if that makes sense. This comes across in the sound but definitely how it feels. 1 is fluid, responsive, light, and I guess is more about larger shapes. Whereas 2 is smaller, where tiny millimetres make a difference. The ordering is good. It makes it feel formless and also endless, like there's no knowing when it will stop. I feel this is a good thing and would change the order every time.[67]

The random ordering, the substantial number of pages, and the long duration of section 2 gives her the sense that the end is unforeseeable. This is in comparison with section 1, which, although described by Kate as more fluid and responsive, is still more definitive in its overall form.

Section 3 is the shortest section of the piece, lasting three minutes. From the opposite side of the piano, one assistant places one marble between two strings of the lowest register and lets it flow down towards the dampers. The instructions ask that the marble not reach the dampers and that the performer blows on it, attempting to constantly push it back towards the bridge. Every thirty seconds, the assistant places an additional marble between two other strings and lets it flow down. The section is finished when a marble reaches the dampers. In contrast with the previous two sections, section 3 has no specific duration. The length can vary according to Kate's capability to fulfil the task. In

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[66] Kate Ledger, email correspondence (21 Sep 2020).
[67] Kate Ledger, email correspondence (12 Jan 2021).

addition, unlike the previous sections, there are no pauses in between the events as the marbles flowing down the strings produce a steady and continuous sound. This steady, continuous sound endows this section with a strikingly different sound profile than the previous sections, which are characterised more by clusters of discrete sounds.

In *Moving Objects*, Kate's blowing adapts to changes in qualities of sounds, dynamics, and timing, and these adaptations correspond with a change in the degree to which she is aware of her blowing and her movements. In the following extract, Kate considers the differences between those moments in which she is more aware of her breaths and movements and those moments in which her reactions to the task become more instantaneous, frenetic, and involuntary:

> As the breath is my tool for completing the tasks, this ultimately relates to how I move and use my breath. It is here that reveals the relevance of a Feldenkrais practice, where to increase my awareness of my physical functioning is to improve it […] The combination of shape and time limit creates the differing moments: some are restricted and compulsive; some are free and more expressive. For example, the fifth shape is not difficult to create, mainly due to the inclination of the strings, and I have 180 seconds to do it. I realise that I have lots of space to complete this task. There's no rush or panic, and in fact I'm able to be expressive as I form the shapes. This is an example of Feldenkraisian spontaneous movement where the boundary is fair and I can fill the space with a conscious freedom. My breath is more than capable here and so my movements are controlled and calm. Conversely, the sixth shape is more difficult as it goes against the inclination of the strings, and must be completed in a much shorter time limit. I dive into this task with compulsion, using all my energy to move the balls. My breath is less capable with its supporting movements being unconsciously directed to wherever seems useful.[68]

Here, Kate discusses the changes in her movements and breaths in relation to the Feldenkrais method, an integral part of her PhD project. Perceptively, she identifies how her breathing is greatly modulated by the task at hand. The different shapes, sequences of colours, and time limits are all factors playing a significant role in the awareness of her breath, which, depending on the task, ranges from steady and under control to immediate and involuntary.

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[68] Kate Ledger, 'Moving Objects: Breathing as a Reaction', unpublished paper delivered at the conference 'Garden of Forking Path' (University of Leeds, 16–17 April 2021).

Moving Objects invites reflection not only on the role of a performer's breathing in relation to tasks, but also on the role of the piano, at large. Like in many experimental pieces, here the role of the instrument as a sounding object is reconfigured; the instructions ask for techniques that are clearly outside the domain of conventional playing. This performance strategy is related to what performer and composer Andy Keep describes as 'creative abuse'; Keep observes that 'as extended techniques become more exaggerated there is a point at which the original intention of the instrument design is forgotten, or is so fractured that it becomes a new sounding object in its own right'.[69] Examples from experimental music, such as Jennifer Walshe's *Everything is Important* (2016) and Ylva Lund Bergner's *viivii* (2017), where, in both pieces, string players blow into their instruments, share certain similarities with *Moving Objects.* However, in Walshe and Bergner's pieces, violinists do not use their blowing to move objects. Moreover, in addition to blowing, the violinists are also required to perform a wider set of musical actions. In *Moving Objects*, the performer is focused on the act of blowing and the piano is never played in an ordinary way. Without ever touching the body, the performer uses the instrument as a resonant body with a stringed interface upon which ping pong balls and marbles move.

Apart the role of the instrument, my piece shares similarity with experimental music precedents that request challenging tasks, making attainability uncertain. Two works that considerably influenced my choice of using potentially unattainable tasks are John Baldessari's *Throwing Four Balls in the Air to Get a Straight Line (Best of thirty-six attempts)* (1973) and *Throwing Three Balls in the Air to Get an Equilateral Triangle* (1972–73). Both involve photographic sequences capturing three or four balls in mid-air, representing Baldessari's attempt to form the shapes suggested by his titles. Like Baldessari's works, *Moving Objects* uses tasks that ask performers to achieve determinate shapes with ball-shaped objects and, like Baldessari's works, there is an inherent uncertainty in the outcome. Apart from the surface-layer differences, the central point of divergence in the intentionality and function of

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[69] Andy Keep, 'Instrumentalizing: Approaches to Improvising with Sounding Objects in Experimental Music', in *The Ashgate Research Companion to Experimental Music*, ed. by James Saunders (Farnham: Ashgate, 2009), pp. 113–29 (pp. 116–17).

Baldessari's pieces and *Moving Objects* is the relationship between person and object. In Baldessari's works, the person uses the objects to achieve a definitive goal with one physical action. One might imagine that as Baldessari becomes more adept at using the balls that he also becomes more adept at achieving the shapes he desires. However, the intention of the piece does not appear to be directed towards an ongoing, reciprocal exchange between person and object, but rather more of a single achievement or attempt to achieve something along with the capturing of that fleeting moment. *Moving Objects*, on the other hand, is deeply interested in the back-and-forth interplay between person and object, creating situations that facilitate a feedback loop in which the performer constantly gauges and adapts their blowing in often minute ways according to the movements of the objects.

This finalized version of piece, as described here, is a result of several months of close collaboration between Kate and me. Early on in our process, I presented a draft of the piece to Kate with verbal instructions specifying a large variety of tasks or challenges. These challenges included blowing ping pong balls beyond the treble bridge, blowing on marbles continuously without allowing them to touch the dampers, and attempting to make ping pong balls jump to another register through the force of blowing. Similar to the graphic instructions of the final version, these verbal instructions corresponded to goal-oriented tasks of varying degrees of difficulty. However, the high level of variance across tasks diminished the coherence of the piece as a whole; indeed, it was easy to experience the performance of each task as a piece of its own. It was Kate who suggested using shapes in place of verbal instructions to bestow the piece with greater coherence along with a more playful character. This suggestion was not only was effective but it completely transformed the language of the score and the possibilities it afforded. Many of these possibilities were not readily apparent with verbal instructions and emerged only when a wholly different style of creative thinking was engaged. In this new, shared creative space, Kate and I could easily achieve significant transformations in the tasks performed with only minute changes in visual parameters such as type of shape, colour of marbles, and number of ping pong balls used; forming the shape of a line orientated vertically versus horizontally,

for instance, posed entirely different challenges physically for Kate and produced completely different sounds as marbles or ping pong balls traversed more or less along the pitch-oriented (horizontal) or timbral-oriented (vertical) planes of the piano strings. Inspired by this new infinite set of possibilities, I composed many sketches for this piece with contrasting shapes, colours, and objects, the combination of which also posed varying degrees of difficulty for the performer. Clearly, Kate's contribution was not restricted solely to performing the piece; her suggestions were instrumental to the core structure and content of the piece. She was an active collaborator with whom I continually exchanged perspectives and with whom I made decisions on performance and notation. This approach reinforces a point made in the commentary for *Breathing, Moving, Playing* (see Chapter 3.1) around flexibility in my compositional practice. I asserted then, as I do now, that certain choices regarding notation and material can easily adapt to the performer and the situation. Moreover, as I hope to have demonstrated here, my approach is to exercise such flexibility while still maintaining a focus around performers' breathing as a key determinant in the relationship between performer, instrument, and musical timing.

Figure 10 John Baldessari's *Throwing Four Balls in the Air to Get an Equilateral Triangle*

Figure 11 Kate Ledger forming Shape 5 of *Moving Objects*

3.2.2 *Neck and Ball* (2020): commentary

Neck and Ball is a piece divided into two sections, section 1 for solo saxophone and section 2 for saxophone duo. In section 1, the saxophonist removes the neck of their instrument and turns it upside down, placing a ping pong ball at the end of the neck. The ping pong ball is freely sitting on the neck without any attachment to the saxophone. Two numbers are written on either side of the ping pong ball, 0 and 1. The saxophonist blows into the mouthpiece making the ping pong ball move. If they see 0, they blow softer; if they see 1, they blow harder. The movements of the ping pong ball are such that only one number is revealed to the player at a time. Section 1 ends if the ping pong ball falls on the ground, if the player cannot blow harder, or if the player cannot blow softer. The diagram below depicts the basic reciprocal relationship between the player's blowing and the ping pong ball. In essence, the ping pong ball is initially moved by the saxophonist's airflow and is then used as a score that instructs the player on how to blow.
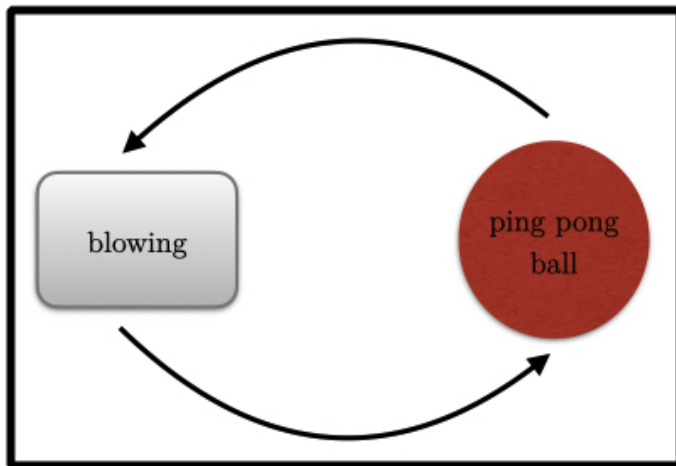
Figure 12 Diagram of *Neck and Ball* - Section 1

In section 2, both saxophonists face each other. Like in section 1, they turn the neck of their instrument upside down and place the ping pong ball at the end of their neck. Each saxophonist blows into the mouthpiece, but this time they react to the instructions written on each other's ping pong ball. Section 2 ends if one of the ping pong balls falls on the ground, if one of players cannot blow harder and stops, or if one of the players cannot blow softer and stops. The diagram below depicts this relationship between the players and the ping pong balls. In this case, the airflow of each player changes according to the movements of the ping pong ball on the other player's saxophone neck.
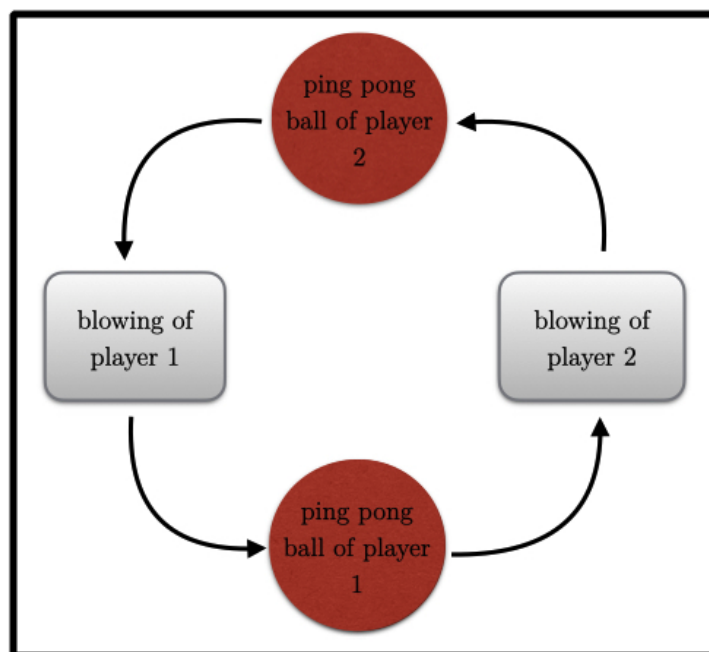
Figure 13 Diagram of *Neck and Ball* - Section 2

This discussion will proceed by examining each of these sections separately and the choices made during rehearsals.

The first section was performed by Marco Spagnolo, a saxophonist and improvisor who is familiar with my practice and has been involved in other projects of mine throughout my PhD. The first time Marco and I met, I asked him to simply blow into the mouthpiece and alter his blowing according to the number he saw on the ping pong ball. While experimenting with this task, Marco and I observed that when he blew softly, the ping pong ball continued to move, generating changes in dynamics and sounds (e.g. from soft breath sounds to loud unstable high pitches according to the changing instructions on the ping pong ball). Curiously, though, when the volume and force of air increased over a certain threshold, the ping pong ball would stop moving and appear to be stuck to the opening of the saxophone neck. It was as if the neck was trying to suck the ping pong ball inside, an occurrence that may be related to changes of pressure associated with higher speeds of air. To overcome this issue, Marco proposed to use a type of embouchure that he defined as an 'uneducated embouchure'; he used the 'uneducated embouchure' when he had to blow harder and he used an 'educated embouchure' when he had to blow softer. The result was different as the ping pong ball moved more often and in a more

unpredictable way. I asked Marco if he could clarify the differences between the two embouchures and this was his reply:

> When I adopt an educated embouchure I bite down on the mouthpiece and my lips cover the mouthpiece. I find a point where the reed becomes stable. The reed can vibrate against the mouthpiece and I can control it, together with the amount and the direction of the airflow. And of course attack and sound are more precise. When I adopt an uneducated embouchure this changes completely. I forget about my technique. I think about the saxophone as a flute or a metal tube. The reed vibrates but is not stable. It vibrates in ways I cannot really control and I blow much harder. What I noticed is that with an uneducated embouchure I cannot control the muscle of my cheeks, the direction of the air, the pitch. I feel that my muscles are completely free. This also affects my need for air. I expel more air but I can't control how much air I'm expelling. So I also need to inhale more often.[70]

Marco describes the differences between the two embouchures in terms of the vibration of the reed, how he perceives the instrument, as well as the control of his muscles, the airflow, and the sound. He adds that:

> This approach makes me perceive the settlement of the reed when changing from uneducated to educated embouchure. It pushes me to notice how the ball reacts to what I am doing. When I blow softly, I use the educated embouchure so the ball can move as the airflow is projected in a more controlled way.[71]

With the use of this 'uneducated embouchure', Marco had the capacity to trigger the ping pong ball's movement regardless of whether the number of the ping pong ball asked him to blow more softly or more forcefully. The proficiency he had gained in reacting to and controlling the ping pong ball's movement, though, appeared to limit the possible endings for the piece and to keep the duration of the piece rather short. Whereas the piece could end with either the ping pong ball falling or with Marco not being able to blow harder or softer, in rehearsals, the piece always ended with Marco stopping because he could not blow softer. The consistency of this ending can be explained by the fact that the softer Marco blowed, the less the ping pong ball moved and, therefore, the less able it was to flip over to the side with the number 1, the 'blowing harder' cue.

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[70] Marco Spagnolo, feedback collected after the rehearsal (22 June 2020).
[71] Ibid.

The experiments of section 1 were crucial for developing a new paradigm that allowed for more unpredictability and indeterminacy in section 2.

Section 2 was performed by saxophonists Marco Spagnolo and Giorgio Manzardo. During the rehearsal, Marco and I explained to Giorgio how to approach the instrument and how to adjust the embouchure according to the instructions on the ping pong ball. After a few endeavours, Giorgio easily managed to move from one embouchure to another one to ensure that he could move the ping pong ball adequately while blowing either softer or harder. Marco's comments yields a compelling insight on how the performer-performer interactivity of section 2 changed his sense of control over the ping pong ball and his breathing in comparison to section 1:

> Looking at both sections, I didn't really change my approach so much between the sections. I felt like I was just reacting to another ping pong ball. Although I was aware that the ping pong ball was moved by Giorgio I felt I wasn't so directly interacting with him. What I perhaps noticed, is that I didn't have the same control over the ball and over my breathing. In Section 1 although the movements of the ball were totally indeterminate, I could feel a certain control over the ball and over my breathing. I could to some degree predict how the ball would move. When I performed with Giorgio this didn't happen as the relationship between breathing and ball changed completely. I could not really predict the movements of the ping pong ball that instructed me.[72]

Marco indicates that interacting with Giorgio's ping pong ball decreased his control over his breathing as he could not predict how the ping pong ball would move. The considerations made by Marco are rather stimulating as they help explain the increased capacity for this section to bring about unpredictable changes in breathing. This unpredictability is underlined by Marco's observation that, in section 1, even though the movements of the ping pong ball were indeterminate, he could still predict to a certain degree how the ping pong ball would move but that this capacity vanished when placed in the interactive context of section 2. This aspect of section 2 revealed itself through the resulting sounds and their timings; the length of the rests between the musical events were contracted, the reactions to the instructions on the ping pong ball

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[72] Marco Spagnolo, feedback collected after the rehearsal (12 July 2020).

are immediate and frenetic, and there are sudden changes from loud to soft musical events. Furthermore, across several rehearsals, the total duration of section 2 was consistently longer in comparison to section 1. In section 1, the piece consistently ended in a feedback spiral, with Marco blowing softer and then, with the reduced force of air, unable to move the ping pong ball to the 'blowing harder' side. Given that the performers were reading each other's ping pong balls, this was no longer an issue; both ping pong balls would have to display the number 0 side (blow softer side) for both performers at same time more than once in order to initiate the 'blowing softer' cycle that ends the piece. Clearly, this is much less likely a scenario with two players reading two ping pong balls that they don't control versus one player reading off a ball that they do control. In other words, the players were able to keep the piece going by, quite literally, playing off of each other. In fact, they were so good at sustaining the piece by responding to the ping pong balls' instructions that it appeared that they could continue perpetually if it weren't for the ping pong ball eventually falling down; this was, in fact, how section 2 ended every time it was performed.

The type of interactions I prescribed in section 2 were inspired by Daniel Mudie Cunningham's *Take My Breath Away* (2012). In his piece, consciously influenced by Marina Abramović's *Breathing In Breathing Out* (1977), two performers face each other and take turns to blowing up a balloon. In relation to *Take My Breath Away*, artist and photographer Cherine Fahd observes that:

> Cunningham transforms the balloon into a body of breath that can be shared, touched and seen. This work renders the breath visibly relational and through the sculptural support of a white balloon this relationality is given material life.[73]

In *Take My Breath Away*, the changes in breathing are not so much revealed by the sounding result but rather by the enlarging motion of the balloons as the performers blow into them. In *Neck and Ball*, a similar situation emerges; as the performers face each other, the movement of the ping pong balls reveal the changes in the players' airflow. One main difference between the two pieces

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[73] Cherine Fahd, 'Breath Work: Visualizing the Invisible and Relational Breath', *Journal of Visual Art Practice* 18.2 (2019), 177–98 (p. 190).

lies in the resulting sounds and the degree to which those sounds are mediated. In *Neck and Ball*, the sounds of the saxophones are dictated by the movement of ping pong balls which are dictated by changes in the player's blowing, whereas in *Take My Breath Away* breathing does not produce sounds outside of a balloon inflating. In other words, in *Take My Breath Away*, there is less mediation between the breath and its effect on sound, motion, and material. This points to another crucial difference between the two pieces. Similar to the difference highlighted when comparing *Moving Objects* with Baldessari's works, *Neck and Ball* involves more of an interplay between person and object that evolves in unpredictable ways over time. In *Neck and Ball*, performers are constantly adjusting and re-adjusting to the movements that they trigger or that the other performer triggers, and in both cases the performers only have partial control of the movements that guide the piece. In this way, unpredictability and interdeterminacy are woven into an evolving web of interrelationality amongst objects and performers.

I have also considered an alternative, potentially future version of this piece that could intensify this relational indeterminacy by increasing the number of players involved. In this alternative version, player one would respond to the numbers written on their own ping pong ball while five or more players, arranged in front of player one, would respond to the numbers they see on the ping pong ball of player one. In this scenario, the players in front of player one could be spaced out in a such a way that they would not all see the same number on the ping pong ball; players facing closer to one side of player one might see number zero while players closer to the opposite side might see number one. As this hypothetical version demonstrates, the players' positions could be yet another factor producing unexpected alterations in sound, in breathing, and in response times.

