Make it Happen

1 Volume, 1 DVD
2 printed scores

by

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Abstract

Works for percussion are often neglected and underperformed because of instrumental unavailability, logistic limitations and notation issues. This research addresses these problems by delivering eight self-contained, adaptable and transportable multipercussion-based projects. The first three works solve these problems by using found objects, body percussion and imaginary instruments, revolving around the concept of interchangeable, if not transportable, instrumentation. The following two projects look at the snare drum as a harmonious box (a resonant body), augmenting its timbre with extended techniques - such as mallets and hybrid hand/stick techniques- and live electronics. The audio processing starts with short and crisp sounds and looks at ways to generate pitch via resonators, and how to control length with reverb. The remaining three projects focus exclusively on MIDI percussion, filling a wide gap in the repertory. These are the first works composed with this instrument in mind and not as a transcription or as a substitute for more common instruments. They cover, respectively, the areas of sampling, automated pitch randomizers and live MIDI scaling and shaping. Furthermore, the max4live MIDI patches serve as a link between the pitched and unpitched percussion, empowering the drum kit with harmonic and melodic controls. All the projects are designed to solve logistic problems and are developed as concerts-in-a-suitcase, a concept which is at the basis of my research Make it Happen. All the scores and types of notation put the performer's needs first; this is why I produced performance editions, sometimes to the disadvantage of the original composition. The graphic, metronomic and partially composed scores included in this commentary, are all drawn together by controlled improvisation. As I was constantly performing and practicing on new instruments, without an established performance practice, I used controlled improvisation to create solid structural skeletons that provide percussionists with versatile performance solutions. The commentary outlines my roles within each project and contextualises the works within the repertory. The conventional, graphic and timed scores designed in the process, have created a body of work that, by granting considerable freedom to the performer, can generate a vast repertoire of diverse realisations.

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Acknowledgements

These three years have given me a priceless musical and personal growth and allowed me to meet outstanding musicians, most of whom became - and currently are - great friends. I would like to express my gratitude to Dr John Stringer for his guidance and support and also to thank all the other members of staff who made an effort to come to the performances, in and out of York.

Special thanks to Dr Radoslaw Rudnicki, whose continuous and competent advice accompanied me throughout many adventures and countless performances. Among the other composers I had the pleasure to work with, I would like to thank Kelvin Thomson, François Sarhan, Lourdes Saraiva and Zezo Olimpio. A particular mention goes to David Ibbett, who created patches that helped me put my ideas into practice, and to Martin Klang of the *London Music Hackspace*, with whom I built lots of interesting instruments. Among those I had the honour to perform with, I would like to thank Danae Eleni, who has also taken the time to proofread this document, Tom Jackson, for his constructive remarks and all the collaborators in Darmstadt, Aldeburgh and at the *Ensemble Moderne Akademie*.

Love to my parents, Mirna Furlan and Pietro Bertelli, for their long distance support, and to Oriana Lauria, who stood constantly by my side, correcting my horrible prepositions and coping with me since the very beginning of the London experience.

Author's Declaration

I declare that this dissertation is my own, unaided work. It is being submitted for the degree of PhD at the University of York. This writing has not been presented elsewhere or used for other purposes.

Chapter 1

Introduction

This research aims to contribute to a 'specifically performer-oriented discourse on live music-making' (Doğantan-Dack, 2012: 34). As argued by Doğantan-Dack, 'it is sometimes asserted that a live performance constitutes research and therefore does not require additional reflective material to declare or defend its research status' (Doğantan-Dack, 2012: 39). However, as she continues, not all performers are *ipso facto* researchers - in order to become one, he/she has to be able to present and distribute knowledge so that others can build upon it. Following this reasoning, I included reflections upon the material, assessing it in the light of concerts, rationalising my own experiences on stage and all the details surrounding the performance.

Make it Happen is the motto that characterizes my career as a percussionist. Since the early steps in the world of professional percussion, I faced awkward logistic situations that impeded a smooth concert organisation or even simple practice. Concert managers would not cover the costs of van hire or extra helpers, and instruments had often to be exchanged at the last minute, on the site of the concert. The different size of the substitute instruments, with their inconsistent relative pitch and dynamic response, made it very difficult to realize works accurately. Lack of space has also been a recurrent problem; percussionists cannot practice in common rooms or dorms, nor they can transport their instruments very easily; even while writing my PhD applications, my choices were considerably narrowed by the instrumental availability and the dimensions of the practice rooms offered by the various departments.

Make it Happen proposes practical solutions in aid to the artistic creativity within the percussion repertoire and against logistic limitations. I focussed my attention on both acoustic and electronic instruments, providing an array of solutions with specific scores, based on controlled improvisation.

This research has a twofold goal:

1. Practice and composition of pieces for open instrumentation, based on different types of controlled improvisation.

2. Extension of the sound palette; I tried to get the most diverse sounds out of the smallest instruments and digital percussion, by means of live electronics and extended techniques.

I used controlled improvisation for the first time on *Kp1*, for kitchenware and live electronics, as described on Chapter 2. I grew fond of this style after encountering similar solutions in scores by composers like John Cage and Bruno Maderna, as well as some more contemporary ones, like Michael Parsons, Gerhard Staebler and Makoto Nomura.

I had the pleasure to study John Cage's repertory in depth during the preparation for an Italian tour, on the occasion of the 100th anniversary of his birthday. The score of *But what about the noise of crumpling paper* (Cage, 1985) includes dots and plus signs to indicate rests and combined sounds, leaving great freedom to the performer. The percussionists are requested to produce noise with water and paper, trying to imitate elements of nature (thunder, fire, waterfalls, etc.).

Over forty years earlier, Cage used a rather strict system of unconventional notation. In 1935, his *Quartet* (Cage, 1977) used crotchets, quavers and similar within a fixed grid. Despite the strictness of the notation, Cage left the performer relatively free to select his/her instruments. This timbral freedom, within a fully composed score, is shared by Xenakis in his *Psappha* (Xenakis, 1976). Xenakis used a similar grid to house dots and accents, providing an interesting guide for another piece based on controlled improvisation. The need to transcribe Xenakis' score arose almost immediately, after experiencing delays in practice due to reading and interpreting difficulties that the original score presented. As described on Section 5.1.1, I created an accurate transcription based on the layout of the MIDI drum kit I was using, with the intention of performing the piece exactly as written. The initial performance, rather dry and lacking the theatrical physicality of the original acoustic version, led to radical modifications. After introducing a backing track and expanding the pool of samples, I started using the score as a guide for orchestration and rhythmic density, taking a definite step away from Xenakis' original work. *Psappha, a personal take* was the first digital piece I created, using the language of controlled improvisation.

The works of John Cage had a great influence on the type of scores I created; the timed

Powerpoint score of *Kp1*, and the *Metronomo Vivo*[1] of *Drumactica* are based on chronometric scores which draw inspiration from Cage's *One 4* (1990). In this piece, part of the collection named *number pieces* by James Pritchett, the two hands perform different actions on instruments of choice, within time brackets. In my score, the slides include a mixture of conventional and graphic indications, following one another according to a predetermined timeframe.

Besides these compositions with actions happening at specific times, I was also interested in scores which specified the duration of the actions, without strict control of their placement within time or rhythm. This was the case of Gerhard Staebler's *FallZeit* (Staebler, 1997), described on page 21. Besides using kitchenware (breakfast bowls, spoons) and a variety of seeds, Staebler adds the angles of entry and exit of the spoon, causing the seeds to fall from bowl to bowl at different speeds. I decided to provide an alternative to this chronometric guide by creating the *Metronomo Vivo* (see page 56), a mixture of descriptive voice and normal metronome, to be heard by the performer only. Tested on Maderna's *Serenata per un satellite*, which I performed with a rich backing track with superimposed percussion instruments, the *Metronomo Vivo* became an essential part of *Drumactica*.

Eventually, I came across the work of Japanese composer Makoto Nomura and his own version of controlled improvisation in *No Notes.* Divided into five movements, the score indicates time signatures and dynamics, whether to play seriously or comically, whether to strike the instruments or to wave in the air, or whether to play an instrument or conduct the audience.[2]

The collaboration with Makoto and his *I-Picnic* ensemble, with which we ran workshops in Italy, served as an act of personal psychological liberation. For the first time I collaborated with an established composer who, with a classical background, embraced controlled improvisation and successfully created his own repertory, presenting me with a successful path to draw inspiration upon. On similar terms, the collaboration with Nicola Cisternino and the contact with his *Graffiti Sonori* (Cisternino, 1997) enticed me with the possibility of sharing the score with the audience, as a work of art. Cisternino's scores are extraordinary paintings and drawings, to be shared with the audience as part of the performance experience. I focussed on *Do'Tsoh* (2003), a rite of purification for six percussionists/shamans, whose score is drawn as an elaborate circle whose thickness instructs the six performers to produce various sounds on ocean drums. I immediately looked for artists whose visual work could be used as a score and become an integral part of

[1] Please refer to 5.2.2

[2] Performance and workshop with Makoto Nomura's ensemble *I-PicNic* on September 29th 2009 at Istituto Vescovile *Pio X* in Treviso, Italy.

the performance, once shared with the audience. The first great opportunity came with the collaboration with the *Asolo International Art Film Festival* (Asolo, Italy). *The Asolo Thing*, designed in collaboration with Dr Radoslaw Rudnicki and Dr Matt Postle, is a full production based on the relationship between music and video. In this commentary, I describe *V-eSnare*, a solo snare drum and live electronics work I created using Kim Shon's movie *Hemorrhage* (on page 44) as a score. I created a structure for improvisation that could work, potentially, with any other instrument, by key-framing events, recording, processing and playing back musical material within a predetermined sequence.

All of the pieces mentioned include, in different forms, elements of controlled improvisation; I used this technique because it proved to be the best approach to the new instruments I was using. These particular percussion instruments were slightly different at every performance and writing a detailed score would have never been enough as it would have ignored the timbral nuances that appeared in one concert, but not in the following one. I require the performer to approach the instrument, cognizant of his/her musical background. The performance is successful only if, at its base, one puts curiosity and an ability to cope with unexpected results. An instrument that breaks, has more or less resonance, or a different pitch than expected, must be turned to the performer's advantage, and re-interpreted as a timbre that allows for the improvisation to flow without obstacles. Furthermore, these pieces could not be composed with pre-conceived techniques of composition, belonging to similar instrument or different repertories; the hybrid drum kit of *Drumactica* and *So far niente* is not a drum kit, neither it is a synthesizer, nor a keyboard. The controlled improvisation allowed for new ideas to flow from the various performances, providing different results. The scores I include here must be used as guides, designed in retrospect, once I understood the general behaviour of the instrumentation. A performer must approach them as maps which describe structure and timbral intention, but he/she must be able to override certain indications in order not to compromise the situation of a specific performance.

The second goal of *Make it Happen* is the exploration of small percussion instruments, intended for the expansion of the sound palette, despite the restrictions on instrumentation. This investigation started from the percussionist's own body, by looking at body percussion. This genre, based on the most portable instrument of all, mixes singing, beatboxing, choreology and music theatre, with its own independent repertory, ranging from Contemporary Classical music to the ethnic roots of many populations all around the world.

Western composers have experimented with body percussion since 1972, with the milestone of

Steve Reich's *Clapping Music* (Reich, 1980). Composed for duo, it revolves around the African *bell pattern* in 12/8, repeated in two loops, one steady and one subject to a one-quaver shift every given number of repetitions.[3] Globokar follows closely with his *Toucher* (Globokar, 1973), in which one is to choose instruments that resemble the tone of one's voice, when pronouncing certain onomatopoeic French phonemes. As the repertory expanded, the figure of the percussionist tended towards that of an all-round performer, able to approach acting and singing as part of everyday performance practice.

Drum kit patterns were transposed onto the percussionist's body, as part of William Schinstine's *Scherzo without instruments* (Schinstine, 1978), for quartet of body percussionists; but it is really Georges Aperghis who merged the world of percussion with that of music theatre. *Le corps à corps* (Aperghis, 1978) was scored for a speaking percussionist with a zarb, used to narrate a head to head duel between F1 drivers. The phonemes which appeared in Globokar's scores are here expanded to include entire words, sometimes whole sentences, with the possibility of translation into the audience's language, in order to ease the delivery of the message.[4] Body-produced sounds appear in Aperghis' work the following year, on *Les sept crimes de l'amour* (Aperghis, 1979), where, during the *Séquence III*, the percussionist plays the singer's bare feet.[5]

The concept of concerti-in-a-suitcase reaches its apex in *Home Work 2* and *The Arrival of the Beatbox*, described in Chapter 3. In these pieces, I started using imaginary instruments, designing a unique multi-percussion set-up, amplified by light and shadow play, as described on page 33.

> The preponderance of compositions emphasizing gestures have led to a sub-genre of 'theatrical percussion' capitalising on the tight relationship between gestures, music for percussion, and perception (due to the large amount of physical motion required to play such instruments, music for percussion is a particularly fertile ground for exploring such connections) (Schutz and Manning, 2012).

Early traces of this concept can be found, once again, in Aperghis' work. His *Graffitis* (Aperghis, 1980) introduced playing in the air; empty-headed notes are homorhythmic with the voice and require the percussionist to pretend to strike the instruments, with partial movements.[6] Per Nørgård anticipated this very technique in his *Waves* (Nørgård, 1969), where the percussionist

[3] The composition takes a step from Reich earlier gradual phasing, which appeared in previous pieces such as *Piano Phase,* embracing this rigid and metered technique.

[4] During Aperghis' seminar in July 2010 (*45th Internationale Ferienkurse für Neue Musik*), the composer expressed his preference for the intelligible words to be translated into the audience's language. That very seminar included versions in German, English and two different Japanese dialects.

[5] 'Le percussionist jous sur la piante des pieds de la chanteuse' (Aperghis, 1979: performance directions).

[6] Much in the way of the middle section of *Kp1*.

is to start the 'wave'[7] in the air, approaching the instrument with the softest possible dynamic.[8]

As the years went by, the repertory of music theatre for percussion started including plots with more and more intelligible contents. The percussionist's job was once again re-defined, to include storytelling. The plots are rarely linear and still only partially understandable, but it is this characteristic that leaves the pieces open to interpretation. For example, *Les Guetteurs de Sons* (Aperghis, 1981) infers the narration of a life cycle; in the words of percussionist Gaston Sylvester, 'birth, adulthood, old age and death compared through interrogations, questions and answers', is just one among many. The performers explore the instruments - floor toms and kick drums - whilst fast forwarding through their life. They begin, as children, making sound by mistake, with no clear connection between action and reaction; they gather all information and become virtuosi throughout adulthood, to run out of energy towards the end of their lives. It is the mixture of hinted words and non verbal communication, which conveys the whole story through percussion music.

Among the rare works with linear plot, Frederic Rzewski's Homeric hymn *To the earth* (Rzewski, 1985) includes 'words [which] are spoken more or less together with the music' (Rzewski, 1985: performance directions). Still far from Sarhan's strictly notated voice, this piece includes the relative pitch alteration of the voice, as the percussionist is encouraged to copy the themes played on flower pots.

Body percussion is not only present in the Contemporary Classical repertoire, but its roots grow deep in the past of many cultures around the world. In particular, the folk body percussion tradition has played a fundamental part in developing techniques and a repertory that have eventually inspired the composers just described.

Among many contemporary artists, body musician Keith Terry is a fundamental figure who best represents the present state of body percussion.[9] As a performance artist, Terry blends in his style different traditions, such as Japanese Taiko Drumming, Balinese Gamelan, North American Rhythm-tap, Ethiopian armpit music and hambone.[10] Terry's rather unique style is

[7] A fast sequence of four repeated notes. Accents gradually appear from left to right, fading into each other, thus generating waves.

[8] It is interesting to notice how this technique has been transferred to the timpani roll, which can start in the air to mask the attack: 'in the way of cello players who start their vibrato before their bow stroke' - from a Facebook conversation with James Deitz, TA at the University of Miami in Coral Gables, FL. Deitz is a timpani specialist, studied with Don Liuzzi of the Philadelphia Orchestra and Robert van Sice with the Capetown Symphony. (Deitz, 2011)

[9] When, in 1979, he started displacing drum patterns onto his body, he also managed to create something that was 'totally portable, acoustic and self contained' (Terry, 1984). He was inspired by cultures where dance and music were connected and seen as an inseparable unity, exactly as for a body musician, who is the music himself.

[10] Originating in West Africa, the hambone was used as an alternative to drumming by Colonial Slaves.

a strong representative of the widespread desire to convey sound with one's body. For dancers, performers and composers alike, this is probably the cause that has inspired the creation of the first electronic drum suits,[11] soon followed by more advanced motion tracking devices.

The technological advancements that flourished throughout the 80s broadened the possibilities of electronic percussion and deeply influenced body music. Whilst prototypes of electronic drum kits can be found as early as 1975, in Kraftwerk *Radioactivity*[12] (*Kraftwerk*, YouTube, accessed 2 May 2011), digital drum kit development flourished after 1983, when the MIDI language was invented. The first recorded drum kit suit dates back to 1985 when Tait McRorie '[...] first applied the electronic sensors to shoes and chest in 1985, with hockey tape' (McRorie, e-mail, 2011).[13] McRorie's idea of a one-man-band involved 'no machines, no tapes, no sequencers, totally live music' (*McRorie* website, accessed 1 May 2011). Though I cannot say I share much of McRorie's aesthetics, I was fascinated by the way in which he managed to expand even further the possibilities of the solo percussionist. He literally dressed up in his instruments and designed devices to control all the elements of a rock band, including keyboards, guitars and drums. This eclectic view inspired my design of the hybrid drum kit, the instrument used to create both *Drumactica* and *So far niente,* which married, for the first time in a MIDI drum kit, the world of pitched and unpitched percussion.

The history of electronic percussion continues with Laurie Anderson and the sensors hidden under her costume in *Smoke Years* (1986), closely followed by Mick Fleetwood of *Fleetwood Mac*, though it had already reached a turning point, in 1981, with Alvin Lucier. Lucier's early experiment, *Music for Pure Waves, Bass Drums and Acoustic Pendulums,* connected the performer to a robotic multi-percussion setup, inspiring the design Biomuse (1990) by Benjamin Knapp and Hugh Lusted. This device brought biomusic into the equation, especially thanks to the trio *Sensorband,* who brought this and other similar instruments into the world of performance. In 1996, Wayne Siegel's wireless Digital Dance System was designed and created at the Danish Institute of Electroacoustic Music (DIEM), in collaboration with the Aarus School of Enginneering (Siegel, 1998: 29-43). This interactive instrument puts the performer in control, whilst allowing for the

[11] Men's and women's dresses augmented with sensors, usually piezo, and transformed into wearable drum kits. The paragraph that follows describes the research in more detail.

