

# **The vocalization of the drum kit**

An evolutive approach to a dynamic drumming style  
driven by sound phrases and evolving gestures

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# Declaration

I hereby declare that the thesis is based on my original work, except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Brunel University or other institutions.

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A handwritten signature in black ink, appearing to read 'Fellay', with a long horizontal stroke extending to the right.

# Abstract

This thesis critically analyses a personal approach to the drum kit, from its sonic properties, the evolving language that emerged from studio and performance practice, and its application to a dynamic drumming driven by sound phrases and gestures.

The research process is investigated from three perspectives: the study of the evolution of drumming and sound practices; the exploration and observation of the '*écriture corporelle*' process through a precise analysis of the results in terms of musical and performance achievements; the careful examination of the integration of evolving gestures within a practice whose goal is the consolidation of a new improvised drumming vocabulary.

The study of several studio sessions and live performances includes a detailed analysis of sound qualities and their context of emergence. It proposes a framework for an evolving approach to the drum kit, aiming at the emergence of a new drumming vocabulary.

The thesis offers a creative approach to drumming through an engagement with sonic structures and developmental processes. It proposes a detailed examination of the move from a drumkit-playing mode originating from 'rudiments' and traditional rhythms towards sound-oriented drumming. The result is a new drumming style made up of sound phrases and using an expanding sonic palette.

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# **o. Introduction**

## **o.1 Invent yourself**

After earning my Master's degree in the mid 1990s (jazz drumming studies), I was confronted with two distinct paths. On one hand, there was a pedagogy oriented towards an ideal form of education drawn from classical music. On the other hand, there was the need to acquire a personal and individual idea of my own musical reality. My basic training acquired at the Montreux Conservatory's Jazz Department, led me to needing a form of emancipation. Many improvising drummers, such as Jack DeJohnette, Andrew Cyrille, Sunny Murray, Joey Baron, Han Bennink, Pierre Favre, Tony Oxley, Eddie Prévost and Barry Altschul, among others, had influenced my playing. All these drummers had a singular approach to improvised drumming and had developed their own personal 'voice', but I had the feeling that trying to play the drum kit like my models was non sense.<sup>1</sup> I had a strong desire to play my own music and experiment in a personal way. After many years spent as a musician working in such domains as improvisation and transdisciplinary projects (e.g. choreography, sound installation, radio art, video performances, music theater, soundscape ecology, etc.), I decided to see if and how my drumming could evolve.

In his book *Drumming at the Edge of Magic*, rock drummer Mickey Hart of the Grateful Dead describes the process underlying the birth of rhythm, 'strike a membrane with a stick, the ear fills with noise... strike it a second time, a third, you've got rhythm' (Hart 1990:12). The image was appealing and highlighted the gesture. I wondered what would change in my drumming if, instead of considering rhythm and noise (sound), I gave more attention to the process mentioned by Hart ('strike' a membrane to have noise and 'strike' a second time to have rhythm). Gestures are at the origin of sound and rhythm and to learn to play drums or

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<sup>1</sup> I was drawing from Keith Rowe talking about visual art education: 'in painting school you have to find out who you are, what is unique about you, what you have to say. You can't take a canvas and paint a Georges Braque, or a Picasso, someone else's paintings... it's an impossibility. [...] Suddenly trying to play guitar like Jim Hall seemed quite wrong. Who am I? What do I have to say? Keith Rowe interviewed by Waburton (2001).



percussion in general, the acquisition of dedicated gestures is crucial. Drum and percussion books and methods teach us how to adapt our bodies to play different musical styles, since different gestures actually give different resulting sounds. Could a new approach to drumming with creative gestures pave the way for unexpected sounds, a new drumming vocabulary, and new avenues of sonic articulation?

I learned to play drums from rudiments,<sup>2</sup> but for as long as I can remember, I have also been driven by sound and listening. The rudimental approach to drumming is made of tiny modules, patterns and alternated/coordinated techniques, including all sorts of right- and left-hand combinations. The core of this kind of drumming is built on modules and assembly. Over the years, I also learned to play and experiment the opposite way, starting with new musical ideas, and trying to adapt and discipline my body to produce them. Playing this way, I was driven by sound and music rather than modules or patterns. My interest in sound was probably linked to my long-term practice with an unpitched instrument, but it was also likely that with the advent of digital technology at the end of the last century, my listening was refocused on sound. It was the result of an evolution that Makis Solomos summarises as follows: ‘From Debussy to contemporary music of the beginning of the twenty-first century, from rock to electronica, sound objects of the first concrete music to current electroacoustic music, from *Poème électronique* by Le Corbusier-Varese-Xenakis to the latest inter-arts attempts, sound became one of the major issues of music [...] we are moving from a musical culture based on tone toward a sound culture’ (Solomos 2013:14).

The world of percussion has been imaginatively extended through the pioneering work of Edgard Varèse, John Cage, Bebop, Free Jazz and some Pop productions, and I was aware of the experiments of the European Free Improvisation scene, especially the emancipating work

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<sup>2</sup> Rudiments are the root of traditional drumming. They originated from the Swiss military drum corps in the 15th century and were developed to give signals to direct troop movements remotely. Subject to precise codification, they were adopted by most European drum corps and imported into the United States in the 18th century. Originating from oral tradition, the rudiments were learned and played by heart. One of the first rudiments collections was written by Charles Steward Ashworth, a drum major in the United States Marine Corps Band, who released a list of 28 traditional rudiments in a method published in 1812 in the United States. In 1931, the National Association of Rudimental Drummers N.A.R.D. decided to permanently codify the 26 most-used military drum rudiments. The rudiments are at the heart of jazz drummer training and were very useful, as we will see later, when it came to integrating my sound research into my drumming.

of European drummers of that era.<sup>3</sup> The extension of my acoustic drum kit with MIDI triggers and samplers in the nineties profoundly changed the perception I had of drumming and initiated my interest in the timbral relation between acoustic and electronic drumming. During that period, I experimented extensively with samples, triggering, remote controllers, and samplers, which seemed to offer almost limitless extension of percussive sonic possibilities. My drumming and listening evolved dramatically due to my extended hybrid instrument. Over time, my live composition work moved towards electro-acoustic pieces and live improvisation.<sup>4</sup> I found strategies to make sampled triggered sounds flexible and responsive enough to enhance my intuitive and improvised drumming. My current work has been highly influenced by the extensive work I did with electronics, that ultimately gave new timbral qualities to my solo drumming pieces.<sup>5</sup> However, after ten years of live solo performances and interdisciplinary works (between 1998 and 2008), I became frustrated by the continued hybrid nature of my setting and looked for more symbiosis between the two sound worlds. Even though extended techniques and new material have since been added to drumming knowledge, it has not fundamentally changed the hybrid nature of electronically augmented drum kits. Intuitively, I returned to exploring my drum kit to uncover whatever sonic and articulatory potential I could find hidden in my drums and cymbals. I wanted to find a way to engage with my instruments' 'hidden world' of sounds. My intuition was that, despite the extensive evolution of the drum kit during the last one hundred fifty years, there was still an underestimated, and therefore underused, potential for drumming that needed further development. Today technology is in focus because of ever more affordable electronic devices, controllers, software, easily customizable and programmable tools, experimental instrument building, artificial intelligence, and even robots. All these options now at our disposal are useful tools to challenge and experiment with new ideas. That said, I was seeking still more fundamental changes in my drumming, and looked for a less anthropocentric and more ecological approach. Instead of seeking absolute control of a hybrid extended instrument, I wanted to learn from and be shaped

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<sup>3</sup> From their American counterparts.

<sup>4</sup> For more about my former research on MIDI and sampler augmented drum kits see Martin Laliberté (2003) and *Batteur Magazine* (1999). Over the years, this evolutionary process had arrived at a crossroads. On one hand, the development of drumming aimed at the relationship between acoustics and electronics and, on the other, the development of a work focusing on electronic sound textures on which I relied to compose the small electronic pieces mentioned in this thesis (see Audio scores, Chapter 4).

<sup>5</sup> See *Mother Africa* in Appendix 2.

by my drum kit and the drumming environment and to consider myself a single element in an ecosystem able to question my instrument's essence, with its composite and hybrid nature. I sought to favor the emergence of a singular voice. It is common to hear or read about drummers that make their drum kit sing, as when Rob Adams (2007) described New York drummer John Hollenbeck 'who makes drums and cymbals sing through microphone feedback'. But I wanted to propose another approach to the drum kit: to 'let' it sing. I was at the beginning of a new process: the 'vocalization' of my drum kit (see Chapter 1).

## **0.2 Research questions**

My research seeks to separate and distinguish musical material, to create sounds using new gestures and new drumming skills extended by – and interacting with – digital technologies. My new drumming practice research has followed an intuitive and simple scheme: implementation (practice) of an improvised sound-oriented drumming (discovery), observation (analysis), and integration of the result within four-limb drumming. This research makes an original contribution to new knowledge through this exploration of techniques which inherently go against the traditions of virtuosity in drumming. It specifically asks the following questions:

1. What strategies should be established to replace existing drumming (instrumental) skills with new ones in an attempt to go beyond mastery and virtuosity?
2. How could a hybrid and extended instrument like the electronically augmented drum kit be reduced to one single voice with specific, timbral and expressive qualities?
3. How can a coherent body and instrumental ecosystem capable of actively searching for new information and transforming our perception of instrumental and musical objects be built?
4. How can the relationships between the drummer and his instrument be redefined in a way that instrumental affordances and performer abilities co-determine each other?
5. How can the use of technology challenge and amplify the evolvability of this entire musical and performative ecosystem?
6. How can musical fragments, patterns, or motifs be stripped of their idiomatic and paradigmatic signification and undergo examination for their potential for movement and relationship?

7. What strategies must be developed to build and internalise vocabulary aimed at creating completely new pieces?
8. Can these strategies be truly transferable to other instrumental practices and musical environments?

The performance-oriented research implemented to examine these questions alternated between studio research and solo public performances. The progression and important steps have been documented in the form of my discussed music portfolio, scores and sonograms.

### **0.3 Thesis Overview**

In Chapter 1, I present and define the main ideas underlying my thesis. I start with the concept of the drum kit's 'vocalization' and its historical roots, the choice of playing and investigating the solo as a framework for my research, and how this framework could differ from similar approaches. Next, I describe my approach to improvisation and define the concept of '*écritures corporelles*'. And finally, I describe my philosophy of listening, which would become an important tool for the shaping of new body gestures.

I lay out my research methodology in Chapter 2, followed by a description of 'economy of the means' concept, regarding my approach to sound research, and in particular my relation with electronic processing. I also define the research framework alternating between three interconnected areas; solo, studio, and performance research. In addition, I introduce the *Rumeurs* live performance series that supported this research.

The 'vocalization' process is presented in Chapter 3, with the support of audio recordings, sonograms, scores and figures. Starting with a detailed analysis of the drums and cymbals' acoustic properties and their auscultation with an amplified microphone, I describe using the microphone as a virtual stick to shape new sound envelopes and new drumming gestures. Finally, I show my developing interest in acoustic and electronic sound durations.

In Chapter 4, I show my move from studio to performance research and discuss the concept of audio scores (composed small electronic pieces I used to strategically allow acoustic and electronic interactions within space, favouring the emergence of new sounds and gestures).

In Chapter 5, I explore live performances and using improvisation as a tool to merge sounds. Here, I introduce some key functional principles I used to compose live sonorities in performance, namely, imitation of electronic sounds, complementarity, convergence and emergence, the notion of non-synchronized synchronism, and the work with separate layers through contrasts and hybridization.

I show in Chapter 6 how I navigated through form as an operator of gestures and I discuss the decision-making process that allowed me to set up, within transition sections, the condition for sound emergence. I explain how I was able to compose in a live setting through evolving and expanding sonorities, and introduce my multi-directional vision of performance.

In Chapter 7, I present the outcomes of my research and the consolidation of new drumming gestures and my new 'voice'. This includes the evolution of the coordination and independence of limbs and its impact on the shaping of sounds, the aesthetic evolution due to greater heterogeneity, the new articulation of sounds and their prioritization, the consolidation of vocalized gestures and their separation from the mobile microphone.

Chapter eight presents the conclusion of this research, the resulting extended language, and how it is transferable to others and further works.

# Music Portfolio

## Studio research

- audio file 10 – tom tom frequencies.wav
- audio file 11 – cymbals frequencies.wav
- audio file 12 – tom tom short phrase 1.wav
- audio file 13 – vocalization phrase 1.wav
- audio file 14 - vocalization phrase 2.wav
- audio file 15 - vocalization phrase 3.wav
- audio file 16 - vocalization phrase 4.wav
- audio file 17 - vocalization phrase 5.wav
- audio file 18 - cymbals mobile frequencies.wav
- audio file 19 - wah wah cymbal.wav
- audio file 20 – prepared cymbals on skins.wav
- audio file 21 - notes durations.wav
- audio file 22 - reverberation simple.wav
- audio file 23 - reverberation long.wav

## Audio scores

- audio file 24 – *Ride up*.aif
- audio file 25 – *Joey*.aif
- audio file 26 – *Drum organ*.aif
- audio file 34 – *Rumeurs 53*, section 6.wav

### ***Rumeurs 53***

- audio file 27 – *Rumeurs 53*, full version.wav
- audio file 28 – *Rumeurs 53*, intro.wav
- audio file 29 – *Rumeurs 53*, section 1.wav
- audio file 30 – *Rumeurs 53*, section 2.wav
- audio file 31 – *Rumeurs 53*, section 3.wav
- audio file 32 – *Rumeurs 53*, section 4.wav
- audio file 33 – *Rumeurs 53*, section 5.wav
- audio file 35 – *Rumeurs 53*, section 7.wav
- audio file 36 – *Rumeurs 53*, section 8.wav
- audio file 37 – *Rumeurs 53*, section 9.wav
- audio file 38 – *Rumeurs 53*, section 10.wav

### ***Rumeurs 66***

- audio file 39 – *Rumeurs 66*, full.wav
- audio file 40 – *Rumeurs 66*, intro a.wav
- audio file 41 – *Rumeurs 66*, intro b.wav
- audio file 42 – *Rumeurs 66*, section 1.wav
- audio file 43 – *Rumeurs 66*, section 2.wav
- audio file 44 – *Rumeurs 66*, section 3.wav
- audio file 45 – *Rumeurs 66*, section 4.wav
- audio file 46 – *Rumeurs 66*, section 5.wav
- audio file 47 – *Rumeurs 66*, section 6.wav
- audio file 48 – *Rumeurs 66*, section 7.wav
- audio file 49 – *Rumeurs 66*, section 8.wav
- audio file 50 – *Rumeurs 66*, section 9.wav
- audio file 51 – *Rumeurs 66*, section 10.wav
- audio file 52 – *Rumeurs 66*, section 11.wav
- audio file 53 – *Rumeurs 66*, section 12.wav
- audio file 54 – *Rumeurs 66*, section 13.wav
- audio file 55 – *Rumeurs 66*, section 14.wav
- audio file 56 – *Rumeurs 66*, section 15.wav
- audio file 57 – *Rumeurs 66*, section 16.wav

# Chapter 1 Encountering the drum kit's sounds

## 1.1 The 'vocalization' of the drum kit

The term 'vocalization' metaphorically refers to one of the numerous Afro-American contributions to the advent and development of jazz. From the beginning of the process of Africanization of American music in New Orleans,<sup>6</sup> musicians originating from oral tradition were sensitive to the model offered by the human voice.<sup>7</sup> Richard Hadlock (Hadlock in Goia 2011:48) remembers Sidney Bechet telling his students: 'I am going to give you a single note today. See how many ways you can play that note – growl it, smear it, flat it, sharp it, do anything you want with it... It's like talking'. This kind of exercise aimed at developing a personal 'voice' has expanded tremendously in jazz pedagogy over the years. Today the search for a personal vocabulary as part of an instrumental practice is common among musician improvisers.<sup>8</sup> The drum kit's 'vocalization' process proposed and discussed in this thesis is a very personalized approach, but could potentially be experimented with by other instrumentalists. Although closely linked to the development and exploration of my drumming's expressive sonic potential, the proposed methodology and discovery process could be transposed to other instruments as well.