Figure 14 Performance of *Take My Breath Away* by Daniel Mudie Cunningham
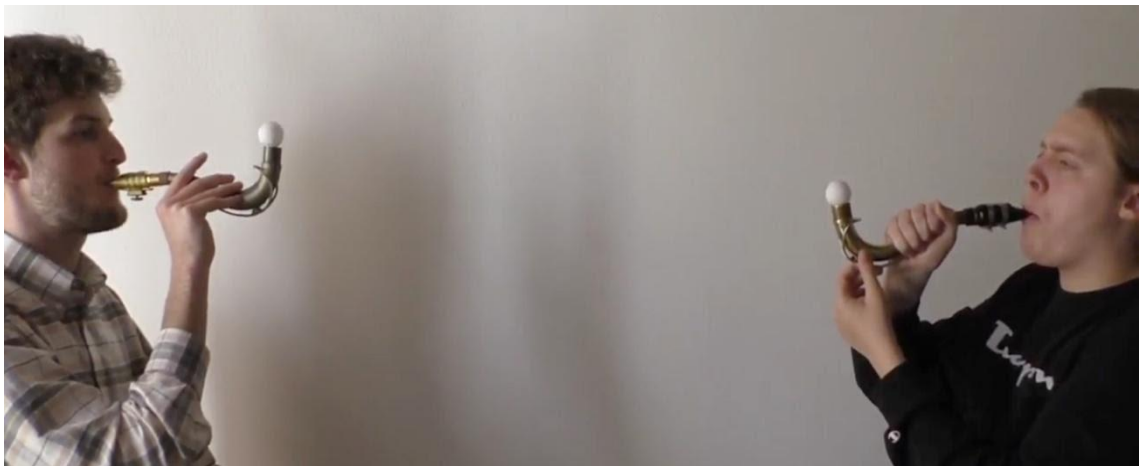
Figure 15 Performance of *Neck and Ball* - Section 2

3.3 Breathing as a Tool to Shape Performer-performer Interactions

The last subgroup of pieces in this chapter looks at breathing as a tool a performer can use to elicit changes in another performer's breathing and actions. This choice was inspired, in part, by other pieces that use this strategy.

Two examples are Michael Parsons's *Mindfulness of Breathing* (1969) for low male voices and Adriana Minu's *Breathe* (2019) for two accordionists. In *Mindfulness of Breathing*, each performer starts singing when the previous singer is in the middle of their first breath. After that, each player moves independently through the score. In *Breathe*, the performers slowly synchronise the lengths of their breathing first with the duration of the notes on their accordion (one note or chord for inhalations and another note or chord for exhalations) and then with each other's breathing. Both works use breathing to determine certain temporal elements of the performance, such as the note onsets, the transition from synchronised timings to free timings, and the duration of the sounds. My early compositional experiments incorporate these aspects. Below is a list some of the directions included in my early pieces which exemplify some of the techniques used in the set:

- The performer shapes the timings of their own sounds according to the length of another player's breathing.
- Two performers inhale and exhale audibly ten times. If they inhale or exhale simultaneously, they should start the piece again from the beginning.
- All the performers breathe in unison.
- The sound of the performer's breathing is used as a cue for the other players' breathing.
- When one performer inhales, the other performer exhales and vice versa.

Performing these instructions in different musical contexts served as a testing ground, revealing the potential and the limits of using these strategies, particularly as it pertains to ensembles.

In addition to Parsons and Minu, the work of composer Charlie Sdraulig helped inspire the creation of new pieces and the development of my techniques. Sdraulig often uses a performer's breathing as a reference for another performer's playing, fostering the emergence of a range of interactions between players. For instance, in *trace* (2012) for descant recorder and piano,

the piano part is reliant on the recorder player's breathing and stamina. Similarly, in *one to one* (2018–19) for violin and audient, 'the undulating breathing and attentiveness of the audient [...] shapes the course and intensity of the violinist's performance', creating a situation in which the violinist alters and adapts their playing according to the audient's breathing.[74] What I find most intriguing in these two Sdraulig's pieces is how a performer's playing is contingent on the breathing of another performer. The inextricable link between the interactions of the two performers encourages the emergence of indeterminate elements, such as subtle changes in timing, dynamics, sounds, and players' attentiveness.

Below I will discuss two pieces where I aimed to reverse certain types of interactions occurring in Sdraulig's compositions. While in Sdraulig's *trace* the piano part depends on the wind player's breathing, in my piece *Couples or Groups* (2020), the wind players' breathing depends on the non-wind players' playing. Likewise, while in Sdraulig's *one to one* the audient's breathing shapes the musician's playing, in my piece *Couples II* (2020), the breathers, namely performers who use only their breathing, alter their breath according to the musicians' playing. In other words, in *Couples or Groups* (2020), the breathing of wind players follows the playing of non-wind players and, in *Couples II* (2020), the breather (known as the 'audient' in Sdraulig's piece) follows the playing of the musicians. Overall, *Couples or Groups* and *Couples II* sought to address the following two questions:

- How can the breathing of one group of performers regulate the actions of another group of performers?
- How can the breathing of one group of performers be regulated by the actions of another group of performers?

This pair of questions was derived by reversing one question to obtain another, similar to the inverse relationship between the questions addressed in *Breathing, Moving, Playing* (see 3.1.1). In that work, inverting questions and

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[74] Charlie Sdraulig, *one to one*, for violin and audient (unpublished score, 2018–19), p. ii.

instructions changed whether breathing was following the player's movement or whether movement was following the player's breathing. In light of the intriguing results of *Breathing, Moving, Playing*, I hoped that using a similar approach in ensemble situations could also generate novel insights on breathing and performer-performer interactions.

Couples or Groups and *Couples II* are written for open instrumentation. Both pieces were performed by the same musicians on the same day. As in the previous sections, I was guided by my phenomenological method, which involves examining extracts from the performers' accounts. However, unlike previous commentaries where I usually discuss the feedback of only one performer, in the two commentaries below I will engage with the accounts of multiple players. Gathering feedback from more performers undoubtedly enriches the examination of the interactions between the players and adds depth to the interpretation of the work by offering multiple perspectives on the same musical situation. In terms of the structure of the commentaries, I will compress the discussion of both *Couples or Groups* and *Couples II* into the following section. I decided to group the commentary of these two pieces in one section because I felt that the two pieces offer similar viewpoints on the way the players' breathing shapes interactions within an ensemble context. In addition, I found it useful to compare the players' experiences of the two pieces, as it helped me to contemplate on the similarities and differences between the approaches I adopted in these two compositions.

3.3.1 *Couples or Groups* (2020) and *Couples II* (2020): commentary

In *Couples or Groups*, the ensemble is divided into two sub-groups, non-wind players and wind players. The non-wind players arrange themselves throughout the performance space and play two notes, one octave apart from each other. Each non-wind player performs the same pair of notes throughout the performance and each pair of notes uses distinct pitch classes. The duration of these notes is determined by the length of their breathing; the first note is matched to the length of their inhalation and the second note is matched to the

length of their exhalation. Each wind player then enters the performance space and arranges themselves in front of a non-wind player of their choosing. Inhaling through their instruments, the wind players match the duration of their inhalation with the duration of the non-wind player's first note. Exhaling through their instruments, the wind players match the duration and the pitch class of their note with the non-wind player's second note. Throughout the performance, the wind players are free to move and to choose another non-wind player, changing therefore the length of their breathing as well as the pitch class and duration of the note they play. After a while, the non-wind players start leaving the performance stage, pushing the wind players to choose whichever non-wind players are left who are not already matched. When they cannot find an available non-wind player they are asked to form groups with other wind players who all face the same non-wind player. The piece is finished when the last non-wind player stops playing or leaves the stage.

In *Couples II*, the ensemble is divided into two sub-groups, 'the players', musicians who perform two actions with their instrument throughout the piece, and 'the breathers' who just use their breath. After arranging themselves throughout the performance stage, each player starts repeating two sounds. Aspects such as dynamics, articulation, pitch, timbre, and duration are freely chosen by the players. The breathers then arrange themselves in front of a player they choose and match their inhaling and their exhaling with the sounds of the player, altering the timing, dynamics, and timbre of their breathing to match the player's sound: breathers used a variety of techniques to shape the timbre of their breathing, including changing the shape of the mouth, position of the tongue, and the speed of airflow. Meanwhile, as instructed in the score, the player should try to adapt their playing to enable the breathers to breathe in a comfortable way. Throughout the performance, the breathers are free to move and repeat the same task with other players. The breathers begin leaving the stage on their own accord; the piece is finished when the last breather leaves the stage.

In order to enhance the understanding of how breathing affects performer-performer interactions in both *Couples or Groups* and *Couples II*, I will now delve into some of the feedback provided by the performers. The extracts

presented here intend to provide a first-hand account of how the performers used their breath while playing, how they interacted with the others using their breathing, and how they followed the other performers' breaths and playing. The pieces were performed by fifteen players; one violin, one viola, one double bass, one flute, one clarinet, one melodica, three saxophones, one trumpet, two guitars, one glockenspiel, and two electric pianos. Some of the performers involved in the project were familiar with my practice while most of them were not. In the first two extracts presented below, two non-wind players share their experience of using breathing as a regulator in *Couples or Groups*. Here, violist Cecilia Bonato underscores how focusing on her breathing while playing altered her bowing:

> The awareness of what I was doing increased considerably. I was much more aware of my bowing. A few times breathing pushed me to be so focused on my bowing that I lost the rhythm of my breath and this led me to adjust my breathing, stretching the exhalation.[75]

In this extract, Cecilia describes a balancing act between the awareness of her bowing and the awareness of her breath. Her increased awareness of bowing compromises her ability to track her breath; once the rhythm of her breath is lost, though, she finds it again by stretching out her exhalation. Percussionist Riccardo Nicolin observes that:

> I was brought to continuously ask myself questions about my breathing. For instance, how do I breathe now? How do I normally breathe? Am I breathing too fast? When I was thinking a lot about my breath I felt like pins and needles in my chest. I was always thinking about my breath, and my breath started stretching and I noticed that my playing and the length of the notes were affected by that. Another interesting thing was to see that this feeling disappeared in the second part of the pieces [...] I was more comfortable with my own breath. While I was doing that I also started noticing how each player breathes differently.[76]

Riccardo stresses that after a few minutes, his breathing became longer and more stable. These changes in timings were experienced by many players who

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[75] Cecilia Bonato, feedback collected after the rehearsal (22 June 2020).
[76] Riccardo Nicolin, feedback collected after the rehearsal (22 June 2020).

performed my pieces in the past. In this respect, it might be worthwhile to take into consideration Pauline Oliveros' reflections. Discussing her instructions in *Sonic Meditations*, where the performers are asked to observe their own breathing, Oliveros states:

> Although my instructions ask for observation in its receptive sense, somewhere complementary action is occurred. The breath does change, if the attention remains focused on the cycle [...]. In my own experience [...] my breaths become very prolonged.[77]

In a similar way, the act of observing his breathing led Riccardo to stretch the duration of his inhaling and exhaling and consequently also the length of his notes. He also emphasises that in the second section of the piece he started becoming more aware of the other players' breathing. Riccardo's increased duration of sounds and his heightened sense of connectedness with the other performers as the piece progresses is particularly evident in the video recording. Throughout the recording, the duration of his notes slightly stretches. Towards the end of the recording, Riccardo is the last non-wind player left in the performance space and spends some time leading the breathing of a group of wind players with his playing, which itself is led by his breathing. Evident of the increased attention directed towards the wind-players, from 6:42 of the video recording Riccardo slows down his movements in order to allow the wind players to match their breathing with his playing and sometimes he also raises his gaze to the wind players. The leading role taken by Riccardo pushed him to alter his playing in order to build a synchronous relationship with the wind players.

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[77] Pauline Oliveros, *Software for People: Collected Writings 1963–80* (Baltimore: Smith Publications, 1984), p. 150–51.

Figure 16 Percussionist Riccardo Nicolin leads the wind players in *Couples or Groups*

I will now consider wind players' feedback, which focuses on the way their breathing adapts to the other non-wind players' playing. The extract below is from Anna Cavedon, a singer familiar with my own work. On this occasion, Anna played the melodica and she observes that:

> The first thing I noticed while following the non-wind players sounds was the difficulty in controlling the amount of air with my instrument. The melodica and the fact that I had to follow the other players did not allow me to expel the whole amount of air during the exhalation and when I had to play the second sound I still had air within my body. For this reason, throughout the piece I started increasing the intensity and the amount of air I was breathing out. Consequently, the dynamics of the instrument considerably changed.[78]

Anna observes that because of the need to follow the playing/breathing of other players she was at first unable to expel all the air in her lungs during exhalations; her solution was to increase the dynamics of her playing and, consequently, the amount of air she was expelling. Indeed, the sound of the melodica becomes particularly loud and more consistent throughout the recording.

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[78] Anna Cavedon, email correspondence (29 June 2020).

Curiously, saxophonist Marco Spagnolo underlines how these constraints pushed him to experience the timing of the other player's breath as a pulse. He states that:

> It was not difficult to match my breathing to another player's breathing. At the beginning it was challenging and I found that interesting. I like challenging situations. The most fascinating thing for me was to observe how I experienced the other player's breath after a while. It was like following a sort of fluctuating and not metronomic beat. I started being more synchronised with that and my playing became more fluid.[79]

Marco indicates that adapting his breath to the non-wind player's playing allowed him to establish a more tightly linked connection with their breathing over time, which translated into his playing becoming more fluid. From the recording, it can be difficult to determine how the sounds are affected by the changes in the interactions between the performers. However, the performance of the wind players share at least one aspect in common, and that is their synchronisation with the non-wind players. In their playing, an evident synchronisation emerges with regard to timing, attack of the notes, and pitches between wind players and non-wind players. This synchronisation did not characterise all musical parameters, though. As dynamics were free, most of the wind instruments are much louder than the other musicians. Interestingly, the different dynamic levels between wind players and non-wind players might also be partially explained by Anna's comment; Anna plays louder in order to gauge the amount of air she needs to expel according to the length of non-wind player's notes. It may be, therefore, that this urge to expel more air during exhalations, at least partially, contributed to higher dynamics in the performance of the wind-players versus the non-wind players.

As a composer, I avoided specifying dynamics in *Couples or Groups* and in *Couples II* as I was interested in observing how dynamics and sounds could be shaped by the particular interactive context of the piece; this allowed factors such as ensemble size, performer-performer interactions, and the relationship between breathing and instrumental sounds to act as driving forces in the piece, determining not only dynamics but also musical timing, timbral diversity, and

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[79] Marco Spagnolo, feedback collected after the rehearsal (27 June 2020).

sonic density. My reasoning for avoiding dynamic constraints aligns with the reasoning of Manfred Werder (mentioned also in Chapter 1.5). According to an interview with James Saunders, since 1997, Werder has stopped using instructions to specify the dynamics or the features of sounds produced; Werder cited that he refrained from these specifications in an attempt to set aside aesthetic preferences and to focus on the materials and musical settings from which emerged the specific qualities of sound and dynamics. In this way, the sonic features of a piece are meaningful artefacts or signifiers carrying information about and pointing back to the musical setting. In my pieces, including *Couples and Groups* and *Couples II*, I have adopted this approach, focusing my energy on framing contexts that afford rich, open-ended explorations of breathing as a compositional and performative tool.

Regarding players' feedback on *Couples II*, the extracts below from both 'players' and 'breathers' offer an opportunity to examine the differences between *Couples or Groups* and *Couples II.*. Anna, who played the melodica in *Couples or Groups*, was one of the breathers in *Couples II*. In the following extract, she describes in detail how, in *Couples II*, she experienced her breathing and her interactions with the players:

> *Couples II* was very stimulating to me for several reasons. The first one is about the reciprocal awareness of who should regulate the breathing. For me, as a breather, it was interesting to observe how the players behave differently with me. Some of them were more emphatic and completely changed the length of their sounds as soon as I was in front of them. Others had a more challenging approach, pushing me to breathe in more unnatural conditions, holding my breath, contracting my breath, breathing faster, and making very short and sudden breaths... It was stimulating because I was led to notice the 'activation point' of the instrument, namely what I had to look at in order to know when inhaling or exhaling. For instance, for the saxophonists I was looking at their hands. Another interesting experience was that holding my breath changed form at the exact moment I thought I had to start inhaling or exhaling. That was very challenging and intense. Sometimes I was pushed to look at their eyes. After a while, I felt a really strong connection with the player.[80]

Anna makes interesting considerations on the way her breathing changed according to the type of player with whom she interacted. She describes how

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[80] Anna Cavedon, email correspondence (29 June 2020).

she was led to be aware of the body of the player and how her connection with them grew as the piece progressed. Federico Zaltron, who had played the violin in *Couples or Groups,* had the following comments regarding his role as a breather in *Couples II*:

> In *Couples II* I was constantly looking for a compromise with the other player. I always felt there was a sort of mutual agreement, particularly when I had to match my breathing to those wind instruments whose mechanism is not really clear to me. It was very interesting when the performer played very short sounds and then very long sounds. My breath continuously changed. It stretched, contracted and I was not really aware of that. I was just responding to the player.[81]

While the description offered by Anna reveals that she often felt inclined to follow the lead of the player, Federico highlights that the relationship that he formed with the players always felt mutual. He also observes how his breathing changed without being aware of it. Although breathing is not generally audible from an outsider, the video recording, through its documentation of mutual physical movements, eye contact, and changes in the sound durations, captures an element or an artefact of the experiences described by Anna and Federico.

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[81] Federico Zaltron, email correspondence (30 June 2020).

Figure 17 Federico Zaltron (breather) and Martino de Franceschi (player) interact in _Couples II_

Unlike Anna and Federico, Marco was a player, not a breather. Although he played saxophone in both _Couples or Groups_ and _Couples II_, his experience differed significantly from one piece to another. In his feedback on _Couples or Groups_, he points out that it was not difficult to follow the non-wind player's playing. Regarding _Couples II_, he shares a different viewpoint:

> Leading the other players' breathing was challenging. I noticed that without a breather, I was playing very short notes, particularly in the highest register of the instrument. When I had in front of me a breather my approach to the instrument changed. I was aware they had to follow me and not vice versa but I tried to find a negotiation in order to make them breathe more comfortably. This compromise pushed me to change the length of the notes and obviously my breathing. It was a sort of

'cut breath'. I was inhaling very fast, and I was moving from one
sound to another because of the breather's breathing.[82]

Marco's notes provide an invaluable opportunity to reflect upon the same
musical situation from another perspective. Although Marco was aware of his
leading role within the interaction, he still felt compelled to adjust his breath and
his sounds, making both sounds longer and steadier. In contrast, when there
was no breather in front of him, his notes were very short and there were long
pauses in between the sounds. In the recording it is possible to notice that each
musician behaves, plays, reacts, and breathes differently and the intentions or
strategy of the leading role become unclear and ambiguous within the
interaction. I intentionally avoided imposing explicit instructions on how to
execute leadership. My purpose was indeed to foster interactions that could
transform according to the different performers.

Looking at both works, it is worth reiterating how the experience of the same
piece differs amongst the musicians. For instance, in *Couples or Groups*, Anna
experienced a constrained and altered type of breathing; she states that her
breathing was challenging as she confronted limits with the amount of air she
could expel and adjusted by altering her dynamics. Marco, who performed the
same task, did not experience this type of breathing; for him, matching his
breathing to a non-wind player's playing was not demanding and it enhanced
his interactions with them. In *Couples II*, Anna experienced a type of breathing
which she adjusted continuously according to the players' sounds. By contrast,
in the same piece, Federico experienced a type of breathing which resulted
from what felt like a natural, mutual compromise between him and the player.

Overall, in *Couples II*, the different modes with which the performers
engaged their breath and the intentional ambiguity of the instructions generated
a myriad of relationships between the duos. This is evidenced by the variation in
musical timing and hierarchies of roles that manifested throughout the
performance. In *Couples or Groups* the resulting sounds, timings and
interactions are more predictable because there is a clear delineation between
leader and follower. In *Couples or Groups*, the wind-players always use the

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[82] Marco Spagnolo, feedback collected after the rehearsal (27 June 2020).

non-wind players' playing to guide their own breathing and are clearly the followers. The non-wind players are the leaders, attending to their own breathing to dictate the duration of their notes independent of the wind-players' breathing. The degree to which the non-wind players adjust their breathing and playing to affect the wind-players' breathing is up to them but as it is possible to observe in the case of keyboardist Riccardo, a reciprocal relationship can easily be cultivated by the non-wind players. On the other hand, in *Couples II*, the role of the performers becomes more uncertain and undefined as each performer is adjusting their breathing in response to the performer they are facing. While the breather matches their breathing to the sounds of the player, the player is also modulating their breathing to ensure that breathers are breathing comfortably. The role of leader and follower here is blurred, leaving each pair to come up with their own unique interpretation and solution. The uniqueness, idiosyncrasy, and ambiguous nature of each pairing results in sounds, dynamics, and timings changing significantly between the couples. The greater sense of stability in *Couples or Groups* can also be attributed to increasing synchronisation of the breathing and playing of the subgroups over the course of the piece. For instance, at 5:15 of the video recording, when the subgroups and the pitches emerging from them are more defined, the synchronisation between wind players' breathing and non-wind players' playing becomes quite noticeable along with the steady duration of the notes. Even with the greater predictability of *Couples or Groups*, though, it is still worthy to note that there were ample indeterminant elements to the piece. The wind players' freedom to choose non-wind players to match with produced unpredictability especially as it pertained to the combination and number of notes sounding at any one time.