[12] A tabletop drum kit-looking device is used in connection with two wired sticks, to produce a phasing effect.

[13] His set-up consists of two Starlab ZB6 controllers, held on his hips - a cross-breed between a piano and a guitar. The keys are chromatically aligned and offset by a perfect fourth: chord progressions are made very easy this way, since the same hand position can be held whilst moving around the keyboard. The drums are metal encapsulated piezo sensors (four in each shoe and five on the chest), backed up by shoulder-mounted tilt sensors and G-force armband measurers, mapped to the effect parameters. A pitch-to-MIDI converter, linked to other instrument banks - mainly reeds - completes the set-up used for a variety of original compositions and covers, from Elvis to tracks by AC/DC's (*McRorie* website, accessed 1 May 2011).

music to influence him/her within a rule-based composition environment. Like McRorie, Siegel is not happy with straightforward triggering; instead, he wants the performer to be able to control the music, which allows for a very precise synchronisation and creates space for interpretation and improvisation. The performer is not restricted by an automated and unalterable sequence of events, but he can control them in full and, like the stage resonance in *Home Work II*, he can be inspired by the musical material and take extemporaneous decisions.[14]

Siegel points out how the collaborative triangle of interactions between composer, choreographer and dancer, is successful when each of them finds his own space, remains assertive in the correct measure and allows for enough autonomy to the other two parties. Siegel's approach, as in *Kp1*, was rehearsal-based, with the perfect compromise between performer and technology as the main aim, so that the dancer was able to act naturally, not constrained by technical limitations. As far as drum suits are concerned, their technical advancement has progressed in parallel with sensors and computer technology. Better and more advanced sensors allow for the creation of smaller and more durable devices with shorter latency. I had the chance to build a personalised version of an electronic drum suit, using an old MIDI drum-brain connected to foam-encased piezo sensors.[15] The arduino-based *LilyPad* project imposes, together with the e-textiles, a new standard in portability, durability and playability of the drum suits. On the other hand, very simple materials and circuitry can be assembled to create innovative instruments such as Marco Donnarumma's *X Sense* (*Donnarumma* website, accessed 9 September 2012). With a very cheap, open source and easy-to-build[16] device, Mr Donnarumma offered biomusic possibilities to the general public. Unfortunately, the complete absence of a repertoire and appropriate documentation makes it very difficult to appreciate how fast or how wide this new type of instrument is developing. Far too often, projects like *ElectroAxe* (*Werthein* website, accessed 28 April 2011) are brought forward as revolutionary while, in fact, they are just reworking much older inventions.

The projects described in the second part of this commentary, demonstrate how technology has broadened the possibilities of a performance with percussion instruments. Basic techniques, like sampling and MIDI-mapping, allowed me to expand the palette of timbres, merging different techniques. This allowed me to superimpose sounds I created with sticks onto those generated

[14]Siegel provides very useful aesthetic advice on the differences in mapping: the triviality of the one-gesture-one-sound and, on the other extreme, the risk of loosing the action-reaction connection if too complicated mappings are used.

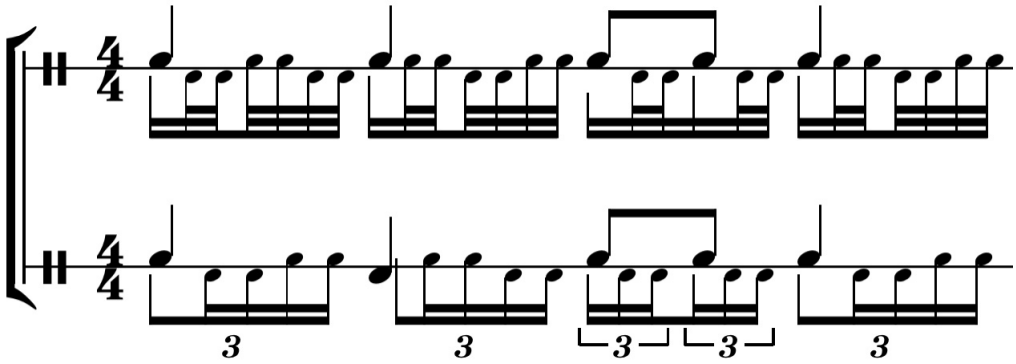
[15]The suit has been premiered at the *BEAM* festival 2012 at Brunel University, as part of the *London Music Hackspace* workshop.

[16]I built one of these devices, in collaboration with software engineer Martin Klang, in order to prepare a workshop for the London Music Hackspace.

by hand, creating a hybrid timbre, which could have never been achieved as a solo in an acoustic situation. The direct interaction with technology, whether with another live performer or with a prepared electronic device, originated a new trend of controlled improvisation-based pieces. Furthermore, by introducing functions that allowed for harmonic and melodic control while playing a digital drum kit, I offered a brand new point of view on digital instruments. When someone wants to control a VST, he/she usually maps one or more to a keyboard, a universally suitable instrument. In so doing, every instrument is both enhanced and limited by the characteristics of a keyboard. For example, it is very easy to transform a flute into a polyphonic instrument, but there is very limited control over what happens after the transient of the sound; even though breath control sensors and modulation pedals have been available for many years and they too could extend the expressiveness of any key-based instrument,[17] I decided to challenge this general trend, proposing the use of a digital drum kit as opposed to that of a keyboard. A digital drum kit offers the best control of the attacks, repetition, a great dynamic range and an inviting opening into the world of polyrhythms. The theatrical advantages of the percussion instruments are also very enticing, with the possibility of choreographing every single movement by displacing the pads in different positions, or even by transforming the instrument into a prop for a show. Very little effort is needed to transform a box of candies, a cheese grater or a salad bowl into a digital drum kit. Modern platforms like *Arduino* or the most recent product of MIT, the *Makey-Makey,* IRCAM's *Mogees,* as well as percussion tracking objects, common to both *Pure Data* and *Max/MSP,* allow the user to attach contact microphones to any surface. Besides these advantages, I was also well aware of the limitations of such an instrument which, with the exception of the multiple-zone triggers, could only offer a one note to one pad (or surface) ratio. At this stage, I started developing the series of pitch randomizers that allowed me to design *Drumactica*, as well as the intense collaboration with composer David Ibbett, which led to the creation of the real-time scale shaper. This patch allows for a MIDI feed, which can be computer generated or directly connected to any manned digital instrument, to tune in real time the VSTs mapped to any drum pad. The drummer has complete control over the attacks, whilst pitch and harmony follow the remote feed. In so doing, all automations can be overridden in favour of extemporaneous decisions. If the piano player decides to modulate, then the whole of the hybrid drum kit and its connected instruments do the same and the drummer is presented with new melodic

[17]The breathing control, or the alterations made to the speed and pressure of a bow, are completely lost. Most certainly, these characteristics can be implemented during post-production, but I intend to focus on live performance only.

Figure 1.1: An example of Snare Drum Notation with different fills according to different speeds.



and harmonic material, which constantly stimulates his/her improvisatory skills. This process is demonstrated in *So Far Niente* where, among other instruments, a guitar with different strumming patterns and generative chords is mapped to the drum kit's tom-toms. Inspired by Preston Reed's percussive guitar style, I approached the digital instrument as a hybrid between the two acoustic ones. By stripping the groove down to its primary elements, I had much more space to try and improvise as a guitarist, helped by the great control over the attacks that the tom-toms were offering me.

The Path of the Thousand Doors and *V-eSnare* are the two electroacoustic compositions that serve as a link between the acoustic projects and the digital ones. The progress made on extended techniques allowed me to offer new tools to performers and composers alike. I chose to focus my attention solely on the snare drum, concentrating the efforts in order to produce an acoustic piece with backing track, *The Path of the Thousand Doors,* and an electroacoustic piece for prepared snare drum and video, *V-eSnare*. My top priority was a deep understanding of the existing notation. The classical percussion pieces and studies by Jacques Delécluse (Delécluse, 1964), a core element of any orchestral audition, or those jazz-based pieces by Charles Wilcoxon (Wilcoxon, 1969), provided a good overview of current notation and abbreviations, as confirmed by the more recent list of rudiments published by the *Percussive Arts Society* (Percussive Arts Society, website. Accessed on 23 April 2010). I extended the investigation to Berger's notation (Berger, 1990), with accurate transcriptions of the XIV Century Basle military drum corps pieces. The Basle tradition, together Fritz Berger's own compositions such as *Radac Reveille* or *Radac Tagwacht* (Berger, 1990) interested me for the precision with which the accents were notated, as opposed to the grace notes and fills, which are supposed to be changed according to the tempo and, subjectively, by the ensemble. As seen on figure 1.1, the same passage, whose theme is indicated by the upwards stems and bigger noteheads, can have radically different grace notes

when performed at different speeds. The first example, with fills in demisemiquavers, is to be played at slow tempi, around 110bpm, whilst the other is for the faster ones, 140bpm and above. The Berger notation condenses all the grace notes into just one sign underneath the main note. The performance practice of Basle marches allows the drum corps to choose which type of fill, semiquaver triplets or demisemiquavers, to employ and in which passages. I found a modern application of this system on Alan Dawson's *The Drummer's Complete Vocabulary* (Dawson, 2000). Dawson, a reknowned jazz drummer, composes a few pages of drum solos indicating the accents only - crotchet, quavers and, occasionally, semiquavers- leaving the grace notes completely up to the performer. Fascinated by this style, I have used it during personal practice and proposed it to composers as part of my interest for controlled improvisation.

Among the mallets that fascinated me the most, the superball had the charming timbre around which I developed *V-eSnare*, on page 44. The superballs available on the market, polybutadiene rubber toy balls[18] on a thin stick, did not offer enough control and were very painful to use. I designed a new handle, hollowing out a section of a wooden drum stick, offering a solid and comfortable grip, as described in figure 4.5 on page 47. After describing this process to fellow PhD student Tom Jackson, who specialises in the philosophy of improvisation at Canterbury Christ Church University, he commented, 'the enhanced interface acts as a liberator, or an augmentation, of creative potential' (Jackson, *text message*, 2012). The improved and prolonged control I offered to future superball users, opens a new array of musical solutions and urges a rethink of the musical possibilities.

The innovations described, ranging from music theatre to digital percussion, have added an important paragraph to the job description of the contemporary percussionist. A good technique on a variety of acoustic instruments is not enough, if it is not backed up by a thorough understanding of the new directions in music. Classical technique on all instruments must be backed up by an extensive knowledge and understanding of extended techniques, as well as a technological know-how, sufficient to operate, tweak or, even better, design software patches.

[18]Commonly known as Bouncy Ball or even Super Ball.

Chapter 2

Project 1: *Kitchenware Project 1 - Kp1*

The *Kitchenware Project 1 - Kp1* (January 2009) is my electroacoustic response to a light, transportable and adaptable set. Since percussionists constantly fight against time and space restrictions, not to mention increasingly strict hand-luggage limitations imposed by low-cost flying companies, *Kp1* is the perfect example of a concert-in-a-suitcase, one of the key points of *Make it Happen*. The piece is the opera prima of the *UUCMS* duo,[1] which I founded in collaboration with digital composer Dr Radoslaw Rudnicki.

I held multiple roles within this project:

- Composer: I carefully scanned through many hours of recorded rehearsals - based on free improvisation - and transcribed the best parts onto timed power-point slides, which included conventional notation, images and strings of text.
- Instrument designer: I designed the kitchenware table and its hideouts for the technology, including the concealed triggering system given to the other performer.
- Stage director: *Kp1* was premiered with scenography and stage directions.
- Video pre- and post-production: the submitted video was shot in the days directly preceding the premiere.
- Performer: improviser on the kitchenware table.

[1] *Unprecedented, Unprotected, Contemporary Music ... Set!*

In the light of the existing corpus of research, *Kp1* appears as a unique composition for kitchenware and live electronics; this line-up is currently missing, as a whole, from the percussion literature. The investigation included interviews with some of the most important Contemporary Classical percussionists, such as Steven Schick (UCSD), Christian Dierstein (*Ensemble Recherche*), Rainer Roemer (*Ensemble Moderne*), and was also extended to Russia with Dmitry Shchoyolkin (*Moscow Contemporary Music Ensemble*). None of them had seen, heard or performed a similar piece. YouTube and other social media networks have proved to be the most up-to-date resources for references to compositions of similar nature. As these pieces rarely include a scored transcription, their video realisation has become the most reliable source. The scope of this review was therefore extended to include very different types of artists, such as beatboxer Beardyman and his *Kitchen Diaries* (*Beardyman*, YouTube, accessed 15 January 2010), whose domain is limited to the acoustic world. Gino Robair's[2] work on free improvisation was also very relevant; in his *In my Kitchen* (*Robair*, YouTube, accessed 20 July 2012) he uses an e-Bow to generate sympathetic resonance among metallic kitchenware, producing a sort of electronic music completely detached from the computer.

The very few pieces that get close to the core nature of *Kp1* are famous videos such as *Stomp*'s *Kitchen* (Cresswell, dir., DVD recording), or *Music for one apartment and six drummers*, or a very old sketch by German comedian Otto Waalkes, titled *The Dishwasher*. None of these are improvised, use live electronics or can be logistically contained within what *Make it Happen* states.

Kitchenware is certainly used by composers as part of multipercussion setups, especially in mixed ensembles. Once again, John Cage's influence plays a fundamental role; his *Living Room Music* (1940) for percussion quartet is a forerunner. The four percussionists are to use kitchenware items (the instrument list is rather open) to perform a fully composed score, which has a great theatrical potential. Among other interesting examples, Howard Skempton used ramekins and baked beans in his *Shiftwork* (1994), while Unsuk Chin's *Allegro ma non troppo* concentrates on the electronic modification (post-production only) of household appliances and objects. One must not forget either the acoustic-only *Chew Chow Chatterbox* (1998) for four percussionists at dinner by Steve Montague or Gerhard Staebler's *FallZeit* (1997) for breakfast bowls and a variety of seeds.[3] The music theatre repertory offers Stuart Saunders Smith's *Songs I-IX* (1981), which,

[2] American percussionist.

[3] The piece, of which I gave the Italian premiere at he Computer Art Festival (Padova, 2010), is composed for 18 breakfast bowls, nine full of different type of seeds and nine completely empty. At given signals in the score, a performer is to dip a spoon inside a bowl at a given angle of entry, trying to pour the content in the empty

much in the way of *Home Work II,* outlined on page 30*,* incorporate a consistent monologue, but fails to match the audio processing.

Unable to find similarities with any other composition, I can safely define *Kp1* as a unique piece of music-theatre for a 'kitchenwarist' with a live electronics partner.

2.1 The plot

Kp1 was always intended as a theatrical work, set between the average untidy, dirty and small-sized student kitchen and an even dirtier study bedroom.

At the very beginning, an annoying ringtone is answered by an obnoxious person, who soon makes his way to the stage. Caught off guard, the audience manages to understand just a few words: 'internet', 'gameboy' and 'concert'. The host enters via the kitchen, sips some beer and gets comfortable in his bedroom where a videogame is soon launched. The loud noise of pots falling and pans diverts the attention and cues the percussionist (referred to as Player A from this moment onwards), who walks in front of the projected background, into the kitchen. Whilst Player A explores the kitchen table, some walk-ons interact with the main characters, whilst preparing tea and wandering around.

The music becomes the main character and, after *Theatrical* (see Section 1.2) Player A drops the chopsticks, grabs some food and goes offstage, allowing the live-electronics performer (Player B) to finish his gaming session in peace.

2.2 The score

Based on a timed-PowerPoint presentation, the score brings together the highlights of many hours of recorded free improvisation and includes conventionally notated rhythms, images and juxtaposed strings of texts; it suggests speed, mood, timbral characteristics and the preferred sound or instrument.

The tripartite score is concealed, visible to Player A only, who is given complete freedom upon the voicing of rhythms and the layering of colours. The three sections of the score are:

1. *Exploration*: Player A is to explore the nature of the instruments available as if he has never seen them before. At the beginning, long and sustained sounds are preferred because

one; the diversity of seeds and angles generates a vast array of sounds, because of the seeds falling in or out of the bowls at different speeds. Moreover, we have also assigned musical signals to every action, to involve a second performer a change that had been warmly welcomed by the composer.

Player B is recording and gathering material. Player A leads the improvisation while Player B plays back, *ad libitum*, chunks of the acoustic part with basic processing.

2. *Theatrical:* Player A pretends to strike the instruments with his bare hands. The sounds are triggered by Player B, remotely, in a situation which leads into a comical gag. Throughout this fully notated section the time presentation is paused, allowing for improvisation sections and waiting for Player A's signal to lead into the final section.

3. *Looping:* the roles are reversed. Player B launches pre-composed techno-based loops, generated from kitchenware samples, and Player A responds improvising with whatever is left on the table. To keep an open line of communication with Player B, I decided to throw some of the objects off the table, signalling key structural points like the changes of loop or section.

2.3 The instruments

2.3.1 The performing table

The strength of *Kp1*'s instrumentation lies in its adaptability.

> But most percussionists are willing to play on any quality set of bongos. In fact, if no quality bongos are available at a given moment, a percussionist might improvise by using tightly tuned tom-toms or roto-toms as substitutions. [...] Likewise, most percussionists do not need bongos they need 'bongo-ness' (Schick, 2006: 7).

Figure 2.1: The Performing Table

The research of a particular instrument, an elaborate tool or a unique found object has been discarded in favour of common household utensils to be found anywhere, complying with the suitcase problem. Thanks to the general and

suggestive guidelines included in the score, the instrumentation can be gathered upon arrival, sorting found objects in a specific order.

The design of the performing table follows specific timbre and register guidelines, dividing the objects by material: metal, ceramic, wood, plastic and paper.

- Metallic objects (bowls, empty beer cans, plates/trays, boxes) sit quite comfortably in the middle and high registers. They are very resonant, pitch bendable and change sound if put upside down or inside out.[4]

- Ceramic objects: bowls emulate crotales or high-pitched cymbals, completing the upper register of the instrument, and can generate finely-tuned pitch material.

- Plastic and wooden objects: ice-cube makers, wooden breadcrumbs collectors or any other guiro-like instrument find their place in the middle register, together with the Pringles tubes, perhaps the only obbligato; their metallic end is extremely flexible and allows for great pitch glissati.

- Paper objects: as far as the lower register is concerned, any box - cardboard or metal - is suitable. Despite the short decay, the low frequencies provide enough bass whenever a reverb channel is armed. Finally, one must not forget the table itself, the provider of the richest timbre resource, for it can be scratched, hit with hands and sticks or struck with objects that can also be broken against it.