In order to test my imagination and lineage against it, I deliberately narrowed the scope of my sound research to the confines of the drum kit itself, choosing not to expand it with ethno-

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<sup>6</sup> Ted Goia talks of the Africanization of American music in these terms: 'a synergistic process that anthropologists call 'syncretism' – the blending together of cultural elements that previously existed separately' (Goia 2011:5–6).

<sup>7</sup> Frank Thénot makes a distinction between 'Western' intake: instrumentation, rhythmic framework and themes, and 'Afro-American' intake: interpretation, *vocalized* work of tones and sound, the significance of percussion and the adaptation of the pentatonic modal variations to the Western scales (Frank Thénot in Paczynski 1997:40).

<sup>8</sup> See Miles Davis and Quincy Troupe's: *Miles: The Autobiography* (Davis and Troupe 1990) in which Davis talks of the influence the human voice and especially singers had on his playing, and Joachim-Ernst Berendt and Günther Huesmann: *The Jazz Book* (2009), the final Chapter, *Towards a Definition of Jazz*, mention 'a sonority and manner of phrasing that mirror the individuality of the performing jazz musician'.



percussion instruments or noise devices. By choosing this rigorous path of aesthetic and ‘voice’, the results were greatly enriched. I sought to explore the ‘resistance’<sup>9</sup> offered by my instrument, in an attempt to go beyond mastery and beyond knowledge. I wanted to simultaneously find ways to question my drumming habits, imagine strategies and stimuli to extend the sonic palette of the drum kit, and foster the emergence of an innovative world of drumming sound. My aim was not to draw up an exhaustive list of sounds the drum kit could produce or to do research grounded in a physical or spectrum analysis of sound. I was more interested in investigating the sonic possibilities of drumming, movement, gestures and their articulation.

Sound is in constant relation with the body, and is an immediate prolongation of bodily movement. As Michaël Levinas (2002:27) writes, ‘In this prolongation it calls on the imaginary possibilities to which the body of the musician-composer responds naturally’. Pushing that line of thought further, I reasoned that the gestures acquired over many years of instrumental practice might yield new applications when applied to an approach centred on sound. I was interested to see whether, by implementing a series of new gestures and actualising them in performance, a form of live composition could take shape around the sounds offered by the acoustic drum kit. Franziska Schroeder and Mícheál Ó hAodha (2014:9) talk of ‘tactile commitment’ between performer and instruments. In Steven Connor’s (2004:231) discussion of sound and touch, the skin is the ‘milieu of tactility through which we form ‘sense impressions’ of the world around us’.<sup>10</sup> Skin-to-skin contact (fingers against drumheads) is indeed an interesting metaphor since I sought to explore my instrument with a new awareness of the border between my body (self) and the playing surfaces (non-self). The notion of ‘touch’ comes to mind when we refer to body-instrument articulation (pianists and drummers, among others, can have a nice ‘touch’). Simon Waters (2007:2) talks of the causal loop that ‘touch’ involves, the feedback of vibrating material into the player’s body, its physiological adaptations and adjustments before feeding back the vibrating surfaces, and so on.

I started exploring the drum kit with my fingers, drawing from vernacular traditions of hand-played percussion instruments. Although many elaborate techniques from North and West

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<sup>9</sup> I am referring to Aden Evens who evokes the many and specific ‘resistances’ Fred Frith’s unconventional playing techniques reveal compared to other guitarists including Julian Bream and Jimi Hendricks (Evens 2005:159–60).

<sup>10</sup> Steven Connor, in his article, *Touching Hearing* (Connor 2001), refers to an ‘umbilical continuity’, that characterizes the tactile relation between sounds and their produced sources.

Africa, the Middle East, and India were sources of inspiration, I never worked on any of them specifically. I simply wanted to feel and explore, to shape and be shaped by this new tactile engagement with my drum skins and my drum kit's various vibrating surfaces (plastic membranes, woods, metals). The different gestures and actions that sprung from this approach proved extremely useful in further exploring the relationship between the playing surfaces and my body. I later considered this union as a single entity driven by movement in which the instruments initiated a dynamic exchange. Brandon LaBelle (2005) talks of the integration of the body and the instrument. In his view they become 'a single body driven by choreography of movement and energy, precision and improvisation, skills and reciprocal gestures'.

Reciprocity needed further exploration and a certain number of strategies. One of them was to explore and break down the sounds a drum kit could produce, and thereby make it separately available within a context of improvised performance or live composition. I drew from Makis Solomos' notion of *sonorité* (referred to below as simply 'sonority'), and defined as a constructed and composed 'global entity' at the heart of sound, which springs from 'the dissolution of the classic dimensions of sound (pitch, rhythm, timbre, etc.); that is, from the loss of their autonomy' (Solomos 2013:331). While documenting my work on the drum kit's acoustic properties (see Chapter 3), the idea of 'electronically-assisted listening' (or simply 'assisted listening') via a microphone began to take shape. This represented an important step in my research, as it fundamentally changed my approach and relationship to the instrument. Assisted listening helped me hear and highlight the different parts of a sound, and allowed the emergence of a new sound reality. It also conveyed new possibilities for articulating the sounds of the drum kit. This is similar to what Pierre Schaeffer refers to when he states that the microphone lends events a purely sonic version of them. Without transforming the sound, it transforms listening. Thanks to its power to magnify, Schaeffer says 'the microphone can bestow the same importance and, if it pushes the magnification further, the same uncanny dimension on a whisper, a heartbeat, the ticking of a watch' (Schaeffer 1946:82–84). The microphone is not a passive observer and in my approach it became a live musicmaking tool.<sup>11</sup> Changing the distances of the microphone can result in very substantial changes in the sonic result and act as an envelope shaper and filter at the same time. Chris Cutler claims that 'Microphones amplify whatever they touch or approach, and give minute (and startling) control over the amplitude

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<sup>11</sup> Simon Emmerson (Emmerson 2007:118), confirms that microphones have never been passive observers since they all add their own contribution to the resulting sound.

and timbral variations associated with distance and motion (drastic diminuendo/crescendo, shifting overtone clusters, massive starting transients, etc.)(Cutler 2005).

The microphone allowed me to set off in search of pre-existing sound material with a new approach. Thanks to the intermediary of a microphone and amplification, listening to the sounds produced by the drum kit became like observing them through a microscope. This made it possible to dissect the instrument's sounds and isolate the components, and was a line of research that allowed me to work directly with sound.

Microphone and amplification profoundly changed the way I perceived drum kit sounds. The positioning of the microphone over my instruments enabled me to hear the different components of a sound and bring out sound events that were not apparent without its revelatory presence.<sup>12</sup> I was excited to see how my use of the microphone and amplification could alter not only my perception of sounds, but also the ways I had of producing, interpreting and articulating them. Finally, extending the drum kit through speakers gave rise to a new sound reality when the microphone was held in hand. This made it possible to reduce multiple sound sources coming from the acoustic instrument to a single track, and relocate them to the speakers in mono. As I explain later, this spatial dislocation not only became part of my live composing array, but significantly influenced the production of acoustic sounds in return, and contributed to the emergence of a new acoustic drumming sound vocabulary.

Drumming with the mobile microphone tended to 'vocalize' the drum kit. The result was the emergence of a new 'voice' that was separated and detached from the acoustic drum kit. Thus, the components (harmonics, frequency, timbre, and rhythm) of the drum kit's individual elements became parameters of the amplified 'voice' formed by a range of sounds coming from various instruments. This permitted creative sound combinations because the sound envelope (attack, decay, sustain, and release) could spring from different elements of the drum kit. The reduction of space that the microphone and speakers brought about was due to the fact that the microphone was both 'sensitive and agnostic', as Seth Kim-Cohen asserts. This produced a new relationship to sound by allowing the different sound sources to merge into one and be relocated to the compressed non-space that the loudspeaker constitutes (Kim-Cohen 2009:25–26). Simon Emmerson writes that 'the straightforward amplification of instruments may in

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<sup>12</sup> In particular, frequencies perceptible to the naked ear only a few centimeters above the resonating surfaces.

addition, perhaps intentionally, add an element of acousmatic dislocation'. Extended performance techniques (especially) may also produce sounds of perceptually uncertain origin. 'If these are further spatialized, the image of a performer conjuring up a soundscape 'maybe yet maybe not' related to the instrumental gesture as seen can be powerful in its ambiguity' (Emmerson 2007:129). This distance dis-location helped me not only separate the amplified voice, but also add a new dimension to my (acoustic and amplified) sonic drumming palette.

Some artists of the 1960s and 1970s, in particular the group AMM, used microphone techniques to 'de-instrumentalise sound in order to slip into it as if into a still-unformed material'<sup>13</sup> (Saladin 2014:250). It was a matter of listening to 'the sounds as sounds', beyond their cultural and historical dimensions. In my own practice, I assumed the idea that instruments and sounds remained no less invested with socio-historical and cultural aspects. I worked with a singular awareness of sound discovery, continually questioning my discoveries and their idiomatic implications. Listening experiments and the 'vocalization' process described in detail below revealed unknown aspects of my instruments. When new potential and un-actualised qualities began to appear, I became increasingly interested in finding a means to engage with what Adam Parkinson (2014:57) terms 'the hidden worlds of sounds and instruments'. For him, music is relational and is the result of an encounter. We 'encounter sound through the actualisation of memory and experience, culture and experience, culture and material'. 'Objects always have potentials and un-actualised qualities that might be revealed if they are engaged with differently or placed in a different network of relations' (ibid. 2014:57). The underlying question of encountering led me to envision a multi-directional approach to my improvised practice that will be introduced and developed later in this thesis.

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<sup>13</sup> For Cornelius Cardew, sounds are always already pre-formed. He mentions Adorno's scepticism vis-à-vis a supposedly 'pure' sound, 'stripped of any and all extra-musical resonance', that 'fresh snow', as he terms it, 'that can only lead, according to the philosopher, to a naturalism that is rather incompatible with an artistic approach that is clear-eyed about its socio-historical context'. (Cardew 1971:XVIII).

## 1.2 The solo, a ‘milieu’ of investigation

Practising, rehearsing and playing solo could be seen as problematic for someone seeking to escape virtuosity<sup>14</sup> but I saw it as a means to protect the intimate side of my research (discovery of sound and gestures). My jazz school instrumental studies consisted of two aims: learning improvisation within a formal structure (including free forms), and developing personal musical speech through the use of newly learned drumming skills. I share Cutler’s (2005) view that solo practice and performances focus the mind wonderfully. But more interesting for my research was his remark that playing alone obliged him to treat the instrument as an equal (a thing with its own mind) with which he had to negotiate and co-evolve.

Frank Zappa and Anthony Braxton also had very interesting and inspiring ways of approaching solo work. In *The Black Page* (Zappa, 1976), the written drum solo might be perceived, according to Rémi Raemackers (2003:22–25), as ‘virtuoso’ and ‘improvised’. In a second version (*The Black Page Part 1*), a vibraphone part and a bass line were added, highlighting the written nature of the piece and providing its musical justification. With these additions, Zappa’s written drum part could no longer be perceived as a random/improvised demonstration of technical virtuosity because the melodic line of the vibraphone added substance to the drum part, giving it a new musicality. Another inspiring approach to playing solo was Anthony Braxton’s concept of ‘music for unaccompanied saxophone’. The ‘unaccompanied works’, writes Ronald M. Radano, ‘were not, like most of their solo jazz precursors, simply improvisations performed without the benefit of a rhythm section; nor were they rehearsed solos extracted from a big band or other context [...] They were distinct, autonomous entities, compositions in their own right’ (Radano 1993:133).

These evolutionary works inspired my research and solo drumming with new timbres, and with the idea of ‘non-accompanying drumming’ (to paraphrase Braxton) became models for my experimenting. Drumming through amplification and/or with electronically augmented drum kits is quite common today. Some lines of this development that directly and/or indirectly related to my research are: the extension and hybridization of the drum kit with MIDI controlled electronic devices, the electrification of the drum kit, and the drum kit’s sound processing or sound transformation.

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<sup>14</sup> Historically, solo drumming made the drum kit a virtuoso and spectacular instrument.

### 1.2.1 The MIDI controlled electro-acoustic drum kit

The electronic drum kit market began to appear in the 1970s with devices which included pickups carrying electronic signals through filters, amplification, and loudspeakers (e.g. the Synaire<sup>15</sup> and the Syndrum<sup>16</sup>). The Simmons company<sup>17</sup> developed a complete electronic drum kit made up of a 5-pad set, each consisting of a transducer system, and each signal having its own mixing channel on an electronic console. The Simmons sound became very popular in early 1980's pop music. British drummer Bill Bruford<sup>18</sup> was a prominent representative of the Simmons company and had a singular approach to MIDI drumming with his band Earthworks. Former Frank Zappa drummer Terry Bozzio<sup>19</sup> also creatively attempted to play MIDI augmented percussion. Today's electronic drum kit market have incorporated hundreds of inventions and augmentations, that mainly correspond to new musical needs regarding a standardized scheme of performance environment and specific sound sources. These now industrialized products are mostly fixed sets of pads (imitating drumheads and cymbal touch and sounds), sound modules, and all kinds of triggers. Many pop drummers use this type of set-up to transpose elaborate recording studio sounds and loops into live situations, triggering them with electronic or augmented acoustic means (triggers and electronic pads). Other acoustic drummers, like Jojo Mayer,<sup>20</sup> have started playing complex polyrhythms to imitate the editing

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<sup>15</sup> See <https://en.wikipedia.org/wiki/Synaire>

<sup>16</sup> See <https://www.youtube.com/watch?v=6iuPEU2wS60>

<sup>17</sup> See <https://simmonsdrums.net>

<sup>18</sup> 'The first Earthworks, born 1986, was an electro-acoustic outfit based around the idea that the electronic [MIDI] drumset – recently enabled to play all manner of chordal, sampled, and pitched or un-pitched rhythmic material – had come of age and was a serious instrument that could be used in jazz. The plan was that I would play much of the chordal material, and that I would find some young open-minded players from the exciting and growing UK jazz scene and have them play single lines on top' (Bruford 2009:185).

<sup>19</sup> With the American drum kit manufacturer, Drum Workshop, Bozzio developed a set of sensors that were to be mounted inside the drums. Printed circuits at the top included a trigger that had the advantage of minimum contact with the skin. These triggers' principal purpose was to minimize the muting effect resulting from the presence of an object on the drum's skin. They were very sensitive, with a good dynamic response. Terry Bozzio and his team had also developed a bass drum pedal-sensor using a magnetic field, a system that had a higher dynamic than usual bass drum triggers. The sensor was very sensitive to pianissimo playing and had the advantage of eliminating the double triggering of the large skins. It therefore allowed greater precision in all playing dynamics. I had access to this system which, to my knowledge, was never sold (or only very rarely) in music stores.

<sup>20</sup> See <http://www.jojomayer.com>

of MIDI drum machines, including them in jazz and all kinds of fusion and free improvisation contexts. This has become very popular in some pop subgenres such as hip hop, drum and bass, and electronics as well. Some drummers mix pads, triggers, transducers and sensors to control sounds via MIDI or OSC (e.g. the recent works of Swiss drummer Arthur Hnatek<sup>21</sup>). Others, like Chris Cutler (2005) briefly experimented with sample triggering and failed to find them very useful, arguing that there was ‘no hybridization, mutation or evolution, [acoustic drums and pads were] just two wholly different systems running in parallel’. Cutler argued that for triggering and manipulating stranger sounds, a keyboard offered far more control and flexibility in general than hitting something with a stick.