When contemplating how I might modify *Couples or Groups* for future versions or performances, my primary question is how to improve, from the audient's perspective, the distinguishability of types of breathing (and, as a by-product, different types of playing) performed by groups in the ensemble. One idea would be to start with a smaller number of non-wind players, thereby reducing the number of groups in the ensemble and, consequently, the types of breathing that are performed at any one time. In its current form, *Couples or Groups* begins with all players divided into pairs, all of which engage a different

type of breathing and interrelational dynamic. This leads to too many types of breathing and interactions occurring simultaneously, resulting in a sort of cacophony that prohibits the outside observer from focusing on any one breathing style or mode of interaction. A smaller number of non-wind players would reduce the number of overall groups, which may allow for the emergence and perceptibility of distinct forms of breathing, playing, and interactions. Another idea might be to assign separate breathing instructions (which may differentially influence duration, timbre, and/or dynamics) to each non-wind player so as to increase the likelihood that the breathing and playing of their group is discernible from that of another group.

One last consideration regarding *Couples or Groups* and *Couples II* concerns the issue or whether or not to incorporate or to utilise breathing sounds in performance; in their current forms, my intention was for breathing not be heard in live performance or in recordings. I wanted to focus away from the sound of breathing and towards the role of breathing in regulating interactions between the performers. However, retrospectively, I realised that, especially for *Couples II,* the audibility of breathing sounds in performances and recordings could have helped reveal how performers reacted to the breathing or playing of one another, enriching consequently the whole sonic dimension of the piece. Although I did not explore further the possibility of integrating the sound of breathing in other ensemble pieces during my PhD studies, I did explore the incorporation of audible breathing in the solo piece *Four Sections*, discussed in 6.1.

3.4 Reflections upon the Pieces that Use Breathing

These six compositions discussed above expanded the approach I employed during my master's studies, involving the development of a wider set of techniques and more in-depth reflection upon the intersection of breathing, blowing, timing, and performer-performer interactions. Below, I have presented many of these reflections in the form of a list:

- *Breathing, Moving, Playing* demonstrated how the length of a player's breath can be drastically affected by whether their breathing dictates or is dictated by the speed of a player's movements. When breathing was leading movement, Kate's breathing and playing were slow, steady, and soft. When movement was leading breathing, Kate's breathing and playing became faster, shorter, and louder. This may be due to my instructions for Kate to conceive of her movements and breathing as automatic, in the sense that she would be aware of them but without changing how she would normally execute them. With this performative approach, it makes sense why the section dictated by the pace of breathing would be slower and steadier than the section dictated by the pace of movement; one would expect 'automatic breathing' to be typically longer by a significant degree than 'automatic movement', particularly when those movements are highly familiar to a trained performer. While breathing following movement led to quick breathing, breathing that followed duration of a note's decay led to either longer or shorter breathing depending on the register of the piano where the chord was played. We found, therefore, that allowing Kate to choose the register gave her more freedom in determining the length of her breaths. The point to be made here is that a boundless variety of outcomes can be achieved by simply shuffling the roles of certain primitive factors, such as duration of a chord and speed of movement, and changing the way they relate to breathing.

- Extending the duration of *Breathing, Moving, Playing* and linking musical parameters to Kate's variable breathing increased the level of indeterminacy regarding dynamics, register, and timing.

- The work done on *Breathless* provoked extremely useful insights on the relationship between the performers' breathing and the length of the piece; it appears that the short duration of the piece might have compromised the performers' capacity to detect changes in their breathing and playing.

- In comparing the pieces in 'Breathing as a Time Regulator' versus the pieces in 'Breathing as Blowing', I found that differences in sound quality, duration, and intentionality all help differentiate the act of exhaling from the act of blowing. While exhaling versus blowing does provide an obvious point of divergence, these pieces were also distinguished by the level and type of indeterminacy that emerged in performance. In the set of pieces 'Breathing as a Time Regulator', indeterminate elements emerge as consequences of the changes in the length of the players' breathing, whereas in the set 'Breathing as Blowing' indeterminacy is dependent on tasks that are not all directly tied to breathing (e.g. the task of achieving different shapes and sequences of colours in *Moving Objects*). Moreover, the indeterminacy that arises in executing these tasks are often associated with the physical properties of the objects used (e.g. the density and dimensions of the ping pong balls and marbles in *Moving Objects*), the divergent ways these objects move along surfaces, and the relationship the performer has with the objects through their blowing.

- In *Neck and Ball*, the level of indeterminacy is modulated by performer-performer interactivity. In section 1, where there is only a one player who is being guided by the instructions of the ping pong ball that he himself blows, the performers perceived having a firm sense of control over the ball and of their own breathing. However, in section 2, where there are two players facing each other being guided by instructions from one another's ping pong ball, the control over their breathing decreases as they are less able to predict the movements of the balls that they themselves are not blowing. Overall, their manner of breathing is more unpredictable when reacting to an object moved by another player's airflow.

- Federico Zaltron's feedback for *Couples II* suggests that he was responding so seamlessly to his partner's playing that he was not really aware of his own breathing. Yet, as he confirms, his breath was

continuously changing in order to match the other player's breathing. Interestingly, then, it may be that at this level of interconnectedness with another player's breathing one's own breathing can become similar to 'involuntary breathing', a type of breathing which does not involve the performer's awareness.

- The ambiguous role of leadership in the instructions for *Couples II* fostered a destabilising and challenging context with which the performers navigated. The necessity to co-create a solution in the act of performing led to idiosyncrasy and variety in the modes of interaction across couples. Hierarchies of roles became more uncertain, affecting, consequently, the resultant timings and sounds of the performance in an unpredictable manner. Overall, the ambiguity around whether a breather or player was a leader or follower for any one couple at any one given time facilitated a greater variety of interactions and outcomes in comparison to *Couples or Groups*, in which the leadership position of the non-wind players was rather clear-cut.

- Lastly, allowing breathing to be heard could be used as a tool for revealing the varying interactions between the players, as was considered retrospectively in analysing the performance and recording of *Couples II*.

Some of the insights that emerged from these works are starting points for the classification and exploration of four specified types of breathing defined and implemented within the second set of pieces. These compositions, discussed in the following chapter, explore the use of varying piece durations for facilitating the emergence of a specific type of breathing. They also investigate the relationship between exhaling versus blowing, steady breathing versus affected breathing, and voluntary versus involuntary breathing. While not all my insights listed above served as the impetus for further explorations in this thesis, some of them, particularly those revolving around performer-performer interactions, are considered again in 'Chapter 5: Conclusions'.

Chapter 4 Pieces that Interrogate Breathing

In 'Pieces That Use Breathing', the players' breathing varies as it naturally would or as a consequence of the performing context. The players may be asked to observe their breathing without manipulating it or they might be required to constrain the timing, the dynamics, and the type of breathing they perform according to individual instructions or in response to cues from other players. They may alter their breathing consciously or they might be pushed into a circumstance that distracts themselves from their own breathing. Using insights derived from the players' feedback, I created the following series of definitions to enrich my understanding of the different types of breathing musicians experience in my pieces:

1) Observed breathing. This type of breathing intentionally resembles one explored by Oliveros in her collection of text scores *Sonic Meditations* (1971). What I term 'observed breathing' is shaped by instructions that ask the players not to alter their breathing. Rather, they invite the performers just to observe their own breathing, without deliberately manipulating it (as is the case with the instructions for the non-wind players in my piece *Couples or Groups*, discussed in 3.3.1).

2) Constrained breathing. This refers to the type of breathing that players adopt according to explicit constraints imposed by the score. The constraints specified in my scores inform players ahead of time on when and how they should change the timing, the dynamics, and the type of breathing performed throughout the piece. For instance, my piece *Breathless* involves this type of breath; the score instructs the players of an ensemble to inhale simultaneously, perform as many possible actions as possible while they hold their breath, and then to exhale independently of each other when they have run out of breath.

3) Affected breathing. This type of breathing results as a by-product of a physical task the players perform. Contrary to constrained breathing, performers do not alter their breathing according to explicit instructions. Rather, the

physical task they perform leads them to alter their breathing in ways that are sometimes unexpected. These tasks might include running, push-ups, jumping jacks, burpees, or challenging breathing exercises. One of my pieces previously discussed that involves this type of breathing is *Breathing, Moving, Playing*. Here, the repetition of demanding instructions on coordinated breathing and movement pushes Kate to significantly alter her breathing as the piece progresses, not so much by choice but so as to prevent (or possibly also as a response to) physical fatigue.

4) Involuntary breathing. In correspondence with its accepted definition, I use 'involuntary breathing' to refer to a condition in which performers are not aware of their own breathing and do not consciously control it. While none of my pieces from Chapter 3 ask performers to breath involuntarily, some performers reported an experience that appears close to involuntary breathing. For instance, in *Couples II*, the 'breather' Federico reported that he was so in tune with matching his breathing with his partner's playing that he was not actually aware of the way his breath was continually changing and adapting to his partner's playing. As expressed in his own words, 'I was just responding to the player.' At some level, Federico was not aware of his breathing while, at another level, he must have engaged it voluntarily in order to make the appropriate modifications to his breathing in real time. In this new set of pieces, though, true involuntary breathing, involving both lack of awareness and lack of control, is used as a compositional tool.

The process of defining these four types of breathing was extremely fruitful, inspiring me to develop of an entirely new set of pieces in the last year of my PhD. In this set, which I refer to as 'Pieces That Interrogate Breathing', I was interested in investigating the differences between the four types of breathing defined above and the transitions from one type of breathing to another. The three pieces in this set explore the following aspects of breathing:

- The transition from exhaling to blowing.
- The transition from observed breathing to involuntary breathing.

- The differences between observed, constrained, involuntary, and affected breathing.

Regarding the first point, while exhalation and blowing do not explicitly belong to one of the four defined types of breathing, the ambiguous relationship between them was a compelling insight emerging from the musicians' feedback in Chapter 3 (particularly in relation to Section 3.2: 'Breathing as Blowing') and is what originally inspired me to begin defining more general, larger categories for approaches to breathing. Therefore, I include 'the transition from exhaling to blowing' as a topic in this chapter as it directly extends from the explorations of Chapter 3 but also represents the beginnings of my interest in identifying boundaries between forms of breathing. The topic of transitioning from exhaling to blowing is explored in the piece *From Exhaling to Blowing* (2020) in section 4.1.1.

The second point, 'the transition from observed breathing to involuntary breathing', engages two of the forms of breathing defined above. Unlike exhaling and blowing, these two types of breathing are easier to categorically distinguish as it is difficult and—arguably, by definition—impossible to faithfully perform both observed breathing and involuntary breathing simultaneously, whereas one can argue that blowing is a type of exhalation making it inherently more difficulty to categorically distinguish them. However, I still find the transition from observed to involuntary breathing a productive site of inquiry replete with its own ambiguities. While presented as contradictory terms, from biological and psychological perspectives, they are inextricably linked; observed breathing can be engaged to greater or lesser degrees (the less observed the breathing, the more involuntary it may be) and involuntary breathing, while operating without awareness, can turn into observed breathing within a split second. In this chapter, I explore the link between observed and involuntary breathing by studying the causal factors and timing involved in the transition from observed breathing to involuntary breathing and how breathing can quickly and easily fluctuate back and forth from observed to involuntary even when one is instructed to engage one form of breathing over another. This point is the

central concern of *From Observed to Involuntary* (2020), discussed in section 4.1.2.

The last point, 'the difference between observed, constrained, involuntary, and affected' is concerned with the unique set of attributes characterising each form of breathing and how the abstract definitions I have attached to them can be tested through embodied experiments with performers. This is the topic of the last piece of this thesis *Four Sections* (2021), which dedicates each of its section to investigating one of the four types of breathing defined.

4.1 Transitions From One Type of Breathing to Another

The pieces discussed in this section, *From Exhaling to Blowing* (2020) and *From Observed to Involuntary* (2020), are solo works composed and performed by me during the three-month compulsory quarantine from March to May of 2020. Over the course of that period, I categorised my pieces, reflected upon my experience and that of the players and distilled the most significant insights from our collaborative process. Through these contemplative procedures, I became interested in the thresholds between two or more types of breathing, particularly between exhaling and blowing and between observed breathing and involuntary breathing. These differences became evident to me when reviewing my interviews with Roche and Sparling and the performers' accounts in Chapter 3. In these texts, Roche and Sparling explained how they conceive of one type of breathing versus another (e.g. exhaling versus blowing) and the performers described how they experience these different types of breathing, as well as the varying degrees to which they are aware of their breathing between pieces and within the same piece. However, I realised that my previous compositions do not specifically question the undefined types of breathing that exist somewhere in between my defined forms of breathing. It is this realisation that motivated me to explore the thresholds of breathing (between exhaling and blowing and between observed and involuntary breathing) from a compositional and performative perspective. This motivation lies at the core of my works discussed in this section.

Although I consider myself more as a composer, in early 2020, my inability to meet with others in person encouraged me to test different performance strategies that resulted in two pieces:

- *From Exhaling to Blowing* (2020), where I performed a transition from open mouth exhalation to fully blowing through pursed lips.

- *From Observed to Involuntary* (2020), where I performed a transition from an observed type of breathing, which involves attention on my breath, to involuntary breathing, which occurs unintentionally.

In both compositions, I attempt to gradually move from one type of breathing to another. This form allowed me to compare the two pairs of breathing modes and the different amounts of time the transitions take to occur. Furthermore, the fact that these two works were performed by me brought me to slightly change my phenomenological method and to adapt it to this individualised context. Following the approach used by choreographer Donald S. Blumenfeld-Jones in his phenomenological account on dance and artistic process, I will engage with my own notes taken at the time of my performance. Blumefeld-Jones follows a phenomenological approach that differs from the one used in interpretative phenomenology; he uses the *epoché*–a technique typical of descriptive phenomenology–which encourages the researcher to set aside their presuppositions and their taken-for-granted beliefs. While discussing this phenomenological step in his account, he states that:

> I look into the scene to see what is there […], as opposed to looking for something that I think is there. This means that first I must clear away my usual understandings of the scene by taking detailed notes of what I am expecting. Following this, I am better able to feel what is actually there.[83]

According to Blumenfeld-Jones, taking notes of what he believes might occur in a particular scene helps him identify and set aside preconceptions while

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[83] Donald S. Blumenfeld-Jones, 'The Artistic Process and Arts-Based Research: A Phenomenological Account of the Practice', *Qualitative Inquiry*, 22.5 (2016), 322–33 (p. 327).

examining a phenomenon. Whereas in the previous chapter, feedback was provided by different performers, in the case of these pieces, I exclusively collected my own comments. In order to avoid making assumptions that might hinder the understanding of my performative experience, I adopted the strategy used by Blumenfeld-Jones. Before rehearsing my pieces, I took notes of what I expected to happen when performing these works. Then, after performing, I took notes on my actual experience. Using this approach helped me set aside my assumptions, identify the differences between my expectations and real experiences, and provide a faithful account of my performance. While the notes I took using this approach will not be included in the following commentaries, in certain points of the text, I will point out where my expectations did not correspond to my lived experience.

4.1.1 *From Exhaling to Blowing* (2020): commentary

From Exhaling to Blowing (2020) is a silent video piece documenting one performer with mixed objects. It investigates the transition from exhaling to blowing and the thresholds in between. My exploration of the difference between exhaling and blowing was initially inspired by the installation 'FUHA - The expression of air' (2015) by artist Marlene Wolfmair. Wolfmair's work is part of a multi-sensorial project, led by Benetton group and Daikin, about the concept of air. The figure below displays her installation.

Figure 18 *The Expression of Air - Motion* by Marlene Wolfmair

The left side of the figure shows the directional movement of air during blowing and the right side shows the softer movement of air during exhaling. The term 'Fuha' comes from two traditional Japanese onomatopoeic expressions for the sound of human breath. The artists in the project explain that '"FU" recalls the sound of blowing on something to cool it, while "HA" imitates the sound of exhaling, open-mouthed, to warm something'.[84] Wolfmair's installation displays the difference between exhaling and blowing on a sheer surface, highlighting directionality, force, and movement as points of divergence. Likewise, the distinctions between exhaling and blowing outlined by Copeland, Roche, and Sparling in section 3.3.1 revolve around intention, control, and focus. Wolfmair's installation helped motivate the central question of my piece *From Exhaling to Blowing*:

● What lies in between exhaling and blowing?

The final version of *From Exhaling to Blowing* lasts less than two minutes and showcases six different videos presented in a grid on the same screen.

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[84] 'FUHA: The Expression of Air' (2015), description of the installation 'Motion', documentation of the project [private correspondence with Fabrica, May 2020].

Each video captures one type of material: water, paper, cotton thread, static grass, flame, and dandelion. All six videos are synchronised and for each one I adopted the same process; at a distance of ten centimetres, I breathe on each object ten times, during which I transition slowly from exhaling regularly through my open mouth to fully blowing. I slightly and gradually change the position of my lips with each breath. I wait ten seconds in between each of my breaths and each breath lasts three seconds. The video is silent and the numbers on the screen identify the 'breathing stages' (e.g., 1= first breath, 2= second breath; etc.).
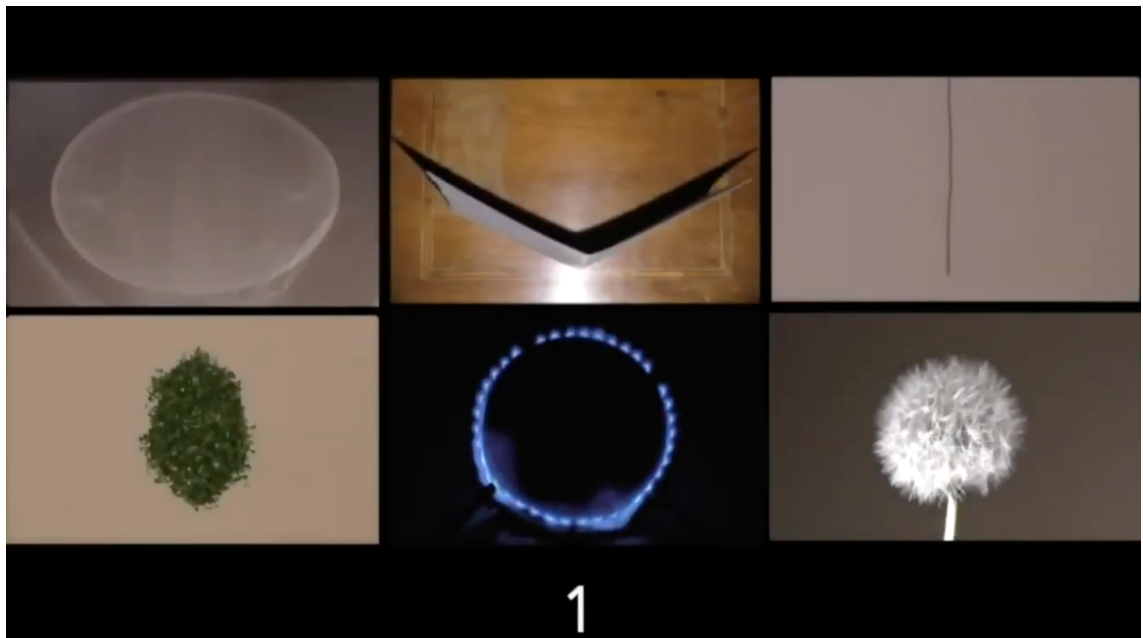
Figure 19 Six objects shown on the same screen in *From Exhaling to Blowing*

In terms of timing and breathing, two aspects should be taken into account: the whole length of the piece and the duration of each breath. In this piece, the length of my breathing is arranged in advance and the ten 'breathing stages' mentioned above dictate the entire duration of the piece. In earlier versions, the duration of the performance was free and the video recordings lasted from four to six minutes. I wrote the following notes to myself after performing one of these early versions:

> I tried my best to mark the difference from one type of breath to another one and to give the sense of direction from exhaling to blowing. However, it is difficult to make very subtle changes in my lips and in the amount of air expelled. Sometimes I had the feeling that my current breath was an exhalation more than it was two breaths ago.[85]

These notes indicate my difficulty in clearly marking each breathing stage within extended versions of the piece. Through these attempts, I realised that indeterminacy in my breathing increased with duration, making it difficult to clearly identify the transitional stages in my progression from exhaling to blowing. In response, I chose shorter durations for the piece during which I could exert more explicit control over my breathing and present the transition from exhaling to blowing with more clarity.