As the title of the first movement, *Exploration*, suggests, *Kp1* begins with an exploration of the acoustic timbre and sound combinations. I use chopsticks to hit and scratch the objects, experience their resonance, dampen and squeeze them to try and alter their pitch. The different timbres are mentally organised in a drum kit-like fashion. Cymbals, toms, snare drums and kick drums sound-alike are individuated and the improvisation starts revolving around this newborn hierarchy. The exploitation of the material is taken to the extreme in order to generate the most interesting music from the simplest object. I approach every item with all the viable techniques, in order to generate the most diverse sound canvas.

> A performer must determine how to perform with a new instrument for which there is no established performance practice and no instruction manual (Gurevich, Marquez-Borbon and Stapleton, 2012: 23-41).

[4]Similarly to John Cage's *Second Construction*, one of the first examples of tin cans used in a composition, the pitch changes slightly at every hit, keeping the interest alive.

Curiosity is the cornerstone of discovery; the absence of formal restraints and complete disrespect for the instruments, their integrity and durability, allows for the production of the most interesting sounds, unexpected timbres, and unimaginable textures, for example, classical contemporary examples such as Sir Peter Maxwell Davies' *Eight Songs for a Mad King,* with the infamous desctruction of the violin, and rock music such as The Clash, who used to destroy guitars on stage.

These very colours can only be achieved with the right tools. In order to produce a convincing sound throughout the set, I tested a number of beaters and sticks. Chopsticks were my first choice due to their availability, portability and durability and for being flexible enough to produce interesting sounds across the various materials. In one of the most recent performances, I used children drumsticks.[5] Though useful and effective at times, these were too heavy and often compromised the objects. They were also unbalanced and awkward to use, working better as a novelty item than versatile sticks.

When organising the table, I grouped the objects by material, function and register, displacing them in the form of a drum set; metal plates and boxes to the right (like a ride cymbal), bowls and Pringles to the centre (like snare drums) and all the rest from left to right, high to low. Despite the shakiness of the table top instruments, which can move at every hit, these well defined areas helped me know where to reach for, when in need of long pedal sounds, bright melodic material or comping tools. These latter sounds, equivalent to kick drum, snare drum, hi-hats and ride cymbal, are of fundamental importance for a drummer. By thickening or thinning out the texture, a performer can completely change the perception of time, speeding up by increasing the frequency of hits on the snare, or becoming heavy and mechanical, by adding a lot of kick drum hits. I underlined the importance of these voices even in *So Far Niente*, on page 58, where I left the natural sounds alone, without the hybrid mapping.

2.3.2 The concealed triggering system

Inspired by Rowan Atkinson's sketch *The Invisible Drumkit* (*Rowan Atkinson*, YouTube, accessed 10 January 2009), I started researching into how to include an imaginary set in *Theatrical.*

The performing table was sampled in four dynamic ranges and laid out in a *Battery* patch,[6]

[5] Very rarely sold separately, a pair is usually included with junior three- or five-piece drumkits.

[6] Every time Player B hits the pad, the strike's velocity is scaled between 0 and 127, and directed to a specific area where the samples layered with partial cross-fading to emulate dynamics (i.e. $p<44$; $36<mf<80$; $76<f<110$; $sfz>106$). The extension of the regions is mapped according to the sample, but can be re-set to suit the sensitivity of the performer.

mapped to a Korg *nanoKontrol*.[7] The samples vary not only in loudness, but also in striking techniques; those recorded in *piano* have been gently rubbed with fingers or scratched with chopsticks, hit a little louder for *mf* and *f* but also smashed on the table to breaking point to create the *sforzati*. The *nanoKontrol* is a very small piece of touch-responsive hardware, concealed within Player B's set. Player A's actions, which are obviously never reaching the instruments, are completed by Player B by who triggers the correct samples. The performers can decide whether to keep this hidden from the audience, or to disclose it towards the end, as part of a staged fight. I opted for the latter, as it allowed for some improvised comical interludes.

Whilst the inevitable compression, due to the recording, sensibly limits the dynamic range, good complicity between the performers compensates for this and ensures a credible illusion. The Pringles tubes are probably the best example of this because, if both rhythm and dynamic emulate the mimed action in perfect synchrony with the pitch glissato, the illusion gains strength and becomes more authentic.

2.3.3 The live electronics

The electronic response has been dealt with by Dr Rudnicki; I had the role of advisor and moderator.

Reverb effects of different variety have been used to enhance the objects' resonance and to mould, where necessary, the acoustic perception of the space. These digital decays were sliced and looped, to create a sustain with a subtle sense of rhythm. Furthermore, delays and beat-repeat randomisation, controlled by the mapped game pad, enriched the rhythmic counterpoint.

Resonators were used to supply pitched sounds which were almost completely absent (apart from Pringles tubes and bowls). These harmonic exciters have been mainly applied to the low end, in order to create interesting bass lines.

Whilst the acoustic sounds dominate the first two sections, the electronics take over in *Looping*. All of the samples used to compose these phrases have been recorded on the table and then digitally processed to generate bass-drums, snares and hi-hats.

[7] Whilst the NANOpad remains as the best hardware solution, Live8's Sampler could replace the existing patch with no side effects and could also limit the software environment to Ableton Live, excluding third-party VSTs. Unfortunately, at the time of composition, I did not own a license for Sampler, thus the choice.

2.4 The interaction between performers

Both performers are on stage with equally important parts and no hierarchical distinction between them. Player B has been made part of the active scene, chiefly thanks to the controller interface, designed by Dr Rudnicki. The game pad allows Player B to detach him/herself from most of the direct interaction with the computer keyboard, offering an intelligible and enjoyable action/reaction-based performing act.[8]

In *Exploration,* the acoustic performance is recorded, processed offline and played back as original material. The only realtime, unaltered and automated live processing is the one aimed at improving the acoustic experience with reverbs and a gentle equalization. Though versatile and interactive, this approach involves an insurmountable lag between acoustic question and electronic response. Player B is silent whilst collecting the recording, he/she needs some time to prepare it before being able to counteract.

Free improvisation is an optimal approach to the performing table. This instrument lacks a unified form of notation, a repertoire, an established voicing or orchestration technique and is continuously subject to radical modifications. Unfortunately, this process does not allow for a strict control over the texture, where registers can saturate very quickly. In the absence of a fixed structure, Player B is tempted to engage in multiple loops, piling up dozens of voices that may annihilate each other in a chaotic result. Constant and interactive listening becomes a vital feature and performers must have a clear understanding of their role within the improvised sections. If, for example, the middle register was overly busy, a performer would have to find his or her space on a different layer, pushing to the extremes of the instrument's register. This complete saturation can be turned to advantage, if saved for climaxes or to pinpoint sections.

The improvisation style must also adapt to the type of effect in use and vice versa. A dense delay will work best on short, fast and isolated outbursts of notes, while long reverbs will suit slower and denser textures. Performers must decide whether to comply with these ideal situations or to exploit the effects' weak points to generate interesting contrasts. The latter opens new musical directions, but must be used economically in order to avoid uncontrolled chaos and the most derogative definition of the word noise.

[8] Such a clear connection between movement and sound takes a definite step away from the conventional spacebar hit on a Max/MSP patch to flicker through presets.

2.4.1 Performances in different settings

Despite its original conception as a music-theatre piece, I presented *Kp1* without scenography, in a variety of contexts, proving its wider validity.

In order to provide a satisfactory overview of the possible scenarios, this analysis will compare the performances at the *Rymer Auditorium* (An electronic music studio at the University of York), *City Screen Basement Bar* (a musical salon in York) and *Festival Finestre sul '900 in Santa Caterina* (a cathedral in Treviso - Italy).

Kp1 was developed in the *Rymer Auditorium*, a dry hall with an extremely powerful and responsive PA system, associated with a predominantly music-trained audience, equally divided between students and lecturers. This venue will be considered the control sample.

The quietness of the audience and the absence of unwanted noises, rattling or reverbs, allows for the greatest freedom - one can hear everything. The performers can explore sounds from the tiniest to ear-splitting level, with abrupt changes in speed, colour and rhythm. Furthermore, the absence of natural reverb empowers Player B to mould the perceived dimensions and the venue's characteristics to the extreme.

If the venue changes, so must the improvisation; in a pub, the background noise raises the threshold of the hearable material and the audience's attention span is considerably shorter and less focussed. In such a context, performers have a much narrower and louder dynamic range available and must opt for short and loud outbursts, with preference for steady and repetitive patterns rather than metric variations.

An in-ear monitoring system proves essential in this type of venue. Normal stage monitors would only generate more feedback problems and the PA loudspeakers, pointing towards the audience, offer a very distorted picture to the performers' ears, accompanied by an unacceptable latency. Deprived of proper monitoring, Player A's performance is at stake, Player B's responses cannot be guessed or expected and the interaction is irreparably compromised.

At the other end of the spectrum, the church-venue is characterised by a strong resonance, which invites for a different type of listening, sensitive to timbral nuances and the naturally long reverbs. Santa Caterina's regular audience is also knowledgable of contemporary music, but the latent sacredness of the place suggests an unhealthy thick and impenetrable fourth wall. As opposed to the convivial pub atmosphere, the performers are here segregated inside an imaginary glass prison, to be observed and examined by a silent audience, whose presence is never sensed beyond the applause. Nevertheless, the venue privileges the acoustic performance, bringing it

to a brand new level. Player A can directly interact with the church, responding to the natural reverb, the most fascinating 'built-in plug-in', with the same care and curiosity with which he/she approaches the tabletop instrument.

Kp1 can be effective and successful in a variety of contexts, as long as the performers approach each venue as a unique one, with a wide open mind and being willing to reinvent and adapt their own performance, to achieve the best compromise.

Chapter 3

Project 2-3: Body percussion and imaginary instruments

3.1 Project 2: *Home Work II*

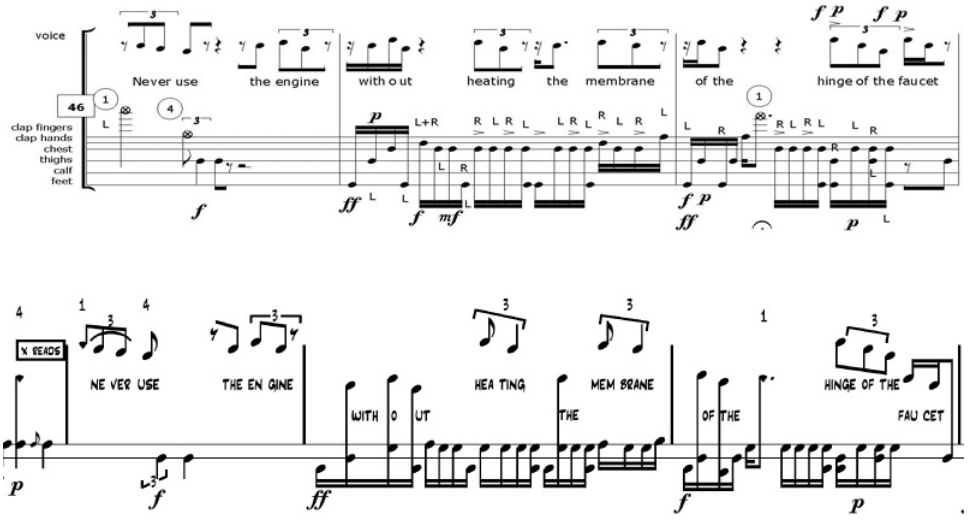
Home Work (2008-2009) is a work for sextet by French composer François Sarhan.[1] *Home Work II* is the result of the reorganisation of the solo percussion parts, scored for solo singing percussionist.[2] I came across this latter version during my studies at the *Darmstadt Ferienkurse fur Neue Musik* in 2010 and grew immediately fond of this extended role for the percussionist. *Home Work II* merges body percussion techniques with spoken voice,[3] 'a rhythmical and half-sung parlando' (Sarhan, 2008-2009: 2), and imaginary instruments. Sarhan responds, with innovations, to the earlier works of Globokar, Rzewski and Aperghis, as described in the Introduction. Nevertheless, when I interviewed him, (Appendix Section B), Sarhan suggested no direct studies of similar scores (vide Vinko Globokar's *Corporel*) and identifies his own improvisation as a source for material, 'I started, as usual, with my camera running and made sounds in my kitchen, improvising. I then selected what I liked and wrote it down as precisely as possible' (Sarhan, *interview,* on page 68). I had the pleasure of premiering the piece in Italy, England, Ireland and

[1]The Sextet includes Fender Rhodes (original, not emulation), percussion, flute, electric guitar, samples and live electronics.

[2]The scoring process was overseen by Christian Dierstein's (*Christian Dierstein* website, accessed 10 June 2011) - *Ensemble Recherche*- and Gerrit Nulens's (*Gerrit Nulens* website, accessed 10 June 2011) - *Ictus Ensemble*- who helped individuate the best layout and notation type. The notation improvement between the first and the second piece is rather evident: *Home Work,* with a mixture of performance notes in French and English, is spread onto five far apart staves, with considerable reading difficulties, while the solo version has a much more contained two-staves layout. The text is notated in the upper part, leaving the three staves for imaginary instruments, upper body, lower body and feet at the bottom. The voices are very well aligned and the cross-staves beaming helps clarifying their rhythmical interlockings.

[3]The score includes elements of relative pitch and requires a precise rhythmic enunciation of the syllables.

Figure 3.1: A comparison between the scores. Original at the top, realisation at the bottom



Northern Ireland, as described on page 66 but, because I was introduced to the score once it had already been completed, I focussed on the following aspects of the performance:

- The transcription of my own interpretation, which aimed to create a performance edition: a simpler version of the score that better suits the needs of the performer.
- A well defined plot, generated by collating and interpreting, subjectively, the various strings of text.
- Implementing the concept of the imaginary instruments by including them in a new piece.

3.1.1 The realisation

The score of *Home Work II* is an open canvas which leaves considerable freedom to the performer, who can 'join the dots' to create his own path. The score I produced is an accurate transcription of my interpretation (see Appendix D). Whilst leaving the final result unaltered, this version simplifies the notation, includes the indications of my own plot interpretation and looks at the material from the point of view of the performer. The transcription was realised in October 2010.

In order to describe how I have improved the score, I have chosen to compare bars 46 through to 48.

As one can notice in Figure 3.1, the realisation offers a condensed scoring system.[4] The two lines at the bottom divide the sounds produced with the upper part of the body (fingerclick, clap, chest and cheeks, with modified notehead) from those produced with the lower one (thigh,

[4] A complete performance key is presented at the beginning of the score.

calf and foot). The 'note under, note on and note on top of' the line is a rather common feature in scores for percussion and helps create a continuum and make for a more consistent phrasing throughout the passage. The imaginary instruments (different noteheads and circled numbers on the original score) no longer have an independent system; when homorhythmic with the voice, as in the downbeat, (second beat b. 46), the number is just stated on the top; when independent, the notehead is changed to signify the solo (downbeat b.1). The performance notes also suggest, with a 3D model, the disposition of the imaginary instruments, the theatrical procedure of putting them on and taking them off.

One of the main issues I encountered during the extensive practice period, was understanding the interlocking between the voices. In b. 47, whilst the 'without' is pretty obvious, one loses track of the position of 'the' within the overall picture. Therefore, I merged the voice with the remaining material, leaving it independent only when creating polyrhythms (e.g. 'hinge of the') in an attempt to preserve clarity.

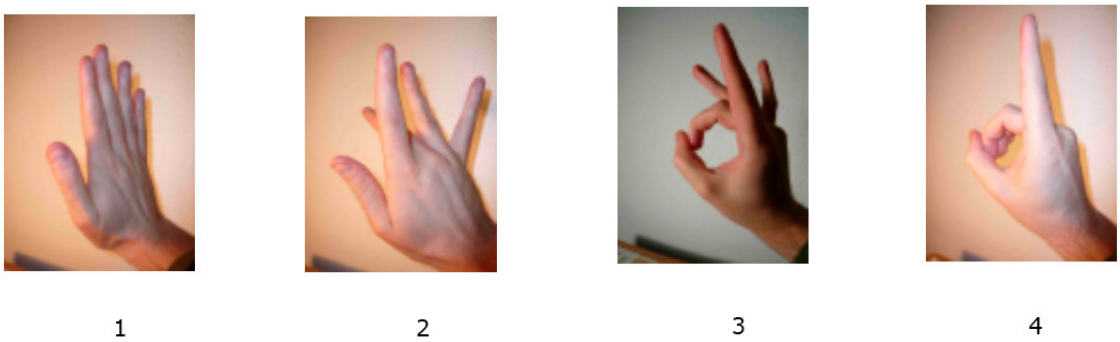
I hid all the non-vital rests and simplified the rhythm solfège. A very good example of the latter, is the third beat of b. 46, transformed from a quaver plus quaver rest, to a crotchet. Whilst this could make a difference in any instrument that controls the length of the sound, it appears superfluous when used to score very short, sharp and dry sounds - the thighs, in this case. The argument is that a series of crotchets is, within this musical context, no different than a series of quavers, each followed by quavers rests. Moreover, it conveys the same message with one symbol, instead of two, significantly simplifying the notation.

The text that, in the score, is boxed,[5] refers to the 'interpreted performance'. The plot, read directly from the score, is very fragmented, unsettling, confusing at times. I took this chance to contextualise it, by encasing it within a story that describes a descent into the madness of the main character, who struggles with a machine that he soon regrets bringing to life. These performance notes indicate whether the man speaks out of his own will, or if he is being possessed by the machine. This clearer description of a bipolar personality serves as a guide to the performer, who is now made aware of how the events connect, together within the main story.

I created this realisation by collecting all the elements that slowed down my practice or prevented me to focus on the musical material. Much in the way of *Psappha, a personal take*, on page 53, I looked at the score strictly from the point of view of a percussionist. My simplification

[5]Please note, on the realisation, the text is all very well aligned; the different levels on this format are a mere export problem.

Figure 3.2: The four imaginary instruments



could have nullified some expressive nuances,[6] but I did so only when I was sure they could be disregarded for the greater good of the performance. In particular, I found compromises with details that would have anyway been lost in the texture, as I did in the performance of *Synthesis, on page 63,* to control note length.

3.1.2 The author's interpretation of the plot

'I conceive the score as a field of possibilities, my imagination provides the performer with space for interpretation: any is good' (Sarhan, interview, on page 70).

While preparing the Italian translation for the programme notes of the premiere in Padova, it became clear how incoherence, in other words schizophrenia, was the very strength of the plot; fragmented by random mood alterations and soli on imaginary instruments, it longs for consistency, meaning and context. What follows is my contextualisation - please note that none of the elements described are part of the original score.