In my own approach to the extended drum kit with MIDI triggers and sampler, I found very interesting ways to go beyond the limitations imposed by these kinds of settings. The MIDI remote controlled hybrid drum kit served as a basis for the composing of pure electronic pieces used as ‘audio scores’ in this research (see Chapter 4). In an interview for the French edition of ‘Batteur Magazine’ (Soupa 1999), I explained my research involving a MIDI augmented drum kit in which I found myself involved:

Acoustic and triggered electronic sounds are in direct and permanent interaction. There is no recorded sequence, everything is played. The sounds of the (MIDI) machine are additional textures. Sometimes a triggered sound creates an uncontrollable reaction that feeds me, as if I was playing with another percussionist. Accidents are possible in the path of sounds within the machine. I improvise, and sounds act with some randomness. Each concert, every evening, is different, as the machine doesn't react identically (Fellay in Soupa 1999).

In an article discussing my engagement with a MIDI augmented drum kit, musicologist and composer Martin Laliberté (2003) summarized my approach as follows: ‘It is clear that the musician's programming aims to establish an organicity, a merger between live and triggered sounds, also to find coherent ways to convert them into timbre (frequency) or intensity (volume). This is a characterized experimental approach of the concrete music and mixed music fields (live electronic acoustic instrument in public)’. Many of the obvious parallels between acoustic strokes and triggering led to my present research.

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<sup>21</sup> See <https://www.arthurhnatek.com>

### 1.2.2 The electrification of the drum kit

The electrification of percussion refers to the use of electric devices like amplified and contact microphones to explore vibrating surfaces (without necessarily processing sounds electronically). The electric guitar is sometimes evoked as a model, as when Chris Cutler compares his drumming milieu to it:

As a drummer I was used to – in fact I was wholly dependent upon – the minute differences in sound that arise out of the subtle interactions between the tuning of an instrument, the acoustic space in which it resonates, the material with which it is exited (hit, scrape, bounce), the exact pressure, velocity and nature of the stroke and the precise location of that stroke (every drum or cymbal produces different overtones and resonances at every point on its surface). Any variation in any one of these parameters makes a difference, and all the skills of expressive playing depend on knowing (or feeling) exactly how hard, exactly where and exactly with what, to hit, agitate or caress some resonant material in order to make it sound the way you need it to sound. In addition, drums is a multiple instrument and a drummer is always playing several different things at the same time – all of them in close proximity – so inevitably they affect and modify one another: bass drum resonating through floor tom, overtones and frequencies blending.... and of course, such a setting-of-a-system-in-motion is an important part of the controlled gestalt of playing – and therefore of the vocabulary of an experienced player [...]. Knowing what I missed with samples helped clarify what I wanted from electrification: an instrument that would respond to the minutia of performative variations, interact with itself and retain all the qualities of an acoustic instrument while extending itself completely into the electronic realm. An instrument in fact like an electric guitar, in which many of the techniques and attributes associated with the acoustic version are preserved but massively extended (Cutler 2005).

Cutler's description is useful in understanding or imagining what can produce scale changes with an amplified microphone in this context. It also helps clarify what can be expected from the amplification of the drum kit. The historical references to microphone use within the framework of improvisation go back to the sound research undertaken by musicians of the British free improvisation scene of the 1960s. Free improvisers of the era forged methods that allowed them to scrutinise the acoustics of their traditional instruments and various recycled



objects with microphones. They were influenced by the pioneering work of John Cage (*Cartridge Music*, 1960) and David Tudor (*Rainforest*, 1968). Cage and Tudor were interested in using microphones and amplification on stage to reveal unheard sound worlds of various materials (including percussion instruments via the utilisation of contact microphones). Stockhausen's *Mikrophonie I* (1964), for tam tam, microphones, and potentiometers is also emblematic of microphone manipulation. Max Neuhaus's *Fontana Mix-Feed* (1968), a personal adaptation of Cage's piece, *Fontana mix*, in which he created feedback loops by positioning timpani between a speaker and a contact microphone, is another good example of this. Strictly in the drumming field, Tony Oxley and Paul Lytton developed their extensive drum kits alongside an interest in their electronic modification. Oxley sought to make 'audible the normally inaudible' by extending his instrument's sonic possibilities. Lytton developed an interest in 'sound qua sound' (Barre 2015:292). On his side, Chris Cutler started experimenting with telephone mouthpieces, amplification, equalization, and reverberation in 1977, and with Fred Frith beginning in 1978, as an extension of his drum kit. This approach has continued to develop up through the present day among percussionists and drummers such as New York drummer John Hollenbeck, Jack DeJohnette, Swiss drummers Jean Rochat and Nicolas Meier. My own research with the mobile microphone is related to this line of development as well. That said, to my knowledge, very few musicians have pursued this line of research *per se* (drumming dedicated to microphone techniques). Contact microphones and microphones are more commonly used to feed electric and electronic devices in order to process and transform drum kit sound sources live (see paragraph 1.2.3).

### **1.2.3 Acoustic drum kit sound processing and sound transformation**

The use of percussion as a sound source for processing is widespread among creative musicians and sound artists today. I experimented with the live processing of drum kit sounds during my stay at the San Francisco Exploratorium in 2005 and later in close collaboration with composers, improvisers and Max/MSP experts Michael Edwards (*Percussion and Piano Pieces*, 2008) and Ejnar Kanding (*Passage 2*, 2010). Self-taught drummer and electronic programming expert, Christos Michalakos (a former student of Michael Edwards), developed this kind of interactive playing in a very convincing way, focusing on the attention paid to developing programming in close relation with his acoustic playing. Michalakos extended the sound palette of his acoustic drum kit with percussive and sonic elements like metallic thunder sheets and all

kind of small percussion instruments.<sup>22</sup> In his approach, the acoustic instruments were the source of very elaborate processing and complex programming in which prototyping programming environments such as Max/MSP imposed the use of the computer as the epicentre for the acoustic kit's electronic augmentation (Michalakos 2013). Through amplification, filtering, and the transformation of sound envelopes with the addition of effects, the range of tones was increased (Ungeheuer 2013:1371).

One way of conceiving live electronic music involves technologies for transforming sound through the performer's instrumental gesture. Important research institutes like IRCAM in Paris and Steim in Amsterdam have looked to equip acoustic instruments with all kinds of commands (switches, levers, keys and pedals, etc.). They have also sought to understand the legibility of instrumental gestures in order to pilot machines through them. Some examples are Michel Waisvisz's developments, the works of Pamela Z, the interesting approaches of Stef Edwards in *Davros*, Jonathan Impett and his Metatrumpet, John Bowers's Virtual/Physical Feedback Instruments, and Simon Waters and his VPMI flute, among others. Some of these musicians attempted to escape the limits of their own practice by exploring different kind of 'hybridities' (Waters 2003, 2007). On my side, the control of such a hybrid instrument was not my aim, which is why I focused my attention on instrumental practice rather than processing (and/or remote controllers). I wanted to better understand how the process of 'vocalization' might dovetail with the possibilities offered by the computer without having to worry about electronic sound control after the fact. The process of composing in real time remained closely aligned with both the instrument and the gestures that sprung from the work of vocalization, and the computer was seen as a potential extension of playing the drums with the microphone.

#### **1.2.4 The drum kit as a sculpture: how my milieu differs**

Playing solo proved very effective in coupling myself to the drum kit, especially since I was looking for new ways to learn what the instrument had to teach me. Drawing from Evan Parker (Parker in Borgo 2014:44), sound was the medium of this coupling, and I can confidently say that sound research is front and centre among today's contemporary drummers as well as solo

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<sup>22</sup> See Christos Giorgios Michalakos, PhD: *Evolving the Drum-Kit, Frameworks and Methods for Diachronic Live Electronic Performance Practice and Bespoke Instrument Design*, (Michalakos 2013).

percussionists such as Glenn Kotche,<sup>23</sup> Julian Sartorius,<sup>24</sup> Sylvain Darrifourcq,<sup>25</sup> three creative approach of prepared drum kits, Abril Padilla,<sup>26</sup> Mathias Kaul,<sup>27</sup> Gino Robair,<sup>28</sup> Ingar Zach,<sup>29</sup> Suzie Ibarra,<sup>30</sup> Michaela Antalová,<sup>31</sup> Chris Corsano,<sup>32</sup> Øyvind Skarbø,<sup>33</sup> and their sound research involving extended techniques and sonic material exploration. Others include creative percussion ensembles involving drummers, like Eklekto, We Spoke or the world famous Les Percussions de Strasbourg, mixing visual arts, music and sound research. Most of us share a great interest in drumming developments and sonic singularities and we are all very sensitive to our instruments' responses to our creative efforts. But despite our shared interest in developing our 'milieu' of exploration, 'each improvisation will yield a different *milieu* of actors and interactions, a different *assemblage*' (Cobussen 2014:22), and I had the feeling that my approach would/could/should differ from other drummers and that the difference would be found in the status given to the instrument itself. I wanted to see my instruments with new eyes and challenge my listening to imagine what sound qualities could emanate from them before any sound actually emerged. I wanted to remain off-centre and much like a viewer in a museum. I needed to view my drum kit as a silent sculpture containing intrinsic inner sonic qualities. In regard to this, my influences were the works of Christian Marclay, *Drumkit* (1999), Céleste Boursier-Mougenot, *La vie moderne* (2015), Anri Sala, *Moth in B-Flat* (2015), Tarek Atoui, *The reverse Collection* (2017), and the conceptual approach of rhythms by Jarrod Fowler, *Distribution as Rhythm, Translation as Rhythm, Argument as Percussion/Agreement as Percussion* (2006). Each artist questioned drums with approaches outside any musical intentionality, and sometimes even outside the field of music. In this sense, my milieu greatly differed from the drummers and percussionists cited above. Difference was not always perceptible in my setting itself, but more in my playing philosophy. I had a strong desire to let the drum kit express itself

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<sup>23</sup> See <https://www.glennkotche.com/about/>

<sup>24</sup> See <https://www.juliansartorius.com/works/videos>

<sup>25</sup> See <https://www.youtube.com/watch?v=Z3XzvC9zJlA>

<sup>26</sup> See <http://abrilpadilla.net>

<sup>27</sup> See <https://www.matthiaskaul.de/how-to-produce-my-sounds.html>

<sup>28</sup> See <http://www.ginorobair.com/video.html>

<sup>29</sup> See <https://ingarzach.com/sound-video/>

<sup>30</sup> See <https://www.susieibarra.com/video/>

<sup>31</sup> See <https://michaelaantalova.com>

<sup>32</sup> See <http://www.cor-sano.com/video.html>

<sup>33</sup> See <http://www.oyvindskarbo.com>

and, more important, I wanted to be physically shaped by my environment as a response to the impulses given by the instrument and its extensions, letting my body internalize evolving gestures and unexpected sounds. Unlike my counterparts, I was not so much interested by the material development of my drum kit with the addition of tools, all kind of objects, or tiny instruments. My aim was not the extension of my instrument into the electronic realm either. I never sought to control a massively extended instrument or to exploit the enormous complexity and instant controllability of the acoustic percussion in order to use these sounds as a primary source of subsequent electronic modification. In fact, I had the exact opposite approach as, instead of *expanding* my drum kit, I sought to reduce it to a single voice, a single track, a sort of concentration of sonic and articulatory potential in an attempt to finally lose control. I intentionally moved away from all of my drumming milieu's possibilities (of which there is no end in this day and age) to a careful exploration of what really mattered; what my drum kit wanted.

Oddly, there are opposing ways of seeking the same goal. Chris Cutler massively extended and entirely wired his drum kit,<sup>34</sup> while I only worked with a single moving hand microphone to amplify, reverberate and delay sounds. In both scenarios, to paraphrase Cutler, we 'feel as if we not so much try to make the instrument do what [we] want it to do as to discover what it wants – and then argue with it in performance, and playing solo obliges [us] to treat the instrument as an equal – a thing with its own mind with which [we] have to negotiate and co-evolve' (Cutler 2005). The crucial difference though, may stand in the true aim of my research: replacing existing drumming skills and gestures with new ones. At the end of the process I had the feeling that my use of technology could be perceived like an exoskeleton (led by my instrument). This was useful in helping me adapt and consolidate my body gestures and drumming articulations to my milieu, diverse strategies, and stimuli, as presented in this thesis.

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<sup>34</sup> '16 channel mixer with 2 effect ways, allowing sixteen separate inputs, each with it's own individual control over equalisation, volume and additional effects processing, a multi-effect unit (100 different programmable effects, selectable on a scrolling button), a 'Space pedal' (various effects, including reverse, harmoniser .....), a 'Whammy pedal' (pitch shifting 2 octaves up, 2 octaves down and all points between controllable on a foot-pedal with a range of different selectable harmonisations), a PDS 8000 (1-8 second delay, with varispeed control) and an ancient Boss pitch shifter/delay unit and a whole range of other effects. I can send any amount of any signal to any or all of these effects, and I can change any parameter of any of them in real time' (Cutler 2005).

### 1.3 Improvisation

Likely due to my extensive background in jazz studies and improvisational practices, jazz has served as a fundamental model for my research. Jean-Charles François reminds us that jazz is not the only style of music that makes improvisation an essential element, but that it does so in a particularly hybrid context: ‘It is born of and takes shape around a vernacular Afro-American core content (noise, body, polyrhythms) whilst remaining close to Western European music (rhythm, harmony) through its search for virtuosity and complexity, and through the desire of its creators to blaze new trails and constantly innovate, as each style frees itself from the one that comes before it’ (François 2013:1324). Free Jazz and Free drummers in particular had a great influence on my playing philosophy. Trevor Barre (2015), (2017), argues that Free Jazz and European ‘Free Music’ (as he terms it) share a ‘key family relation’.<sup>35</sup> Free Improvisation developed chronologically parallel to Jazz and Free Jazz, musique concrète and electroacoustic music,<sup>36</sup> minimalism, fluxus, sound installation and visual performances. I can reasonably say that I was born into and grew up in a world in which all styles of music, music culture, and art (in general) coexisted, collided and influenced one another (and by extension, my own work). Regarding music, Benjamin Piekut talks of a ‘mixed’ avant-garde, a variegated collection of musical tendencies. ‘The meeting ground for these different avant-gardes’, he writes, ‘was the musical practice of spontaneity, which had great currency for both the ‘classical’ indeterminacy of John Cage and the jazz improvisation of Ornette Coleman’ (Piekut 2014:770). The network of jazz, rock and classical music had become intimately intertwined in the UK by the end of the 1960s, and the common link among them all was improvisation. Piekut says that experimental music history ended up at free improvisation in the sixties. This became evident for Tim Souster when Cage’s use of live electronics led to many new groups ‘dedicated to the exploration of new sound worlds and holding to no preconceived notions of method or form’

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<sup>35</sup> Regarding drummers, Barre mentions the internal pulse (rather than a strict metric swing or meter) developed by Free Jazz drummer Sunny Murray, along with Cecil Taylor and Albert Ayler. Free drummers like John Stevens, Eddie Prévost, Tony Oxley and Paul Lytton developed this style, and ‘their contribution was key in the development and group sound of the music. In fact, the importance of drummers to the sound is suggested by the preponderance of percussion personalities and their influence in the gene pool of so many of its players’ (Barre 2015:589).

<sup>36</sup> Evan Parker says that these traditions ‘to a large extent involve improvisation whether it’s acknowledged or not’. Luc Ferrari, John Cage, David Tudor and many of their counterparts were dealing with versions of music made by making decisions in the course of performance’ (Parker in Borgo 2014:41).