My choice of duration for each breath takes into account that, as expressed by performance psychologist Inna Khazan, blowing can last longer than exhaling. In her article on overbreathing and mindfulness, Khazan instructs teachers on a series of breathing exercises that aim to restore calm inhalation and exhalation and to prevent overbreathing in their students. In an exercise where the 'client' is asked to stretch the length of their exhalation, Khazan advises practitioners that, in case clients find the exercise is too challenging, they can engage mechanisms related to blowing to help extend the duration of their exhalation; 'Many people have trouble extending their exhales initially. If that happens, ask your client to breathe through pursed lips, as if blowing out a candle'.[86] Khazan's advice helps explain my reasoning for choosing three seconds as the duration for my breaths in *From Exhaling to Blowing*. If the ten breaths that I direct towards each object can be perceived on a spectrum, exhaling 'normally' (or as one would involuntarily) is a type of breathing that starts the piece on one extreme end of the spectrum while blowing is another type of breathing (also technically a type of exhaling) that ends the piece on the other extreme end of the spectrum. Establishing three seconds as the duration for each breath, regardless of where it lies on the exhaling-blowing spectrum,

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[85] Federico Pozzer, feedback collected after performing one of the first versions of *From Exhaling to Blowing* (2 April 2020).

[86] Inna Khazan, 'Breathing, Overbreathing, and Mindfulness', *Biofeedback*, 46.1 (2018) 2–8 (p.6).

can be seen as a sort of negotiation; the duration is short enough to avoid the physical tension that often occurs when my normal exhalation extends past three seconds, and it is long enough to cause visible movements in the object upon which I am directing my breath. The notes taken after one of my last performances expounds upon this notion:

> One thing that I always notice is that I cannot really control my exhaling as much as my blowing. During the performance I find it demanding to exhale through an open mouth for more than three seconds. I stop having this feeling at my fourth or fifth breath when my lips are more closed and the direction of the airflow is more controlled. This feeling might reveal when the more evident changes in my breath take place.[87]

In the notes, I indicate that it was challenging to exhale through an open mouth for a long period of time and that I could only do so comfortably and steadily for about the three seconds. The notes also introduce two other considerations regarding the type of exhalation I performed and my transition from exhaling to blowing. Although one can certainly exhale through only the nose or the mouth and nose simultaneously, I specifically chose to exhale only through my open mouth. As the artists of the FUHA project point out, exhaling through an open mouth is particularly effective at highlighting the act of releasing air while also foregrounding the contrast between releasing air and producing a controlled airflow. Moreover, using the mouth instead of the nose while exhaling increased the ease with which I could perform a gradual transition from one type of breathing to another. The other consideration mentioned in my notes is the shift taking place from exhaling to blowing. In those notes, I indicate that I started observing a transition from exhaling to blowing in my breathing during approximately the fourth and the fifth breaths. My notes after performing the last version of the piece expounds upon my experience of the transition:

> I think I slightly start blowing at the seventh or eighth breath. Throughout the performance I cannot really state when exhaling becomes blowing. During the first breaths I am aware

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[87] Federico Pozzer, feedback collected after performing one of the last versions of *From Exhaling to Blowing* (10 April 2020).

that I am exhaling and at the last breath I am aware that I am blowing, however I'm not sure when the change occurs.[88]

In other words, at the beginning, I am aware that I am exhaling, and, at the end, I am aware that I am blowing. However, I am not able to determine if the breaths within the transition can be labelled as either exhaling or blowing. Here, it is interesting to highlight that the actual experience completely differed from my expectation; before rehearsing the piece, I thought I would be able to identify the moment in which my exhaling transformed into blowing. Dividing the transition from exhaling to blowing into ten discrete steps appears to increase the difficulty in distinguishing exhaling and blowing, and, in particular, the ability to identify the point at which my exhaling ends and my blowing begins. Therefore, I postulate that the types of breathing that lie in between exhaling and blowing defy classification into one of these two categories. From my perspective, these transitional forms of breathing effectively occupy an ambiguous space within a spectrum of breathing that involves the intersection of multiple and continuously changing parameters, such as intensity, force, focus, and control. Such a complex, multi-dimensional space of intersecting parameters makes it difficult to quantise into discrete units the transition from one, ultimately abstract, end of a breathing spectrum to another end. This work can easily serve as the starting point for extended versions where undefined types of breathing between exhaling and blowing are further investigated. Such an exploration could specifically incorporate the aforementioned factors of intensity and force as musical parameters, potentially increasing the complexity of the piece by orders of magnitude. In its current form, *From Exhaling to Blowing*, for purposes of simplification, avoids specifying the intensity and force applied to exhalations versus blowing. While one might expect exhalations to be a softer form of breathing than blowing, there is still a range of perceptible difference between a soft exhalation and a forceful exhalation and between a soft form of blowing versus a more forceful form of blowing. In future projects, therefore, what might be questioned is the degree of intention and strength that can vary within the same breathing-action.

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[88] Federico Pozzer, feedback collected after performing one of the last versions of *From Exhaling to Blowing* (11 April 2020).

4.1.2 *From Observed to Involuntary* (2020): commentary

Similar to *From Exhaling to Blowing*, the piece *From Observed to Involuntary* explores the transition from one type of breathing to another. In this piece, the types of breathing investigated are 'observed' and 'involuntary' breathing defined in section 4.1. With the term involuntary breathing, I am referring to a type of breathing that performers are not aware of or do not control. On the other hand, I use the term observed breathing for a condition in which performers are aware of their own breathing but they do not intentionally manipulate it.

Throughout my PhD, a repeating theme in the feedback I received from performers revolved around the way their attention to their breathing changed according to the task they were trying to achieve. This theme motivated the central research question underlying *From Observed to Involuntary*:

- What lies in between observed breathing and involuntary breathing?

In *From Observed to Involuntary*, I respond to this question by closely examining the change in a player's attentiveness to their breathing through explicit, task-oriented instructions that regulate the transition time from higher to lower levels of attention directed towards their breathing. As in *From Exhaling to Blowing*, I will speak not only as the composer but also as the sole performer of this piece and my reflections will be focused on my experienced filtered through the phenomenological approach of Blumenfeld-Jones, discussed in section 4.1.

I performed this piece by first recording my breath for one hour while performing a series of different activities; in the first twenty minutes, I did a twenty-minute meditation exercise focusing entirely on my breathing. During this period, I constantly noticed my lungs expanding and contracting, allowing my breath to increase in length. After twenty minutes, I started diverting my attention away from my own breathing; I stood up, got my laptop and looked up news on the internet for ten minutes. In the last thirty minutes, I watched a television show. After recording my breath, I played the recording on my headphones and I played the piano along with it, playing the note C3 at the

same time as the inhalations and the note C5 at the same time as the exhalations. In this way, the piano sounds traced my transition from observed breathing to involuntary breathing, capturing differences in timing between the two types of breathing.

My interest in the transition from an 'observed breathing' to an 'involuntary breathing' was originally inspired by two sources, Pauline Oliveros's *Deep Listening: A Composer's Sound Practice* (2005) and the project *Tracery* (2016–18) by composer Cassandra Miller and soprano Juliet Fraser. In *Deep Listening: A Composer's Sound Practice*, Oliveros details a series of exercises that push the performers to be aware of their own breath. She states that 'Breathing is the bridge between the voluntary and involuntary–the sympathetic nervous system and the parasympathetic nervous system, the conscious and the unconscious, the inner and the outer'.[89] Oliveros looks at breathing as a link between voluntary and involuntary actions and invites others to explore the nature of this link through her exercises and pieces. The techniques that I used to perform observed breathing in my own piece, involving breath regulation as well as deep and long breathing, was largely inspired by Oliveros's practice. Meanwhile, the project TRACERY by Miller and Fraser engages breathing in a different way; Fraser performs body-scan meditations, where she directs mindful awareness towards different parts of her body, while simultaneously responding and mimicking a source played through headphones (often an audio recording of music, sound or dialogue) by singing, breathing, and moving in ways that Miller refers to as 'automatic'.[90] Miller's work is also inspired by Catherine Fitzmaurice's 'Voicework', a training method encouraging actors to engage a form of 'spontaneous and free breathing' that might be involuntary and uncontrolled by the performers.[91] The projects by Oliveros and Miller/Fraser helped established a frame of reference for my exploration of different types of breathing, voluntary and involuntary activities, and performers' attention or

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[89] Pauline Oliveros, *Deep Listening: A Composer's Sound Practice* (New York: iUniverse, 2005), p. 10.

[90] Cassandra Miller, 'Transformative Mimicry: Composition as Embodied Practice in Recent Works' (unpublished doctoral thesis, University of Huddersfield, 2018), p. 96.

[91] Catherine Fitzmaurice, 'Destructuring', in *About Fitzmaurice Voicework*, <https://www.fitzmauriceinstitute.org/fitzmaurice-voicework> [accessed 10 Jan 2021].

awareness towards breathing. However, in contrast to these two works, *From Observed to Involuntary* is specifically interested in the transition from one type of breathing to another and aims to unveil those undefined thresholds in between observed and involuntary breathing.

I will now examine three sets of notes reflecting on my experience performing this piece. I took down the first set of notes after recording my breathing, the second set after listening to my breathing, and the third set after playing the piano. The notes cover my experience of the different types of breathing throughout varying stages of the compositional and performative process.

The following is the first set of notes transcribed after I recorded my breathing:

> In the first twenty minutes I was constantly aware of the length of my inhalation and of my exhalation. I felt my breathing increasing in length. In the first moment I stopped doing the meditation exercise I felt my breathing changed considerably. I felt my breathing become shorter than before, though I was still focused on it. When I started reading the news, I noticed that often my attention moved towards my breath. So I tried to read faster and choose articles that I could find interesting. This was rather helpful. When I started watching the tv show, my attention rarely moved to my breathing. Just a few times I realised I noticed the sound of my breath and my lungs expanding.[92]

As this extract indicates, I started noticing changes in my breathing (by way of shorter breaths) as soon as I stopped the meditation exercises. Interestingly, when I first began to divert attention away from my breath through watching the news, I found myself frequently returning my attention towards my breath and adopted strategies to ensure that I kept my attention away from my breath. Finally, in the last part of the recording where I am watching television, I find that my attention was almost always diverted away from my breath, only rarely redirecting itself towards the sounds of my breathing.

The following is the second set of notes taken down after listening to the recording of my own breathing:

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[92] Federico Pozzer, feedback collected after recording my breathing (30 April 2020).

> During the meditation exercises my breaths were steady, long, calm, and loud. When I stopped doing the meditation exercise the length of my breathing phases rapidly changed. My breaths suddenly became irregular, softer and faster than before, and the duration of each breathing phase frequently varied. It was kind of strange listening to the recording of my involuntary breath. While I was recording it, I did not realise that my involuntary breathing is so irregular, mutable, short, and full of breaks.[93]

Here, I am struck by qualities, such as irregularity, shortness, softness, and quickness, that characterised my involuntary breathing almost immediately after I stopped my meditation exercises. These reflections on the changes in my breathing throughout the recording were crucial to identifying the differences in timing between my involuntary and observed breathing that I would then translate into my playing.

This last set of notes was taken after I played the piano along with the recording of my breathing:

> Performing this piece seemed to be very different from playing other pieces of mine. It was sometimes difficult to follow my breath as it was really irregular. In the last forty minutes I had to pay more attention to the recording. My breathing became very unpredictable in terms of duration, very fast and then immediately slower, with unexpected pauses in between the breathing phases. In the first twenty minutes my breathing corresponded to a sort of pulse, flexible but regular. I could somehow predict when my inhaling and exhaling occurred and this helped my playing. After that, it was kind of challenging to follow my breath due to the irregularities in terms of timings and in terms of dynamics.[94]

These notes allude to two qualitatively different experiences I had while performing. One occurs in the first twenty minutes where my breathing is steady and it is relatively easy to translate my breathing rhythm into my playing. The second occurs in the following forty minutes where I find it challenging to follow my own breathing given its continuous irregularities, particularly as it relates to timing and dynamics.

Through working on this piece, I discovered the difficulty in executing a gradual transition from an observed to an involuntary type of breath. In contrast

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[93] Federico Pozzer, feedback collected after playing the piano (30 April 2020).
[94] Federico Pozzer, feedback collected after playing the piano (30 April 2020).

to the breathing transition in *From Exhaling to Blowing* (2020), which is characterised generally by a forward progression from exhaling and blowing that is rather clearly manifested, the relationship between 'observed' and 'involuntary' breathing is characterised by a continuous back-and-forth, from moments during which I am aware of my breathing to moments during which I am unaware of my breathing. Although I performed instructions designed to facilitate a progressive transition from observed to involuntary breathing, instead, what I experienced was a sudden change in my breathing when I switched from breathing meditation exercises to looking at the news. 'Looking at the news' was meant to act as a transitional phase between full attentiveness towards my breath during the meditation exercises and complete unawareness of my breath during my time watching television. Before recording my breathing, I expected that, during this looking-at-news phase, my breathing would steadily transition from observed breathing to involuntary breathing. I believed that looking at the news on the internet (or the act of browsing the internet itself) would demand my attention but that those demands would be so light as to allow for lingering effects from the meditation exercises. In other words, I expected that browsing news on the internet, through its relatively light demands on my attention, would gently and gradually move me towards an activity that I expected would totally consume my attention, namely watching an engaging television show. However, to my surprise, this phase of looking at the news marked not a gradual transition but an almost immediate switch towards a wholly different mode of breathing that was far more erratic and flexible than the regular breathing adopted during the meditation exercises. Another curious occurrence in the first half of the piece were the few times during the recording I unintentionally noticed my breathing while I was not supposed to be aware of it.

Both the sudden transition from observed to involuntary breathing immediately following my meditation exercise and the subtle, fickle fluctuations in my involuntary breathing are captured in the piano recording. In the first twenty minutes of my piano playing, while following the recording of my 'meditative' breathing, each note I play lasts between three and four seconds, with note C5, which is matched to my recorded exhalations, lasting slightly longer than note C3, which is matched to my recorded inhalations. The pacing

was steady and the duration of the notes were consistent throughout this initial section. Conversely, during the last forty minutes of my playing, while following the recording of my involuntary breathing, the duration of the piano notes varies greatly, sometimes lasting less than one second while other times lasting two to three seconds. This change occurs right at the beginning of the involuntary breathing section (20:43 of the recording), marked by the playing of C3 matched to an involuntary breath lasting only one second. Overall, the unpredictable changes in the durations were rather evident in this latter part of the piece.

In light of the nature of the instructions and the considerations discussed above, several stimulating questions emerged from this piece:

- Can a performer move from observed breathing to involuntary breathing in real time during performance? Note again that throughout this thesis I adopt the standard biological definition of involuntary breathing as breathing that is performed without direct, conscious control. In this sense, then, involuntary breathing can also be considered unobserved breathing, making the categories of observed and involuntary breathing mutually exclusive. In this piece, I used prompts to assist my natural transition between observed and involuntary breathing. The recording of my breathing during this 20-minute period was source material I used to generate the music during my performance on the piano. However, with this question, I am wondering how a musician might effectively perform the transition from observed to involuntary in real-time during a performance (i.e. with or without their instruments and possibly in front of an audience).

- Can a wind player or a singer divert their attention away from their breathing so much so that they lose control over the highly specialised form of breathing that they have been trained to utilise in performance? When performers divert attention away from their breathing to the point where they can no longer activate their 'trained breathing', what consequences emerge in terms of sound, dynamics, and timing?

- How can the instructions of a score facilitate or instigate involuntary breathing in a singer or a wind player?

In discussing these topics with wind players and singers, several intriguing ideas surfaced, some of which I tested out in the last piece discussed in this thesis, *Four Sections* (2021) for one wind player or one singer (see section 4.2.1).

Lastly, in order to further explore the transition from observed to involuntary breathing, I have considered the possibility of alternative versions of this piece where the overall duration is greatly extended. What new angles of perception would unearth, for instance, if a piece like this spanned for ten to twenty hours? Within this time span, a recording could capture a performer's involuntary breathing while sleeping and their transition to a more observed mode of breathing while waking. In average circumstances, the performer's breathing while sleeping could be considered the most involuntary of breathing as they are not aware of their own breath and cannot easily transition back and forth into awareness of their breath as they would when they are awake. Notwithstanding the logistic challenges of recording one's breath while sleeping, such an endeavour, if successful, could greatly expand the scope of this research as it may provide a base-line for involuntary breathing or, at the very least, descriptive insight into the involuntary breathing of sleep that in some ways will undoubtedly differ from the involuntary breathing of the awakened state.

4.2 Differences Between Four Types of Breathing

In November 2020, I started work on the last piece included in this thesis, *Four Sections* (2021). At that time, I was polishing up my definitions of four types of breathing and meeting occasionally with Andrew Sparling online to discuss aspects tied to involuntary and voluntary breathing as well as exhaling and blowing. In addition to improving the terms used in my definitions, the meetings with Sparling helped me examine more thoroughly the results and lessons

derived from *From Exhaling to Blowing* and *From Observed to Involuntary*. This deeper examination was the impetus for creating *Four Sections*. In this piece, I wanted to question my definitions for four types of breathing by asking players to perform each type of breathing in a consecutive sequence (as opposed to the approach taken in *From Exhaling to Blowing* and *From Observed to Involuntary* where I ask players to steadily transition from one type of breathing to another). Thanks to the contributions of several musicians including clarinettist Michele Fontana, saxophonist David Zucchi, and singers Hyeyoung Kim and Hannah Firmin, I was able to explore several versions of this piece. With them, I tested alternative notation strategies to facilitate the emergence of a particular type of breathing. The proceeding section reviews the instructions of the piece, the collaborative components that shaped it, and the experience of the performers.

4.2.1 *Four Sections* (2021): commentary

Four Sections (2021) is a piece for one wind player or one singer that explores a distinct type of breathing in each of its four sections: (1) observed breathing, (2) constrained breathing, (3) involuntary breathing, and (4) affected breathing. These types of breathing, defined in more detail in section 4.1, can be summarised as breathing that one observes but does not manipulate (observed breathing), breathing that one consciously constrains in some way or in relation to some parameter such as timing (constrained breathing), breathing that occurs unconsciously (involuntary breathing), and breathing that is affected by and a by-product of performing some physical activity (affected breathing). In this commentary, I will first explain the instructions for the sections separately and then discuss their performative outcomes, taking into account the feedback and solutions adopted by the performers.

Each section asks players to perform a different set of instructions that shape, constrain, or alter their breathing for a total of two minutes. In addition, each section consists of two sub-sections, each one lasting one minute; in the first sub-section, the player performs the instructions on their breathing alone while, in the second sub-section, the player performs the same instructions on their breathing while vocalising or playing their wind instrument. The performer

uses a stopwatch to end each sub-section after precisely one minute. Each performer freely chooses one sequence of notes that they perform repeatedly throughout the second sub-section. They perform the sequence with the same notes and at about the same tempo in each of the four sections of this piece. In the second sub-sections, the repeated sequence of notes performed are shaped, constrained, and affected by following the varying tasks and instructions on breathing. With this structure, my aim was to explore how the breathing sounds and the singing or playing of musicians could reveal changes in the types of breathing performed.

In the first section ('observed breathing'), the instructions ask the performer to observe their own breathing, allowing it to increase in length naturally throughout the section (similar to Inna Khazan's breathing exercise mentioned in section 4.1). In the second section ('constrained breathing'), the performer is required to constrain their breathing according to durations of exhalations specified in the score. In the third section ('involuntary breathing'), the performer is asked to distract themselves from their breathing. In the fourth section ('affected breathing'), the performer is asked to perform a physical activity which alters their breathing as by-product.

The instructions in section 3 ('involuntary breathing') were particularly inspired by my conversations with Heather Roche and Andrew Sparling. In October of 2020, I asked Roche if she thinks it would be possible for a wind player to adopt an involuntary type of breathing while playing, and she replied:

> I think the only way to get a wind player not to think about their own breathing is by way of distraction, but I have to say this distraction would have to be really extreme. I'm not sure just asking me to think about something else will work. You have to remember that these processes are engrained for decades. We take lessons on how to breathe, we go to players of other wind instruments and learn how they approach breathing. We worry when we have a cold, or asthma, that we can't breathe enough to work.[95]

In a similar way, Andrew Sparling states that:

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[95] Heather Roche, email correspondence (14 Oct 2020).

When you spend your whole life playing a wind instrument,
you're always conscious of your breath. I'm aware of it while
walking in the streets, outside musical situations, and
particularly when I am short of breath.[96]

Both Roche and Sparling rightly point out that the wind players are usually very
aware of their own breathing. Sparling indicates that he is often conscious of his
own breathing also outside musical situations. Likewise, Roche observes that in
order to completely push wind players' attention away from their breathing, the
distractions employed should be extreme. Their perspectives led me to
experiment with several strategies aiming to distract wind players and singers
from their breathing while performing. These distractions include saying
mentally the alphabet backwards, watching a silent movie, thinking about
memories, and reading a book.