The performer enters the stage acknowledging the audience, introducing himself and the ensemble, speaking as naturally as possible while hanging and testing the imaginary instruments. These, hit with their very own techniques, Figure 3.2, are to be kept in specific positions, in order to extend the physical performing space onto an imaginary multipercussion setup. The fourth gesture serves as retraction to start the scored piece; it looks like the instinctive movement one would do in order to call for attention. As soon as the performer says 'Take!', the audience is put before a different situation: a quiet man, sitting in his garage, reading from a manual and trying to build some contraption. All seems well, until the first signals of mental instability appear. He talks to the machine (bb. 17-18) and personifies the replies, being relentlessly tossed around in limbo between reality and the world within his mind. The division between the two *personae*

[6] A series of quavers followed by quaver rests could be different, even if just in the intention, from a series of crotchets.

widens and the moments of lucidity (bb. 28-33) are abruptly interrupted (b. 50, third crochet) by the complete fusion of the two characters. The voice of the man morphs into the scream of the machine, whose power is escalating. The protagonist realises something is wrong (b. 50) and his crisis begins, alternating with moments of astounding lucidity. The first solo on the imaginary instruments (bb. 72-76) is an attempt to evade reality, a regression to a calm memory, but it is in vain and the machine overpowers him (b. 79). Unopposed, it harms the unfortunate who wants out (b. 110); he fights off the evil instruments, slapping and kicking to make the pain stop (bb. 113-122). This is just the calm before the storm; the steady heel-toe pattern soon goes out of control, simulating a heartbeat, and the disorientation takes over triggering a panic crisis. Shouts, kicks and screams are a desperate attempt to reach out for help, climaxing on repeated patterns in a last moment of lucidity (bb. 127-128-130). The sudden apnea triggers the ending section (b. 143) and the performance is suspended; the protagonist is now detached, in limbo. Far away from his physical situation, he takes shelter in his mind, with a song that reminds him of happy moments; he slowly unhooks the instruments, collects them on his lap as precious talismans and dampens the last note as the room grows dark, burying the inner conflict in the depths of his mind.

3.1.3 Designing the ideal performance space

The texture of *Home Work II* is made up of delicate, quiet and resonance-lacking sounds which need appropriate conditions to project effectively towards the audience. Lighting and staging should be carefully considered and calibrated; the performance space should be marked by a warm, almost vertical, spotlight and by a LED floor par can,[7] 30°-45° from the performer, to cast shadows on the background. The latter serves to magnify the gestures, especially those on the imaginary instruments, promoting them to a primary role.

The second key element is a resonating wooden stage. Whilst most of the body sounds cover middle and high registers, the bass is delegated, in full, to the feet. During the Dublin performance, the wonderful lighting was not matched by the stage whose lack of resonance prevented the rhythms from projecting effectively. The Italian concert, on the other hand, boasted an excellent floor resonance. Every time the feet hit the wooded floor, the bass came in and the rhythm flowed very naturally. The various rattles on stage - part of setups for other pieces - provided even more material to play with. The louder the stomp, the richer and longer the resonance;

[7] A type of light that can be positioned on the floor.

this helps underline critical passages, whilst remaining very soft and quiet in others and to interact physically with the other instruments, expanding the performance space to the whole of the stage. *Crescendi* become very effective because, besides the increase of volume, the timbre is also enriched by bells and rattles that play sympathetically.

3.2 Project 3: *The Arrival of the Beatbox*

The Arrival of the Beatbox (October 2011) is the result of a process of collaborative composition for a duet of soprano, Danae Eleni, and body-percussionist with imaginary instruments, developed with composer Kelvin Thomson. The piece was commissioned by the *Second Athens Composer/Performer Conference* (November 2012).

Much in the way of *Home Work II,* the piece was designed to offer a blank canvas: *'TAOTB* is a theatrical musical dialogue containing alternating improvised and set elements. Performers are encouraged to express their own, unique personalities and musical background through their interpretation of the score and guidance notes' (Thomson, 2011: performance notes).

My role within this collaboration was:

- Instrument designer.
- Improviser and composer of the body-percussion and imaginary instruments part.

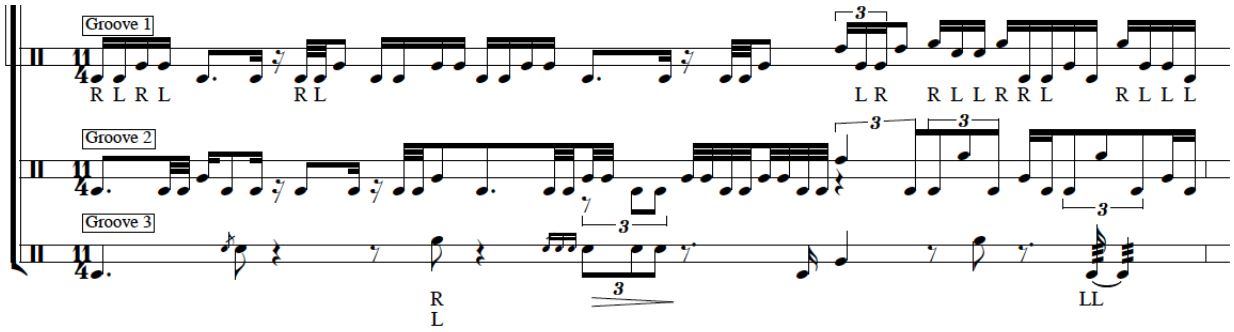
3.2.1 The imaginary instruments

My primary target was to bring the experience of the imaginary instruments to the next level. I decided to classify my creative input in four separate categories:

- *Word amplifiers*: identified with specific words - like 'copyright' at the very beginning - they underline the key concepts throughout the piece. They also offer a continuum, giving the audience a solid visual reference, once the spoken/sung language changes.[8]
- *Shared gestures*: triggered by 'harmless venom of the bees', this is a theatrical section during which I teach the soprano the vocabulary of gestures used to narrate and accompany her singing.

[8]Throughout the compositional process, we encountered serious copyright issues. In order to get around it, we translated Sylvia Plath's words into Ancient Greek, Latin, Italian, transliterated them into the International Phonetic Alphabet and then read them backwards, or broke them down into vowels, sung by the soprano, with consonants, beatboxed by myself.

Figure 3.3: The body percussion grooves



- *Accompanying instruments:* easily recognisable, connected to physical instruments like bells, cymbals (choked) or piano. Very different from all others, they suddenly fill up the audible space. Useful to pinpoint structural changes, they colour the scene with a defined emotion.

3.2.2 Body-percussion grooves

As shown on Figure 3.3, I composed three rhythms in 11/8, upon which I base all the improvisations of the solos and accompaniments, throughout the piece. They are very diverse, so that the first gives a sense of steady pulse, whilst the second is slower and useful to break down the metre, very similar to the third one, very sparse, used to accompany quiet, spoken sections.

The body-percussion playing changed very much according to the scene. While accompanying the singer, I would incorporate comping elements only (kick drum, snare drum and hi-hat-like sounds); when soloing, I would stretch or abruptly speed up the tempo to include imaginary instruments that emphasised certain passages. Together with *word amplifiers,* they carried the audience through the plot, offering a lead despite the abrupt change of language.

All these gestures, whether they symbolize an object or an action or the reach for an object, draw an imaginary space. In the manner of a mime, I define the dimension of my setup by checking the instrument positions, adjusting their height or by underlining excessively some hits or the dampening of certain objects.

The more precise the hits and movements, the more credibility is given to their existence and the better the amplification of their imaginary sound.

Furthermore, the body percussion has been extended to include some beatboxing. The usual imitation of digital drum sounds would have not fit the composition, so we steered towards a style very similar to that of the French Letterism movement.[9] Kelvin breaks down Sylvia Plath's

[9]Letterism was founded by Isidore Isou and Gariel Pomerand in 1944, with roots on DaDa and Surrealism. I was particularly interested in their use of French phonemes, which reminded me of Globokar's *Toucher*, in a very rhythmical way. Rhythms and polyrhythms were made up of 'Ts', 'Rs', etc. mixing hard and soft consonants to

words, dividing between the vowels used to create the soprano's aria, and consonants for the beatboxing. I was given the opportunity to improvise with sequences of hard and soft consonant sounds, whilst accompanying the eerie line of the soprano. What started as an attempt to override copyright laws[10] generated this very interesting improvisation technique which, once again, has expanded the job description of the *Make it Happen* percussionist.

create very intricate textures.

[10]We faced quite a lot of resistance from the copyright owners, who would not allow Plath's words to be put to music.

Chapter 4

Project 4-5: Snare drum projects

In this section I analysed the existing contemporary repertoire for snare drum, investigating extended techniques and different approaches to the instrument, including relevant live-electronic processing.

A fundamental turning point was my jam session with percussionist Christian Dierstein - from *Ensemble Recherche* - after which I understood the importance of using the snaredrum as a harmonic box and not only as an instrument to interact directly with.[1]

4.1 Project 4: *The Path of the Thousand Doors*

The *Path of the thousand doors* (August 2010) is the product of an intense composer-performer interaction with Ms Lourdes Saraiva. Throughout this collaborative process, I investigated the extended timbral possibilities of the snare drum and the feasibility of interlockings between a live performer and a pre-recorded tape. Ms Saraiva soon proved to be very interested in looking at the snare drum as a harmonious box and based the whole piece around texture. In her own words, 'I composed using specific gestures characterised by unique timbre, rhythm and their different combinations. From that point I developed a path of different textures unfolded by imitation and variation techniques, in order to create a balanced unity among the three snare drums' (Saraiva, e-mail, 2012).

The result is a score, partly fully notated and partly based on controlled improvisation, for solo snare drum.

My role within this collaboration was:

[1]The Jam session took place during the Ferienkurse fur Neue Music in Darmstadt, August 2010.

- Sound Designer: I studied in depth the extended techniques and presented them to the composer.
- Notation Editor: I investigated the existing notation for snare drum, created solutions for the extended techniques and focussed the attention on how to differentiate the various types of roll, as shown on Figure 4.1 on page 40.
- Improviser: upon my request, Ms Saraiva left some sections open to improvisation, for me to apply the extended techniques *ad libitum*.
- Performer and producer: I guided the premiere of the piece (Darmstadt 2010), after which I suggested a structural re-arrangement. Organised pre- and post-production, recording all of the three parts and creating a path within *The Path of the Thousand Doors*.

The notation is a mixture of conventional orchestral techniques, marching tradition and graphic notation. I was also hoping to include elements from Berger's *Basle Notation* (Berger, 1990), but different compositional directions did not allow for this to happen.

Within this project, classification and organisation of the different types of roll have been a main focus of attention.[2]

I divided the rolls in four groups:

1 Open.

2 Multiple bounce or buzz.

3 Press.

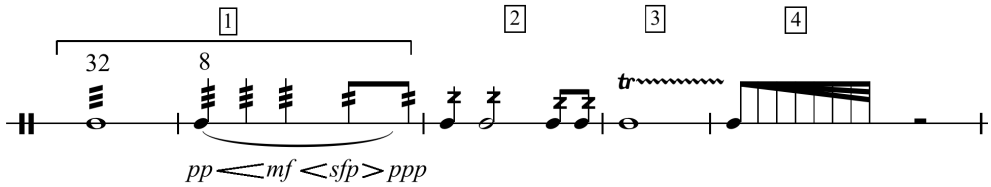
4 Variable speed.

Open rolls (RRLL), example 1 Figure 4.1 on page 40, are notated with three diagonal cuts and a number that indicates the subdivision. In a marching band context, the number would have included the final accent - generally an odd number - but, because the music is different and

[2]I was particularly sensitive towards this issue, due to the prevailing confusion that one has to face, when interpreting scores for percussion instruments. Orchestral excerpts are the apex of this imprecision. When looking at snare drum passages, such as Prokofiev's *Peter and the Wolf*, rehearsal mark 49, (Gschwendtner and Ulrich, 1993), minims with three diagonal cuts on the stem indicate press rolls. In Korsakov's *Scheherazade*, however, upon rehearsal mark G of the third movement, crotchets with three cuts are to be played as open roll (RRLL), contradicted at H, where it goes back to press roll, not to mention C in the fourth movement, where the press roll is notated as a trill. The confusion is spread to other instruments where crotchet with three cuts, for example the first movement of Beethoven IX at rehearsal mark K, requires a measured roll of demisemiquavers (Buonomo, 1973).

Whilst the confusion in orchestral excerpts is generally solvable through performance practice, this study's target is to provide clear guidance to the contemporary performer.

Figure 4.1: *The Path of the Thousand Doors* - roll types



that performance practice does not apply,[3] I opted for a stricter solution. The numbering has been changed to indicate the strokes on the note only. I have also included an option for a visual unfolding, in order to allow for precise dynamic changes or diverse accent patterns (second part of example 1) .

According to the Percussive Arts Society (*PAS* website, accessed on 23 April 2010), example 2 is a multiple bounce roll,[4] but has been converted here into a buzz roll.[5] This notation alone indicates a one-throw only, but can be combined with example 3 - a conventional orchestral press roll - to create an overly dense roll.

The last example, the variable speed roll, is the most open to interpretation. It is inspired by a technique first used by marimbist Keiko Abe in her *Variations on Japanese Children's songs*. In the middle section of the piece, the dyads in the left hand bounce freely and independently from those scored for the right hand. Abe decided to notate it with a series of vertical line where length expressed dynamics (the longer, the louder), and space between them indicated frequency. As a result, the rhythmic texture flows between the chord changes and presents complex polyrhythms in a very natural way, without external controls.

In my version, the attacks are precisely defined by the rhythm, but the speed is arbitrary, as is the sticking, that can alternate between open or closed. It is used as a cadenza in which the performer leads the speed, the bounce pick-ups and the dynamic changes, also alternating between one and two hands.

These solutions have allowed for a much clearer and shorter score; this is fundamental because page turns are rather impractical, since both hands are constantly playing and are quite far from the music stands.

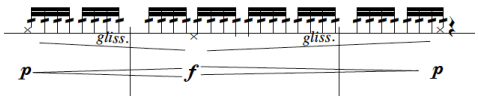
[3]Whilst a five-stroke roll is RRLL-R, all semiquavers, a six-stroke roll is R-LLRR-L-R, for a total of seven, with specific rhythms.

[4]More than two strokes per hand, i.e. RRRLLL.

[5]Part of the Scottish *Fife and Drum* tradition, it indicates a very tight press roll where the stick is kept firmly on the head without much freedom to bounce.

A geographical notation, figure 4.2 to the right, has been used to represent the different rim-click collision points,[6] seamless *glissandi* between them and therefore manages to avoid extra text or futile graphics. Similar principles have been applied to the stick-on-stick hits, rubbings and elbow *glissandi*.

Figure 4.2: Geographical notation



4.1.1 Performance considerations on the superimposition

When I first approached Lourdes, I asked her for a solo piece, to be performed with stereo backing track. Whilst the composition was still a work in progress, I took advantage of the Darmstadt *Ferienkurse fur Neue Musik*[7] to perform it with two other percussionists. This acoustic trio version sparked the modifications I suggested for the final version. Besides some structural modifications, the acoustic performance provided a great opportunity to test this form of collaborative interaction. While the tape version is quite strict, in terms of *tempi* and number of repetitions, the live performance allowed a much greater freedom. The *soli* would last for as many choruses as we wanted, we could stretch the piece *ad libitum* and the dynamic flexibility was easier to achieve than it had been in the studio version. When playing live, a simple nod or an unspoken gesture is enough to get the ensemble to change speed or dynamics. In order to achieve the best musical result, I had to decide every musical element even before recording the first track.

The Path of a Thousand Doors comes after a long list of pieces I performed with backing tracks, mostly with a clear rhythmic structure to play along with.[8]

The metronome compensated for the absence of visual cues with the other parts, in the most rhythmic sections. The open sections were composed so as to have a theme upon which to create the solo; in the words of drummer Elvin Jones, when asked how to develop one, 'if we understand the melody, then we can understand how that rhythmic phrase can be developed' (Gray, dir., 1979, VHS recording).

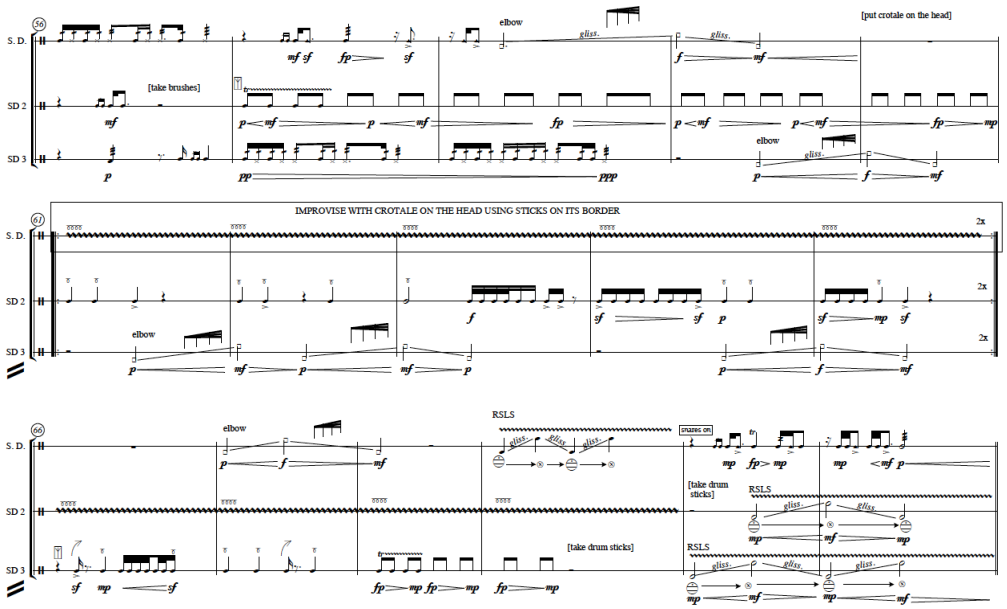
Between bb. 61 and 69, as shown in Figure 4.3, the soloist can improvise upon Player 2's theme. The gentle accompaniment and brush swipes in crotchet, grants a lot of freedom to

[6] Note on top of the line for the tip of the stick, on the line for the shoulder and below for the body.

[7] *The Path* has been premiered in July 2010 at the Darmstadt Internationale Ferienkurse fur Neue Musik by myself, Saulo Giovannini (Brazil) and Fernando Chaib (Portugal). Unfortunately, there exist no recording of this acoustic premiere. Notwithstanding, the piece was designed for solo with backing track, thus the recording by superimposition, realised on June 5th 2011 at the University of York.