(Souster in Piekut 2014:774).<sup>37</sup> Inherited from that period and closely linked to my own research, the expansion of electronic music alongside free improvisation practices favoured (or induced) the exploration of overtones, circular breathing and drums and cymbals bowing in response to the electric and electronic extension of sound durations.

While the act of improvisation cannot be restricted to playing improvised music, it proved useful for my research as a means to engage with my drum kit's so called 'hidden world of sounds'. It also guaranteed a certain state of radical openness. My work as a musician, composer and improviser is based on and permeated by, different cultural and historical influences. It is truly a mix of my musical (marching band drumming, brass bands, rock, jazz, avant-garde, contemporary music, free improvisation) and non-musical (visual arts, literature, architecture, ecology) practices. In addition, I found myself constantly balancing tradition with my long-term interest for innovation. Improvisation helped me develop a singular approach to my drumming in relation to an ever-evolving tradition and an ever-expanding common knowledge and epistemology.

In order to avoid what Kyle Gann (2006) calls 'the excesses of clichés of free improvisation',<sup>38</sup> I used and developed tools as stimuli to enhance my improvisation practice and develop my reactive listening strategies (audio scores, sound extension, delaying and layering sounds described below). One of the key questions underlying live composition concerned its temporality. Improvisation plays out in the present moment but, as Jean-Charles François claims, its temporality seems much more complex: 'it takes shape according to a temporal plurality' (François 2013:1324). The improvising musician does not only react to the specifics of the situation (such as his relationship to the site, the venue's acoustics, the music played in situ, the interaction with other musicians or an electronic setup of some kind), but also to past improvisations and the multiplicity of what he has previously heard. In fact, improvising does not necessarily mean starting from scratch. An instrumentalist-improviser is always influenced by a long period of 'writing' imprinted on and into his body (*écritures corporelles*), and his music echoes with the plurality of past performance situations and his own personal research.

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<sup>37</sup> Benjamin Piekut argues that 'free improvisation was the logical end of indeterminate music' (Piekut 2014:774).

<sup>38</sup> See Kyle Gann's article *A Statement on Free Improvisation* (Gann 2006) and his numerous articles for The Village Voice Columns: [https://www.kylegann.com/Voice\\_biblio.html](https://www.kylegann.com/Voice_biblio.html)

Starting with this idea and questioning the emergence of sound in and outside traditional drumming (rudiments), I discovered a way of playing my instrument based on sound discovery through dynamic body gestures. In my research, which centred on sound but had gesture as its starting point, I took into account that sound may well be the consequence of the gesture, thereby distancing myself from the idea of a certain expected result. While I wanted to experiment and perform outside any known or identifiable place, I first needed to identify a sort of initial state (between rules, limitations and personal freedom) from which I could build a research methodology. This led me to envisage improvisation not so much for itself, but for what it was able to offer as a multifaceted practice: an openness towards possible combinations, articulations and interactions of musical and non-musical elements.

#### **1.4 Body practice (*écritures corporelles*)**

Embodied physical musical practice necessitates confronting how to prepare for improvised performances, as well as how to practise improvisation. Referring to the regular connection improvisers maintain through instrumental practice, Mathieu Saladin (2014:171) writes that it is not a matter of repeating set methods or learning tricks and techniques, but rather of maintaining a sustained relationship with one of the ways through which the improvised gesture takes shape. In an attempt to question my personal tastes and habits, I chose to implement an instrumental practice with a framework consisting of what François calls the *écritures* (writings) of improvisation. According to him, this writing takes place in a ‘regulating’ and ‘constraining fixed framework’ which is physically inscribed in the things that are present, i.e., the space, acoustics, technical equipment, and so on. These elements form inescapable facts by their mere presence’ (François 2013:1324).

Drawing on my experience of training in both the field of jazz and an improvisation-focused practice, I realised that to envisage my practice in terms of writing, I needed training in developing physical gestures. Jean-Charles François speaks of ‘body writing’ (*écriture corporelle*). This kind of ‘writing on the body’ is slow and tedious. Transposing François’s (ibid. 2013) jazz pianist training description for drummers, the different phases could be described as follows: Initially the body develops a certain dexterity, an ability to move around the drum kit, and works on the systems of independence and co-ordination that allow the articulation of sounds.

The drummer's body then learns to produce sounds that are compatible with different styles of music. What we see is the development and internalisation of a touch adapted to specific contexts. In the third phase, the drummer's body immediately becomes the vehicle by which the idea is conveyed; it acts without thought having to precede gesture. We witness a kind of fusion of the gesture and the idea. Finally, the last phase includes detaching from bodily skills that have already developed in order to slowly inscribe others that will enable novel sound and musical contexts to emerge. This slow 'body writing' springs from a kind of memorisation of gestures in what would be the musical equivalent of a vernacular language. The proposed approach involved fostering and modifying the content of body inscription through regular work. This takes into account outside contributions, accidents, and new ways of actualising what exists in memory. The art of improvisation, François writes (*ibid.* 2013) seems to be centred on the capacity to detach oneself from the demands of the setting and/or gestural technique in order to concentrate on the overall aspect of what is occurring. This would include the capacity to invent new sound combinations and the capacity to concentrate on the present moment without having to plan out the musical form in advance.

I began with the premise that in order to modify the content of what had been inscribed in my drummer's body, I had to set off in search of new drumming techniques dedicated exclusively to sound. In this process, I didn't consider myself as the sole determinant because I was 'sharing the stage' with other protagonists such as my acoustic instrument, technology, space and music (drumming) history as well as the other various influences mentioned in this research. I was seeking to explore the endless chain of interactions the environment and I could produce. This included the mind and body, moment and place, emotion and intellect, preparation, experience, and spontaneity. The fact all these could work together in my personal practice and later in performance, was of interest. As Cobussen (2014:26) writes: 'the dynamic complexity that informs, and can be generated by, an individual improviser is immense. Following this 'ecological'<sup>39</sup> approach, my aim was to shape and to be shaped by interactions, focusing on spontaneity and openness linked to spontaneous responses to the instrument itself. Improvising musician Paul Stapleton (2007) has characterised this performer-instrument relation as 'un-masterable' and 'always unknown', providing the musician with opportunities for 'unexpected and new discoveries'. This process of discovery led me to de-construct my drumming, stripping down my work to its most elemental state. I was looking for a state free of

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<sup>39</sup> Marcel Cobussen looks at improvisation as an ecological culture.



pre-established concepts or ideas, and remembered my childhood<sup>40</sup> and the ‘uncertainty and hesitation’ upon first contact with my instrument.<sup>41</sup> Back in a sort of ‘preamble’ to drumming, I was in search of secret knowledge to expand my relationship with the materiality of the instrument. I wanted to learn anew how sound discovery worked as if for the first time, and then how to carry on to the next discovery from there. Gestures became fundamentally creative. I was not so much interested in producing the most interesting sounds, but those that offered to potentially shape and produce surprising bodily play. One of my strategies was to let my body know these new gestures existed, and to save the explorative potential for live performances. My primary material was, and still is, the gesture and the resulting sounds are evidence that the gesture occurred. Therefore, the result of my live composing work (*Rumeurs*, discussed later in this thesis) is not an object in itself, but rather a witness to the process of sound and structure discovery in an environment of gestures. When I later analyzed the result of my progress over months (and years), I was less focused on where the music had gone than where it could go. Evolving gestures were the sign of my own development and I was the developing subject of my own research. Each step of this process of discovery was also a moment of growth and transformation. I was surprised by both what I had discovered and by who I had become.

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<sup>40</sup> I started playing marching drums at the age of four and one of my first experience was that of noise, in particular, the first memory of the physical effect of the drumstick awkwardly striking the drum, the resistance of the drumhead, the violent rebounding of the drumstick after impact, and the poorly-tuned instrument of middling quality yielding an uncertain fundamental sound with a number of harmonics and vibrations that I tried to master with pieces of cloth stuck to the drumhead with adhesive tape. The impressions resulting from that initial experience probably formed, consciously or not, my interest in sound.

<sup>41</sup> Referring to visual artist Cy Twombly, Jean-Louis Schefer (1995:149) describes his ‘infantile science’: ‘a process of notation, rather than the art of composition’ in which, ‘instead of someone (the subject) creating something (the object), we witness [in Twombly’s work], the artist creating himself’. The resulting form (the artwork) is a ‘residue of this process’ while the performer finds himself engaged in the ‘process of becoming’. See the very interesting article written by Justin Yang: ‘Free improvisation and the uncertainty principle’ in F. Schroeder and M. O hAodha, *Soundweaving, Writings on Improvisation* (Yang 2014:79–93).

## 1.5 Philosophy of listening

To focus on sound discovery implied a rediscovery or new awareness of listening. I drew from Max Neuhaus (2019), Alvin Lucier (1995), Pauline Oliveros (2005) and Luigi Nono (1993) to investigate listening at the border of music and sound (art) practices (LaBelle 2006). Like Lucier (1995), I considered listening more important than making sound. I also drew from Edgard Varèse's work on the acoustic components of percussion instruments as the basis of a musical form, and his fight for a new type of musical listening (underlining its physical nature) (Varèse and Hirbour 1983). For me, it wasn't sufficient to listen in a different way (Cage 1961). Of course, any form of music-making requires listening on the part of those who are playing it, but in this sound-centred approach, it was considered a vital parameter of the process. As Saladin says, for improvisers listening is 'the first act' and appear to be primordial, while performance itself is the 'second act'. The improvising musician 'is first of all a listener', and his 'status as an actor' depends on that position (Saladin 2014:206). In my research I have tried to implement a particular practice of listening, one that suggests a movement that begins with the attention paid to every little detail and event. This includes noticing each reorientation of the acoustic pressure, from the micro (detail) to the macro. What I investigated was the idea of training myself on a critical level of listening, and to question listening as a tool for composing in real time. It was a matter of trying to develop an approach of active simultaneous response and live composition. while attempting to act on the movement of the musical piece. I wanted to develop an active responsiveness that behaved like a link between the emission of sound and listening to the situation. This would take into account what Saladin calls 'the founding experience of the musician's playing style, the experience by which, in the listening that is part of his practice, that style is constructed from one improvisation to the next' (ibid. 2014:214). I discovered that listening and playing influenced each other in performance and that I could take this into account to construct the sound morphology during the performance.

Conversely, not listening (to myself or to sonic results), proved useful in freeing my live composition work and avoiding systematic or immediate responses to sounds. Leaving the improvisational archetype, this non-listening position allowed for experimenting in which sounds possessed their own time, enabling me to foster sound discovery in the movement of the performance. This distancing from an overly 'reactive' listening favoured a multi-layered approach to my live composing. It also opened the door to a less-anthropocentric perspective,

allowing me to engage my drumming 'milieu' with new ears. I imagined that my instruments and material were neither passive nor inert, nor were they simply at my disposal to be played the way I wanted (or the way I always had). In my mind, they were not simply functional, but existed independently of my thought and interest, and had things to teach me.

Pushing this idea further, I sought to place my body, mind and milieu on equal footing by imagining a play in which all actors could interact at the same level. In order to seek out affordances and, if possible, reveal unexplored drumming potential, I aimed to introduce what Adam Parkinson (2014) calls, 'a state of uncertainty which might reveal, affordances' into my practice. In his article: *Encountering Musical Objects: Object Oriented Philosophy, Improvisation and Ethics of Listening*, Parkinson argues that improvisation creates possibilities for engaging with what he calls the 'hidden world' of sound and instruments. For him, objects always surpass our representation or impression of them, and possess a being that exceeds the presence we encounter. Therefore, playing, listening and improvising became methods for engaging with these 'hidden worlds' (ibid. 2014:56–58).

# Chapter 2 Research framework

## 2.1 Methodology

The research was carried out in three interconnected areas described below. In addition, the response to different strategies and stimuli (described in detail in Chapters 3-7) helped build and internalise a new drumming vocabulary.

Research areas:

- Solo drumming exploration
- Studio practice
- Live performances

Strategies and stimuli:

- Economy of the means principle
- Sound discovery process via evolving gestures
- *Écriture corporelle*
- Sound exploration with a mobile microphone and amplification
- Audio scores (short electronic pieces), live interactions
- Listening and context of performance as support for live composition
- Use of digital technology: laptop and Max for Live (live electronics, live interactions, acoustic imitations of electronic sound transformation, sound processing)

## 2.2 Economy of the means

In addition to the methodology described above, whose output will be discussed in detail in the following chapters, ‘economy of the means’ principle underlay the whole process. As already mentioned, improvisation inevitably deals with constraints, and I was interested to see how much freedom I could find in limitations and what possibilities were hidden in restrictions. I considered this principle a means of exploration, a self-imposed set of constraints as part of my personal improvised practice of discovering sounds. David Borgo refers to this as ‘handicapping’ and distinguishes between physical and conceptual handicaps.<sup>42</sup> In his article entitled *Rehearsing Improvisation? An Ethnographic Study of Free Improvisers at Work*, Clément Cannone (2018) refers to ‘limitations’ as ‘improvisations with explicitly exploratory function, clearly understood as such by the musicians’. He also differentiates ‘musical’ improvisations from ‘constrained’ improvisations. The latter are exercises designed to try out various situations, without paying too much attention to the overall result.

My own strategy was very basic: I allowed myself to explore only one variable at a time. This approach led me to a very profound exploration of drumming possibilities with/in/through/on timbre. I used physical and conceptual limitations as an attempt to go beyond drumming virtuosity and avoid a possibly disturbing (if overly sophisticated) use of electronic devices and/or sound processing. I began by exploring my acoustic drum kit one tom tom and cymbal at a time. I also played improvised sets with single elements in an attempt to extend my drumming vocabulary. This kind of approach was later extended to my gesture explorations, as well as use of digital processing, with a mobile amplified microphone. To allow the deep understanding and integration of all my drumming components, I systematically added one element at a time to explore my drumming milieu step by step. The mobile microphone was added to the exploration process of the acoustic instruments, allowing the emergence of dedicated drumming gestures and the consolidation of new drumming skills. My work with

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<sup>42</sup> Borgo says that handicapping refers to a self-imposed challenge designed to limit material or techniques available to the improviser. These may be conceptual or even physical handicaps imposed on the performer. Conceptual handicaps could involve playing only one note, playing within a specified range, or aiming for a uniform mood in an improvisation (Borgo 2002:174).

electronic devices extended this process to the shaping of new gestures by imitating the delay (and random processing) of my own playing.

To summarize, I began with the exploration of acoustic sounds to which I added amplification, reverberation, electronic delays, and so on, one element after another. Each step was individualized and exploratory, and only later consolidated when the embodiment process was finished. Finally, the broad knowledge I gained from constrained and improvised experimenting with each piece of my milieu led to an expanding potential of drumming and sonic articulation potential. My instrument became much more than just an amplified drum kit. Changes in volume scales modified not only the character of my sounds, but allowed a singular access to specific timbre exploration through a choreography of gestures I will discuss in later chapters.

The results of my investigation, as well as the monitoring of my progress, were audible in the emergence of new sounds and evident in the changes within my drumming gestures. I chose not to capture my progression via video documentation to protect the process of *écritures corporelles*. I felt there was a risk for me to simply redo what I liked or be influenced by repeated viewing of selected sequences. In fact, I chose to rely on my bodily sensations, and when those sensations told me a new step had been made, I (audio) recorded the following sequence or upcoming important performance for further analytical listening. It is also important to note that I analyzed these recordings for the purpose of this thesis several months after the fact. I did this to help me listen to my playing with a certain distance and more easily confirm (or not) the evolution of steps I had felt in my body.