The instructions in the fourth section ('affected breathing') were greatly
influenced by those works in which the players run or perform a series of
physical exercises. These include PIXERCISE by Kathryn Williams (2017–
ongoing), Tom Johnson's *Running Out of Breath* (1976), Ben Vautier's *Run*
(1962), and Andy Ingamells' *textscoreaday #180* (2013). In these four projects,
the players either run or perform a set of physical tasks that affect and contract
their breath. The type of breathing that arises from performing the physical
activity shapes the timing and sound of the performance. In the fourth section, I
asked the musician to perform tasks similar to the ones mentioned in the pieces
above as I wanted to investigate the evident effects a challenging physical
activity could have on the performer's breathing and on their playing or singing.

The piece was performed by the following four musicians throughout a
period of six months: clarinettist Michele Fontana, saxophonist David Zucchi,
and singers Hyeyoung Kim and Hannah Firmin. Throughout this period, I
frequently modified the instructions in response to players' feedback.
Specifically, I explored various constraints on timing, types, and dynamics of
breathing in section 2 and strategies that could push the performer to distract
themselves from their breathing in section 3. In this text, I will reflect especially
on how changes in sounds produced by the performer correlate with the

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[96] Andrew Sparling, interview by Federico Pozzer (Zoom Meeting, 30 Sept 2020).

different definitions of breathing. The rest of the section will be dedicated to analysing singer Hyeyoung Kim's performance and experience of the piece, with a brief mention of the other three players' experiences.

In her performance, the changes in the types of breathing Hyeyoung employs are clearly revealed by the sound of her breathing and her voice. The sequence of notes that Hyeyoung chose to sing in the second half of every section was 7 to 8 seconds long. In section 1, where the performer is asked to observe their breathing, Hyeyoung's breathing is steady during the first sub-section. Likewise, in the second sub-section, the timing and dynamics of her repeated sequence of notes is sung steadily and the duration of her notes are long.

In section 2, Hyeyoung follows a set of instructions in real-time that constrain the timing of her breathing (the instructions are presented in a video that displays the text cues and a countdown timer). These instructions ask that certain durations be exaggerated by either stretching and or contracting the length of exhalations; for instance, as specified in the instructions, the longest exhalation performed should last seventeen seconds while the shortest one should last one-second. I intentionally requested exhalations with highly contrasting durations so to make evident the distinction between the type of breathing performed in this section, characterised by erraticism, and the type of breathing performed in section 1, characterised by steadiness. Given the wide variety in the duration of the exhalations that she must perform, Hyeyoung is often unable to sing the entire sequence of notes in one exhalation and must therefore stop singing in mid-sequence, leading to the impression of a musical sequence that is frequently and, from the audient's perspective, unpredictably interrupted. For instance, since Hyeyoung's full sequence lasts 7 to 8 seconds, when the score asks for an exhalation that lasts 4 seconds, Hyeyoung is only able to sing about half of the length of the sequence before she must end her exhalation. In cases where the exhalation specified is longer than the duration of one full sequence, Hyeyoung is asked to perform the sequence repeatedly at the same pace until reaching the time limit for the given exhalation. For instance, when the score asks for an exhalation that is 17 seconds long, Hyeyoung sings the full sequence for 7 to 8 seconds and then has enough time

to repeat the sequence, drawing out her exhalation for another 9 to 10 seconds. In these cases, the timing of her ending still sounds unpredictable, since from the audient's perspective, there is no way to know where, within a repeated sequence, she will stop singing. Given that the pace at which she performs the sequence remains constant, how many number of notes from one sequence she performs and how many times she can perform a full sequence is determined solely by the number of seconds assigned to each exhalation in the instructions. This results in a wide variety in the portions of sequences performed and the number of times sequences are repeated across exhalations. While the instructions exclusively pertain to constraints in timing, during Hyeyoung's performance, dynamics are also incidentally affected. For instance, in her performance, notes of short duration are usually sung with louder dynamics whereas notes of longer duration are usually sung with softer dynamics. These changes in dynamics occur both in Hyeyoung's breathing within first sub-section and in her voice within the second sub-section.

In section 3, the aim of my instructions is to prompt an involuntary breathing from the players during which the timing, sounds, and dynamics of breathing are outside of the players' control. My intentions were for the breathing to be so involuntary that, even in the second half of the section where the performer sings or plays, the habitual, trained practice of breathing that performers normally employ would be not be activated. In Hyeyoung's case, therefore, I had to find a technique and source material that was so effective at distracting her from her breathing that her singing, instead of being entirely commanded by her trained breathing, would be shaped by involuntary breathing or at least by approaching involuntary breathing. I say 'approaching involuntary breathing' because even without specific training, singing, especially singing anything that is determinate, does require shaping the breath in 'voluntary' ways. After all, singing (like blowing as previously discussed) can be conceived as really just a type of breathing (the audible portion of which is usually an exhalation). Therefore, the objective in this piece was to cause Hyeyoung to forget about controlling her breath, which would inevitably lead her, at some level, to forget about controlling her singing. In this way, activating or approaching involuntary breathing would modulate her singing in unpredictable ways.

Initially, I tried out different techniques with the performers to determine which ones were effective at facilitating this type of breathing. These techniques included reading a book, recalling memories or something funny, saying the alphabet backwards inside one's head, and watching a silent movie. From these initial experiments, we realised that watching a silent movie was most effective at drawing the performer's attention and causing performers to, consequently, lose control over their breathing and singing. We found that this loss of control produced unexpected sonic results that imbued this section with a satisfying level of interest and complexity. Settling with silent videos as the source material for distracting one's breath, I sent Hyeyoung a silent video combining a few clips taken from different surrealist and oneiric movies (directed by Dali, Lynch, and Bergman) to use for the first rehearsals. In addition, I explained to Hyeyoung that my intent for this section was for unpredictable changes in her breathing to emerge through decreased attention and control over her breathing and singing. During the rehearsals, Hyeyoung watches the video for the entire duration of the section; during the first sub-section she is only breathing while in the second sub-section she is singing the same sequence of notes used in the previous sections. The following is her feedback after rehearsing the first sub-section:

> When we generally breathe, I think we do not perceive breathing. But you'd like to hear the sound of breath. Therefore, if I unconsciously try not to focus on breathing while watching the video, the sound of breathing would not have been recorded. The video I sent you was recorded twice by me. At first, I focused on the video and recorded it, and I couldn't hear any breathing sound from the result. So secondly, I watched the video again and recorded it so that I could hear the breath you wanted. In fact, I think this result itself is not a natural result. If you want something really natural, you won't hear the breath, especially for section 3. And I'm afraid the video you sent me is weak in terms of producing changes in breathing. It would be nice to have a video with bigger changes between the shots.[97]

In this rehearsal, Hyeyoung identifies two obstacles in the way of her achieving the aim of the section. One obstacle was that her involuntary breathing was not loud enough to be heard, leading her to suggest that 'natural' involuntary breathing is not likely to be audible, or at least not audible enough to be

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[97] Hyeyoung Kim, email correspondence (27 Mar 2021).

captured by an ordinary audio recording. The second obstacle was the video's inability to instigate changes in her breathing. In response to this, Hyeyoung suggests that a video with more transitions in between the video clips may foster more evident changes in her breathing and singing. This was my reply:

> About section 3, what you say makes sense. However, I'm thinking that sometimes when we breathe in an involuntary way, really soft sounds like exhaling rapidly from the nose might be heard (or any other kinds of involuntary sounds tied to breathing). I'm not saying that they should happen but I'm wondering if we could increase the possibility of hearing them by placing yourself closer to the mic and increasing the microphone sensitivity. Do you think that could work?[98]

In response to her feedback, I proposed that Hyeyoung increase the microphone sensitivity and that she arrange herself very close to the microphone. As per her suggestion, I also decreased the duration of the video clips, from 15 seconds long in the previous video to 1–4 seconds long in the final video. Luckily, this produced audible changes in breathing and singing that were rather satisfying. For one, the duration and sound of the recorded breathing was more unpredictable than the first rehearsal. There were also more pauses in between inhaling and exhaling and, while the dynamics were softer overall compared to recordings of the other sections, there was a noticeable contrast between loud and soft breaths. Likewise, the singing in this rehearsal features several striking contrasts; in certain moments it appears that Hyeyoung has control over her voice while other times the sudden rallentandi and decrescendi in her sung sequence of notes seem to disclose a lack of focus in her singing. I asked her what she thinks about the way the video affected her breath and her voice and this was her reply:

> That's interesting! The video helped me a lot. For breathing I think I was able to forget about it. For the singing it was rather hard but still, I tried to do my best to focus on the video.[99]

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[98] Federico Pozzer, notes gave to Hyeyoung Kim, email correspondence (28 Mar 2021).

[99] Hyeyoung Kim, email correspondence (31 Mar 2021).

Hyeyoung indicates that this video was more effecting at pushing her attention away from her breathing and singing. However, she highlights how it was easier to distract herself from her breathing than from her singing.

In section 4 ('affected breathing'), the performer chooses one physically challenging activity amongst a list of suggestions I provide. In the 'breathing' half of the section, they perform the physical activity uninterrupted. In the 'singing' half of the section, the player performs this activity and stops intermittently to sing or play. Specifically, they begin by performing the physical activity until their breathing has changed significantly and then stop to play or sing their sequence of notes. Once they detect that their breathing has returned to normal, they stop playing or singing and begin the physical activity again, re-initiating the cycle. The performer's breathing is recorded throughout the section. In her performance, Hyeyoung runs for one minute, then she starts singing her sequence of notes and while singing, at 8:01 of the audio recording, she starts performing jumping jacks. Compared to the other sections, this section features the most evident changes in Hyeyoung's breathing and singing; her breathing is significantly contracted, the dynamics of her breathing and singing are much louder, and her sequence of notes is frequently and unpredictably interrupted due to her need to breathe.

Overall, I found that working on this piece was a fruitful opportunity for questioning and discovering attributes related to my formulated categories of breathing, 'observed,' 'constrained,' 'involuntary,' and 'affected'. In particular, I believe the form of this piece was effective at isolating and emphasising the most prominent, idiosyncratic features associated with each type of breathing and the ways they can manifest differently. Unlike my previous compositions that involve one type of breathing or that are concerned with the transition between two types of breathing, *Four Sections* condenses four approaches to breathing into small, discrete units. By analogy, I think of this tight juxtaposition of short experiments on breathing akin to four tiny bottles of essential oils; lined up in a row, one can pick up any one bottle to quickly and intensely experience the 'essence' of that oil in a concentrated form. Likewise, I find that placing small sections within one piece, each lasting two minutes and each laser-focused on a different, specified form of breathing, facilitated my ability to

compare the forms of breathing and to quickly grasp something of the essence I associate with each form of breathing. Another aspect of the form that was highly effectively at distilling the essences of and differences between types of breathing was the use of the same sequence of notes for every section. This made the sections feel especially experimental in a quite literal sense of controlling variables and isolating for one factor of interest. The sequence of notes became a referential object whose changing appearance across sections provided a wealth of information regarding how breathing was engaged and being affected by the compositional and performative context specific to each section.

It remains to be asked then, 'What are some of the essences of and differences between the types of breathing highlighted by the form of this piece?' Below, I use two to three words to capture the essence of each type of breathing (and playing) employed in the piece:

Section 1 'Observed Breathing': long, steady
Section 2 'Constrained Breathing': temporally extreme
Section 3 'Involuntary Breathing': indeterminate, unpredictable
Section 4 'Affected Breathing': gradually contracted, evident

I will first briefly mention the sensible reasons behind these essences and then attempt to place these categories of breathing along certain thematic axes or spectrums (e.g., control, indeterminacy, unpredictability) to gain deeper insight on their similarities and differences. The long, steady breathing and playing in the performances of Section 1 can be attributed to the calming effect of observing one's breathing. So common is this effect on breathing that, in anticipation, my instructions ask that players allow their breathing to lengthen naturally throughout the section. By contrast, the performance of constrained breathing and playing in Section 2 is characterised by extremes in the durations of consecutive exhalations. I intentionally included these extremes, placing, side by side, exhalations of anywhere from 1 to 17 seconds long. Section 3 features temporal variety as well but without such extremes. Rather, the variety that characterises the involuntary breathing and playing of this section is more

rooted in an overall quality of fickleness and indeterminacy. The involuntary breathing of Hyeyoung, for instance, is audibly in a state of constant fluctuation, with subtle and sudden variations in pacing and dynamics throughout the recording. This type of breathing has a similar effect on her singing, manifesting unpredictable rallentandi and decrescendi as her breathing becomes more involuntary and distracted. Lastly, the affected breathing of Section 4 gradually contracts as the aerobic exercise performed by the player becomes more and more physically challenging. This also leads to interruptions in the player's singing as their need to stop and breath becomes more prevalent. As suspected, the changes in breathing and playing in this section are the ones most audible as they involve heavier breathing.

This is a synopsis of easily identifiable aspects, which, while seemingly surface-level, are indicators of deeper connections that can be established between these modes of breathing. Extending this thought, I will now consider these four types of breathing along a spectrum of the performer's control over breathing. Supported by the players' experiences of these sections, I would associate the four types of breathing with the following labels, descriptive of the level of control the players had over their breathing:

Explicit control: Constrained breathing
Implicit control (tentatively labelled): Observed breathing
Less control (or challenged control): Affected breathing
No control: Involuntary breathing

According to my categorisation, these four types of breathing broadly represent the full spectrum of control one can have over their breathing. It was not necessarily my intention to so evenly represent the levels of control that a player should exercise over their breathing. Instead, this observation was derived retrospectively from the analysis of my performances and, in particular, from the feedback of my performers. I am essentially superimposing one linear axis measuring degrees of control over the forms of breathing engaged in my piece. While this may appear like an attempt to neatly discretise the conceptual substance of my piece, I am, in fact, more interested in the ways that this

superimposed labelling axis becomes more or less misaligned with the defined types of breathing, in performance. Aside from 'constrained breathing' in Section 2, which conforms quite well to the label of 'explicit control', observed breathing, affected breathing, and involuntary breathing do not fit their labels with such ease.

I placed 'tentatively labelled' next to observed breath in the list above precisely because I suspect that this form of breathing can easily defy the label I assigned it. In Section 1, I believe to have made it clear in my instructions that I do not want the performers to intentionally slow down their breath. Instead, the performers engage a long and steady breathing (and playing guided by breathing) that they and I believe to be, in part, the result of the slowed down, calming effect that observation has on one's breathing. The question then is, 'What type of control do the performers have over their breathing while observing it?' It does not seem accurate to say that they have no control over their breathing considering that clearly their observation of their breathing transforms it significantly; this is especially evident when comparing its performance to the more mercurial involuntary breathing, a type of breathing over which we truly have no conscious control. The best term that I could offer for describing this middle-ground between explicit, conscious control and no conscious control is 'implicit control.' This term is used in several fields, including neurology where it is used to describe automatically performed movements (e.g. reaching for a light switch) that are not totally available to our consciousness during the moments that we perform them. In the case of observed breathing, it may be that, although we are conscious of our breathing, the lengthening effect of our breathing is like an automatic movement that evades our conscious control because it is so highly learned. What is most interesting (and perhaps messy) about implicit control is its reversible state; we can easily turn an action that is implicitly controlled into one that is explicitly controlled simply by devoting more attentive guidance towards that movement. Therefore, I admit that in my section calling for 'observed breathing', though I know that explicit or implicit control can be engaged, I am assuming that my performers will enact a more implicit control over the movements involved with observed breathing. For instance, I assume that as the section progresses, they

will implicitly pull their diaphragmic muscles further down to accept more air into their lungs across successive inhalations. My assumption is supported, in part, by my instructions which ask that they allow this to happen, implying that they should engage implicit as opposed to explicit control over these respiratory movements.

Like observed breathing, affected breathing, as performed, may not always neatly correspond to the label I assigned it: 'less control or challenged control.' Overall, I would categorise the breathing that performers engaged during their aerobic exercises as one they had less control over than observed breathing. This was evident by the heaviness of their breath and the fact that, at times, Hyeyoung's playing sounded interrupted due to the how the jumping jacks she had just performed affected her breathing. However, at the same time, I can detect a certain degree of control over the breath, one might even call it a high degree over the breath. Even though the duration of the breaths and notes played were shorter than in the section with observed breathing, there was a gradual, not rapid, contraction of the breath as the body was more challenged by the exercise. In addition, even when the breath was at its most shortened duration, the breathing was rather steady. The steady, repetitive rhythm of the physical movements surely influenced the steadiness of the breath but certainly there was still the player's own control over their breathing that was keeping it from sounding haphazard or like someone hyperventilating. In addition, how much control any one player will have over their affected breathing will depend on a whole host of factors, such as the particular exercise they choose, their physical condition, the number of hours they slept, the temperature of their room, and several others. This section reveals again that the 'control label' I applied to affected breathing, like the other types of breathing, involves a range of parameters influencing the degree to which the performer can be said to have control over their breathing.

Lastly and perhaps most intriguing from the standpoint of performance is involuntary breathing. I have labelled this as breathing over which one has no conscious control whatsoever. Perhaps, it is not terribly debatable that this type of breathing can and does exist without consciousness, otherwise boxers would immediately stop breathing the moment they were knocked unconscious.

However, if I am referring to a process that is performed completely without our awareness, then how could I ever expect a performer to intentionally engage this form of breathing? My solution was to create a context that would facilitate the unconscious emergence of involuntary breathing, and, for this realisation of my piece, I used a silent video to create that context. The problem, though, is that if the performer knows that the goal of the performance is involuntary breathing than that knowledge in itself motivates the performer to check and see whether or not they are engaging involuntary breathing (as occurred with me during my performance of *From Observed to Involuntary*). Once that happens the breathing is no longer involuntary; explicitly framing a piece as one that requires the performance of involuntary breathing invites a psychological conundrum. This psychological conundrum is only heightened once singing is introduced into the equation. How can a performer involuntarily breath and sing at the same time when a singer must consciously control their inhalations and exhalations to satisfy the timing and dynamic instructions of a score? In Hyeyoung's performance, it is likely that, given her feedback, the final silent video used had the effect of facilitating true involuntary breathing. However, it is an open question as to what type of breathing Hyeyoung engaged while singing at the same time as attempting to maintain involuntary breathing. Does this involve yet another undefined type of breathing like the forms that I encountered in *From Exhaling to Blowing*? Was Hyeyoung's breathing and singing caught in transition from involuntary to voluntary? Her moments of unpredictable and seemingly uncontrolled fluctuations in tempo and dynamics suggest that this might be the case.

Before considering the role of control in performative breathing, I anticipated writing a lengthy discussion on how indeterminacy and unpredictability is manifested to a lesser or greater degree in each section. However, upon analysing my pieces through the lens of control, I realised that such a lengthy discussion was not necessary because both indeterminacy and unpredictability run parallel to the factor of control; they might even be seen as more or less consequences of the degree of control a performer has over their breathing. During the section with involuntary breathing, where Hyeyoung has the least control over her breathing, her performance is also the most unpredictable and

indeterminate out of all the sections. During the section with observed breathing, where Hyeyoung has the greatest control over her breathing, her performance is also the most predictable. Of course, there are some more aberrant factors to consider when drawing these parallels. For instance, Section 2 featuring constrained breathing is likely to sound unpredictable or indeterminate to an audient when in fact for the composer and performer it is completely predictable and determinate. Likewise, while observed breathing may sound determinate due to its predictability, it is in fact indeterminate (or at least partially) because it relies on the natural breathing of a performer who is attempting not to consciously manipulate it and is relying as much as possible on physiological functions that are not explicitly under control. However, putting aside these discrepancies between what the outcomes sound like for the composer, performer, and audient, the positive linear relationship between degree of control and degree of predictability and determinacy holds rather well.

I will conclude this section with one last insight that briefly covers the divergent experiences of the performers. When comparing performers' experience of Section 3, I found that the effects of the strategies used to foster involuntary breathing are quite subjective and can easily change between the performers. For instance, while the silent video used in the final version of section 3 produced significant changes in Hyeyoung's breathing, for performers Hannah Firmin and David Zucchi there were no significant audible changes in their breathing. In David's case, his inhalations tend to be slightly contracted but dynamics, durations, and the articulation of the sequence of notes were rather similar to those occurring in Section 1. Likewise in Hannah Firmin's performance, no remarkable changes in breathing and singing occur in section 3. However, both performers expressed that they were not focused on their breathing while performing it, which would indicate that they were, indeed, engaging involuntary breathing. The following is David's feedback for sections 1 and 3:

> I think I was much less focussed on my breathing in section 3 than
> section 1—the result being my breathing ended up regulating itself
> in a slower way—I think in the first section, I was definitely more

focussed on breathing consistently and steadily, probably in a
more contrived way, than in section 3.[100]

Interestingly, David did perceive strong differences in his breathing between sections 1 and 3. It may be, therefore, that those differences were either not audible in the recording or that they weren't strong enough to be discerned through listening. Perhaps, also, the differences in the recordings of the performances between players may pertain more to the players themselves than their instruments as Hannah and Hyeyoung are both singers while David is a saxophonist. Given that this is a small group of players, though, the questions of what might be the outcome with other instrumentalists (such as flautists and brass players) and how tools for fostering an involuntary breathing can be expanded, remains open for future projects.