[8] Paul Smadbeck's *Rhythm Song*, Steve Reich's *Nagoya Marimbas,* Andrew Byrne's *Ascension* and Bruno Maderna's *Serenata per un satellite.* Though this last composition is not supposed to have a clear underlying rhythm, I did prepare a backing track which orchestration was controlled by a *Metronomo Vivo.*

Figure 4.3: *Elbow gliss* and improvisation section



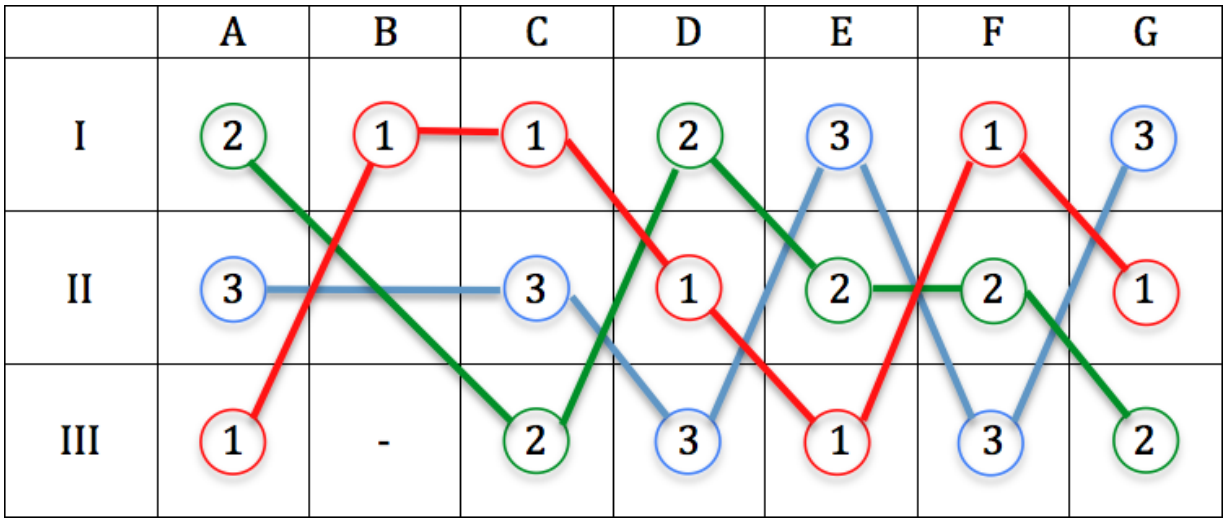
the performer, whilst the clear demisemiquavers and semiquavers are a precise reference of the position within the structure. Each section is cued in and out by the soloist with precise gestures (e.g., the elbow *glissando* that opens in b. 58 and closes bb. 67 - 68) that give signals to the rest of the ensemble. This goes also through Section C, where the glissandi are transformed from pure rhythmical figures into cascades of colour. Furthermore, I was able to prolong the improvisation for as many repetitions as I wanted, before re-cueing the ensemble.

Though rather regular on the score, a sequence of crotchets and semiquavers, the resulting sound of the brush swipes, created a continuous texture pierced only by rare accents.These are suggestions for the soloist to create themes and responses and their displacement deletes any sensation of repeated pattern, introducing the sensation of free improvisation. Freed from structural responsibilities, I could concentrate on the creative process, with plenty of time to return to the composed parts.

In order to create a successful studio version, I had to decompose the piece. I designed a grid that described, subjectively, the role of the three drums as bass, accompaniment and solo. I created recording paths by following these labels, as in Figure 4.4 on the following page. In so doing, I recorded a strong bass followed by a rich accompaniment, upon which I recorded the solo part. This process ensured homogeneity of sound and interpretation throughout the piece. I managed to add some diversity within the orchestration during post production, by simply changing the panning of the various voices.

The imperfections of the superimposition have been advantageously used throughout Section

Figure 4.4: The path within *The Path*.



A. The different colours, generated by the stick hitting the rim in different positions, emulate a heavy rain effect, taking the listener very far from the banal idea of a battery of field drums. The timbral nuances and inequalities of the hits on the rim created an interesting phasing pattern and a unique atmosphere, much in the manner of Michael Gordon's *Timber* (*Michael Gordon* website, accessed 10 May 2012), which, though composed in 2009, was not brought to public attention until one year after *The Path of the Thousand Doors* in 2011.

The stereotypical unison of a battery of drums has been saved for only one occasion (b. 54), which represents the fulcrum of the score, split between the strictly notated and the improvised sections.

The Path of the Thousand Doors has proved its adaptability both in trio and solo performances. With minimum hardware and a large spectrum of timbre available, it offers another concert-in-a-suitcase performance solution to every percussionist.

4.2 Project 5: *eSnare* and *V-eSnare*

4.2.1 *eSnare*

eSnare (April 2010) is a ten minute, free improvisation work structured in five distinct timbral sections, with the support of live-electronics and a touch-screen iPod.

The aim of this project is to start with the crisp, loud and short timbre of the snare drum, to gradually transform it, both acoustically and electronically, into a mellow, sustained and deep one. *eSnare*, for solo snare drum and live electronics, later evolved into *V-eSnare* (July 2010),

with the addition of video support and a more precise structure.

The patch consists of five distinct processing options.[9] Three of these excite certain portions of the spectrum - including harmonics specific to the instrument - and feed them to resonators and tuners. These devices opened the snare drum to the world of pitched sounds, introducing a brand new scope for melodic creativity. The fourth is an extended delay which, when linked to a beat displacement device, generates percussive counterpoints that enrich the middle register; the fifth is a feedback generator chained to a phaser that, when applied to a roll or pedal, emulates the *tutti* used at the end.

The touchscreen iPod patch was originally designed to free the performer from computer dependence, in the spirit of detachment expressed in *Kp1.* This patch, created with OSCulator, was mapped to the Live-set and divided into five pages, each with a looper and dummy files for automations.[10] It also allowed for the simultaneous one-handed performance and live-processing tweaking, granting a continuity that was fundamental for this performance. Nevertheless, even though I could operate independently from the laptop, the touchscreen surface was very small and awkward, especially whilst holding the sticks; this impediment overcomplicated some passages and broke the continuity of the piece. Eventually, I decided to automate all parameters and to concentrate on the acoustic performance, creating *V-eSnare.*

4.2.2 *V-eSnare*

V-eSnare (June 2010) is the cross-media evolution of its predecessor. After various free improvisation based performances for snare solo, I felt the need to use a controlled method, a score that could be part of the listener's experience. I had the opportunity to work with film archivist Dr Stefano Zara and, after a period of research at the *Asolo International Art-Film Festival*, I chose 12 short films[11] that led to not only *V-eSnare*, but also to the collaborative production *The Asolo Thing.*

Simon Goulet's film *Oio* (*Goulet* website, accessed on 3 March 2010) and Kim Shon's *Hem-*

[9] Fully designed within the Ableton environment.
[10] Deactivated clips, without any audio content. They include effect automations only.
[11] Onni Pohl, *Frequenz Morphogenese*
Le Fresnoy, *Under Construction*
Bitzer, Brunch and Weber, *458nm*
Ameera Kawash, *Arabesque Perfecto*
Pelin Kirca, *Reconstructing Mayakovsky*
Provora Myznikava, *Washing*
Yuri Ancarani, *Ancarani*
Mia Grau, *Hydrophil*
Yoko Fukishima, *Alice in Wonderland*

orrhage (Shon website, accessed on 3 March 2010) matched my search for a slow, constantly evolving environment that allowed for the morphing of sound into colour and vice versa. Goulet's film, a continous splash of coloured paint in slow-motion, was used in the English and Italian premieres.[12]

Among the various extended techniques that I used on the instrument, the superball was the most effective one. Though quite popular in contemporary scores, especially among German composers, the superball was lacking a proper mallet with an efficient handle. Made up of a simple bouncy ball, it is usually pierced through with a skewer or something as simple as a straightened paper clip. The resulting instrument is awkward to hold and painful to use, with very limited control over dynamics or prolonged sounds. I wanted to expand its possibilities and, by changing the tool, to offer a new experience to the performer. This innovative mallet, as shown on Figure 4.5 on page 47, grants a thorough control over the ball, allowing for a continuous sound and a much wider dynamic range.

Shortly after the first performances, I realised that I was synesthetically associating this particular timbre, a leitmotiv in the piece, to a washed out red or pink. Therefore, I chose to use Kim Shon's *Hemorrhage,* because it was shot with these very colours; I re-automated the patch to match this film and have used it for public performances ever since.

Hemorrhage has a continuous fluidity that sets a perfect context for free improvisation. Its lack of abrupt events, apart from some sequences of pitch black to which the automations have been key-framed, allows enough freedom for the performer. I added 30 seconds of pitch black at the beginning of the film, to present the musical material and to enunciate some themes, in the same way as Player B at the beginning of *Kp1*. Throughout this scene, the patch collects sound material which is automatically orchestrated in the sequencer and played back at key points. Though the structure is keyframed, its content varies every time because the performer is unaware of when the various recordings happen. As a composer, I was afraid of falling into the loop-layering cliché and tried to differentiate the processed material from the original acoustic material as much as possible. This is why all the speeds are altered and the heavily processed content is represented to the listeners with radical differences each time.

Strongly based on free improvisation, the piece relies on the performer's interpretation and can change its nature at every instance; for it to be successful, the percussionist has to keep in mind the overall structure, measure his acoustic tools carefully and be aware of their resulting

[12]Rymer Auditorium, University of York and Concerti di Primavera XI Edizione, Treviso (Italy) - both in June 2010.

colours, when combined with live processing. Much in the spirit of John Cage's radio broadcast within *Credo in US* (Cage, 1962),[13] chance plays a central role in this piece.

4.2.2.1 Advanced techniques and live electronics

In order to create the sound palette I used in *V-eSnare*, I searched the existing repertoire for effects and experimented with a mixture of percussion techniques. Despite copious attempts, conventional drum sticks were not suitable for the effects I chose, because they were exciting a too rich spectrum of harmonics; they were also too loud and constantly overpowering the pitch nuances and colours I was looking for. Hand-drumming techniques, derived from the Conga repertory, could isolate specific qualities in different regions of the head, especially with the snare off. The open (on the edge of the head) and closed (on the centre) sounds are approximately a sixth apart. However, these can be easily bent by *elbow gliss*, a feature that was key in *The Path of the Thousand Doors*. Slaps are strong accents that trigger gated delays and filters, while fingering techniques, such as one-handed rolls or nails scratching on the coarse part of the head, create pedals and carpets of sound.

Scratches and scrapes were also at the basis of Stephen Davismoon's *...against the grain* (Davismoon, 1996), for solo percussionist on two snare drums, which I premiered in Scotland and recorded in York. However, his processing was radically different and drew a completely different musical landscape.

Right after my session with Christian Dierstein, as described on Chapter 3, I looked at the snare drum as a resonant body. Some of the techniques appear in the existing literature; scraped and bowed glasses are used in Evis Sammoutis' *Two* (Sammoutis, 2009), and the temple gong resonant feedback on the vertical snare was introduced by Thomas Meadowcroft in his *Home Organs* (Meadowcroft, 2000). Nevertheless, neither of these pieces process the sounds in any way.

I used a variety of objects to widen the sound palette. I applied water tuning to all of the bowls, tapping or scraping their surfaces and edges, creating a colour that resembles the ripples of a drop of water, strongly connecting with the fluidity of the movie. Among others, I also discovered a new crotales effect; if laid down flat on the head and hit hard, their irregular tilting bends the resonating note by an octave, through a down-up *glissando*, characteristic of the bars shown on Figure 4.3. Crotales can be hit with triangle beaters, or coins.[14] When moved around

[13] A turntablist interacts with the two percussionists and pianist, playing some classical records and a random radio broadcast at specific points.

[14] Though small, fast and precise, coins must be used conservatively as their timbre is easily recognisable and, possibly, connected to themes that are not really part of the musical discourse.

the surface, it will alter the pitch of any other connected sound, including tapping or other resonant instruments, at rest, in the proximity.

Wine glasses, if scraped on the head, produce a high-pitch hiss which works as a perfect counterpoint to the other pedals generated by bowing the glass itself.[15]

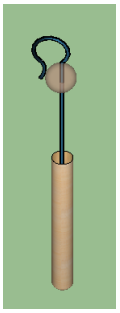
Among other metallic objects, tuning forks laid vertically on the head are amplified by the snare, or distorted when put on top of a much denser crotale; thick guitar strings (low E, or if available, the low B of a 7-string guitar) can be scraped on the rim or jammed on the snare to enhance the rattle and can vary consistently in pitch according to the pulling speed.

There are also some mallets that produce very interesting effects: Hot rods, Superball and Xylophone mallets (Musser model only, because of the very elastic plastic handle). I worked with plastic hot rods, much thicker than normal, which, if pressed hard and twisted on the head, start whipping the drum at random, producing an interesting effect of crackling fire. The superball, Figure 4.5, - a rubber ball on top of a metal stick, is a much more common effect, but I have designed a proper handle, that makes the mallet much more versatile, less painful and easier to control. The effect can be enhanced by putting a light metal stick on top of the metallic handle that rattles sympathetically. Lastly, a Musser xylophone mallet[16] laid flat on the drum, with the head free to bounce, can be moved towards and away from the rim, whilst bouncing and producing a continuous and rhythmic *glissando*.

4.2.3 Future applications: *The Asolo Thing*

The Asolo Thing (June 2010) is a collaborative multi-media piece, which I developed around the concept of live video montage and free improvisation, with Dr Rudnicki, patch designer and live electronics, and Dr Matt Postle, trumpet.[17] We chose nine movies, out of the pool I selected at the *Asolo International Art Film Festival Archives*, and stripped them of their original soundtracks. We then sliced each movie into clips of either three, six, or nine seconds,

Figure 4.5: Superball



[15] Bowl and foot have two very distinctive sounds, whilst the stem can create a *sul ponticello* effect.

[16] The brand is, in this case, important, because it is the only one with a thin enough plastic body which allows for the ricochet.

[17] The submitted video is from a later version, performed at the *Festival Omaggio A* in Acqui Terme (Italy) with Pietro Bertelli on vibraphone.

completely disregarding the final montage.

The piece, tripartite (*fast, sparse, as fast as possible*) is open to any type of trio. Together with Dr Rudnicki, we have presented it with piano, trumpet, vibraphone and clarinet, collaborating with a variety of musicians. The primary target of *The Asolo Thing* was to enslave the live montage to the musicians' free improvisation. We each had a sensor with which we could call our movie up on the big screen, shared with the audience. Having one's movie on screen signaled a solo, which would last until the next musical event; should this event delay, the system would loop the movie, waiting idly.

The narratives of these nine stories were mixed in groups of three with overlapping, movies could start and end at different points, according to the amount of soloing performed by each player. In order to create a continuum with the watery atmosphere of *V-eSnare*, I chose three films that represented the fluidity of the extended snare drum timbre. I opened with the aquatic figures of *Frequenz Morphogenese*, working my way through the middle section with the long and continuous shot of *Under Construction*, to conclude with the continuous morphing of *458nm.*

I approached *The Asolo Thing* with the very same acoustic instrumentation of *V-eSnare* but, on this occasion, the live processing was managed by Dr Rudnicki. Even though I no longer had control over the sound output, I acquired much more independence and, freed from technical responsibilities, I could instantaneously respond to the live electronics, finding the most suitable technique to pierce through the texture. The very nature of this piece requires great elasticity in shifting between the roles of solo and accompanist, much in the way of *The Path of the Thousand Doors*, as shown in Figure 4.4 on page 43. Whilst the soloing was very similar to *V-eSnare*, when accompanying, I played much more rhythmical and steady patterns. The intention was not only to create a guide for the other performers, or to provide a reference for the audience through the free improvisation, but to become a humanised drum machine. Most of Dr Rudnicki's processing consisted of delays, distortion and bit reducers, which brought the snare drum timbre very close to the one of the classic *Roland 808* or *909.* The ability to lock into a steady tempo, to immediately play over it by dragging or pulling, allowed me to stretch tempo and time perception throughout the performance. As a matter of fact, I did use this technique in my improvisation in an earlier piece by Dr Rudnicki titled *Synthesis*, described in more depth on page 63.

Both *V-eSnare* and *The Asolo Thing* sparked my interest into merging melodic and harmonic material with un-pitched instruments. In the words of Schick, 'it is simply impossible to imagine the situation in the late 1960s and early 1970s when there was just a bare handful of important

pieces' (Schick, 2006: 192); whilst today this sentence has never been truer, the percussion repertoire being larger than ever, there is still a great gap between pieces that deal with pitched instruments and those which do not. With these electroacoustic compositions and the digital ones described in the following chapter, I aim to broaden the multipercussion repertoire, in order to embrace both strands of composition.

Chapter 5

Project 6, 7 and 8: MIDI drum kit projects

This chapter consists of commentaries on three projects developed around the MIDI drum kit: from the creation of the sample-based patch I used for *Psappha, a personal take*, to the study of pitch randomization and filtering, which allowed me to extend the MIDI drumming into the realm of pitched sounds.

Despite its widespread commercial availability, this instrument has yet to succeed in gaining the composers' attention. Chiefly used as a tool to study drummers' behaviour in swing (Honing and Bas de Haas, 2008), eDrums are also used in didactic applications as in the *Haptic Drum Kit* (*E-sense* website, accessed 15 August 2012). Programmed to be performed by robots or to create realisations of MIDI scores, MIDI drum kits did not have, before the pieces described in this commentary, any form of repertory composed *ad hoc*.

I started working with this instrument in 2007, creating my first electronic realisation, *Rebonds b* by Iannis Xenakis (*Bertelli*, YouTube, accessed 8 April 2009). With the drive of the high-bongo and the fast phrases interlocked between membranes and the five woodblocks, the score was a perfect match for my digital drum set. The patch was based upon velocity-layered samples and allowed me to play the piece with its original, acoustic sounds. The advantage of creating my own pool of samples was that I could carefully change the striking technique according to the dynamic level; whilst I used gentle taps of the fingers for the quieter range, I superimposed tone[1] and sticks for *mf*, recording a variety of slaps for the accents. By merging these techniques, I designed a rich timbral palette full of those harmonics that one can reach only by hitting the

[1] When referring to drums with natural heads, such as bongos, congas and djembé, one may distinguish at least three possible sounds: tone - the main sound - slap - the accented one - and bass.

instrument with the hands; this happens because the area of contact is wider and because the fingers strike at different times and excite different part of the head, producing a timbre very rich in overtones. A conga slap, for example, begins with the palm hitting the edge of the membrane, immediately followed by the fingers which, in a whip motion, dampen the centre of the head, generating the overtones. Such a complicated and organic movement is unachievable with drum sticks alone. When performing with acoustic instruments, a performer must make a compromise and use drum sticks because hands would not work on the woodblocks. However, thanks to the electronic medium, I have been able to combine both techniques, achieving the best possible combination of timbres.

I decided to carry on this work during the PhD because Xenakis' orchestration and his signature sounds played a fundamental role in my musical growth. As a young student, I acted as Pietro Bertelli's[2] interpreter for the conversations with Radu Stan, Xenakis' PA. It was through these phone calls that the *Brake Drum Percussion,* Pietro's ensemble, was able to build one of the first versions of *Sixxen,* which led to the *BDP*'s performance of *Pléiades* as one of the first five ensembles in the world to prepare the piece (Facchin, 2000: 188).[3]

> I know that I am not alone among percussionists specializing in contemporary music to acknowledge a great debt to Iannis Xenakis. Many of us learned to play percussion by playing his music (Schick, 2006: 192).