### **2.3 Studio and performance research**

Shifting back and forth between studio practice and public performances allowed my work to leave the privacy of the studio and face the demands of playing in public. This also helped bring questions that arose in performing back into my intimate research space. Work in the practice studio took place outside the constraints of performance and encouraged instrumental sound research as part of my regular personal practice. Once the context was established and checked,

it resulted in the fostering of a personal relationship with the musical instrument. The research benefited from controlled acoustics, favourable to both concentrating on the sound material and implementing the dedicated instrumental practice. The interactions between the acoustic drum kit, the microphone (amplification), and the processing/electronics were intuitively, yet carefully, investigated utilizing a looping sequence. This loop consisted of implementation (practice) of an improvised sound-oriented drumming (discovery), adaptation (new gestures), and observation (analysis). This resulted in an integrated product within four-limb drumming.

Aimed at the audience, the performance situation, by contrast, was altogether different. There, the work played out in various contexts and was developed in connection with parameters that were already in place. Following Saladin (2014:259), taking into account the latter enabled me to see the performance context as a support for improvisation. The situation did not constitute an object that lay outside the music; on the contrary, it tended to merge with it. Consequently, the performance time and venue, the presence of the public (including the response), and the acoustics of the space formed a set of parameters I could count on when improvising. In addition to the back and forth between these three areas (instrumental discovery and solo experiments, studio practice, and live performance), I developed my work in ‘an ever-evolving feedback loop of experience-experiment-consolidation-experience’ as described by John Butcher (in Borgo 2014).

## **2.4 The *Rumeurs* series**

*Rumeurs* is the generic title of the sixty-six public performances I carried out between 2010 and 2015. The two versions discussed in detail *Rumeurs 53* and *Rumeurs 66* (Chapters 5–7), were chosen because they both convey, and are representative of, the different questions that made up the body of my research. The recordings accompany this study, and their detailed analysis illustrates the different phases of research that accompanied the process throughout.

For this thesis, I chose to make a detailed analysis of parts, sequences and performances I had identified as relevant to illustrate my research. That said, it would be wrong to detach them from the broader process that supported the research. Each performance had, to a certain extent, an ‘unfinished’ status. I refused to see any of the performances of *Rumeurs* as an object that could be assimilated to a ‘piece’ (according to the usual definition of the term), even if they

all had a beginning and an end (when I began and stopped playing). The *Rumeurs* series was part of a work in progress at the end of which the live performance shared something of the nature of the sketch. To paraphrase Saladin (2014), they were like sketches envisioned for themselves, not with the expectation they were but rough drafts for a later completed creation. For him, the improviser creates a kind of ‘unfinished definitive’ state. This oxymoron applies to *Rumeurs*, as in the process that was developed, the end of the performance was only momentary, representing just a temporary stop. Incompletion is also the mark of a requirement to continue, not to rework, improve, or clarify aspects of the past improvisation. The *Rumeurs* series was thus part of an uninterrupted musical thinking within what should be understood as a continuously evolving process. Each phase accompanying that process was bound up with my ability to develop (and challenge) my active responsiveness to listening at the instant the sounds were emitted. No matter which situation or phase of the work I was involved with, I acted from the position of someone who was discovering and becoming. In this process, the response to the emitted sound could be either immediate or delayed. According to Saladin, the response’s immediacy is not what lends it its active dimension. The responsive activity is actually at work in the act of listening, whether the work is heard or not. He speaks of a shared experience that constitutes the musician’s playing style. In this experience, where listening is part and parcel of his practice, the style is constructed from one improvisation to the next (ibid. 2014:213–18). What we witness is a temporal broadening of the improvised response, from the immediate to the long term.

Instead of concentrating solely on the present situation, I played with a complex multiple temporality. I had the choice to respond (or not) to the sounds being simultaneously emitted in the performance space. These sounds were specific to the situation, my setting, performance and studio research. My continued efforts to take into account my memory and what constituted the ‘writing’ of the improvisation also led me to a certain detachment from both my own sounds, and memories of past situations. This ‘response’ to myself while interacting with earlier performances was part of a complexification process. The emitted sounds and past work experiences influenced each other and yielded new sound realities. The pre-performance sounds and situations obviously contributed to the multiplicity of factors at work in my improvisations. The elements influencing me went beyond my practice and even the simple framework of the music. In performance, these voices allowed the emergence of new sonic worlds representing a movement that, at least partially, escaped my own consciousness.



# Chapter 3 Vocalization process

## 3.1 Vibration modes of drums and cymbals

I began this research with my acoustic instruments' (drums and cymbals) 'auscultation' with an amplified microphone. My aim was to better understand the nature of their vibration modes. In a standard drum kit, two skins are attached to the drum by a number of tension screws that can individually change the tuning. The tuning of the drums, however, is a rather subjective matter and, compared to other instruments, is regarded as a considerable challenge. This is mainly due to the freedom of action in regards to the tuning parameters. The drum kit's diverse and complex tuning possibilities can have an important and valuable impact on the quality and contextualization of the instrument (solo or as part of an ensemble, live or in a recording scenario).

The microphone's volume settings are of great importance in fostering sound auscultation and highlighting low sounds. In a normal recording situation, the microphone is set to capture the whole dynamic of the instruments, giving the player maximum freedom. To start my drums' auscultation, I positioned the microphone (left hand) near the point of impact of the drums in the order played: 12" tom, 10" tom, 14" snare drum, 8" tom and 14" floor tom (Figure 1). As one would do with an electronic microscope's zoom feature, I had to significantly increase the input gain of the microphone in order to highlight the resonant frequencies of the drums. The sound of a drum varies depending on where the drumhead is hit, and playing the drumheads from the center towards the edges, or vice-versa, allowed for frequency crossfades on all the drums. This is because the impact at different locations on the drum skin elicits different vibratory modes. The fundamental mode of resonance refers to the motion of the air mass inside the drum, while drum frequencies are primarily dependent on the size and tension of the two skins (top and bottom). Tuning them changes the frequencies. The two main frequencies of each drum<sup>43</sup> are shown in the sonogram below.

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<sup>43</sup> See also Cuny Crigny, Robinson, Richardson and Toulson's interesting study about the resonant frequencies of drums (accessed Oct. 2013).

➤ See: audio file 10 – tom tom frequencies.wav

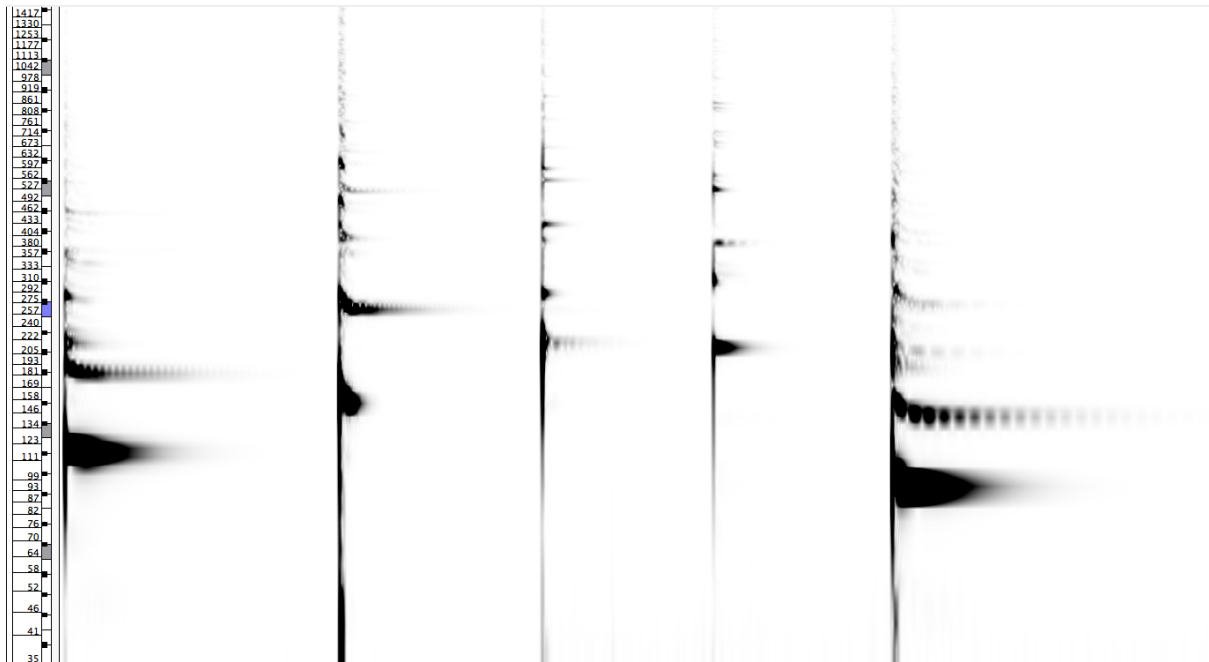


Figure 1: Sonogram, tom tom frequencies

Due to the difference in texture and tuning of the drum's skins, the fundamental (lower) sound had a shorter decay than the secondary frequency. This was because the textured drumheads were partly dampened and had shorter sound durations than plain plastic bottom heads. In addition, the drums with larger diameters (first 12", followed by 14"), resonated longer. Finally, the high microphone input level amplified harmonics that were sometimes transformed into beating (visible on the sonogram).

Different strikes produce different sounding results, and it was possible to alter the skins' frequency response by using a finger, hand, or prepared skins to vary their tension. Playing with my hands offered a lot of creative combinations. Fingertips, nails, palm, and the slap technique were of great interest to me, and allowed quick passage from one technique to another without losing time, as one would with stick changes. As we see in the examples below, the musical result can be very expressive. The textured skins prepared with small instruments (i.e., small cymbals) were extremely interesting because their resulting sounds were determined by the object's make-up and the gesture's movement. Developing my touch and gestures helped

me isolate the drums' different frequencies. I could then play them separately in an attempt to act on or shape sound envelopes. It was a long but rewarding learning process that was crucial to developing the microphone playing technique described below.

My three cymbals were set to form an homogenous ensemble with similar characteristics, despite their fundamental pitches, harmonic components, and sound durations being reliant on their diameter and thickness. I sought to separate and/or highlight specific cymbal frequencies with hand techniques along with different hard and soft sticks or brushes to favour sounds emerging across the spectrum's range.

Cymbals are 'idiophones', Michael Bettine says, 'a class of musical instruments in which sound is produced primarily by way of the instrument itself vibrating without the use of membranes or strings. In this case, the whole instrument is one vibrating unit...' (Bettine 2011). The main frequencies (the pitched sounds) of the cymbals were revealed by the proximity of the microphone, which highlighted these (mainly low) frequencies that are almost inaudible to the naked ear. In the example below, I played the three cymbals sequentially from 18", 14" to 16" (Figure 2) with a timpani mallet (light stroke) to soften the attack. The sonogram shows the fundamental frequencies' different pitches (that I later explored with my microphone) merge with the cymbals' rocking motion, generating sounds containing polyrhythms.

➤ See: audio file 11 – cymbals frequencies.wav

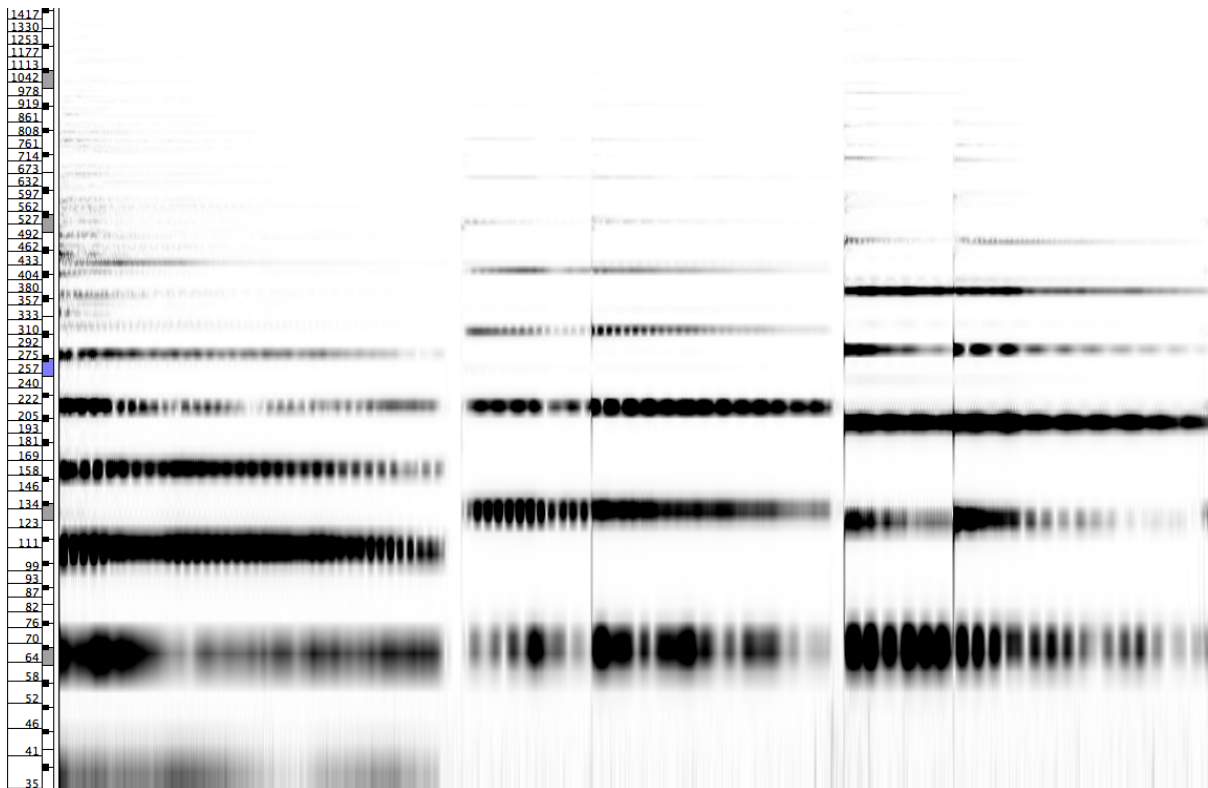


Figure 2: Sonogram, Cymbals frequencies

Scott McLaughlin (2012), who researched cymbal resonances using sine waves, defined the chaotic regimes of the cymbal's vibration. During his experiments, he observed that the pitched sound of sheet metal was always audible, although often masked and reduced to a colouration of the cymbal. This is not surprising, as cymbals are mostly used for their noise content. When struck hard with a stick, the cymbal oscillates chaotically, and the energy is spread over multiple vibrational modes. Even when struck lightly, the pitch is not very clear, as cymbals are inharmonic and have many different and unrelated resonant frequencies. When the cymbal's excitation frequency is also a resonant frequency, the energy is sharply focused on that pitch and amplified by the cymbal resonance. As the excitation amplitude is increased, the sound has several distinct stages. These include periodic: the excitation frequency and some mostly linear/harmonic overtones, the quasi-periodic spectrum, with energy exchange between normal modes (which are strongly coupled by an internal resonance relationship), and the chaotic spectrum. In the chaotic spectrum stage, the energy excites many modes, and the

frequency relationships are too complex to perceive as pitch, instead being perceived as broadband coloured noise.

These scientific inputs, followed by a more creative approach to drums and cymbals (frequency discovery), were very useful at the beginning of my research process. They gave me a better understanding of my instruments' acoustic properties and their physicality (what drums and cymbals are). This initial state profoundly challenged my empirical knowledge as I started moving my microphone over the drums and cymbals.

### **3.2 The mobile microphone**

I sought to take advantage of the interesting sonic singularities provided by the microphone and the amplification for a number of reasons, including creating new volume balances between different instruments, bringing selected sounds into the foreground, varying listening points, highlighting elements from the rest of the drum kit, making reversals and scale changes, and emphasising parts of a sound or amplifying almost inaudible frequencies, among others. Simon Emmerson (2007) distinguishes six functions of amplification in live music: Balance, Blend, Projection (and Spatialization), Perspective, Colouration and Resonance-Feedback. Surprisingly, the microphone movement itself could become a tool for shaping the sound (picking up sound elements along the way). This allowed me to use horizontal movements to experiment with frequency crossfades over the instruments and vibrating surfaces. It also allowed me to vary amplitude with vertical movements. Furthermore, listening to this through my computer's sound card offered me the option of recording my experiments and later visualising movements and analysing sound files.