4.3 Reflections Upon the Pieces That Interrogate Breathing

Through my work on *From Exhaling to Blowing*, *From Observed to Involuntary*, and *Four Sections*, I derived the insights listed below. These have shaped by perception of the four modes of breathing previously defined and their potential for use in a compositional and performative context:

- In *From Exhaling to Blowing*, I was unable to identify my breathing as either exhaling or blowing at any point within my transition from exhaling to blowing. My transitional forms of breathing in between exhaling and blowing seemed to defy classification. This observation has led me to consider further artistic explorations. For instance, rather than asking performers to transition from one type of breathing to another, perhaps performers could be asked to breath exclusively in the space between exhaling and blowing. In other words, the performer would engage only the transitional forms of breathing, never reaching a point in which their breathing could be definitively classified or detected as a normal

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[100] David Zucchi, email correspondence (17 April 2021).

exhalation or as the act of blowing. Through a more isolationist approach, a series like this may be effective at further characterising and learning about these transitional forms of breathing.

- In *From Observed to Involuntary*, it was difficult for me to perform a steady transition from an observed type of breathing to involuntary breathing; throughout the piece, I was either aware of my own breathing or not aware of it. In other words, I did not observe any transitional state between being aware and not being aware of my breathing. These results countered my original intention and expectation of detecting undefined types of breathing in between observed and involuntary. The lack of a gradual transition between these forms of breathing is clearly revealed in the timing of the piano sounds that trace the recording of my breathing. Immediately after my meditation exercise, when my breathing becomes less observed and more involuntary, the piano part changes suddenly from steady to variable in terms of the pacing and the duration of notes. This unexpected experience performing the piece provokes several, intriguing follow-up questions, such as 'What is, in fact, the average time range of transition from observed breathing to involuntary breathing, biologically speaking?', 'Do we have the capability to detect this transition or does the typical length of this transition too short for us to perceive?', 'Can observed breathing and involuntary breathing overlap or dovetail to some extent? For instance, is it possible that after a meditation exercise involving intense focus on breathing that we are generally more observant of our breathing even if it is primarily functioning involuntarily?', and related to the previous question but definitively different, 'Are there lingering effects of observed breathing that in some way shape our involuntary breathing? For instance, if we become more relaxed during a period of observing our breath, does this state of relaxation affect how we breathe involuntary once we stop observing our breathing?'

- Through my work on *Four Sections*, I identified effective techniques and tools to promote certain types of breathing and sounds amongst performers. Particularly interesting were my explorations into strategies for diverting the performers' attention away from their breathing. What I discovered through these explorations is the challenge in anticipating how effective an object or strategy will be in distracting a particular player from their breathing and the challenge in using one object or strategy that will be equally effective across multiple players. In my earlier pieces *Couples or Groups* and *Couples II*, I specified how one group of performers should modulate their breathing based on the playing/breathing of another group of performers. Through my experience as a social being and as a composer accustomed to choreographing performer interactions, I was able to predict general trends in how performer interactions, specified in my instructions, would shape the role of breathing in these pieces. However, in section 3 of *Four Sections*, the context was not interpersonal, involving only person and object. Moreover, this object, the silent video, was meant to produce a physiological and psychological effect, namely a level of distraction from breathing that would audibly influence how the performer breathes and performs their instrument. This person-object dynamic, the effect that I was attempting to achieve through my source object, and the individualistic manner in which the source objects affect different players represented new terrains for me. My original silent video did not have much of an effect on Hyeyoung's singing and the final silent video did not have the same effect on any one performer who used it. The lessons I derived from working on this section coalesce in the form of new questions such as 'It is realistic or worthwhile to search for sources that are sufficiently effective at distracting breathing amongst different players?', 'Would collaborating with each performer individually to select an effective and preferred object of distraction yield more fruitful results while also providing a template for a more productive composer-performer collaboration?', and 'Does using an object of distraction yield different degrees of distraction from one's breath throughout one

performance, between performances, or between players and can these degrees of distraction yield differential effects on breathing and playing that would be interesting to investigate compositionally?'

The insights above address observations, challenges, and lessons specific to the three pieces of this chapter. However, in the process of working through these pieces, the idea occurred to me that combining strategies and lessons from two or more pieces could potentially engender a new, productive site of inquiry as well as novel compositional forms. Below are a few ideas for pieces that would combine the strategies and instructions from the three pieces discussed in this chapter:

- A piece where players are asked to first perform activities (e.g., jumping, running) that affect their breathing and then to observe their affected breathing.
- A piece where players first affect their breathing (e.g., through jumping or running) and then constrain their affected breathing according to explicit instructions.
- A piece where performers constrain their breathing according to explicit instructions while attempting to distract themselves from their own constrained breathing.

Some of these ideas do not appear challenging while others appear impossible owing to the juxtaposition of contradictory modes of breathing. In relation to the last idea, the glaring question is, 'How can one distract themselves from breathing that requires their awareness to constrain?' However, I think it is precisely the intersection of opposing types of breathing that may help define the thresholds of one type of breathing versus another. When we attempt to constrain and distract our breathing at the same time, what can we learn about the attentional demands of constraining our breathing or the minimum criteria needed to distract our breathing? I believe this approach and the questions they generate can sharpen the definitions for breathing that I have introduced in this thesis as well as generating new definitions and categorical schemes.

Chapter 5 Conclusions

5.1 Final Thoughts on Two Approaches

In this section, I begin by briefly summarising the fundamental attributes of the sets of pieces covered in this thesis. Then, upon reviewing the progression of my works, I extrapolate an overarching trajectory that encapsulates the PhD work and research I have presented here. Lastly, I reflect upon points of divergence and convergence between my sets of compositions and the larger implications arising from them.

The pieces discussed in this project follow two main approaches summarised by the titles of the categories to which they belong: 'Pieces That Use Breathing' and 'Pieces That Interrogate Breathing.' In 'Pieces that Use Breathing', I employ breathing as a tool that regulates musical timing, the movement of objects, or performer-performer interactions. These three regulated parameters represent three sets of pieces whose titles allude to the way breathing is used as a tool: 'Breathing as a Time Regulator', 'Breathing as Blowing', and 'Breathing as a Tool to Shape Performer-Performer Interactions'. The set 'Breathing as a Time Regulator' uses breathing to regulate the duration of notes and the speed of chord transitions (*Breathing, Moving, Playing*) as well as the number of actions that can be performed (*Breathless*). The set 'Breathing as Blowing' uses the force of blowing to move objects across piano strings (*Moving Objects*) and to move objects that display instructional cues for the performers (*Neck and Ball*). In 'Breathing as a Tool to Shape Performer-Performer Interactions,' the breathing and playing of one group of performers is used to guide the breathing or playing of another group of performers (*Couples or Groups* and *Couples II*).

In 'Pieces That Interrogate Breathing', I am less focused on using breathing as a tool to regulate musical events and am more interested with exploring the nature of breathing itself. I am interested in the different ways we engage breathing, how these ways of breathing can be characterised and defined, and the undefinable spaces in between modes of breathing. I divided this category

of pieces into two sets: 'Transitions From One Type of Breathing to Another One' and 'Differences Between Four Types of Breathing.' In the first set, the performer transitions from exhaling to blowing across multiple breaths (*From Exhaling to Blowing*) and transitions from 'observed breathing' to 'involuntary breathing' through a series of activities that are designed to direct attention towards the breath, such as meditation, or distract attention away from the breath, such as watching a television show (*From Observed to Involuntary*). The second set, featuring one piece *Four Sections*, relies on four types of breathing I defined as 'observed breathing' (that is, observed but not manipulated), 'constrained breathing' (which is achieved through following explicit instructions), 'involuntary breathing' (that which lacks conscious control or awareness), and 'affected breathing' (breathing that is affected by performing a physical activity). Each section of the piece is dedicated to prompting the performer to engage one of these four types of breathing. The form of the piece requires that the players perform one of these types of breathing for a minute without doing anything else and then to continue to perform this type of breathing for another minute while singing or playing their instrument. Meanwhile, throughout the entire piece (as well as the other pieces in Chapter 4) the breathing of the players are recorded. I used these recordings to study how the different forms of breathing were expressed sonically as well as how they modulated the performer's singing or playing.

What can be seen from this synopsis of my pieces is a trajectory that begins with my interest in using breathing as a tool and ends with questioning the nature of breathing. This progression from a more utilitarian to a more philosophical approach to breathing is understandable when analysing how one stage of my research led to another. Through using breathing as a tool to shape timing in *Breathing, Moving, Playing*, I noticed that the more observant Kate was towards her breathing and movement, the slower and steadier her breathing and playing. This pointed to the effect that observation can have on the breath and alluded to there being more than one approach to breathing, each of which can have a differential effect when being used as a compositional tool. In *Moving Objects* and *Neck and Ball*, I begin to explore this multiplicity of approaches by focusing on blowing as another type of breathing that, unlike the

soft exhalations in *Breathing, Moving, Playing*, could be used to move and interact with objects. However, in exploring blowing as a compositional tool, the question emerged as to what, in fact, differentiates blowing from exhaling. Again, beginning with intentions of using breathing as tool, I end with questions as to the nature of breathing. This pattern is re-iterated while working on *Couples II*. In this piece, some of the performers remarked that they experienced a type of breathing approaching involuntariness when, in performance, they felt particularly connected with the partner whose playing guided their breathing. This led me to wonder whether a score could prompt performers to engage or approach true involuntary breathing, with or without playing their instruments. My work on this piece, therefore, pointed to yet another form of breathing which arises from a different performative context and which changes the dynamics and outcomes of that context.

To borrow Heideggerian terminology, it can be said that my earlier pieces approached breathing as 'ready-to-hand', but the open-ended, exploratory approach with which I used breathing repeatedly pointed me to the direction of breathing itself, the phenomenon as 'present-at-hand'.[101] Compelled to define the nature of the thing itself, I created categories for breathing, not to reduce the phenomenon, but precisely so as to perceive it holistically, from its many angles. This explains the impetus behind my pieces *From Exhaling to Blowing* and *From Observed to Involuntary* where I search for a better understanding of the thresholds and undefined space between exhaling and blowing and observed breathing and involuntary breathing. My last work, *Four Sections*, expands this exploration even further, with intense, short experiments that, borrowing scientific terminology, controls for variables with the use of an immutable sequence of notes and isolates, as the factor of interest, a type of breathing and its effect on musical performance. Apart from all the more detailed insights that I've addressed in previous sections, there is one broad

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[101] Marcella Horrigan-Kelly, with Michelle Millar and others, 'Understanding the Key Tenets of Heidegger's Philosophy for Interpretative Phenomenological Research', *International Journal of Qualitative Methods*, 15.1 (2016) <https://doi.org/10.1177/1609406916680634>.

insight that emerged from this final phase of my PhD research with which I would like to conclude.

When considering all the physiological functions of our body, it is quite remarkable to have one that is so capable of being both voluntary and involuntary. This unique degree to which breathing can harness both processes imbues this physiological function with an unprecedented degree of flexibility and responsiveness. As was demonstrated in *Breathing, Moving, Playing*, the second we observe our breathing we run the risk of altering it with or without our full awareness. In fact, I would argue that it takes effort to observe our breathing without causing it to alter and we might even wonder whether it is fully possible. Can we actually observe involuntary breathing or is involuntary breathing immediately adulterated by our first glance? This high level of responsiveness goes hand in hand with the attribute of flexibility. Our breathing fluctuates from involuntary to voluntary more times throughout the day than most of us probably realise. It happens with such ease that even when performers in my pieces were asked to engage only involuntary or voluntary breathing, they found themselves at times engaging the breathing that was not instructed (e.g. voluntarily breathing when instructions call for involuntary breathing). This high degree of flexibility and responsiveness on a moment-to-moment basis would seem to defy all our attempts of controlling breathing, yielding only indeterminate results when used in composition. However, humans can control breathing easily and with remarkable precision, as becomes especially obvious with certain meditation practices, high-intensity athletics, and the playing and singing of trained musicians.

Therefore, I argue that breathing is not only inherently flexible in a way that at times appears to elude control, but, perhaps tautologically, it is also flexible precisely in its capacity to be controlled whenever we see fit. The inherent, spontaneous flexibility of breathing can, in one moment, be commanded by our will in highly specified ways. As demonstrated in the performances of my pieces, we can control the durations of breath by fractions of a second, the force of blowing to move objects by the slightest amounts, and the speed and trajectory of air to precisely shape the sound of our own voice or instrument. Yet, even with our greatest efforts of control, if we but start running or

performing any number of physically challenging exercises, we very easily lose that tight control of our breathing or, in the case of musicians, our playing that we once had. At the risk of overemphasis, let us again remember that these changes in breathing can and often do happen in less than a second, a feature that makes the idea of composing for types of breathing intriguing at the same time as highly attainable.

Clearly, there are endless layers of flexibility and responsiveness embedded in the phenomenon of breathing that cannot be exhausted by these brief reflections. Notwithstanding, I find it important to conclude this section with a final consideration so as not to underestimate the interconnectivity of our breathing with ourselves. Not only is our breathing responsive to our commands, but we are responsive to it, because it is part of us. When we breathe slower or faster, shallower or deeper, softer or more forceful, we not only affect our breathing, our breathing affects us, making us calmer or more tense, energised or exhausted. From the compositional perspective, these altered states of being, facilitated by one type of breathing over another, finds its way, whether intended by the score or not, into performance (as was the case in *Breathing, Moving, Playing* when Kate's musical choices were influenced by her exhaustion from consecutive long exhalations). To close, I consider this inherent flexibility and responsiveness key to what makes breathing such an effective and rewarding compositional tool and object of inquiry in the projects of this thesis and one with great potential for projects to come.

5.2 Future Projects

I consider the work done during my PhD as a starting point for exploring further aspects of breathing and the intersection of those aspects with performers' awareness of their bodily processes as well as with interactions that can be facilitated within ensembles. As I continue my research in this topic, I plan to experiment with alternative notational strategies, settings, and

performance requirements. Below, I will briefly review how I might explore these alternatives in two pieces that I am currently planning:

- A piece for strings written for a subset of the Los Angeles-based Southland Ensemble that looks at breathing as a non-visual cue for synchronisation and as a way of physically supporting the directional act of bowing and other physical movements that vary in degree of challenge. Directly influenced by Luke Nickel's *String Quartet #1* (2014), which features a transcription of the Obsession Quartet players speaking during a rehearsal, I would like to record and then transcribe string players' breathing during a rehearsal or a performance. My intention would be to uncover relationships between breathing, ensemble interactions, musical materials, and physical movements. One technique I may use would be to restrict performers' line of sight so that they must resort to breathing loudly to cue each other. Another technique I am considering involves pushing musicians to alter their breathing by using long rests between musical events and sets of chords played simultaneously.

- A new piano piece for Kate Ledger that looks at Kundalini yoga. During the quarantine, Kate and I attended an online Kundalini yoga course. Kundalini engages endurance through the performance of numerous repetitions of the same movements and asks for changes in the performer's attention and awareness. This experience contributed significantly to my understanding of meditation and how to direct attention to different parts of the body. My interest in Kundalini brought me to delve into the investigation of what Shields and Simon define as 'non-emotive bodily processes', a series of physiological activities which may entail responses in the individuals including 'sensitivity to bodily cycles and rhythms, ability to detect small changes in normal functioning,

and ability to anticipate bodily reactions'.[102] Bodily processes may
include breathing, eye moisture, muscle tensions, and perspiration. In the
first draft of the piece, Kate repeats short sequences of chords while
moving her attention to different parts of her body, as prompted by the
score. Parameters such as dynamics, timings, and notes are then
allowed to be influenced naturally by the performer's experience of
attending to certain parts of her body.

The aforementioned projects can be seen as direct consequences of the areas
of the topics explored and the techniques learned throughout my PhD research.
Their collaborative nature also reflects my interest in returning to a more
interpersonal, interactive process during composition and in performance. My
hopes are that the new perspectives with which I approach breathing in these
projects expands my practice and continues to generate an endless trail of
stimulating inquiries.

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[102] Stephanie A. Shields, and Angela Simon, 'Is Awareness of Bodily Change in
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Appendix A

A.1 Redacted Transcript of Email Correspondence between Kate Ledger and Federico Pozzer

Date: Mar 26, 2020

FP: [REDACTED] Sounds very good to me! We might try to regulate movements from one end to the other using breathing length or the time a note needs to fade out completely (or both). Something like: stand in front of the lowest register of the piano. and play the note that is exactly in front of you (duration of that note ———> regulates length of both your inhalation and your movements to the highest register) or same thing but it's your breathing that determines the movements from one end to the other (length of breathing ———–> regulates movement from one register to the other one and the duration of the note). There might be plenty of options. Let me think about it. I'll share with you some ideas that we could discuss [REDACTED] Federico.

Mar 30, 2020

KL: Hi again Federico I think we should definitely have a play with breath and the GoPro. We could also link it to the deep calming breathing we should all be doing in these times of stress! In for 6, out for 6. I will have a go at the ideas you've mentioned and I'll share on YouTube anything of interest. Feel free to throw any more ideas my way. [REDACTED] Kate.

FP: Hi Kate! What do you think about this (attached)? It's a sketch with also some ideas I mentioned in the last email. I think breath counting is great. We could match calming breathing to note duration or using a set of 6 notes to mark the length of the breathing phases. We could also expand the breath counting, for example starting from 4:4 ratio, then 5:5, then 6:6 etc. until breathing becomes uncomfortable. Or it could also be possible to decouple breath counting and playing. Federico

April 1, 2020

KL: Hi again. I've been trying out the situations.
Regarding A and B, do I hold the notes while I move to the next one? It may also be nice to notate specific chords that require two hands, then the movement to the next chord has even more restrain. E.g. one in the bass, then I move to the next location but have to keep my hands holding the chord, depending on duration or movement being in charge. Does that make sense? D is really hard but forces me to choose higher notes for a rest, and also the breathing when the piece is finished is really extreme! I think it will come across well on the GoPro. I'll continue to play with it. Kate

April 2, 2020

FP: I was initially thinking not to hold the notes. For instance using only the right hand. You play one note in the bass, then move the hand to the centre matching movements of your arm/hand to breathing, then play the next note etc.. But holding the notes might work well. I attached a sketch to see if I understood correctly. In the sketch you play the first chord, then you move to the next one while holding the first chord. Speed of the finger movements from one chord to the other is regulated by the length of breathing and the duration of the movements corresponds to the length of breathing. Were you thinking about something similar? Federico

April 5, 2020

KL: Hi Federico. I have lots of ideas about what you've sent. I think what is best is that I try them all out and film them. I'll state what version I'm doing in the film so it's clear what is what. I'll try and do this tomorrow. I'll then let you see the films and then we could have a Skype about what you like later in the week. I think this could be really interesting…Kate

April 6, 2020

KL: Hello again. Right I've recorded a few videos related to your sketch. [REDACTED] They should all be on by this evening. The videos are like this: Breathing, Movement, Playing: I go through versions 1, 2, 3 and 4. I play each one a few times so you get an idea of what they look and sound like. I like how 2 works. At first, the fact that movement dictates the breath made me wonder how and why I would change the way I move. Perhaps specifically-notated chords and areas would effect this. However, I ended up being quite playful with it, where the quicker I hop about, the more my breath responds.
Chords: I play what you have written, which is to move to the chord but allow the actual finger movements/shifts to be controlled by breath. I may have misunderstood this one. I'm actually struggling to see how I move separately to the finger movements. I can separate moving to the chord from moving the fingers a tiny bit, but I don't think it's obvious when watching. What I do like about the chords sketch you have written is that the notes are held in the space between inhalation and exhalation. I really like this. I looked up this in Yoga, Kumbhaka breathing (have you looked at this already?) and how the time in between inhaling and exhaling can provide us with stillness and calm. I'm also looking at biology studies looking at this type of breathing and it's effect on cognitive ability as well as stress/anxiety. I can share this if you haven't already looked into it. Quite important for Feldenkrais. Finally, the third video is a couple of combinations. Chords with version 4, and chords with version 1.
Chords with version 4: This is really hard! As the chords are low and dense, they take so much longer to decay, so my breath is really stretched. The movement to the next chord also has to happen before the next inhalation/exhalation, so there's a really urgency to get to the next chord. It has to be planned carefully, with movement being judged then a quick dash to the next shape. I love this. Perhaps adding awkward shapes to the chords adds another layer of difficulty. And by the way, I love hard.