5.1 Project 6: *Psappha, a personal take*

Psappha, a personal take (May 2010) is the electronic realisation I composed for the *Luigi Nono Festival* in Trieste 2009, scored for MIDI drum kit and pre-recorded tape. Even though I started with the simple intention of creating a digital version of Xenakis' *Psappha*, after transcribing the part, researching in depth the timbral possibilities and composing a backing track on fixed media, I realised I had achieved a completely different piece.

A close experience of *Rebonds b* and a major criticism, 'Why are you not using the acoustic instruments?', pushed me to create a patch that could extend the physical possibilities of the set. *Psappha*'s acoustic setup had already been minimized by Steve Schick, whose portable kit was half the size of as Gert Mortensen's stunning battery of instruments. The electronic realisation would have taken me to the next step, logistically, but much further ahead in terms of timbral

[2] My father.
[3] I sampled this instrument for the closing section of *Psappha, a personal take.*

possibilities.

> I would later be grateful for an arrangement of small, ordinary instruments, considering the demanding logistics of either traveling with or borrowing instruments on tour (Schick, 2006: 198).

Loyal to the performance directions, I created a pool of samples that depicted my musical environment. The metal section of the setup was the most inspiring, 'tempered metal bars, steel rails, tam-tams and gongs struck with a metal beater or hammer' (Xenakis, 1976: performance notes).

I included:

- Found objects: from the local mechanic and junkyard, intended as an expansion of the performing table (see 2.3.1 on page 23).
- Sixxen, one octave: a homage to Brake Drum Percussion and the Italian part of my career.
- Gamelan: one of the highlights of York's Music Department.
- Scrap Metal Recycling Factory: for its fascinating sounds, that I had used in *M@Elodie*[4] and that I re-orchestrated for the tape accompaniment.

Though I organised the samples strictly, respecting Xenakis' indications, I was able to merge the different striking techniques, various types of beaters and also sounds belonging to very large instruments (skips, gutters or sheets of metal) in single cells. I maximised the distinction between the six groups of sounds, differentiating them by instrumental colour - what Schick would call *modular* - but with the advantage of not having to change beaters. By that stage, I had joined together sounds from an imaginary setup that, physically, would have never been possible to put together.

I was also able to arrange various hits of the same instrument according to its harmonic response. The same bar of a Sixxen, for example, could produce at least three definite notes, depending on the striking point. I exploited these variables and mixed the samples among the sampler's cells following the overtones instead of the formants.

I took every effort to humanise the performance, avoiding repetitions and duplications of sounds whenever possible. Despite these expedients, the crisp, bright and short sounds resulted

[4] I composed *M@Elodie* for choreographer Elodie Frati, during the exchange programme with the Northern School of Contemporary Dance (Leeds). For this piece I explored the processing of metallic sounds collected in a scrap metal recycling plant.

in dry and unsatisfying performances. Moreover, at the time of composition I was suffering from a heavy flu that blocked part of my hearing. Therefore, I decided to create a tape accompaniment with a very rich texture, full or harsh, sometimes painful, sounds that could still stimulate my nervous system. I generated material by interpreting random parts of the score as if they were written on a treble and bass clef, composing melodic lines by playing with the sounds on sampler keyboards. I differentiated this material by smoothing all the attacks, in order not to interfere with Xenakis' rhythmical structure.

After all these changes, my realisation was so far away from the original score that I decided to change the title and to dedicate this composition to Xenakis.

5.1.1 Score and performance practice

Psappha's original score is in the form of a graph; squares symbolise time and duration and dots indicate the attacks. Whilst there is no discernible specification for the duration of the notes, accents help identify the Sapphic Ode's metre, expressed in quavers and semiquavers. A quintuplet, a 5:4, is the only irregular grouping throughout the whole score.

From the very beginning, I found the notation system quite challenging. Whilst rhythmically very clear, the original score did not take into account the layout of the instruments and, though it could work with any setup, it required too much decoding, a process that slowed down my practice sessions. Moreover, the very many lines, the distance between the voices and the complete absence of beamings, made it very difficult to follow consistently. Therefore, I devised a system to transliterate the dots into conventional notation (see Appendix E).

I was aware of rather opposite currents of thought on this matter. On the one hand, the view of percussionists that read from the original score, like Steve Schick (UCSD): 'I think that anyone who makes a metered [sic] transcription of *Psappha* has pretty completely misunderstood the piece' (Schick, e-mail, 2012); on the other, Chris Brannick (of *Ensemble Bash*) view: 'I tried to stick to consistent metre, but to follow the shape of the "melody" wherever possible' (Brannick, e-mail, 2012).

My transcription is unique because, besides respecting the original freedom of Xenakis' score, avoiding regular beamings, it is also made *ad hoc* for the instrument. I accommodated the nine sensors on a fixed system of 4 + 3 + 2 lines, which fit the two rows of tom pads and the two pedals. The sensors have then been automated to the score in the background, to match all the combinations of the 16 timbres. The radical difference from Xenakis' score was that, whilst his

layout put the timbres first, mine prioritised the physical disposition of the pads, offering many more points of reference to the performer. Like my work on *Home Work II*, I aimed to create a score that was based on the performer's needs. The speed and the ease with which I could practice increased consistently, and I was able to control the phrasing with much less effort.

I kept the metre completely open, as well as the phrasing, creating an original compromise between Schick's and Brannick's views. Even though I wanted to add slurs to the score, the different colours and resonance of the samples were constantly invalidating my attempts. Therefore, I decided to leave phrasing and most of the dynamics open to the performer's sensitivity, giving priority to timbres and textures. Moreover, I was inspired by the Cageian phrasing - which appears throughout the three *Constructions* - with beamings and tuplets that carry across bar lines.

It was at this stage that I decided to abandon the literal interpretation of the score. Since I had prioritised timbre from the very beginning, distorting most of Xenakis' *dictat*, I approached the score as a guide for controlled improvisation. I used it as a reference for orchestration, achieving the original textures, emulating density and dynamic levels. The improvisation was centred upon the Sapphic Ode's metre, at the basis of Xenakis' structure, adapted as a response to the pre-composed track, which I used as a reference for the structure.

While I completely understand that this abandonment of the score might be upsetting for some, I worked towards a personal version of the piece. Following up the work done on *Kp1* (see 2.2 on page 22), I re-structured the Xenakis to mould an improvisation around a pre-existing score, concentrating on this unique palette of colours.

The possibility of merging all these different sounds within such a contained set, and the chance to achieve this without ever changing the sticks, was unprecedented. The instrument became so sensitive that every phrasing was achievable; even during the tremolo section, starting at 2030, the instrument was able to achieve an incredible density and to reach great dynamic power.

Psappha, a personal take has become a versatile skeleton for a piece of music that can be performed in radically different ways, as long as one changes the samples or reinterprets the rules of the proposed controlled improvisation. While it respects most of Xenakis' initial intentions, this version is completely recontextualised to match the needs of the performer; the same material is presented in a clearer way, prioritising practical and logistic needs that are not necessarily obvious to the composer. The use of blocks of familiar beamed notes helps show the exact interlocking

between voices, whereas representation of the instrument layout enables the performer to envision phrasing and multiple stops directly from the score.

Psappha, a personal take is the first electronic realisation of a Contemporary Classical score performed with MIDI percussion. By presenting this recording I aim to inform composers of its potential and to entice them into creating a series of *ad hoc* compositions.

5.2 Project 7: *Drumactica*

Drumactica (November 2010) is an original composition for MIDI drum kit, created during my residency at the *New Music New Media* scheme at the *Aldeburgh Festival* with Tod Machover.[5] This piece is my response to the need to expand MIDI drumming in the realm of pitched sounds. Despite extensive research, I could not find a single patch or dedicated software that allowed this to happen. Henrik Schwarz's *Schwarzonator* (*Schwarz* website, accessed 5 March 2010), was the most similar patch; based on a piano-roll, it gives the option to pre-select chords and scales so that, in the words of its author, 'No matter what key you press, the result is gonna sound good' (Schwarz, YouTube, accessed 5 March 2010). Nevertheless, the device is not very different from the one-finger chord style, which is now programmed in every home keyboard.

There are a number of drummers who have added MIDI pads into their kit. The most successful integration was Akira Jimbo's *James Bond & Mission Impossible Drum Solo* (Jimbo, YouTube, accessed 10 November 2008). However, Jimbo simply integrates the themes in his drum playing and does not alter his style, re-thinking the role of the drummer. Moreover, his system is not interactive, but a rigid step sequencer, which reveals its flaws at 3' 33", when he misses one pad and the theme remains stuck on the wrong note.

In projects like *Psappha, a personal take,* described in 5.1 on page 51, I layered samples by velocity, triggering them univocally with slightly randomized MIDI messages, in order to achieve a more diverse texture; this was not enough. My instrument was limited by a single-note output per hit,[6] and by no control over the note length. Some more advanced instruments feature dual- or triple-trigger pads, and choke controls. Unfortunately, whereas the former can only multiply the problem, instead of solving it, the latter is limited to cymbal pads. Since neither of these were acceptable solutions, I started tampering with the hi-hat, which sends useful control messages,

[5] As the only performer in residence, guided by Dr Martin Suckling and Dr Milton Mermikides, I had the chance to collaborate with various composers, including Adrian Gierakowski and David Ibbett, with whom I later developed other MIDI-related projects.

[6] Each of which is made up of MIDI-note, velocity and note-off.

but its unreliability, at hardware level, and design flaws, lead to its early dismissal.[7] Eventually, I opted for a software-based pitch generation patch, which exploited particular hardware glitches.

In line with the principle of concert-in-a-suitcase, I downsized the kit to make it fit. By using shorter poles and narrowing the distance between pads, I obtained a lot of cross-talk, which I exploited in the composition.

5.2.1 MIDI filtering and pitched material

I based my compositional ideas on filters that work with the output of pitch randomisers. Each device could control *chance* - whether or not the initial message is altered; *choices* - how far from the root, in semitones, can the new note be, and *scale* - what intervals are acceptable. Modal harmonies were easily achievable, but all these randomisations revolved around a central note that, when kept the same, generated only monotonous material. Therefore, I selected four root notes, C, F#, C#, G that would alternate over time, and chained them to the automated sequence; the results were filtered a second time through modal scales,[8] chosen for their contrasting nature, and colours and rhythm acquired priority once again.

I chose the sounds to create a one-man rock band, similar to McRorie's (see **??** on page ??), but solely on drums. A distorted guitar provides the lead, split in two octaves, strongly connected to a clean bass,[9] which holds together the harmonic progression. Piercing electronic bells and a deep evolving organ[10] characterise the introduction and the fade out, while distorted kicks and percussive sounds enrich the texture, reminiscent of the drum kit sounds. Eventually, since I could not programme a reliable controller for the note-length, I automated this value, according to the diverse structural needs; for example, the bass notes are short and crisp during the solo, to be transformed into long pedals during the accompanying sections. I also tried to improve the humanisation by mapping velocity to various parameters. This solution, besides increasing the timbral diversity, meant each note sounded a little different, imitating a live performance.

5.2.2 The score and *Metronomo Vivo*

Drumactica is heavily automated and must be performed to a specific click, which I called *Metronomo Vivo*. Besides the usual metronome sound in 4/4, the *MV* is a voice track that

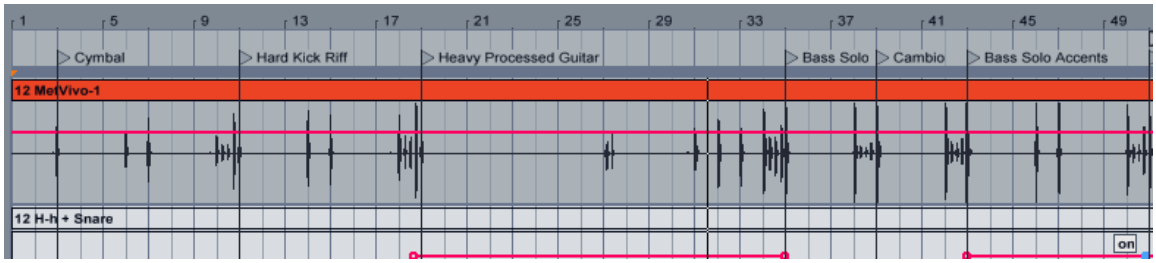
[7] Yamaha's MIDI drum kits mount very similar hi-hat technology on all models. Unfortunately, these are not very precise and they often result in unwanted attacks.

[8] Major Pentatonic, Lydian Flat 7th, Dorian, Minor Harmonic, Enigmatic Scale, Altered, Dodecaphonic.

[9] A technical term that indicates a pure, non distorted sound.

[10] A technical term indicating alterations, in the timbre, that happen from just after the transient, throughout the whole duration of the sound.

Figure 5.1: *Drumactica*, score-like markers in the sequence



marks structural points and helps counting bars in particular sections. Although I worked with blocks of four, eight and sixteen bars, the *MV* allowed for a greater independence from the tempo; I was able to play a theme and improvise over it, whilst being constantly reminded of my position within the phrase.

I decided not to produce a paper version of the score, but rather to put markers at key points of the automated sequence, as in Figure 5.1, for the performer to see during the performance. The grid below shows, on the left, my definitions and, on the right, the conventional wording.

Table 5.1: *Drumactica*'s automated score

On The Score	Conventional Wording
Cymbal	Intro
Hard Kick Riff	Build-up
Heavy Processed Guitar	Verse
Bass Solo / Accents	Solo
Doubles	Chorus

Despite its improvisatory nature, I used recurrent rhythmic patterns that identify the various themes. Though I find them rather effective, I preferred not to notate these ideas, in order to allow other performers to choose their own grooves and create a completely different piece. I limited my notes to few indications on the sequence that suggest timbres and the general performance mood, leaving all the other structural explanations as part of the *Metronomo Vivo*.

In contrast to *Kp1,* I chose a rigid structure because:

1. A 4/4 structure is much more instinctive and reliable when interacting with a fixed, fully automated sequence that gives very few recognisable cues.

2. The timbres are referable to the world of rock; though I distorted rhythmic patterns, harmonic progression and everything I could from that performance practice, I maintained a strong connection with this genre by using a conventional structure.

3. With very limited time on my hands, I chose a balanced structure I was very familiar with, which would help me deliver a good overview of the composed material.

5.2.3 Performance practice

Drumactica is performed from a standing position. I re-shaped the drum kit, embracing a layout with pads on multiple lines, easily accessible by both hands. Though this offers much more versatility and control in the phrasing - the drum kit hierarchy was no longer valid. All the pads were equally important and most of the limb interdependence, part of the technique background that is common to all drummers, was nullified. I sacrificed this feature to be able to look at the various instruments from a different and unbiased point of view; a guitar could not be used instead of a hi-hat, a bass was not a tom-tom, they all had to be accessible in the same way. The familiarity of pads and sticks was disrupted by the unexpected timbres they were connected to; I had to reinterpret the instrument and build a completely new identity for it. The digital instruments, though not fully controllable in dynamics and phrasing, were all mediated by a percussive means. They each lost their core characteristics, as did the drum kit, to embrace a new form of performance. By marrying the percussive techniques achievable on a MIDI drumkit with timbres of a wide array of instruments, I created a hybrid instrument that offered the performer a different interpretation and an alternative way of controlling pitched sounds and effects.

5.3 Project 8: *So Far Niente*

So Far Niente (July 2011) is a collaborative project between myself and pianist/composer Zezo Olimpio, with guest artist Ricardo Alvarez on saxophone. I aimed to prove the suitability of the hybrid drum kit in an acoustic[11] context and to experiment, through improvisation, with its strengths and weaknesses.

My role in this project can be defined as:

- Instrument and patch designer.
- Sound designer.
- Live performer and improviser.

[11]The samples used are from acoustic instruments. The difference is even more obvious when juxtaposed with fully electronic projects such as *Synthesis* or *Drumactica*.

A groove-oriented composition was the stylistic compromise that merged, at best, mine and Mr Olimpio's musical background, allowing for a partly improvised piece, based upon a solid structure.

So Far Niente is a theme-based open structure, divided into the following sections:[12]

A Half-tempo.

B Straight eights (plus hybrid-guitar solo).

C Straight sixteenths - slow, one hand.

D Kick drum in four, then in eight (four or eight on the floor).

E Hybrid-drum kit solo.

F Straight sixteenths - fast, two hands.

The improvisation develops through eight-bar phrases, most of which are repeated *ad libitum*. The sections gently morph into each other, with the exception of abrupt tempo changes.[13] Each part is built around a groove that Mr Olimpio has selected from a series I have composed.

5.3.1 The patch

Drumactica's randomization devices were static and fully automated, allowing for very limited interaction. I envisioned an interactive patch that could re-map the VSTs' tuning in accordance with the live feed from a MIDI keyboard. For this reason, I approached m4l expert David Ibbett, commissioning from him the design of such a patch, later named *Scale shaper*. As soon as this new feature was added, I re-built the hybrid drums, creating a software environment that could host and combine my two drum kits.

> The *Scale Shaper* takes a MIDI feed from the pianist,[14] to generate a continuous analysis of what pitches are present at any time (factoring out octaves) and which ones are at the top and bottom (specific octaves). This information is used to 'shape' the drum kit's MIDI output - incoming notes are adjusted to match the nearest pitch of the current harmony or follow the top/bottom of the chord. Each part of the kit is channelised to perform a different harmonic/textural role - some generating chords

[12] From my personal notes.

[13] The grooves were selected by the composer from a series I composed. Those in the score are rough indications and to be considered nominal, as they are constantly changed during the performance.

[14] Or any customisable range of the keyboard.

played by guitar, some with randomisers (pre-shaping) forming brass arpeggios, others tracking the bass line with a jazz bass (Ibbett, e-mail, 2012).

5.3.2 The *Hybrid Drumkit*

I improved the hardware I had available, creating a rack that would hold both my *DTXplorer* and the *DD-55* (tabletop), creating an environment that allowed for the mapping to up to 20 instruments.[15] After careful consideration of ensemble size, feasibility of instrument control and orchestration needs, I decided to divide the instrument into four main areas:

Area 1 Hi-hat, snare, ride, one crash, one ride, cowbell.

Area 2 Kick drum.

Area 3 Tom-toms.

Area 4 Remaining cymbals.

The parts used for comping, Area 1, were sufficient to create a drum texture and to underline passages with the cymbals. These were left un-mapped, with the acoustic drum sounds only. I did this to grant a safety net to the performer, a familiar part of the instrument to build the phrasing upon.