The AKG 418-type condenser microphone (specifically designed for percussion) proved very useful in my research. It is a small microphone mounted on a clip that can be quickly and easily positioned around the drum kit without the need for a stand.



*Figure 3: Mobile microphone*

Its frequency range, running from 50 Hz to 20,000 Hz (manufacturer's specifications) was relatively linear, with a slight decrease in the bass register below 500 Hz and a peak of +6 dB between 7,000 Hz and 15,000 Hz. The fact that it is a hypercardioid microphone ensured high directivity and made it possible to pick up sound on the instrument's surface at a narrow angle. This allowed me to center and focus my assisted listening on precise sections of the vibrating surface and then avoid, control, or play with live feedback.

### **3.2.1 The microphone and gestures**

The unusual sound envelopes resulting from microphone movements shaped my listening and body gestures. My body was unbalanced by its presence in my left hand, as I intuitively started to use it as a virtual drumstick. The microphone became both a virtual drumstick and a microscopic ear at the heart of my drumming's coordination and independence. As I shall explain, this integration would have a profound impact on my drumming and the resulting sound(s). In the example below, the written snare part (transcription<sup>44</sup> Figure 4) looks very conventional. When compared with the audio file and the sonogram (Figure 5), they both reveal the developing sound diversity. A whole series of actions contributed to making the sounds, as my hand holding the microphone was also used to alter the drum's resonant frequencies and to mute sounds along the way. My interest in this new approach was that it gave me the possibility to shape and filter sounds before the sound card input and digitalization. As I will show later,

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<sup>44</sup> I kept the usual writing (dedicated to drumming) in all my transcriptions, in order to help my understanding of the relationship between the coordinating gestures and the resulting sounds.

this manner of sound shaping can have interesting outcomes, such as developing un-mastered movements and shaping new drumming gestures.

- See: audio file 12 – tom tom short phrase 1.wav



Figure 4: Transcription, tom tom short phrase 1

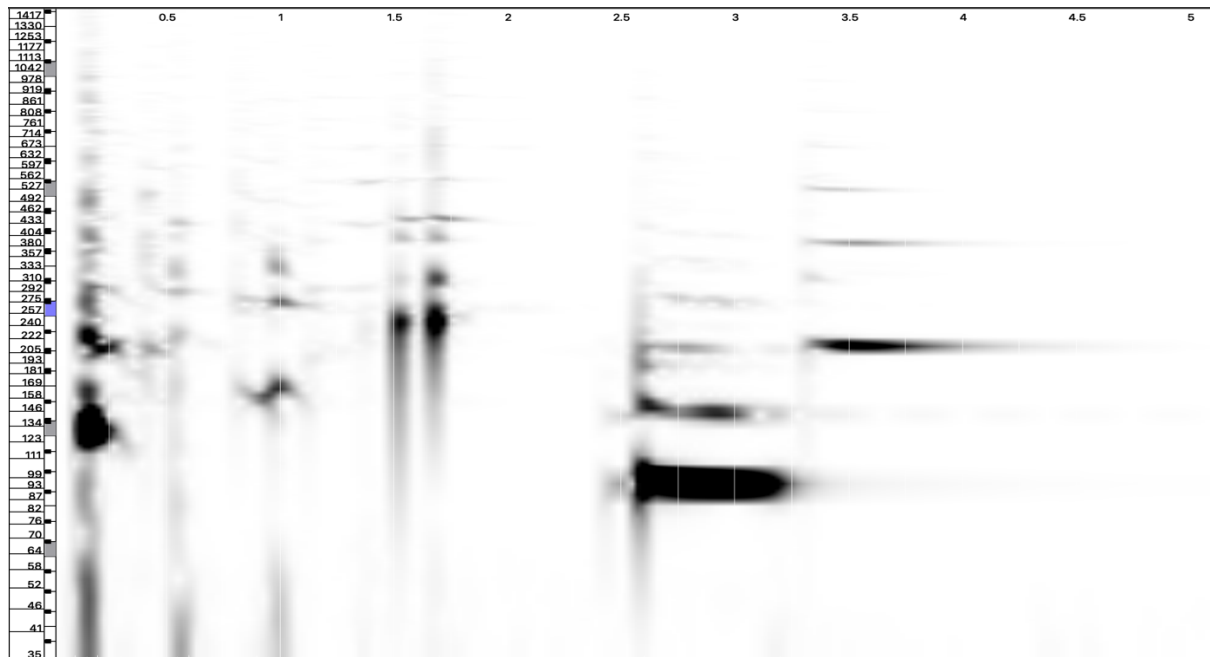


Figure 5: Sonogram, tom tom short phrase 1

Moving the microphone all around the drum kit also tended to relocate drums and cymbals. In a standard recording studio situation, sound engineers ensure that the drum kit's various instruments are spatialised with the use of panoramic parameters. By doing this, they seek to place the drum kit's elements from left to right in the stereo image, attempting to replicate the

acoustic setting. The single mobile microphone's presence reduced the space of the sound image of my instrument onto a single mono track, which gave the illusion of a drum kit reduced to a single 'voice'. The moving microphone made the instrument lose its orchestral dimension, shaped new drumming gestures, and resulted in the emergence of sounds perceived as gesture traces or residue.

### **3.3 New drumming gestures**

The vocalization approach was indeed a breakthrough that altered the perception I had of my drumming gestures. In addition, the mobile microphone was very helpful as an 'un-masterable' tool in drafting new drumming ideas and developing a practice dedicated to the left hand holding the microphone (I am right-handed). Above all, maintaining some clumsiness in the process of discovery became a strategy. I used trials, mistakes<sup>45</sup> and imperfections to go beyond mastery and virtuosity. Confronting these new elements has been a joyful and child-like process. Ironically, it was the merging of microphone gestures with drumming 'rudiments' that first became this new playground for experimenting, and helped me sketch new sounds in my drumming. I was acting with sound as an awkward sculptor would with raw material, and my much-rehearsed drumming gestures became uncertain and hesitant. Many of my drumming skills started to be replaced by new ones when I began paying attention and reacting to the resulting sounds and impulses given by my instrument. Little by little, I extended my discovery process and practice to the composition of small musical phrases made up of new sonic entities. This process became the foundation of my live composition work. The following examples show the early stage of the process, from small musical motifs or sonic events to bigger phrases in an underlying process of unfolding complexity.

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<sup>45</sup> I am referring here to a very short video based on an interview with pianist Herbie Hancock, the master improviser Miles Davis honored Hancock's mistake as a hidden intention by playing along with it. See: [https://www.youtube.com/watch?time\\_continue=91&v=t-vItf0G05M&feature=emb\\_logo](https://www.youtube.com/watch?time_continue=91&v=t-vItf0G05M&feature=emb_logo).



### 3.3.1 Small musical motifs and phrases

Small sound entities started to take shape from my scribbling.<sup>46</sup> It was interesting for me to hear how integrating the microphone into very simple well-known figures could change the resulting sound of what I was used to hearing in my daily warm-up practice.<sup>47</sup> My drum kit was teaching me new skills with unexpected results:

➤ See: audio file 13 – vocalization phrase 1.wav

The image shows a musical transcription for a drum kit on a single staff. The notation includes various rhythmic patterns with 'R' and 'L' above the notes indicating right and left hand strokes. Brackets and numbers (3, 5, 6) are used to group specific patterns. Labels above the staff identify 'Inverted single paradiddle' and 'Single stroke roll' sections. A label below the staff identifies another 'Inverted single paradiddle' section. The transcription ends with a double bar line.

Figure 6: Transcription, vocalization phrase 1

Unmastered microphone movements (compared to drumstick movements) dramatically shaped the resulting sound. When integrated to the rudiment's coordinated movements, the moving microphone generated intriguing amplitude effects corresponding to the coordination of rapid left hand up and down vertical microphone movement with my right hand playing at the center of the skin. The delay between left and right movements added some randomness to the result. From there, I moved into improvising bigger sound entities or sound phrases.

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<sup>46</sup> The microphone as a virtual drumstick tended to imbalance not only my hands, but my whole body.

<sup>47</sup> I am used to warming up with simple and complex rudiment combinations. The National Association of Rudimental Drummers N.A.R.D. codified 26 of the most-used military drum rudiments, including Paradiddles and Rolls (see N.A.R.D.).

➤ See: audio file 14 - vocalization phrase 2.wav



Figure 7: Transcription, vocalization phrase 2

To my ears, the result of this example sounded like it had been awkwardly, but interestingly, transposed from an Indian tabla pattern. Played on the 10” tom tom, the accented finger-playing gave some relief to the phrasing, while the pitch varied continuously. Besides the work’s extension over two beats, the envelope effect’s mix, due to the microphone’s vertical movement with the addition of uncertain hand techniques (impacts, pitch bend, muffling) seemed very effective and promising. I now had to extend my work not only in time, but also in space.

### 3.3.2 Spatial extension

The distribution of rhythmic patterns, motifs or any other musical material to different percussion instruments has been a characteristic feature of jazz drumming throughout history. Later, the evolution of independence and coordination systems would lead drummers to permanently examine this question,<sup>48</sup> as did I. In the following example, I play in a very small perimeter (snare drum, 12” tom tom and 10” tom tom) and very easily and joyfully scrawl over the three instruments.

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<sup>48</sup> For more about the distribution of rhythmic patterns to different percussion instruments, see also the Jim Chapin drumming method: *Advanced techniques for the modern drummer, vol.1*, subtitled: ‘*Coordinated independence as applied to jazz and bebop*’ (Chapin 1948). It is a method for drummers (the first of its kind) to learn to interpret musical figures and patterns distributed to the different instruments of the drum kit.

➤ See: audio file 15 - vocalization phrase 3.wav

Figure 8: Transcription, vocalization phrase 3

The quick movements over the drum kit shaped the sound envelope, merging different sound components captured along the way. The mix of hands and microphone movements gave surprising results. Blending lateral and vertical movements, I discovered an interesting mixture of frequencies and unusual amplitude curves. When the sound was reduced to a single track (physically displaced in the loudspeaker), it became increasingly difficult for me to identify the different sources of the sound entity. It was necessary to recall my body choreography in order to remember the path taken by my newly coordinated gestures.

### 3.3.3 Complexification

In the following example, I intuitively added new and more complex elements to challenge my scribbling work. The transcription (below) can be read as a classic jazz drumming sequence that could have been transcribed from a big band chart or bebop fill. Its unexpected sonic results differ from the typical sound of that musical style.

➤ See: audio file 16 - vocalization phrase 4.wav

Figure 9: Transcription, vocalization phrase 4

Again, the amplitude effects resulting from the mobile microphone gestures generated specific sound envelopes. And, as discussed in the previous example, the pattern's sound sources were not easily identifiable.

After months of studio practice, I succeeded in mixing and adding new elements (single strokes, buzz roll, bass drum) to my scrawl in a very convincing way. This led to the resulting sound becoming denser.

➤ See: audio file 17 - vocalization phrase 5.wav

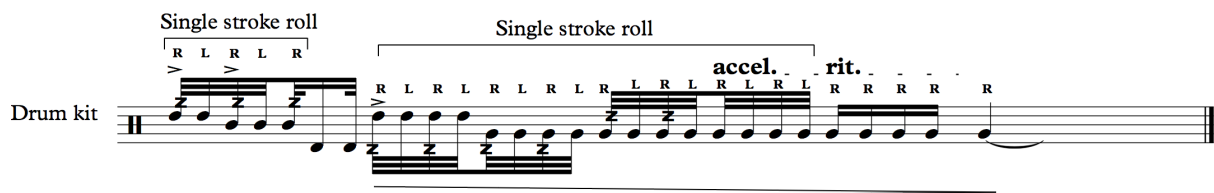


Figure 10: Transcription, vocalization phrase 5

Because of the playing speed (and the microphone scribbling over it), it was not easy to have a clear idea of the sequence's fingering details. Despite this, I liked the fact that the whole bar might be heard as one single sound or 'sonority'. The imitation of a sound reality was not the purpose of this research, but in some ways this sound entity evokes the image of a falling object or a rock rolling down a slope.

### 3.3.4 Extension to cymbals

Cymbal sounds last much longer than those of drums, and this extended duration added new elements to my research around microphone gestures. In the spectrogram below (Figure 11), I was able to read the microphone's path over the resonant surfaces, as well as its resulting incidence on the frequencies.

➤ See: audio file 18 - cymbals mobile frequencies.wav

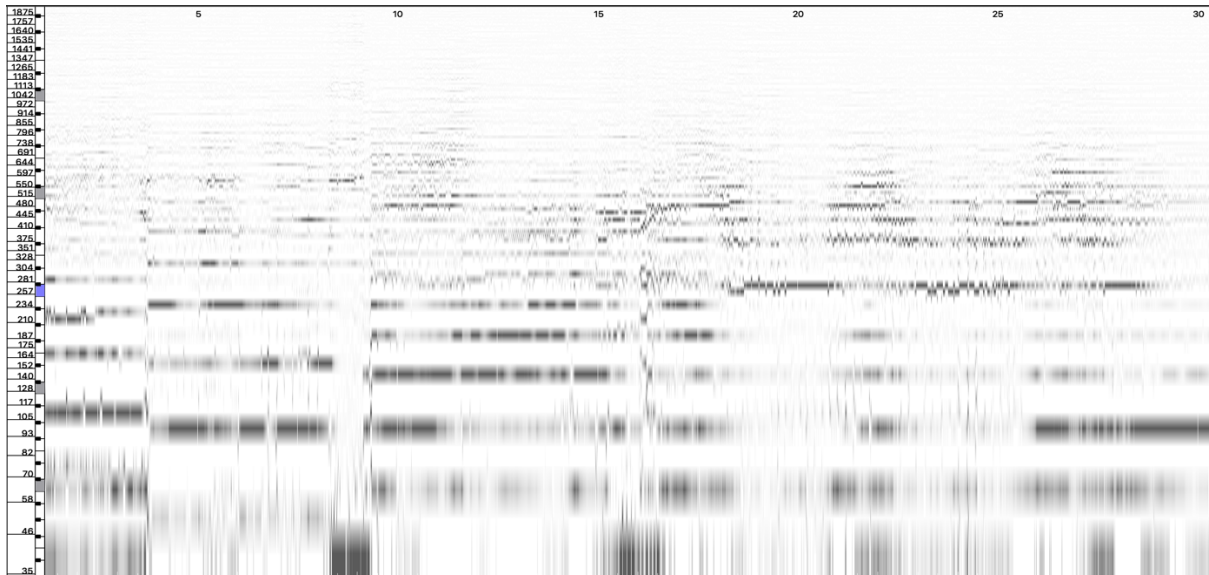


Figure 11: Sonogram, cymbals mobile frequencies

The resonance duration could give me new opportunities to develop my sound discovery work (i.e., focusing on any particular part of the sound, choosing and highlighting specific resonant frequencies and scribbling over them). A good example is the wah wah sound in the following audio file. This sound reminds me of some expressive elements in Jimi Hendrix's wah wah pedal effects.