Chords with version 1: This is more what I had in mind in our earlier email. I thought we could hold the chords but be moving physically to the next chord with my everything except what is sustaining the chord. Ideally I'd be moving to a very different part of the keyboard. Then I have to quickly grab the next chord before being allowed to inhale/exhale. I hope this all makes sense. Have a look at videos and perhaps we can Skype so we can be really clear about what we both mean! [REDACTED]
Kate

FP: That's great! Thank you Kate! Looking forward to seeing the videos! [REDACTED] About the chords, I think I understood what you meant by reading Chords with version 1. But as you wrote we could clarify everything on Skype. Yes, Kumbhaka is really linked to this [REDACTED] And about Chords with version 4, looking forward to seeing how that works! I imagined it was hard and I was afraid it would have been impossible to do it! If next time we use different chords (maybe also chords that move much more widely) the breathing phases might be shaped in a very different way. Also, instead of regulating in. and ex., we could regulate the breathing pauses after inhalation and after exhalation. So the durations of the sounds determine the length of the breathing pauses and inhalation and exhalation are free. Or we could also regulate all of them.Federico

April 7, 2020

FP: Hi Kate, just watched the 'Breathing, Movement, Playing' video. I love the differences you are able to show from version 1 to version 2! The way movement and breathing change from one version to the other is great. It's clear. That's exactly what I was looking for. Looking at it, I think combining the two in one piece might be an interesting option. I really like section 4. I love the couple of breaths you do just after you stopped playing. They really give you the idea of what you went through. I also like a lot the way you're moving from one note to the other due to your need to breathe. What came to my mind now is also using some specific instructions on the way you breathe (for instance using nose in one register and mouth in another, or using some yogic breathing like Ujjayi breath) to see if that affects you differently.

KL: Hi again. I'm so glad it's all coming across through the GoPro shots. It's proving to be way more effective than I thought it would be! I think changes between versions would be a nice way of changing material. There could even be a 'musical' way of doing this. It reminds me of what Holmboe says about Simon Steen-Andersen's music. S-A uses videos and recordings of himself as the material in Run Time Error but then 'peforms' the material using classical form patterns such as retrograde. His simple use of playing the film backwards is an 'accessible and unaminous' form of retrograde, allowing in the viewing audience, rather than been 'clever'. [REDACTED] Perhaps a clear use of the breathing to allow for musical form and clarity. And the link to the yoga article is on facebook. [REDACTED] It's looking at it's effectiveness on cognition but gives an nice account of the breathing. I'm so glad you like 4 - it is hard but that's ok. I think what I enjoy is being able to select dynamics and ranges based on what my breath is doing and when I feel like pushing myself. I feel like using

longer decays sometimes, but when I need to recover I can move up the piano a little and play there. Ujjayi would be great. It's so noisy and would mean I could last longer on the lower chords. Perhaps the open mouth breaths could be the sighing breaths - are they a particulat type in yoga too? And the longer gaps of Kumbhaka could be something I develop over the piece, with their length making my need to breath more desperate at first but then I perhaps settle down and go for longer. Do you prefer the chords to single notes? I like the chords as more of my body is involved. Single notes are too 'easy' to play so won't have as much of an effect on my breathing. Again so glad you like it. Kate

FP: Yes, GoPro is really effective and it's great that it catches everything, breath, movements, body, piano sounds. About single note and chords, I agree with you. I think chords can offer many different possibilities and they can push you much far. What I liked in the beginning about the single notes was the fact that are so easy that my attention as listener moves immediately towards the way you breathe and move, and the way breathing and moving are related to playing. But now that I watched the Chords videos, I think there is no difference in these terms. What I was thinking watching the video "Combinations" was also the fact that if you play a chord, the time each note of the chord takes to decay is different from the others. So instead of matching inhalation (for instance) to the length of the entire chord, we could use the decaying of the single notes inside of the chord to regulate your breathing; for instance you inhale when you play the entire chord, then you exhale when you cannot hear one of the note of the chords anymore, and so on. (maybe with 4-note chords that can become difficult..not sure). I really like the difference between 4 and 3 in "Combinations". And I think with the chords the difference is even more highlighted. What I had in mind initially about the chords was to play the chord and holding the notes of the chords until you get to the next chords (a sort of legato throughout). No silence space in between the chords. So this kind of restraint would force you to use the initial fingering (for instance in the first chord finger 5 for R.H. and finger 1 for the L.F. as written) but then you have to change those fingers to hold the same notes (for the R.H. finger 5 becomes finger 1; and for the L.F. finger 1 becomes 5) so now finger 5 of the r.h. and finger 1 of the l.f. are free to play the other chords while the "old" fingers are holding the previous notes. Hope that's a little bit clearer? It's very interesting what you said about 4, the fact that you select dynamics and ranges based on how your breathing is and on how you want to push. Maybe this could be a solution for another type of thing. For instance you have the same sequence of chords to be repeated for x times. You have to follow that order but then sometimes you can skip one chord depending on how breath is going or how you want to push. [REDACTED] About Ujjayi, that's exactly what I was thinking, the fact that lets you last for longer. There's a yogic breathing where you exhale through the mouth that might be good (although it might be kind of theatrical). It's called Sinhasana. [REDACTED]. Federico

April 9, 2020

KL: Hello! I [REDACTED] I'm loving the ideas and where things are going. I understand the points you've mentioned but it would be good to clarify and

discuss how we could use these ideas. Also, how they relate to the original ideas we had before all this chaos! I'm actually quite busy for the next two days and will be taking Easter Monday off. So Tuesday onwards would be good for me. I just wanted to mention something in relation to the fingering you suggested. I like the idea of changing fingers and is something I'm exploring in other pieces.

[REDACTED] Lion breath - yes it is maybe a bit theatrical but I do like the sound and purpose of this breath. Through the process of the piece, I felt there were so many varieties of breaths being used. All different, all in the moment and all with purpose. I love this. [REDACTED] Kate

April 21, 2020

FP: Hi Kate, thanks for the video. It has been very useful to watch it and to understand the different kinds of possible movements that can be involved.
I wanted to share the sequence of chords I wrote. It's attached. Following your advice I intentionally wrote them in specific registers and to be quite difficult (not sure if all of them are possible). They all aim to stretch fingers, hands, and body movements from one chord to the other. In the PDF you can find the sequence of chords and the versions we discussed in the last weeks. However, I removed version 3 (breathing regulates duration of the chords) as I had the impression that it didn't push some interesting tensions between you, your breathing and playing. As we agreed, chords are written in very specific ranges so in versions 1 and 2, when movement is involved in the regulation, you'd need to move in very specific places. Movements here are quite big, often you need to move from the lowest part of the keyboard to the highest one, and sometimes towards the central register. In version 3 of this PDF attached (duration of chords regulates breathing) you can change register of the chords if you need to recover. I added a new version ('4' in the PDF attached) in case you are willing to try it out. I think this one might be very hard, maybe harder than 3. PS: sorry for the number changes of the versions but as I removed old vers. 3 I had to renumber 3 and 4. Federico

April 25, 2020

KL: Hi Federico, thank you so much for this. These chords are perfect!
I am practising them and looking at how to carry out each situation. I wondered if I should avoid practising too much? So I don't know them too well? As they're awkward, they'll never be totally seamless, but perhaps still searching for the notes will add to the struggle. Or does this not matter? I could experiment with this as I'm playing. I'll hopefully film a version next week. [REDACTED] Thanks again. Kate

April 27, 2020

FP: Hi Kate, that's a very interesting point. Not knowing them too well could be a good solution to add to the struggle. I'm wondering if also changing every time the order of these chords (registers included) could enhance even more this struggle, so you're prevented from getting familiar with the movements you have to do and the sequence of chords you have to play? Perhaps having a set of

different versions of this set of chords in which registers and order of the chords always differ and every time you'd use a different version? [REDACTED] Federico

KL: Hello again, I have done a version and uploaded it. It's just version 1 - could you check the camera angle and let me know what you think? Would you prefer to see more of the keyboard? I wanted to get maximum breath! I can upload the rest if you like it. Also, for each version I randomly generated an order of the numbers. So each one is different. It actually creates some nice moments where the chords are almost the same. Kate

FP: Camera angle is wonderful! Thanks Kate. I can hear well your breathing and see the movements of your whole body. I actually really like the fact that I can't see much of the keyboard as it's like my attention is brought towards the way you breathe and move rather than what you're playing on the keys. Love also the difference between large movements and the smaller movements you make when you stay in the same register. How are you breathing here? Sometimes it reminds me a little bit of ujjayi. And do you think these chords or the body movements that you need to make in order to play them affect somehow your breathing or your breath holding? Federico

KL: I'm glad you like it! I didn't mean to angle the camera so towards my face but actually it's quite interesting for those reasons you mention. I think with version 1, I was doing a small combination of whatever breath I needed. Matching the breath to movement needs careful thought, whichever way around it is! So with version 1, I have to allow the breath to lead, which takes a small moment of articulation in my awareness. It's very Feldenkrais! He refers to this as "differentiation" and is vital for repatterning. Finding each chord effects my breathing- definitely. When breathing regulates (version 1), I have less 'time' to find them as the breath will run out if I take too long. When movement regulates (version 2) getting there too quickly is a danger so I have to take more time. Or if I'm already in the correct register, I have to complete my inhalation or exhalation quickly! Timing these perfectly needs practice- it will eventually become a ballet of breath and movement.
When duration is in charge, I have to strategise a way through. It's hard! Changing the octave and trying to play quietly (with this ruining clarity a lot of the time) effects how I move. I also don't have that time to prepare as I'm low on breath, so I'm snatching and perhaps playing too loudly, therefore jeopardising the next chord! And Version 4 is a bit easier as the movements/exhalations allow me to recover. However I need to be careful I still fit with the movements and not exhale too quickly/ slowly. All the shifts in attention, or the "differentiation" of an action is what it's about for me. To improve the clarity between them, I can start to move with a bit more exaggeration and intent. I will upload the other versions. Thanks for the feedback! Kate

April 28, 2020

FP: Thank you for the comments Kate! I just had a look at what differentiation is. Yes, I think that's the point. Now I'm thinking about it, I'm wondering if alterations in the camera angle would also somehow help to highlight the

changes taking place in your attention and in the different connections throughout the versions. For example in section 3, as your awareness is addressed towards the piano sounds and your breathing, placing the camera where it is possible to hear well both your breathing and the chords, or "seeing" your breathing, like placing the camera on your abdomen, so that while piano sounds decay, the view moves because of the position of the camera. (Not sure if that can work well). I can try something with my phone and give you some feedback about that. [REDACTED]. Federico

April 29, 2020

KATE: Hey Federico. [REDACTED]. I have ordered a chest strap for the Go Pro. I've been meaning to get one for a while so this is a perfect excuse. I'm also looking at attaching the Go Pro it to my shoulder. I would like to attach it to my hip - the chest strap may do this. Lots to try out! I think experimenting with angles is worth doing. I'll keep you posted. Kate

June 9, 2020

FP: Hi Kate. [REDACTED]. Federico

June 10, 2020

KL: Hi Federico! [REDACTED] If we were to tweak the notation even more, it would move it more towards this realm of difficulty and just being possible. But then would this become a different energy? Are you happy with the chords and how they are? I guess they could be "harder", more awkward, or we could add other layers of notation e.g. dynamics, phrasing etc. Is it about being harder or awkward? Is that the physicality we're after? Or is it more minimal; straightforward; "mundane" (in the best possible sense!) I'm happy to leave it if you're happy, as it is your piece. And maybe having a long shot recording would also reveal more. But I want to make sure we have done all we can in this area. We could always tweak a bit more before the premier on 15th July. Have a think and let me know what you think. [REDACTED]
Kate

June 11, 2020

FEDERICO: Hi Kate. [REDACTED]. Yes, we could alter duration and type of chords, and the way you interact with your breathing. I think that might help the listeners to get more into this. Here's some proposals / observations: Section 1 (duration of your inhalation and exhalation regulate moving speed)= In this case breathing is spontaneous and does not involve any conscious manipulation. In relation to this type of breath, I'm thinking now about a sort of meditation exercise in which I adopt a deep and steady breathing but without holding my breath for for too long. What happens if you play the 1st section in a way that inhaling and exhaling are stretched but the the pause "Kumbhaka" between in. and ex., and ex. and in., is short or even absent? As chords are played while you're holding your breath, they would last for a really short amount of time, just for the time you need to change from inhalation and exhalation. This would

maybe limit more the duration of the chords but it would maybe address listeners' attention even more towards what is happening between your breathing and your movements. Section 2 and half of the Section 4 (moving speed regulates breathing): This is more tricky as we discussed a lot about that. I'm wondering if maybe exaggerating even more the moving speed might help. I'm imagining a movement that I make but I'm not aware of it. For instance, just the automatic act of opening a door. When I match my breath to that movement my awareness of that movement completely changes as we also talked about it. I'm wondering if it is possible to almost "memorise" rapid movements between the chords so that they become automatic patterns. By seeing my arms / hands that move rapidly and automatically I have to match my breath to those movements, almost if the movements are separate entities. In this case, maybe chords would sound even more imprecise, they would last for a very short amount of time, and they would not be controlled at all as you don't have the time to prepare them. Also, your breath would sound much more chaotic and fast (In relation to what you were saying about the chords, maybe using harder chords might reveal even more these imprecisions)? 3rd section: I'm honestly happy with that section. I think I could be more precise in terms of notation. For instance, specifying that the beginning of your inhalation / exhalation is matched to the act of playing the chord but then you need to hold your breath rather than match exactly the length of your breathing to the duration of the chords. About chords, if chords are harder, they would push you to loose control (in a good way, in order to reveal the changes that happen between the sections) in certain sections (I'm thinking about section 2 and maybe section 3 and half of section 4 as well)? I'm also wondering if writing a sequence of chords based on a more logical order can be helpful for the listener in order to capture the relationships between chords and how these relationships change in each section (for instance a sequence of chords that follow the chromatic scale or the circle of fifth)? Dynamics: maybe, imposing the same dynamics markings for instance *mf* for the whole piece, and then letting dynamics change because of the task you have to perform might be a good solution? I'm not sure if specifying different dynamics for each section might be worthy, as in certain case you'd be pushed to alter them.
[REDACTED]. I hope that makes sense. Let me know what you think. Federico

June 18, 2020

KL: Federico! [REDACTED] I've also had a careful read through and thought about how these changes could work. I think all of this would definitely be worth trying. I might have a go with the current chord sequence (not mixed up…) and the changes to the sections for now. I really like the changes to section 2 (and 4) and I think this would really highlight some risky areas, plus how tricky it is to do! Being aware of an automatic movement and not change it is something I try to do in yoga and meditation. I think this would contribute some interesting consequences…Point taken about section 3 also! This is a different thing I feel, and perhaps easier? Not sure. I will try it! I think you are right about the chord sequence. If you wrote a fixed sequence, with some sense of progression and deliberate ordering, that is the same every time, this will allow for memorisation and automatic movements to develop over time. It would come predictable and "musical", but then with breathing disruptions around it. In terms of dynamics,

I'm not sure what would add much for now, other than aiming for consistency. As quiet as possible is always a good one but is perhaps too "easy". I also like that dynamics will come out of the breathing and movements. Do you have a new chord sequence in mind? If you wanted to make them harder, perhaps more notes? A few minor 10ths? Always black to white across the span? I could explore some chords and send you anything that may be suitable. But please send me anything you already want to try. Thanks for this! You up for a new version by the 15th July performance? Kate

June 22, 2020

FP: Hi Kate, [REDACTED] I'm definitely up for a new version! Here's the new sequence attached. There's should be more sense of progression in there. The sequence is fixed, you'd read it from left to right; first row, and then second row. There are two sequences in the pdf (chords and the order of the chords are the same in both sequences, what changes is the register). In the 1st sequence, the movements from one register to the other are almost the same as in the sequence written in the previous version. In the 2nd sequence of the document attached, (p. 2), there are just two possible registers (lowest and highest), always alternated. I thought that the 2nd sequence could be helpful to allow memorization and to highlight what differs from one section to another. However, I'm not sure which one could work better. I think the chords are tricky, especially in certain cases. There are minor 10ths and sometimes you have to play 6 notes with one hand. For the chords of the second row, you'd probably need to use the thumb (particularly for right hand chords) in order to play two notes at the same time. In some cases you'd need to play a 10th with a right hand. However, I tried to write them in a way that you could also play other notes with the 1st and 5th fingers inside the 10th so it shouldn't be impossible (I'm not sure though, so please let me know if it shouldn't be like that). Let me know also if they are harder in some ways than the sequence of the recording. And please send me what you have. For the dynamics, I also like the fact that they are a consequence of the breathing and the movements. I think I'd be up for this solution for now. Ah! Do you maybe want to try a version in which the four versions are performed in a reverse order, as we chatted about a few weeks ago? So you'd play Section 4, then Section 3, Section 2, and Section 1? Might be interesting to see if and how the result differs and how the way you breathe, move, and play changes.
Thank you Kate! Federico

June 22, 2020

KL: Hey Federico! [REDACTED] I'm happy to try these new chord sequences and get back to you about them - shall I do the new sections as discussed in your last email but with the new chord sequences? [REDACTED] Kate

June 23, 2020

FP: That's exactly what I had in mind for Section 1 and 2! Thank you Kate. I like the fact that now the difference between the breathing-movements relationship of first two sections and the breathing-chords relationship of the last two

sections is really remarkable. I loved the way you moved in Section 2 and perhaps, the fact that chords are so short in the first two sections might be helpful for a clear understanding of the way these relationships change throughout the sections. Please if you have any feedback about that let me know, particularly in terms of how you experienced breath and movements in this film. About the camera angle, I think it's really good. Seeing your whole body from this perspective allowed me to be more aware of the differences in your movements (the way you stretch and bend the arms, the way you raise and lower your head and your body particularly in Section 3). Do you think to use this camera angle for the 15th? [REDACTED] Yes, you could try to play the new chords sequence with the reverse order of the sections. Federico

July 3, 2020

KL: Hi Federico. [REDACTED] I've been practising a few things this week and wanted to spend some time on your chords before getting back to you. They are great, with the stretches being on the edge of playable. There is a chance I don't quite make these chords - is this ok? Particularly chord no. 10. This 10th in the LH is just beyond my stretch but sounds kind of cool when it's almost. It's a bit messy but the overall shape is there. I will try with the reverse order see how it feels. Shall I just do one ordering of the versions on the day? And I wasn't sure about the 1st or 2nd sequence. Is the 2nd sequence just slightly riskier with the lower range? Would the 2nd sequence involve me changing the octave, and the 1st wouldn't? I guess I would like to see how I feel on the day and choose the sequence then. Is this ok?
I love the changes to sections 1 and 2 - I think 2 works really well. I'll be rather slap dash and pianistic with them if that's ok. The breathing is hard here! But good to do. I'll make sure it's accurate and matched well. I'm still a bit confused about section 4. How do I match exhalation to movement when the movements are in the Kumbhaka? I.e. I inhale whilst the chord decays, then I move to the next chord, then I exhale when I get there. But this isn't matching my movement - it's matching the decay. Sorry if I'm missing the point here. I think now section 2 has changed, section 4 has to change. [REDACTED] Speak soon. Kate

July 6, 2020

FP: Hi Kate. It's absolutely okay that you can't play exactly these chords. That was actually my intent so it's perfectly fine! [REDACTED] About the ordering, yes just do one ordering of the versions on the day. You can freely decide the ordering (if Sections 1-2-3-4 or Sections 4-3-2-1). My only concern for the reverse order (Sections 4-3-2-1) is that you might end up to Section 2 a bit exhausted, so that you can't play sections 2 and 1 as you were in normal conditions. Maybe it could be interesting to see how you actually play Sections 2 and 1 after having played Sections 4 and 3. About the two sequences of the last pdf I sent you, I thought you could change the octave (in sections 3 and 4) in both sequences. Is sequence 2 riskier because overall there are more chords in the lowest register? Or because movements are always very wide? Or both? The reason why I included that sequence is because it involves just one type of movement (in one direction and then in the opposite direction), and two registers (highest and lowest). There's less variety than in Section 1, but I

thought that in this way the changes through the sections could be more evident to the audience (though not completely sure about that). For Section 4, what I was thinking was: inhalation is matched to the decay of chord 1, then exhalation is matched to the movement from chord 1 to chord 2, then inhalation is matched to the decay of chord 2, then exhalation is matched to the movement from chord 2 to chord 3, etc.. Kumbhaka is not really considered in this case (apart when you inhale and you hold your breath until the chord decays). Kumbhaka is considered in Section 3. In Section 3, inhalation and exhalation are matched to the decay of the chords but movements between chords are in Kumbhaka. I hope it's a bit clearer now. [REDACTED] Federico

Aug 16, 2020

KL: Hi there. [REDACTED] I have tried the new score out and it feels good. I'm hearing more and more form/line/organisation each time I do it. The ordering of the movements makes a difference here. I've also got a few new camera angles etc It should look great. I'm looking forward to hearing Moving Objects with the mic setup. I also like the stopwatch idea. I will see how it looks tomorrow with the added pauses. I quite like treating each one manually - i feel it adds something to the flow of the piece but we can see. [REDACTED] Many thanks. Kate

Aug 22, 2020

KL: Hi Federico. Just to let you know I've uploaded section 1 of the moving objects film into our shared google drive folder. More to come soon! Let me know what you think of the feet. We're thinking of using the same 'preparation' shot for each section... sort of daft but might be charming! Also let me know what you think of the sound e.g. breath vs piano. Kate

Aug 24, 2020

FP: [REDACTED] Thanks for sending it. I like the fixed shot and the moving shot together, and also that the moving camera is smaller on the screen. About the feet shot, I think it's really effective. It shifts the attention towards other types of movements that I did not considered before and I like that there's just the feet shot, without other shots on the same screen. It's something very different. About breath sound vs piano sounds, the balance between the two is good. I like that the volume of the blowing sound is a bit lower than the piano sound. It's not too much and you can still hear it well. I wouldn't add more breath sound. Just one thing about the sustain pedal, I'm not sure from the video, but do you think the blowing sound was captured by the sustain pedal or not so much? just to know. About the order of the pages, I think it works well. I like the that the triangles are in the middle and I also like also the transition from the first two figures (p. 3 and p. 4 of the score) to the triangles. I'm not so sure about the all four figures after the 'triangle section' (p. 8, 9, 10, 11 of the score). I believe they are all distinct events, particularly the crox and the curved horizontal line at p. 9. Both different from the triangles and from the first two figures (p.3, and 4). But maybe we could reduce the last four figures (p.8, 9,10,11) from 4 to to 2? I don't know but maybe it could give a stronger sense of

structure, and more balance in terms of duration between Section 1 and Section 2? What do you think?