I mapped the kick-drum to a double bass, unlocking the possibility of syncopated unisons and great crescendi during chord progressions. Phrasing and rhythmic displacements can happen extemporaneously, as if the brains of these two imaginary performers were perfectly interlinked. Dynamic variations were very precise and even underlined by some Bartok *pizzicati*, randomly added on *sfz*.[16] I have disregarded other articulations because they were too subtle and would have been lost in the overall texture.

The guitar part, mapped to the tom-toms in Area-3, is a mixture of powerchords, triggered with different strumming patterns. I chose powerchords specifically for their harmonic versatility. Since I could not really control their voicing whilst playing, I accepted this compromise over single notes, which sounded too digital and would not have enough dynamic power in distorted passages. Chord strums are borderline realistic but, thanks to the superb attack control that the drum kit provides, I managed to mask this flaw, turning it into an interesting improvisation tool.

[15] Since every pad is MIDI-channelised (in groups or solo), the technical limitation would be sixteen. Nevertheless, it would still be possible to re-route the signals through virtual IAC, getting around this limitation.

[16] velocity >120.

The remaining section, Area 4, was mapped to an entire brass section. Used to accentuate specific passages and to thicken or to thin out the accompaniment during the saxophone solo, these instruments were orchestrated across dominant seventh chords that followed the root notes.

The underlying need to interact with live organ and sax player urged me to bend the hybrid kit instruments' registers to the extreme. Besides creating space for the other performers, these octaves brought forward the most characteristic features of the instrument, helping to mask their weak, less credible, portion of timbre. Very high and short notes allowed the digital brass section to convincingly cope with the dense patterns of attacks initiated by the cymbals. A very similar situation happened in the bass, with a sharp phrasing that underlined the syncopation and, at the same time, provided the necessary low register.

5.3.3 Acoustic drum sounds and hardware boosting

So Far Niente is the first project in which I used acoustic drum kit sounds. Since MIDI drum kits are a widely used instrument in the industry, from West End musicals to Hollywood movie soundtracks, the amount of sample-based emulators is practically endless. I searched the market for the best solution instead of creating my own, because I realised I could never have improved a decade of R&D carried out by teams of expert technicians working for professional companies; this led me to *Superior Drummer 2*. Its bleeding control, quality of samples, microphone and room design options and versatile midi-mapping interface, helped me achieve the most realistic playing.

This software could also deal with alternate sticking, various other articulations and cymbal chokes. Whilst some of these features are factory settings in the more expensive hardware (dual- or triple-triggering pads and choke controls on cymbals), I decided to improve mine by solving the issue at software level. In doing so, I created a solution that empowers any performer to use the cheapest of instruments and to communicate with an advanced piece of software more efficiently. Through a series of MIDI racks and gates, as explained in Appendix C, I enhanced the sensitivity of the aforementioned MIDI drum kits establishing a rich communication between a cheap piece of hardware and a very advanced music software.

5.3.4 Performance practice on the *hybrid drumkit*

In *So Far Niente*, for the first time, I was both a drummer and a multi-instrumental improviser. The hybrid drum kit requires a duality of performance, not dissimilar to the schizophrenia de-

scribed in *Home Work II*, which represents an entirely new set of skills. I individuated two ways to approach this bipolarity:

1 Respecting the drum kit timbral hierarchy and enslaving the mapped VSTs.[17]

2 Prioritising the external instruments and partly sacrificing the drum kit's independence.

Since the hybrid kit gives a percussive view on whichever instrument it controls, offering new and appealing solutions to the performer, I opted for the second solution.

The unique features of this instrument emerged as soon as, after a section of comping, I had to play a drum fill. When approaching the tom-toms, I tried to think as a guitarist - how he/she would have approached this passage, what the best rhythm, speed or dynamics would be. This is where the perfect hybridity happened; on the one hand, the rhythm was subdued by the need for a melody but, on the other, thanks to the great attack control that the pads conferred, the guitar was being *drummed*. Even if just at a primitive level, I transferred Preston Reed's percussive guitar style onto my drum kit, unlocking even more phrasing possibilities (Reed, *TED Talk,* accessed 1 August 2012). Even though the pitch is more static than the one on a real guitar, the continuous control of the threshold between discernible attacks and continuous rolls helped to achieve a perfect compromise in orchestration.

The dialogue between organ and guitar, just after the first of the saxophone's themes, brings this role-switching to the extreme. Generally, a drummer's fill is limited to the end of a phrase and it rarely expands after the downbeat of the next bar. In *So Far Niente* the improvised question and answer with Mr Olimpio included both regular and irregular phrases. The struggle to incorporate and interlock these melodic fragments within the ongoing groove was the most challenging. Constantly aching for an extemporaneous musical compromise, I thinned out the grooves to allow for the most flexible interaction, maintaining a sparse but solid rhythm that sustained the structure and acted as a versatile tool for hybrid improvisation.

In each section, I explored different sides of this style of playing. The drum solo in between Sections B and C, for example, is effectively a guitar cadenza. Relieved from the time-keeping role, I was able to gradually morph a tribal tom-tom groove onto guitar phrasing. Towards the end of this part, an extemporaneous orchestration of brass and cymbals accompanied the sax solo. Such a connection between a whole brass section and a drummer could have only been worked

[17] This is the method used by Akira Jimbo, as described on page 55.

out on paper. E and F are at the peak of the drum kit solo. E is the solo par excellence, with two unisons at the beginning of each bar, followed by three full crochets that encourage the drummer to reveal the full power of the instrument. Throughout F, the listener witnesses the role reversal. All the VSTs follow blindly the drum hits, dealing at best with rolls, rudiments and patterns with an extremely tight and syncopated orchestration of brass and bass. In F I showed how the Area-1 and 2 sounds can be gradually integrated with the rest of the kit, to create an organic solo machine. Perfectly in line with the *make it happen* principles, with this single instrument I managed to successfully substitute the entire rhythmic section of a big band.

5.4 Future applications

My interest in advanced pitch and harmony manipulation, in MIDI drumming, pushed me to pursue other projects. The collaboration with Dr Rudnicki produced, in 2009, a piece for eDrums and prepared *Elektron Machine Drum*, titled *Synthesis*. Based on a graphic score,[18] the piece offered me the possibility to play along and against drum machine-generated loops. The eDrums MIDI output was fed to a Max/MSP patch that scaled its values and re-mapped them to *Machine Drum* parameters such as LFOs, delays, reverbs and pitch bends. All of the synthetic sounds were produced by the same drum machine, making it quite difficult to distinguish my performance from the machine's. Nevertheless, by locking onto the quantised tempo, playing around it, changing abruptly speed and dynamics, I found my own space in the texture, differentiating my phrasing from the machine's. In principle, this was the fundament of the technique I used in *Drumactica*, as described on page 55.

Synthesis allowed for limited control over pitch, mostly connected to velocity parameters, but offered a primitive solution to the note length control. Every pad was assigned to a mono track which did not allow for polyphony. Every time a note was struck, it would choke, if applicable, the previous note. I turned this limitation to my advantage by using a quiet note to choke a very loud one, introducing an early solution for the note length control.

Soon after *So Far Niente*, the collaboration with David Ibbett generated *Concentric Mantra*, for hand-ePercussion, iPad and keyboard. Mr Ibbett's patch revolves around the concept of pitch-class set; the keyboard notes are collected in a list and cyclically triggered by the eDrums. We chose to feed these notes to the piano, as it was the most common timbre, which would have helped understanding the compositional process. We achieved a wider timbral interest through

[18] UDP-Based graphic patch designed by Dr Rudnicki, traffic light system and iconology designed by myself.

the live processing controlled via iPad.

As I did in *V-eSnare,* 4.2.2.1 on page 46, I abandoned the sticks to embrace hand techniques. As the pads were much smaller on this kit, fingers were much more precise, fast and reliable. Moreover, this overcame immediately the noise problem of sticks hitting the rubber pads, allowing for much quieter textures and widening the possible dynamic range. Furthermore, a simple sustain pedal augmented the control over the note length; though it sacrificed one of the voices, it improved the expressivity of the instrument.

To date, Korg's *Wavedrum*[19] and Roland *Handsonic* have surprisingly improved the reliability of their sensors. Pressure sensitive pads allow to control pitch bending and, together with beam sensors, duration as well as other parameters. Hand and finger techniques, with their great immediacy, are probably the future for this type of instrument. I am currently working towards a fusion of these techniques with the e-body percussion suit to create a new generation of hybrid drums.

[19]Unfortunately, this device does not have a MIDI output, only an audio out. Though useless in regards to this project, it demonstrates that the sensitivity of these devices has now reached a very high standard and will be used to control MIDI and OSC messaging.

Chapter 6

Conclusions

In this commentary I demonstrated how the application of technology allowed me to both expand the sound palette and contain spatial dimensions. Moreover, the reinterpretation of existing tools, acoustic and electronic, pushed even further the possibilities of percussive instruments.

By looking into underdeveloped areas of the repertory, I created new pieces, meeting composers' and performers' interest alike. Whether I was creating an *opera prima* - kitchenware and live electronics-, boosting an existing field - musical theatre and imaginary instruments- or combining two existing genres - MIDI drumming and pitched percussion-, I succeeded in expanding the current percussive repertory. Furthermore, I showcased the hybrid drum kit's versatility as a controller for other digital instruments, proving its validity against the consolidated MIDI keyboards.

In the light of these innovative compositions, I suggested an update to the contemporary percussionist's role.

I wanted to show an alternative to the extreme instrumental diversification, now very obvious even in percussion competitions,[1] by expanding the possibilities of the multipercussion performance. I am envisaging the figure of a new musician, a hybrid percussionist who, by combining the essential technical background with an updated technological know-how, is able to face the new challenges posed by the contemporary repertory.

[1] Percussionists are divided into very strict instrumental categories (marimba, vibraphone, snare drum, etc.).

Appendix A

Chronological list of the projects and public performances

A.1 Project 1: *Kitchenware Project 1 - Kp1.* January 2009.

Performances: *Rymer Auditorium* (York, February 2009), *City Screen Basement Bar* (York, February 2009), *FOCAM - University of Leeds* (Leeds, March 2009), *Computer Art Festival* (Padova, October 2009), *Luigi Nono Festival* (Trieste, November 2009), *Rymer Auditorium - Concert Season* (York, March 2010).

A.2 Project 6: *Psappha, a personal take.* May 2010.

Performances: *Luigi Nono Festival* (Trieste, November 2009), *Late Music Festival* (York, May 2010).

A.3 Project 5: *V-eSnare.* June 2010.

Performances: *Concerti di Primavera* (Treviso, June 2010), *Festival Omaggio A* (Acqui Terme, October 2010), *University of Hertfordshire* (Hatfield, January 2011), *City Screen Basement Bar* (January 2011), *Centre for Creative Practices* (Dublin, March 2011), *Pop-Up Circus* (London, November 2011), *The Rubik's Cube* (London, January 2012).

A.4 Project 4: *The Path of the Thousand Doors.* August 2010.

Performances: *Ferienkurse fur Neue Musik* (Darmstadt, August 2010), Studio Recording (York, March 2011).

A.5 Project 2: *Home Work II.* October 2010.

Performances: *Computer Art Festival* (Padova, October 2010), *University of Hertfordshire* (Hatfield, January 2011), *Centro Culturale Candiani* (Mestre, March 2011), *Sensorium Festival* (Dublin, March 2011), *Centre for Creative Practices* (Dublin, March 2011), *Orpheus Instituut Conference* (York, May 2011), *Sir Jack Lyons Concert Hall* (York, May 2011), *Knotarts* (Athens, October 2011), *Centre for Creative Collaborations* (London, November 2011), *Sonorities Festival* (Belfast, March 2012).

A.6 Project 7: *Drumactica.* November 2010

Performances: *New Music New Media* (Snape, November 2010), *King's Place* (London, November 2010), *University of Hertfordshire* (Hatfield, January 2011), *Centro Culturale Candiani* (Mestre, March 2011), *London Music Hackspace* (London, January 2012).

A.7 Project 3: *The Arrival of the Beatbox.* October 2011.

Performances: *Royal Holloway University of London* (Egham, September 2011), *Knotarts* (Athens, October 2011), *Second Composer/Performer Athens' Conference* (Athens, October 2011), *Centre for Creative Collaborations* (London, November 2011).

A.8 Project 8: *So Far Niente.* July 2011.

Performances: Studio Recording (York, July 2011), *Solo Showcase at the London Music Hackspace* (London, January 2012), *Solo Showcase at Digihub - Art & Chat* (Brighton, September 2012).

Appendix B

An interview with composer François Sarhan (edited):

EB: *Home Work II* is the extrapolation of the body percussion part from the original trio *Home Work*. The text is, for the greatest part, the same, but it seems to have a very different function in the solo score, deprived of the careful interlocks with the rest of the ensemble. Could you describe the extraction process?

FS: It was very simple since the original piece is conceived as three separate solos, interlocked in the final section only. The extraction was straightforward for the first two sections, where I simply collated the various slices, while I completely re-composed the last one. I kept most of the words because the topic remained the same, but the conclusion is different: the solo version has a much more pronounced curve of excitement, towards madness, that I did not manage to render in the *tutti*.

EB: Were you inspired by other composers whilst producing the score? Which were your primary sound sources?

FS: No, my starting point was my own improvisation. I started, as usual, with my camera running and made sounds in my kitchen, improvising. I then selected what I liked and wrote it down as precisely as possible.

EB: How did you come up with the notation system?

FS: I must really thank Christian Dierstein. Since I am not a percussion player and it was the first time I dealt with these techniques, I wrote it the way I thought, which, of course, is not the best way for the percussionist to read. Gerrit Nulens, with *Ictus* ensemble, has also recommended me some changes and I believe there are still many improvements to be made on the score.

EB: [Description of the author's interpretation of the plot]

FS: It works perfectly, I cannot and I would not contradict anything. I conceive the score as a field of possibilities, my imagination provides the performer with space for interpretation; any is good, within the limits of the score. In this particular case I find the interpretation particularly consistent because it is very close to the score. The thing I never thought of, is to have the *Machine* answering in bar 24. I envisioned the guy himself reading the manual, checking his own work and spotting some problems on it; this section represented the alternation between the reading of the manual and the self-reflection of the performer. If the score were too linear, there would be no space for variation and the piece would be too poor. Christian's interpretation[1] has probably inspired you because he puts his very own imagination; the inconsistency of the plot has then allowed you to reinterpret it under your point of view. I like your interpretation because of the consistent contextualisation that creates a continuity on stage, before, during and after the performance.

EB: While translating the text into Italian, for the premiere in Padova, I confirmed my doubts on the linearity of the plot, thus my interpretation of a schizophrenic character. What is this all about?

FS: The desire of getting satisfaction on a physical level, a manual to build a sexual device for the lonely person. You could imagine the device as a blow-up alien doll; not a banal object of pleasure, but a prototype capable of providing the most intense physical pleasure. The main character is torn between excitation and doubt, this is why he sits on it, hits himself (masochism), and evokes many sexual symbols such as membranes, faucets, opening and closing hinges, things that are either too soft or too hard. The repetition towards the end serves to reach a point of sexual satisfaction. Unfortunately, since he is being overwhelmed by it, the pleasure is replaced by torture, an analogy with Kafka's *In the penal colony* (Kafka, 1987): the machine is drilling, plotting, there are painful pins and he wants to get out of it.

At the time of writing I was under the impression that all the pleasure we have in life is connected, on a certain layer, to the sexual experience. I find this idea very funny because you can imagine many people with naive perversions, trying to hide something which we all share, in different forms. The sexual interpretation is in between the lines, you can choose to render it more or less intensively; the body percussion must hurt, the character is hitting himself in a form of masochistic act, it has to hurt in performance as part of both the musical process and the plot.

[1] François Sarhan is now referring to the Christian Dierstein's - Ensemble Recherche - performance at the Darmstadt Courses in 2010.

One might think that there is no machine at all; it could all be happening inside his body and mind. You can find a similar concept, even if subtle, in *Corporel* by Globokar, where the notion of pleasure is similarly connected to the touch.

EB: *Home Work II* works perfectly well without amplification. A resonating wooden stage is all the performer needs to get enough response. My experience at the Candiani Centre, performing on a stage full of rattling instruments, almost alive ones, was superb: the response of the surrounding objects is a natural expansion of the piece. Nevertheless, the general volume seems insufficient when performing the trio version. Have you ever tried to amplify it?

FS: Yes, we tried many different techniques during our collaboration in Vitten with the Experimental Studio. We were very unsuccessful. Piezo microphones were too sensitive whilst MIDI triggers needed very precise hits; the sounds triggered where from a big library of Asian drums, very irrelevant and boring after a while. We tried normal amplification but the levels on the gain where picking up the other performers, the audience was standing and was very noisy - that did not help either.

Appendix C

The hardware boost on a MIDI drumkit

The two drum kits I used are a *Yamaha DTXplorer* (kick drum, snare drum, four tom-toms, ride cymbal and hi-hat) and a *Yamaha DD-55* (7 pads and two assignable pedals).

Every drum (snare, kick, four tom-toms) has been chained to a randomizer that alters, by one step, the output note. The two resulting notes have been mapped to a right-hand and a left-hand sample, emulating a more human playing. Moreover, the snare has got an extra feature, because it is velocity-mixed with the rim-shot sample, which boosts its power, playing at unison at loud volumes.[1]

The hi-hat is one of the most responsive parts of the kit. This is why I mapped all of the six samples (three open and three closed) to get the most realistic sound possible, including pedal on, release and splash.

The hi-hat pedal sends out a non-latching control message which is very useful to temporarily transpose some notes. Within this patch, with the hi-hat pressed, all the cymbals are choked.

Finally, I transformed the *DD-55*'s pedal into a toggle that transposes the snare into a rim-click sound and the kick drum to a much softer setting.

There is no doubt that this patch could be taken further but, with these very few improvements, any entry level MIDI drumkit is already able to communicate with the most advanced sampling software.

[1] Ride and Cymbals were similarly mapped, merging edge, body and bell sounds.

Nomenclature

Armed: a switch used to record-enable a track's clips. Armed tracks will record the signal set in the Input Type and Input Channel choosers. (From the Ableton 8 manual).

Bleeding: Designed to emulate, by cross-talk, the natural sympathetic resonance. How a kick drum hit affects the cymbals, or how the high tom excites the snare.

Comping: the action of playing a musical accompaniment, esp. in jazz or blues.

Cross-fade: (in sound or movie editing) make a picture or sound appear or be heard gradually as another disappears or becomes silent.

Glissati: whilst glissando is conventionally used in the scores, glissato is more appropriate when used as an adjective. Glissando is, in Italian, gerund (present continuous equivalent) and is used to describe the action, as a verb. Glissato is, instead, a past participle, used as an adjective, thus preferrable to describe the nature of a sound.