➤ See: audio file 19 - wah wah cymbal.wav

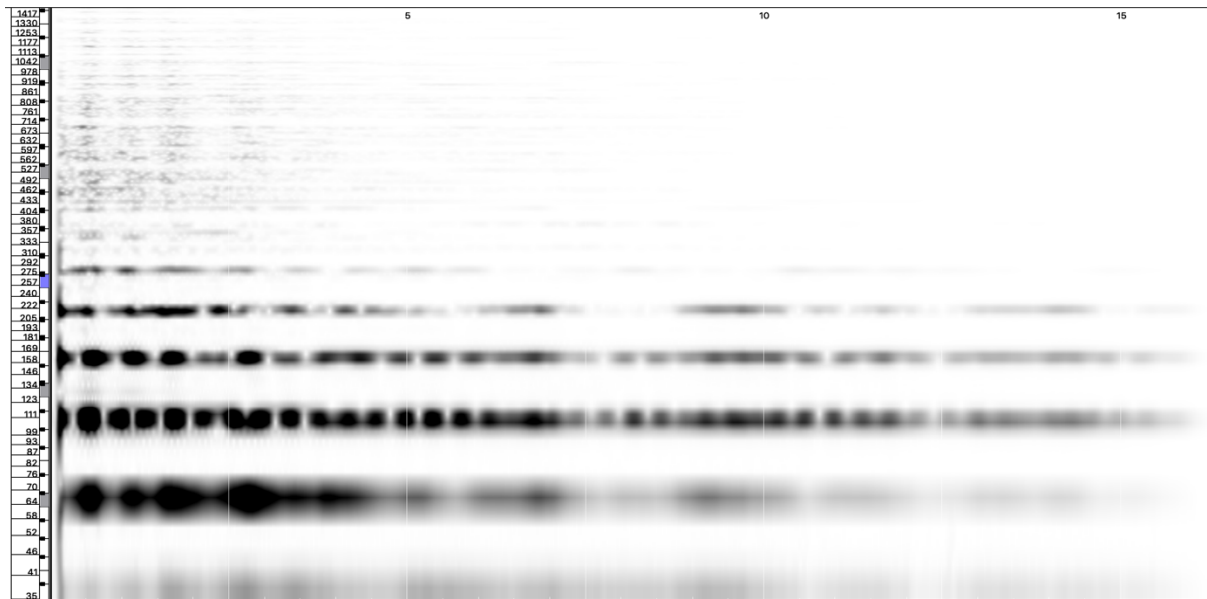


Figure 12: Sonogram, wah wah cymbal

The longer cymbal release time allowed new articulation opportunities. In other words, I had more time to move over them and experiment with frequencies, merging, or separating and shaping unusual sound combinations.

### 3.3.5 Mix of drums and cymbals in a short perimeter

Using prepared drum skins with small cymbals or other objects altered the skins' sounds and allowed for unusual sonic mixes in very small perimeters. This helped my experimenting with new sound combinations. For the following audio example, I placed three small cymbals attached to each other with a nylon wire onto the skin of the 14" floor tom. The fact that the cymbals were attached to each other added some randomness to my playing and caused uncontrollable chain reactions. In this sequence the mix of rudiments tended to give a linear aspect to the rhythm (continuous demisemiquavers), while imbalance and uncontrollable aspects (random behaviour of the attached cymbals) were a source of surprising and unexpected

sounds. The different positions of the cymbals on the skin, however, obviously produced different results.

- See: audio file 20 – prepared cymbals on skins.wav

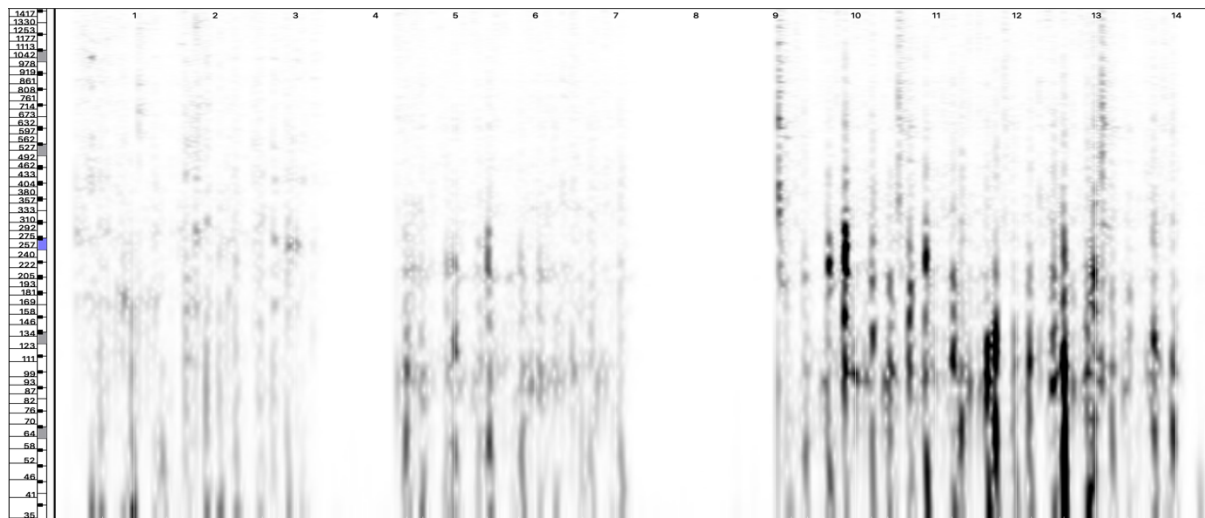


Figure 13: Sonogram, prepared cymbals on skins

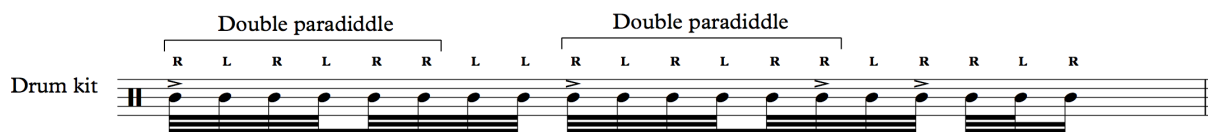


Figure 14: Transcription, prepared cymbals on skins 1

As we can see on the sonogram above (Figure 13), the frequencies are widely distributed within the spectrum. There was no obvious fundamental frequency. This gave the sound material its distinctive character (electronic sound imitation). The end of the sequence showed a new component caused by the random behaviour of small cymbals moving and jumping, which created microsonic and rhythmic variations. These were the result of a chain of events, creating

a sort of random acoustic delay which, to my ears, resulted in a sound evocative of electronic granular synthesis.<sup>49</sup>

The second part of the sequence (Figure 15) shows similarities to the first one, but as the cymbals were turned over on the tom tom skin in a position that gave them greater stability, we can easily hear some differences. First, there is the skin's limited frequency range, and second, the cymbals' random behaviour disappeared. In addition, freed from the element of randomness, the rhythm was less complex. The floor tom's frequency, altered by the cymbals, contributed to the resulting sound in a much more meaningful way. This was because the timpani stick used was heavier and more rigid than the plastic brushes.

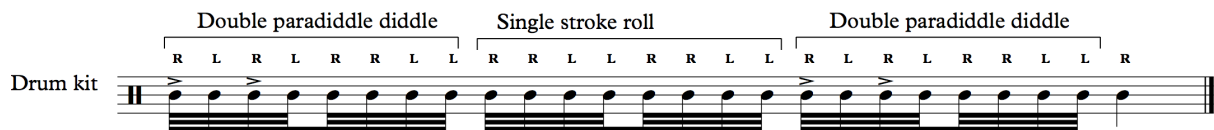


Figure 15: Transcription, prepared cymbals on skin 2

Having separation between my left hand on the skin and the stick on the cymbals gave me three distinct sounds (rim shot, cymbals played with the stick, and skin played with the hand). And, they all emerged more distinctly from the sound mass.

The differences between the skins' and cymbals' natural release led me to start reflecting on each sound's duration. For example, in addition to my scribbling work, I could take my envelope effect work further with new emerging opportunities like microphone movement. This helped clear both the attack of a sound, and the amplification used to sustain sounds beyond the acoustic and physical constraints of the instruments. In other words, I could extend my discovery possibilities to the attack, decay, sustain, and release (ADSR) of sounds.

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<sup>49</sup> I have done several projects using Granular Synthesis (See *Percussion and Piano Pieces*, with Michael Edwards and Sarah Nicolls-Kingdom (2008), and *Passage 2*, with Ejnar Kanding, (2010)



### 3.4 Playing with durations

In traditional drumming, the duration of the sounds of skins and cymbals is usually left free. That said, throughout the drum kit's history, sonic research of sound duration has played an important role.<sup>50</sup> One does not specifically control each sound's duration as one would with voice, wind or string instruments. Unlike piano or some keyboard percussion instruments like the vibraphone, the drum kit does not have a sustain pedal. Skins and cymbals resonate freely from one strike to another. The length of the sounds in drumming is commonly controlled using rolls, rudiments, rubbing sticks, or objects, either on drumheads or cymbals. I was interested to see what the addition of my microphone scribbling gestures over muffling techniques could reveal. And, more intriguingly and promisingly, how it could contribute to the extension of the natural duration of sounds.

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<sup>50</sup> See the sound research undertaken by Warren Baby Dodds and Zutty Singleton that shaped the swing pattern (Mattingly 2002), (Paczynski 1997:104), and the sustained acoustic drum sounds of Eddie Prévost in the 1970s. Prévost explored the sounds of cymbals and gongs with a bow, among other things.

➤ See: audio file 21 - notes durations.wav

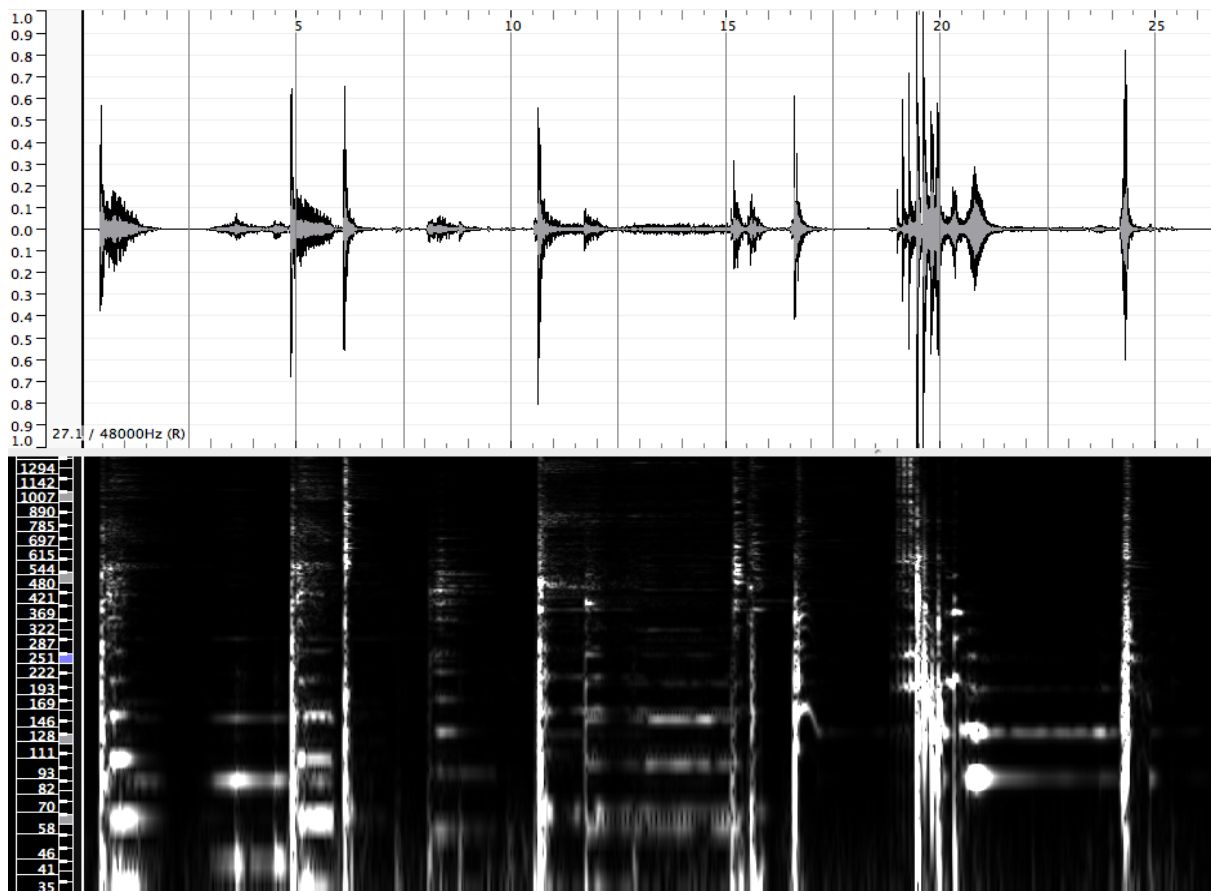


Figure 16: Waveform and sonogram, notes durations

In the example above I found it interesting to identify the cymbal attacks in the first eighteen seconds, and to look at the surprising shape the microphone gestures gave to each sound in the sonogram. To some extent, these were not what would normally be expected from a cymbal sound. Some of the sounds were stopped or muted with my hands (0", 8"), while others had their attack erased (3"), or their frequencies mixed (10", 12") or sustained (12" to 15"), as if sculpted by the microphone.

The same observation can be transposed to the drums. The pattern below (19") is a good example of the microphone sustaining the sound of the drumheads, much like one could do with a piano's sustain pedal.

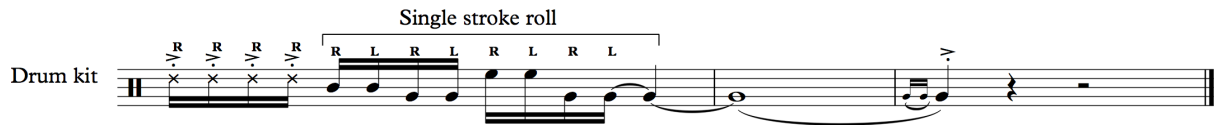


Figure 17: Transcription, notes durations

The sound envelope of the ‘single stroke roll’ was shaped by the microphone’s gestures. This was because, as previously mentioned, I played with my left hand holding the microphone, but not touching the skin (virtual stick). Hence, the microphone tended to erase the strike's attack and pick up the instrument’s resonance along the way. Furthermore, at the end of the sequence, I decided to keep the microphone still in order to sustain the 14” floor tom’s vibration, playing with distance to compensate for the natural decay of the skin. This was effectively my drum kit’s sound sustaining device.

I had the feeling that working with the duration of my drum kit’s sounds could reveal new perspectives in my sonic research. While the possibility to connect the microphone to a computer's sound card opened up the world of sound processing, it was important for me to ensure the integration of the latter into my newly implemented body language. It was equally important to understand how my gestures could interact with digital sound processing without altering or limiting my playing possibilities, yet still preserving my evolving instrumental gestures. This was not guaranteed, if I simultaneously needed to have gestures dedicated to remote control and/or live processing.<sup>51</sup> Following my economy of the means principle, I chose to begin my experimenting with a simple reverberation effect (in Ableton Live). My intent was to simply extend my sounds with fixed values in order to understand what long sustained sounds (as opposed to short decayed acoustic drum sounds) could add to my scribbling gestures.

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<sup>51</sup> My aim, however, was not to control the electronic devices, as previously mentioned, but to shape the physical gestures.

### 3.5 Reverberation

Both recent and long ago<sup>52</sup> performances piqued my curiosity and sparked an interest in reverberating spaces. This gave rise to a series of public performances in spaces selected for their reverberant properties.<sup>53</sup> With a drum kit reduced to the bare minimum (viz., a 14” floor tom, a few suspended cymbals, and various small hand-played percussion instruments), I began working on the relationship between acoustic percussion and natural reverberation. What spurred my interest was the transformation of sound in connection with different styles of architecture. I embarked on this series of concerts in the wake of Pauline Oliveros (2005) and her interest in reverberating spaces. My experience as an instrumentalist had taught me that the tone of my instruments could differ significantly according to whether the performance venue’s acoustics were flat or reverberating. David Toop notes that it was in reverberating spaces that Pauline Oliveros started to obtain ‘a fuller, rounder, richer tone’ with her instrument (Oliveros in Toop 2000:260).