Aug 26, 2020

FP: Hi Kate, sending you the new version of the score. I re-ordered the sequence of the pages in Section 1 according to what you told me in terms of the similarities and the differences in breathing. In section 2 I changed the colour of the marbles. I used the colors of the marbles you use in the video. I also added the indication for the sustain pedal. Not sure if it might be helpful or if you have other solutions but I downloaded an app for smartphone called 'Multi Countdown Timer'. If you have android you'd find in Play store. Basically you can prepare all the countdowns in advance, you can name them as you wish, set the timing, set the silent alarm (which might last 5 seconds if you don't stop it before) and when the alarm goes off you move to the next countdown. I attached a screenshot so you get an idea of how it looks. Every time the countdown goes off you'd need to press 'play' for the next one. And about this, reflecting on what you said on Friday, I believe having a gap in between the figures is a good idea. The gap as a differentiation for understanding what you'd do next (rather than all figures linked together) completely makes sense and is useful to understand how the different figures affect you differently.

Sep 21, 2020

KL: Hi again. I also realised you asked me about the last 4 pages of movement 1. Sorry for not replying to this. I know what you mean here. The last four pages seem a bit clunky and perhaps too similar to each other? They feel more tiring to carry out, and this isn't just the timing or breathing. There's a difficulty to them that feels hard and (in a good way) annoying. However, there's something quite nice about the imbalance of this. You could perhaps even exaggerate it. I thought about there being a really nice "setting up" in the form of these simple tasks, but then they become more disruptive or hard to maintain. Perhaps playing with the time lengths would help here. The movements that you detect as being harder, or clunky, are actually the ones that could be exposed more. Does this make sense? Kate

Jan 3, 2021

KL: Hi there Federico. [REDACTED] I'm about to start working on Moving Objects, which I think will be more straightforward in terms of what shots to choose. [REDACTED] Speak soon. Kate

Jan 4, 2021

FP: Happy new year Kate! Thank you so much for the extended version of Breathing, Moving, Playing!! [REDACTED] Federico

Jan 5, 2021

KL: Hey Federico. Thank you for your feedback. I'm so pleased you like it. I'm pretty happy with the angles. I was worried the back shot wasn't clear enough, and a bit blurry, but I'm glad you like it. For me this is certainly where I "feel" this piece. And I love the hand shots where I'm gripping or I slightly miss the keys. I really like this extended version. The repetitions push me to my edge, and this is when you get interesting results. If it was fully doable I don't think we would be fully exploring the material. I wonder if you could offer 2 versions to your performer, a bit like Moving Objects and the ordering. You could offer a minimum version and a maximum. This would also allow it to be more flexible when programming. I'm currently uploading Moving Objects 1 into the google drive. I think this has come out really well. The hand shot is great! I'll also start working on Moving Objects 2. I'm really enjoying the editing! I think we're experiencing much more of the piece than we perhaps thought we would. Also, is the sound ok? Moving Objects is pretty loud but I think this creates real drama. And lots of external sounds. Thanks again Federico. Kate

Jan 6, 2021

FP: Hi Kate, How about three versions? [REDACTED] Federico

KL: Excellent. Three version is nice - I like the middle option! Yes the timings work really nicely for Moving Objects. I'm hoping the editing adds to the sense of music and timing, but it's good that you hear it without watching. Still working through 2 and 3 should be pretty straightforward. [REDACTED] Kate

Jan 7, 2021

FP: Sure! Sounds great to me. The editing totally adds sense to the music. What impresses me is how the fast changes between the shots suit this piece. That perhaps wouldn't have worked for Breathing, Moving, Playing. Also, the sudden transitions from one shot to another when you start each task clearly mark the timings. And I like the subtle differences in these. For instance, when you perform the 3 triangles and the zig-zag horizontal shapes the first breath is matched to the GoPro. But that does not occur with the other shapes. Federico

Jan 10, 2021

FP: Yes, Section 2 is intense! Initially I was afraid it could sound too long and disorganised but actually it doesn't. I love that it's far more extreme than Section 1! Great to see how some elements that are not explored in Section 1 emerge here: the object that does not respond to the airflow, you clearing the throat, very loud breaths, very slow breaths, you stretching the fingers. I like also how the random juxtaposition between shapes with two marbles, with three, or four marbles pushes you to behave differently. How was this random order for you? Section 3 is awesome. The situation becomes so tense. I really like the editing. Very good to have a sense of your position on the piano. [REDACTED] Federico

KL: Hi again, [REDACTED]. It's interesting to see the difference between sections 1 and 2. 2 feels more sustained and pressed down, if that makes sense. This comes across in the sound but definitely how it feels. 1 is fluid, responsive, light, and I guess is more about larger shapes. Whereas as 2 is smaller, where tiny millimetres make a difference. The ordering is good. It makes it feel formless and also endless, like there's no knowing when it will stop. I feel this is a good thing and would change the order every time. I LOVE 3. It's so much fun. I love the matched movements of me and Iain at the beginning! So many lovely bonuses throughout. [REDACTED] Speak soon! Kate

Jan 12, 2021

FP: Hi Kate, [REDACTED] Thanks for your comments on the piece and for the trailer. I really like it, honestly! What impress me are the sounding combinations. They work pretty well. I love the last bit from 1:34. It creates a lot of expectation and I believe that's very good for a trailer. I also tried to think about a video in which both pieces are presented separately, one after the other, but I think that would be too explicit, dividing and 'less trailer'. This is good. It's nice that the pieces are kind of mixed together also because they look at very similar things from different views.
[REDACTED] Federico

KL: Awesome! Thanks for this. I'm pretty happy with it and was surprised at what came out of it. Regarding both pieces sounding together, there were a few moments in the editing where the two pieces were completely running together. It sounded amazing! I wonder if the trailer may act as a tiny prompt for imagination, then the two pieces are experienced as separate but with knowledge of the other. If that makes any sense! It's all a bit phenomenological...[REDACTED] Kundalini is awesome, and I'm finding so many links to my research. I'm looking into Stephen Kosslyn's research into The Mind's eye using the Global Workspace theory. This is a way of analysing consciousness, and is mind-blowing. The senses seem to be a huge part of this also, which is very Feldenkrais. There is so much overlap and I feel there needs to be more research in Kundalini. The repetition of actions is fascinating - there's a new piece in there for sure. But I wonder how to create that edge, rather than boredom. Repeating actions are not boring in Kundalini, but in music, say with Satie or Feldman, it perhaps is? I think the edge of physical repetition and mental focus is a whole different aspect to repetition. I would love to explore this more through collaboration. Kate

FP: Great, thank you Kate! [REDACTED] Federico

A.2 Redacted Transcript of Email Correspondence between Hyeyoung Kim and Federico Pozzer

Date: Feb 28, 2021

HK: Hi Federico, I recorded for a demo version. And i need your direction (?) section 1-1. I breathed with my nose, but we can't hear the breathing sound. Do you want "breathing" to hear the wind sound? If I breathe with the mouth, we can hear the sound of the mouth. So.. what is the sound do you want exactly? section 1-2
I set up a random series, for a demo version. Is this the right way to do it? Is it to set the same note length? I just added the notes based on my breathing. And overall,
I did what I understood, but I'm not sure if it's accurate. I've done this for now like this, but I want you to tell me more details, I'll fix it!

Mar 2, 2021

FP: Hi Hyeyoung, thanks a lot for the recordings and for your feedback! You're right. For sections 1–1 if breathing were audible would be much better. If you can do it through the mouth would be perfect. In terms of singing, what I had in mind is to repeat the same sequence of notes (or you may think of it as a melody) at each breath of each section. For instance, let's say I choose the sequence C-C#-G-A (where the duration of the notes can be different between each other. For example C is short, C# is long, G is very short etc.). Instead of using different single sounds at each breath, you'd repeat always the same sequence of sounds at each breath. In section 1 the duration of your calm and long breath determines the duration of the whole sequence. So you sing the whole sequence, then you inhale, then you sing again the same sequence, then you inhale etc. In Section 2 there will be 6 repetitions of the same sequence. The way you interrupted the sounds according to the timings in Section 2–2 was great! But instead of using single sounds, we could try with the sequence. In this case, the sequence might be suddenly interrupted according to those timings. For instance, in the the first exhalation (7 secs), you might sing only the first two-three notes of a possible series, in the second repetition you might sing only the first note because the exhalation timing is 2 secs, etc. I hope it's a bit clearer now. Overall, you'd use the same sequence at each breath and after you've inhaled, you repeat the same sequence, with same durations, dynamics, and pitches. Changes in dynamics and timings may occur only as consequences of the instructions on your breath. Thanks again Hyeyoung. [REDACTED]. Federico

Mar 6, 2021

HK: This is great, thank you so much! [REDACTED]. Hyeyoung

FP: No worries Hyeyoung! [REDACTED] Best wishes, Federico

Mar 8, 2021

HK: Hi, I did it again. I hope i understood rightly. It's also demo version. I chose A-D-G#-F. And if it's correct, I will record section 1 and 2 again, and I will do section 3 and 4 !

FP: Thank you so much for this! That's great! It's exactly what I had in mind :) I like the fact that I can hear your breathing really clearly. It was very interesting to hear the differences in terms of singing between 1-2 and 2-2, and also how the time limits in 2-2 shape the duration and the dynamics of your breath and voice, and the repetitions of the sequence within the same breath. Within my work I'm very interested in hearing the performer's perspective so please let me know if you have any kind of feedback on these two sections, perhaps on the way you experienced the differences in terms of breathing and voice between Section 1 and 2, or how in Section 1 you experienced your breathing shaping the durations of the sounds, rather than the opposite. Thanks again, Federico

Mar 10, 2021

HK: Hi Federico [REDACTED] I am so happy to hear that it is what you want. Honestly, there was nothing difficult in section 1 and 2. Just in the part where I set the note, which one would be effective and how long should I set the beat of each note to fit my breathing well? I thought about this. Oh! And the section 2-2 where you inhale for 3 seconds and exhale for 17 seconds, it wasn't easy. [REDACTED]

FP: Hi Hyeyoung, [REDACTED]. I'm really curious to see how sections 3 and 4 would sound [REDACTED] Federico

Mar 18, 2021

HK: Hi there, Finally, I did it. Sorry for late. Im not sure it is what you are looking for.
Specifically, section 3-2 was difficult for me. This is demo version too! For Section 3, I thought something funny. Section 4-1 is running. And section 4-2 jack is jumping jacks .

Mar 20, 2021

FP: Hi Hyeyoung, thanks a lot for this. About sections 3-1 and 3-2, I find very interesting that you thought about something funny. I can see that this had an impact on your breathing and particular in singing. I'm maybe wondering if that's too much as an impact (I refer to your laughing and to the repeated short repeated breaths mostly). I'm wondering if it might be more subtle, more as possible changes in durations and dynamics, rather than something explicit like laughlin. Perhaps I'm thinking now about some external device like a silent movie to make you stop thinking about your breath while you're trying to breathe and sing normally? Maybe I could edit a short video of two minutes that include parts from films that might divert your attention from breathing / singing. I guess

something that could surprise you and you don't expect might work better. Do you think that might work and would you be up for it? Section 4-1 is nice. I can clearly hear the change in your breath, from the first 'regular' breathing to the altered breath. I'm wondering if we'd perhaps have a version of 4-1 in which it is possible to hear a steady transition from regular to alter. For example, starting from a regular breath and then start running or doing jumping jacks but without synchronising movements and breathing. Just waiting for the regular breath to become altered because of the physical exercise instead of immediately alter it because you're doing the physical exercise. About Section 4-2, it's great to hear how this affected your singing. However, I'm not sure how much of this is a consequence of your jumps or of the altered breathing? Also, section 4-2 would ask you to start singing without doing the physical exercise because your breathing should already be altered by what you have done in section 4-1. In section 4-2 the idea would be to start the physical exercise only if you notice that your breathing has come back to normal. Hope this makes sense. And again, many thanks for this. [REDACTED]. Federico.

Mar 22, 2021

HK: Thanks for the feedback! Section 3, Yes. If you can edit a video, I can sing more easily! Section 4-1,2, got it! I will wait your short video for section 3 and I will re-record it. [REDACTED]

Mar 25, 2021

FP: Hi Hyeyoung, sorry for my late reply. I was just considering a few options for the video. The video is attached. It lasts 2 minutes and 10 seconds so you'd be able to perform the whole section 3 while watching it. Perhaps it would be better if you don't watch it before the performance / recording. I think if you watch it for the first time during the recording it could produce (hopefully) a greater "surprising effect" and will push you to divert your attention away from breathing / singing more easily (not sure though!) [REDACTED] Very curious to see if it'll work! Thank you, Federico

Mar 26, 2021

HK: Hi, I did. But section 3, I'm not sure. I did what I understood. [REDACTED]. Hyeyoung

Mar 27, 2021

FP: Hello! Many thanks for the recordings! Section 4 is good. I was expecting a very similar type of result. How was that? Did you run or did you do jumping jacks while you're doing 4-1? I guess you also started running (or jumping jacks, not sure!) about 1:36 of the audio recording? Anyway I like a lot. I like how the altered breath shapes your singing, and the difference between the singing which is affected by the previous exercise and the singing at 1:36 that I imagine is affected in real time by the physical exercises (it seems jumping but I'm not sure?). I'm really curious about section 3. The aim of the video was to divert your attention away from breathing and because of that I was expecting some

indeterminate changes in your breathing. Indeed, I can hear some sorts of changes, for instance differences between the breaths and differences between the sequences of notes. There are more pauses between the breaths, and dynamics are softer, and there are also changes in terms of timings. It seems that your singing is sometimes "uncontrolled": dynamics, the airy sounds of your voice and the short pauses in between the single notes. I like this kind of result and I'm curious to hear from you if this is a consequence of you watching the video. Do you think that watching the video helped you to forget about your breath and your singing? Also, I was wondering if you think that something else or some other types of videos could even enhance this "involuntary breath / singing"? [REDACTED]. Federico

HK: Section 4, I jumped. And 1:36, I started to run because my breath returned to normal. Section 3. I felt there was a contradiction in your directions. When we generally breathe, I think we do not perceive breathing. But you'd like to hear the sound of breath. Therefore, if I unconsciously try not to focus on breathing while watching the video, the sound of breathing would not have been recorded. The video I sent you was recorded twice by me. At first, I focused on the video and recorded it, and I couldn't hear any breathing sound from the result. So secondly, I watched the video again and recorded it so that I could hear the breath you wanted. In fact, I think this result itself is not a natural result. If you want something really natural, you won't hear the breath, especially for section 3. And I'm afraid the video you sent me is weak in terms of producing changes in breathing. It would be nice to have a video with bigger changes between the shots. [REDACTED]. Hyeyoung.

Mar 28, 2021

FP: Hi, Thanks for the comments. About section 3, what you say makes sense. However, I'm thinking that sometimes when we breathe in an involuntary way, really soft sounds like exhaling rapidly from the nose might be heard (or any other kinds of involuntary sounds tied to breathing). I'm not saying that they should happen but I'm wondering if we could increase the possibility of hearing them by placing yourself closer to the mic and increasing the microphone sensitivity. Do you think that could work?

Mar 29, 2021

HK: Hi, Thank you! and I unserstand it. [REDACTED]

FP: Hi Hyeyoung, here's the new silent video. I tried to include more changes between the clips. It lasts 2 minutes and 8 seconds in total, and in this case I combined clips from varying movies and videos from YouTube. Hope this will work better! As with the other video, I think it would be better if you watch it for the first time directly when you'll record. It might divert your attention away from breathing / singing more easily. Thanks, Federico.

Mar 30, 2021

HK: Hi Federico, Interesting! I like the video. And I recorded it at once. Very close to the mic. I hope it's what you're looking for!

Mar 31, 2021

FP: Thank you for the recording and for the picture as well! It was useful to see your position and the mic. I really like this version of section 3. It seems to me that the way vowels and pitches are articulated has changed significantly from the other sections. And although the volume in 3-1 is low I can clearly hear some breathing sounds emerging. I'm glad you liked the video. Do you think it worked? I mean, do you think that the video brought you to divert your attention away from breathing / singing? Was it easier to forget about your breath or sining? [REDACTED] Thanks again! FP

HK: Hi, Yes, That's interesting! The video helped me a lot. For breathing I think I was able to forget about it. For the singing it was rather hard but still, I tried to do my best to focus on the video. [REDACTED] Hyeyoung.

A.3 Redacted Transcript of Email Correspondence between Anna Cavedon and Federico Pozzer

Date: June 28, 2020

FP: Hi Anna, hope you're fine. In case you have any feedback about your experience of the two pieces we rehearsed a few days ago, I'd be very happy to hear your perspective on these. Many thanks. Federico

June 29, 2020

AC: Hi Fede. Sure. Here it is:
Couples or Groups: The first thing I noticed while following the non-wind players sounds was the difficulty in controlling the amount of air with my instrument. The melodica and the fact that I had to follow the other players did not allow me to expel the whole amount of air during the exhalation and when I had to play the second sound I still had air within my body. For this reason, throughout the piece I started increasing the intensity and the amount of air I was breathing out. Consequently, the dynamics of the instrument considerably changed. [REDACTED] Couples II *Couples II* was very stimulating to me for several reasons. The first one is about the reciprocal awareness of who should regulate the breathing. For me, as a breather, it was interesting to observe how the players behave differently with me. Some of them were more emphatic and completely changed the length of their sounds as soon as I was in front of them. Others had a more challenging approach, pushing me to breathe in more unnatural conditions, holding my breath, contracting my breath, breathing faster,

and making very short and sudden breaths... It was stimulating because I was led to notice the 'activation point' of the instrument, namely what I had to look at in order to know when inhaling or exhaling. For instance, for the saxophonists I was looking at their hands. Another interesting experience was that holding my breath changed form at the exact moment I thought I had to start inhaling or exhaling. That was very challenging and intense. Sometimes I was pushed to look at their eyes. After a while, I felt a really strong connection with the player. [REDACTED]. Anna

A.4 Redacted Transcript of Email Correspondence between Federico Zaltron and Federico Pozzer

Date: June 30, 2020

FZ: Hi Fede, here's a few comments about *Couples or Group*s and *Couples II*. Every time I use the violin as a regulator I am wondering how I usually breathe. I never explored in depth this approach but I don't think I breathe normally. Following the breathing to regulate my playing and not the opposite seems to be unfamiliar to me. Therefore, when I follow my breath I always have a strange feeling. It's a reflection that I'm doing now while writing to you. I should film myself and understand how I breathe while playing. I found difficult lead other instruments with my breathing, specifically instruments whose mechanism is not really clear to me. For example, I was afraid I was challenging the trumpet player too much. I really liked the version of *Couples II* when we tried short / long sounds to experience the differences between the two situations even more. If something is not clear please let me know. I'd be happy to provide you with further feedback. Federico

FP: Hi Fede, Thanks. Very useful points, particularly when you talk about the relationship between the other player and yourself and how you changed approach because of the other player. I also wanted to ask you, as you were one of the breathers in *Couples II*, how was the relationship with the other performer in that case? Was it different compared for example to *Couples or Groups*? Thanks again, Federico.

FZ: In *Couples II* I was constantly looking for a compromise with the other player. I always felt there was a sort of mutual agreement, particularly when I had to match my breathing to those wind instruments whose mechanism is not really clear to me. It was very interesting when the performer played very short sounds and then very long sounds. My breath continuously changed. It stretched, contracted and I was not really aware of that. I was just responding to the player. Hope this helps. Thank you! Federico