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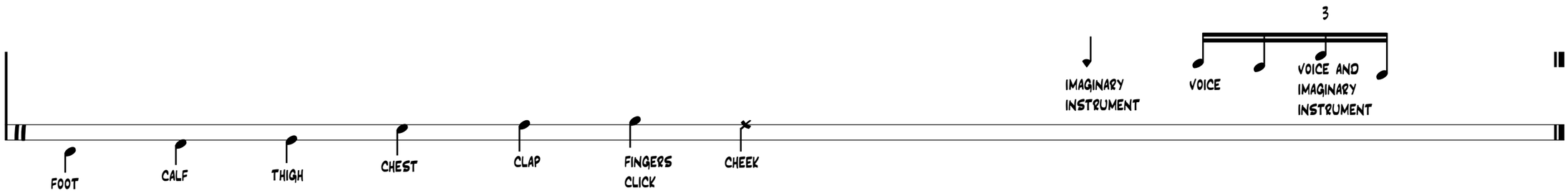
Enrico Bertelli's realisation of François Sarhan's original composition

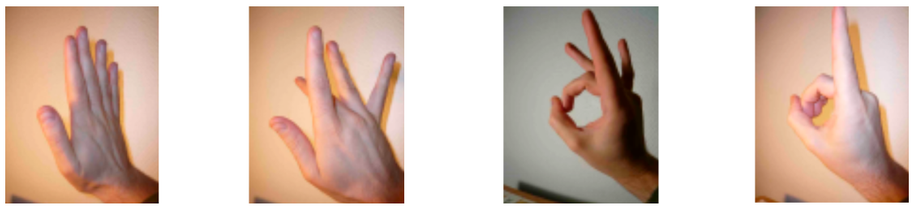
Home Work II

Home Work II

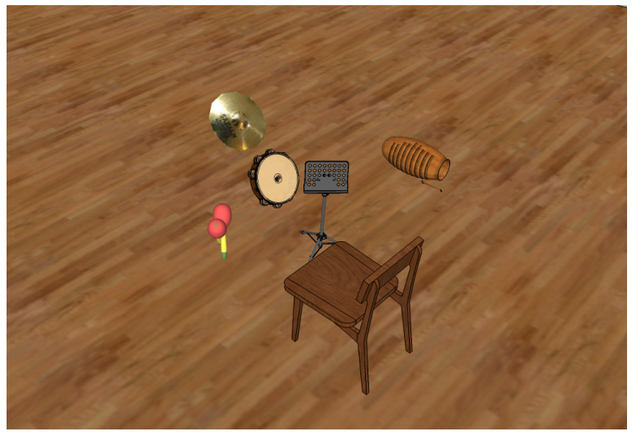
Enrico Bertelli performance edition of François Sarhan original composition



Imaginary Instrumentation



1 2 3 4



What is a Realisation

This realisation is the accurate transcription of the performer's interpretation of the piece. Layout, rhythmic subdivisions and rests have been altered so to ease the study and the reading process.

Interpreted Performance

The performance requires a chair, for the performer, a music stand (as low as possible so that the audience can see clearly), a vertical light on the performer as well as a floor light, diagonal, to project the shadows onto the back wall. This latter is to amplify the imaginary instruments. One may choose where to set the instruments and which gesture to connect them with, as long as it is consistent throughout the piece.

The Plot:
The performer should come in, greet the audience in a very informal way, take a seat and, whilst talking about his day (or any other topic), start setting up and testing the imaginary instruments. The opening speech should flawlessly lead into the first words of the plot: Take, Take The. It is up to the performer to choose at which stage to enter the score.
X is in his garage for a quiet DIY afternoon, eager to build a machine of undiscernible nature. He reads from the manual but, at b. 18, he receives an unexpected answer. Puzzled, he keeps reading until (b. 28), he interrogates the manual once again, unsuccessfully. The scene repeats itself (b.33) when another negative comment leaves X speechless (bb. 42–45). X starts suspecting that something is wrong: unsure if the voices are in his head, he hits himself (bb. 54–55), is confused (b. 63) and he is convinced he is on fire (b.64). The machine takes over (b. 70) and possesses X who tries to escape reality playing on imaginary instruments and singing a song in his head (bb. 72–76). A random gasp (b. 77) is the last moment of lucidity before the complete fusion of the two personae (b. 89). The fight begins. Moments of confusion (bb. 83–86) are alternated with lucid thoughts (bb. 90–96). The apex of the struggle builds up (bb. 116–141) from puzzledness and doubtfulness, through to complete fear, when the imaginary instruments become real enemies (bb. 124–125).
X tries, one last time (bb. 143 onwards), to take shelter in his mind. Whilst playing the ending theme, he slowly unhooks the instruments, putting them down in their box. One last note, a long and slow one, is the ultimate call for help; the instrument vibrates and, as it is dampened, the lights go down.

The Composer's view:
Sarhan's works are open canvasses that the performer has to paint with his own personality. The one described and realised here is just one of the many available scenarios. This version should not be considered as an authorised version.

Home work II

Enrico Bertelli (realisation of François Sarhan's)

LUCID

♩= 70 Take Take The Take The First Take Take the first side of the Take The First Side of the

Take the first side of the hinge in your left hand and with the help

♩= 90

of the me tal stick lo cate the po si tion of the fau cet of the hinge well?

♩= 70 no no no no not like that

x reads the manual

co nnect the de vice to earthed plug for lon ger

use of the hinge of the fau cet

The machine answers

The machine does not answer: x carries on

well...

♩= 90

o pen o pen o pen the front row and put all all the ex ter nal lea ther

32

LEA THER PLA_ STIC FAU CETS AND ALL RUB BER IN THE HINGE OF THE PLA STIC EARTHED FAU CET

♩= 70

THE MACHINE ANSWERS

KAY... M M MMM NO NO NO NO NOT LIKE

37

THAT

X TRIES TO REPLY BUT CANNOT FIND THE WORDS

NO

HERE IT'S TOO HARD

THERE IT'S TOO SOFT

46

X READS

NE VER USE THE EN GINE WITH O UT HEA TING THE MEM BRANE OF THE HINGE OF THE FAU CET

50

IN THE EARTHED PLUG O THER O THER WISE YOU TAKE THE RISK YES THE BIG RISK MY GOOD NESS

THE TWO PERSONAE START FUSING

OF LO WER THE HINGE

53

IN THE FAU CET OF THE MEM BRANE IN THE TANK OF YOUR LEFT ME TAL STICK IN THE HAND

FUSION OF THE CHARACTERS

♩= 70

WELL... WELL... Oo

CHEEKS

RALL

NOW! YOU HAVE

58
TO HEAT MEM BRANE TO GET A RE WARD USE THE HINGE OF THE FAU CET IN THE TANK IT'S THE

63
ON LY WAY TO GET THE EN GINE Oo CONFUSION X IS BURNING HOT! AND EF FI CIENT O THER WISE THE WHOLE SYST TEM WILL

68
WILL WILL WILL WILL NOT REACH THE POINT OF FULL HEAD CHEEKS IN TEN SI TY = 70 M MM MM

75
1 3 2 3 2 1 1 2 3 2 1 2 1 3 FEAR HANDS ON CHEEKS M MMMM CAU TION X FULLY POSESSED BY THE MANUAL STAND UP SIT DOWN CAU TION

82
PLEASE PLEASE DON'T SIT ON ON THE FAU CET Oo RANDOM MOMENTS OF CLARITY = 112

AN ATTEMPT TO EVADE REALITY THROUGH AN IMAGINARY SONG

90

LUCID

HOW SHOULD I GET IN TO THIS MA CHINE NOW?

96

KAY

I SIT HE RE THE PINS O VER THERE

HERE WE GO

WELL

WELL...

CONFUSED

WELL... OO

YES!

♩= 112

104

THE ENGINE IS ON NOW THE PINS ARE TICK LING ALL RIGHT THEN

NOW.

NOW

NOW.

NOW.

111

THE MACHINE TAKES OVER

NOW. NOW YOU'LL DO ALL I WANT YOU TO DO

OO

♩= 80

ACCELLERANDO

117

USE THE FEET TO SIMULATE A HEARTBEAT

PUZZLED

DOUBTFUL

122

SCARED

LET ME LET LET ME GO

SLAP THE INSTRUMENT

LET ME GO O OUT

HIT YOURSELF

OF O OUT

127

OF THIS DRILL ING PLOT ING

10 TIMES

THIS DRILL ING PLOT ING

THIS DRILL ING PLOT ING

TURN AND PART ING PUNCH ING AND

5 TIMES

PIL LING

132

NO! NO! NO! NO! NO! NO! AH NO NO! NOT HE RE NO NO NO

140

NO! NO! NO! NO!

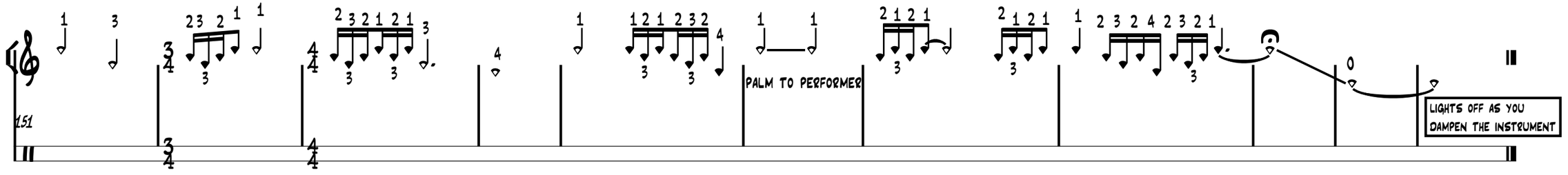
APNEA

LAST ATTEMPT TO FREE YOURSELF FROM THE OTHER PERSONA

NORMAL

START UNHOOKING THE INSTRUMENTS AS YOU PLAY

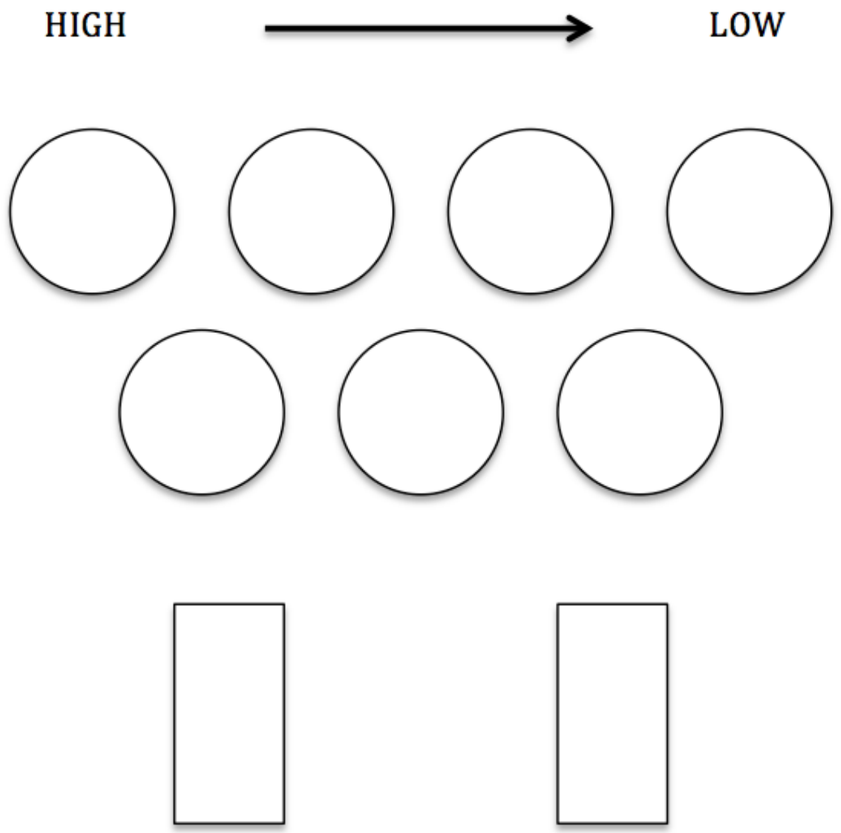
6



Enrico Bertelli

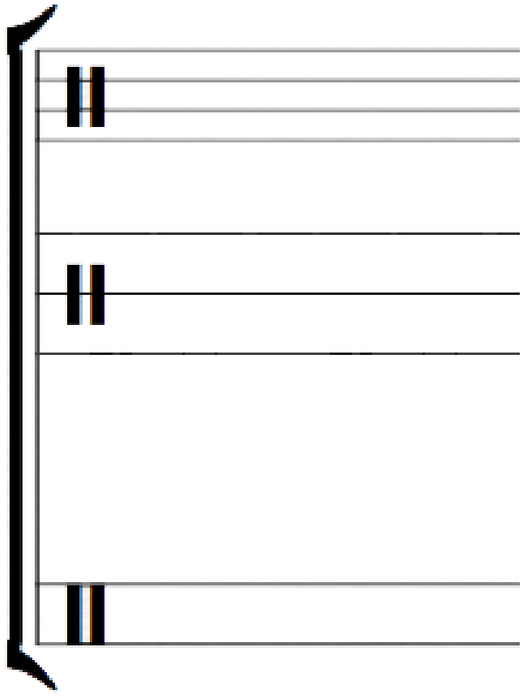
Psappha, a Personal Take

a digital realisation of Xenakis' *Psappha*



FIRST ROW OF TOMS

SECOND ROW OF TOMS



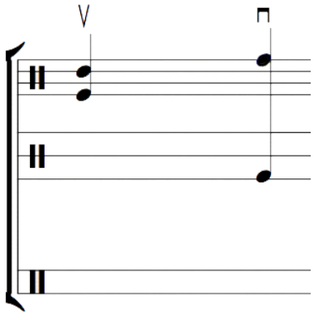
PEDALS

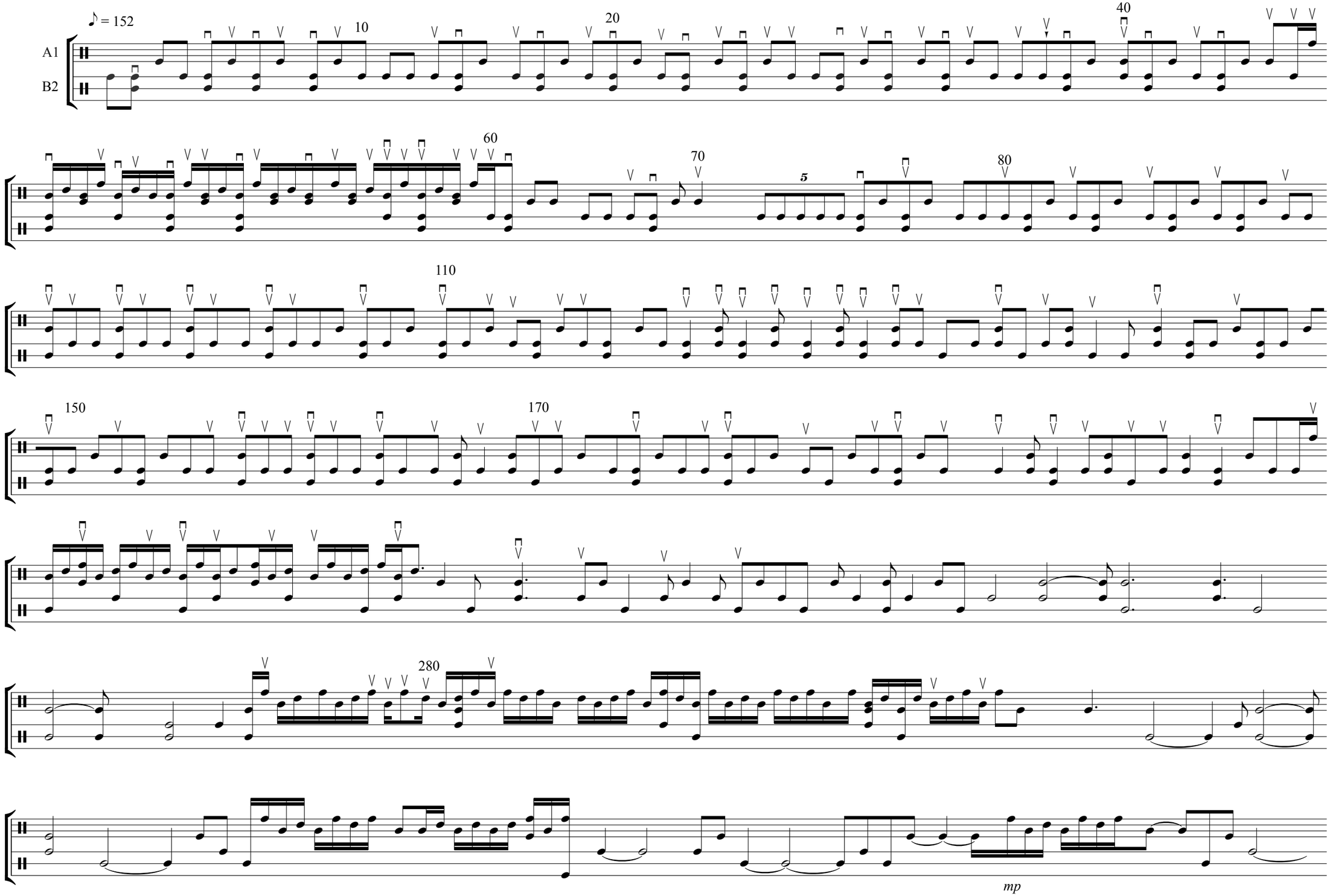
REMAPPING: shows the exact point in which the patch will change the mapping of the pads. The performer should be ready to expect different sounds.

ACCENTS: an up-bow sign means that the top note is to be accented, a down-bow sign means that the lower one is.

Top note accent

Bottom note accent




♪ = 152
A1
B2
10
20
40
60
70
5
80
110
150
170
280
mp

mf

pp

420

f *crescendo sempre*

450

460

480

490

p

fff

ff

550

f

580

ff

620

700

♪ = 272

740

770

fff

fff

fff

fff

810

820

830

840

♪ = 110

ffff

1210

REMAPPING

f

f

f

1320

1330

f

1410 REMAPPING

1450

1460

1520

1540

ffff

ff

1710

1720

p

f

1740

1750

p

p *f* *p*

p

f

1770

p

p

1780

1820

1830

1840

1850

1870

1900

1910

1920

1940

1950

1960

ff

2000

fff

2020

fff

2030

fff

2040

fff

2060

fff

fff

2070

2080

2090

2100

fff

2110

2120 REMAPPING

2130

2140 2150 2160 2170 ♪ = 152 2180 REMAPPING

fffff

2190 2200 2210 2220 2230

2240 2250 2260 2270 2280

fff *fff* *fff*

simile, quavers all the way to the end

2290 2300

2310 2320