The addition of digital reverberation to my research brought up the question of sound processing. I drew from my acoustic experience, where the transformation of timbres and tones in relation to reverberating spaces was significant. The use of digital reverberation allowed me to quickly shift from one specific virtual acoustic to another (e.g., by simply turning an electronic reverberation on or off during a performance). It was likewise possible to imagine playing with several virtual sets of acoustics at once.<sup>54</sup> To record a drum kit, a sound engineer uses separate

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<sup>52</sup> Around the age of nine or ten, during parades with the drum group my father directed, I remember playing the drum while walking in the street. The quality and length of the reverberation varied significantly and permanently. The urban space and architecture of the streets seemed to directly impact sounds with the echo, reverberation, and amplification. The opposite was true for roads running through the open countryside, in that they possessed acoustics that were exceedingly flat. I also remember the joy I felt playing in our rehearsal room, located in an immense industrial building with a high ceiling roughly ten metres above our heads. That space produced a very long reverberation and appreciably changed the sound of the drums by amplifying and filtering certain frequencies. I recall spending hours there as an alert listener, paying rapt attention to the variations generated by the architecture and its reverberation.

<sup>53</sup> See acoustic concerts in Appendix 2, audio files 2-3.

<sup>54</sup> Referring to the beginning of rock and roll when musicians and sound engineers were trying to create ‘auratic’ voices, Makis Solomos speaks of the ‘multiplier’ effect of the voice through the use of ‘artificial reverberation’. According to him, the effect was used to intensify the ‘presence of the star’ (Solomos 2013:222). In the 1980s, the

and specific reverberation devices, plug-ins, and settings for the bass drum, the snare drum, the tom toms and overheads. What was interesting to me was that with a very simple reverb patch, I could work on the frequencies and reverberation time to transform both the sound quality and its extension. As we see below, the reverberation time was the parameter that allowed me to take a significant step forward in my research, paving the way for playing with layers.

Trained as a sound engineer, I am used to editing and mixing my own acoustic drum kit. I typically start with a short reverberation time (0.5” to 1.5”).<sup>55</sup> As a challenge, I decided to start experimenting with a bigger value (5”), which I thought would be long enough to emulate the kind of resonant natural acoustics I was used to playing with. But as shown in the example below, the result was disappointing. The setting had negligible effects on the transformation of sounds and was too short to try out with new relationships between frequencies.

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use of digital reverb in the recording studio was almost systematic. Reverberation was used to produce the effect of virtual spaces. As described by Richard Williams, a completely different approach is associated with the aesthetics of the German label ECM. The label’s founder Manfred Eicher began using reverberation and the positioning of microphones ‘to establish two vital parameters’, namely ‘the space between the instruments and the dialogue between musicians’. The former allowed the tone of each instrument to ‘develop individually’, or, as it were, allowed the instruments to resonate in their own artificially echoing space. The latter ‘directed the attention of the listener to the quality of the group interactions.’ For critics of the label and Manfred Eicher’s repeated use of reverberation in his produced recordings, the effect was nothing more than a ‘superficial intervention, a commercial trick that aimed to win over listeners...’ Williams goes on to point out that ‘Eicher got his inspiration from the sound atmosphere of the old wooden church used by Columbia on 30th Street, and notably its splendid echo’ (Williams 2011:220).

<sup>55</sup> I am referring here to recordings outside the frame of this research.

➤ See: audio file 22 - reverberation simple.wav

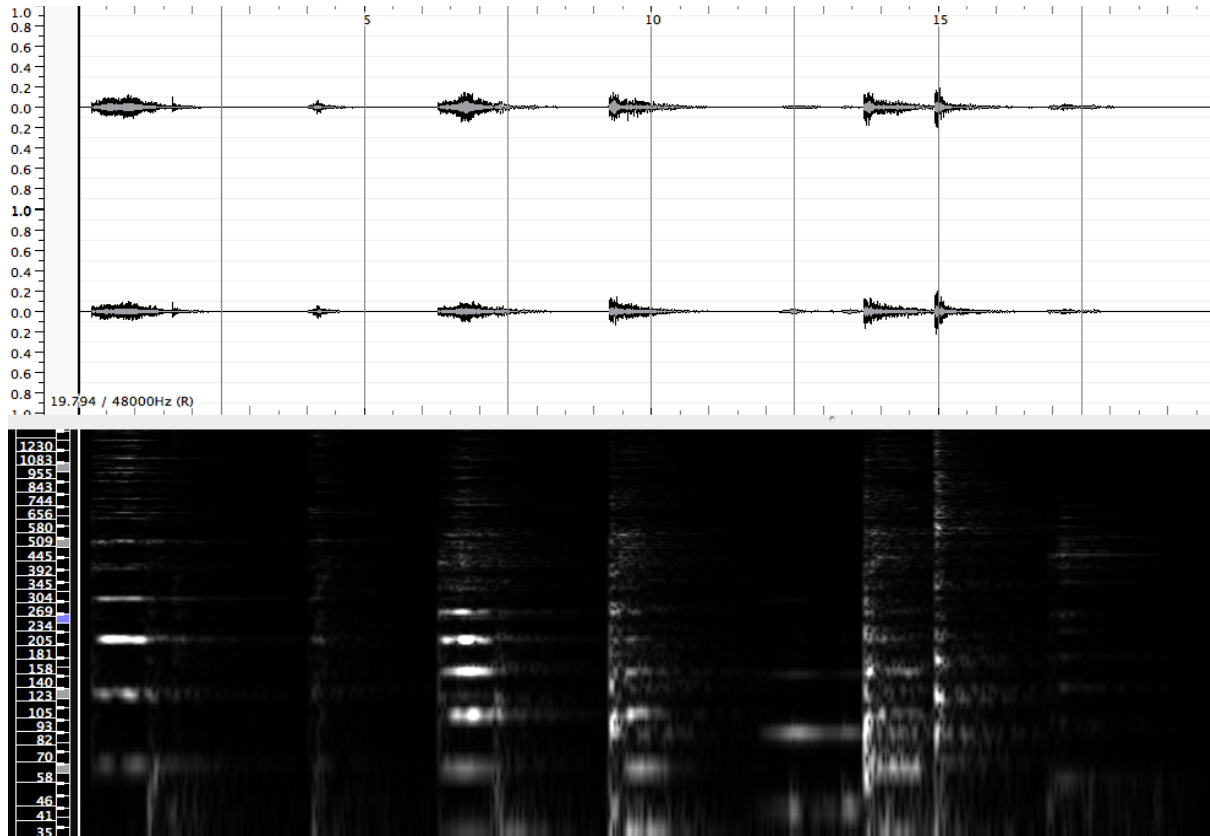


Figure 18: Waveform and sonograms, reverberation simple

I was disappointed by the similarities and the lack of surprises between the waveform and the sonogram in the illustration above (Figure 18).

In the following example, and as a new challenge, I set the reverberation time to a very long value (12"). I also filtered the treble of the digital reverb using a low pass filter to highlight the drum kit's resonance frequencies below 5 KHz. This caused sound to be carried over a longer period of time and had to be carefully chosen and worked in detail.

➤ See: audio file 23 - reverberation long.wav

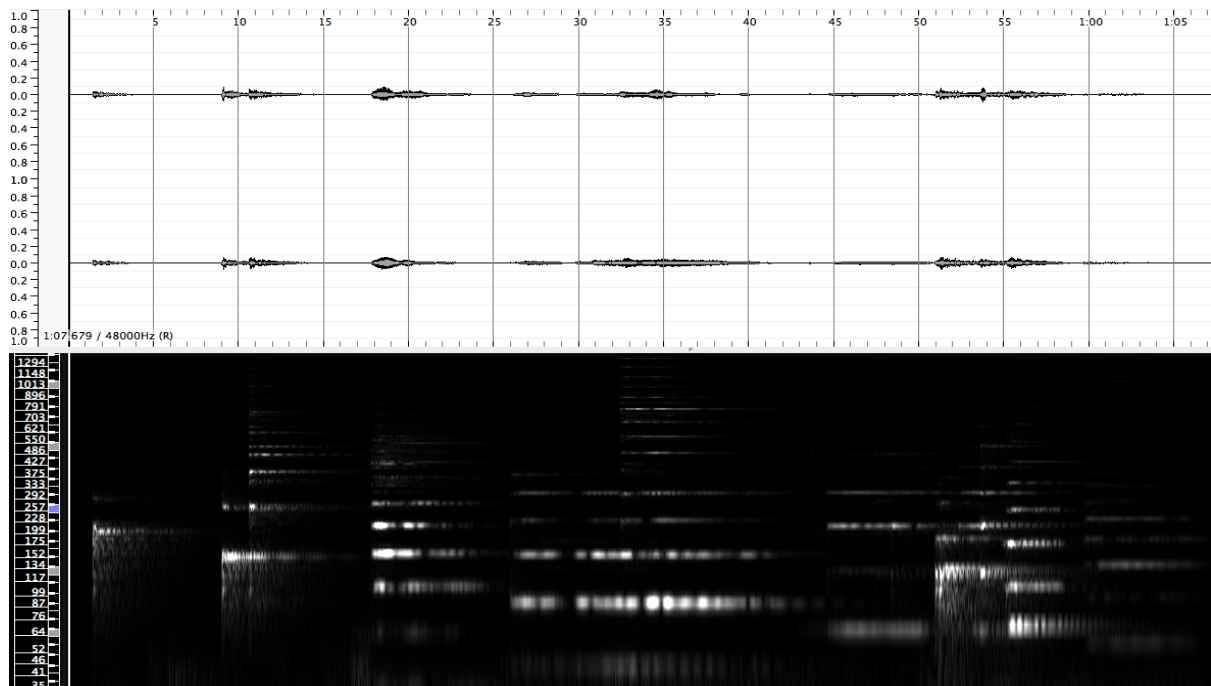


Figure 19: Waveform and sonogram, reverberation long

With this new setting, I was able to separate sounds into layers (Figure 19). The pianissimo dynamic offered great precision and allowed the separation of the instrument's frequencies. Each sound could now be extended over a duration exceeding its natural release (over 7"), allowing overlays (tom tom strike and superimposed high frequencies at 9"). My playing could isolate frequencies and merge them in unusual or unexpected combinations. In addition, the difference between my effects being on and off made me very receptive to the physicality of the room, and considerably influenced my approach to live performances.

# Chapter 4 Performance spaces

## 4.1 Spatial interactions

The prominent presence of the space itself surprised me when I first moved from my studio research to the performance space. The controlled acoustics of my private rehearsal/recording studio and its setup (monitoring and/or headphones) had been appropriate for my sound research. But the moment I played in another place, the room and its acoustics affected my sound research dramatically, forbidding the simple transposition of my work.

I discovered that physical space favoured the blending process and the fusion of the resulting sound identities. I was interested to see whether, using the spatial duality that existed between me, producing the sounds, and the loudspeakers amplifying them, I could introduce a kind of circuit that reinforced the connections with and within space. This made significant changes to sound morphology. I discovered that each performance space not only enabled me to produce new sounds but also, more fundamentally, allowed new possibilities for sound articulation and organisation. I wanted to question that relationship in order to intensify the connection with the environment as a support for the performance. I drew on Mathieu Saladin who speaks of ‘processual scores’, i.e., a support that does not constitute an ‘object [that lies] outside the music’, but which ‘conversely tends to be fused with it’ (Saladin 2014:259).

I could indeed verify that each type of building, configuration of the space, site layout, and audience distribution oriented and acoustically permeated not only the resonance of the sounds but also, and perhaps more profoundly, the process of the playing itself. Certainly, the music inhabits the whole of the performance venue, but I uncovered it and used the space like a sound box. Saladin offers a fine description of this relationship. The ‘here’ not only permeates the improvisation; it also represents ‘that place from which... [sound is shaped]’. Over time, I discovered it was an active relationship, as the venue inspired, constrained, limited, shaped, amplified, increased, and encouraged me to react accordingly. I explored the context of the performance as a support, a source, and resource for composition in real time. I experienced this support at the very moment it took shape through the sounds I emitted, and as Saladin



writes, 'It is only when one experiences it that this support is made available... is materialised in that it becomes material for improvisation' (Saladin 2014:261–63).

As an experienced drummer, I had to adapt my tuning, muffling and playing to each space. I was forced to contend with the physicality of the space, as it added transformative elemental sounds to my live playing. Taking this into account opened the way to a morphological treatment of sound by making connections between sound emissions. Acoustic and electronic sounds interfered with one another in space. In real time, it was possible to choose between blending or separating the sources and sound materials, and creating textures, masses, rhythms, or movements. The loop between the acoustic sounds and the loudspeakers reinforced the relationships between the performance space and the sound emissions, offering new possibilities for articulating and organising them.

The following example illustrates how I considered the confluence and setting of the relationship between my drumming milieu and the performance space. *Rumeurs 53* was recorded in Switzerland (September 2014) in a 200 m<sup>2</sup> former industrial space with a four-meter-high ceiling. The drum kit was set up towards the centre of the room cutting across one of the venue's corners. The loudspeakers, set up in its immediate proximity so I could balance acoustic and electronic sounds, were placed on the left and right side of the acoustic drum kit and pointed towards the ceiling. This created an indirect sound diffusion vis-à-vis the audience/listeners, who were encouraged to move around the space.

The recording was made while paying particular attention to the relationship between the loudspeakers and the acoustic drum kit. In attempting to capture the spatial situation, I installed a stereo microphone 150 cm from the bass drum and 160 cm above the floor facing the drum kit. The drum kit was acoustic (no fixed microphone settings), while the amplified sounds (mobile microphone) were broadcasted through loudspeakers within the venue. The audience was briefed about moving around during the performance in order to experiment with listening from various spots (effectively playing with the distance from the performer and loudspeakers). Accordingly, the closer they moved towards the drum kit, the acoustic sound became more precise. At the same time, the digitised sounds would spread around them, reverberating on the architecture. Conversely, the further away they moved from the acoustic source, the more the two types of sound sources (acoustic and loudspeakers) blended. I chose to install the stereo

recording microphone close to the drum kit, which was ideal for the identification of the (acoustic and amplified) sound sources necessary for a subsequent analysis.

At the beginning of my performances, I generally invite the audience to discover the sound space (as I do myself), by starting from complete silence (when possible), and progressing into drumming with lower dynamics. In addition, I typically use a Max for Live patch (buffer shuffler) to delay the continually stored live recorded sounds and play them back as random sequences. In this example (and in general), the buffer shuffler was set to split the recorded sounds in four sequences of three seconds each. The first quarter belonged to the first sequence, the second quarter to the second sequence, and so on. The patch was set to play back the sequences randomly, with random parameters applied to the forward, backward and ignore functions as well. This is shown below (Figure 20):

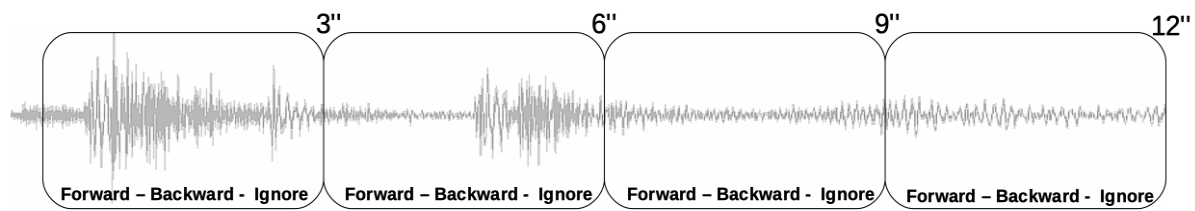
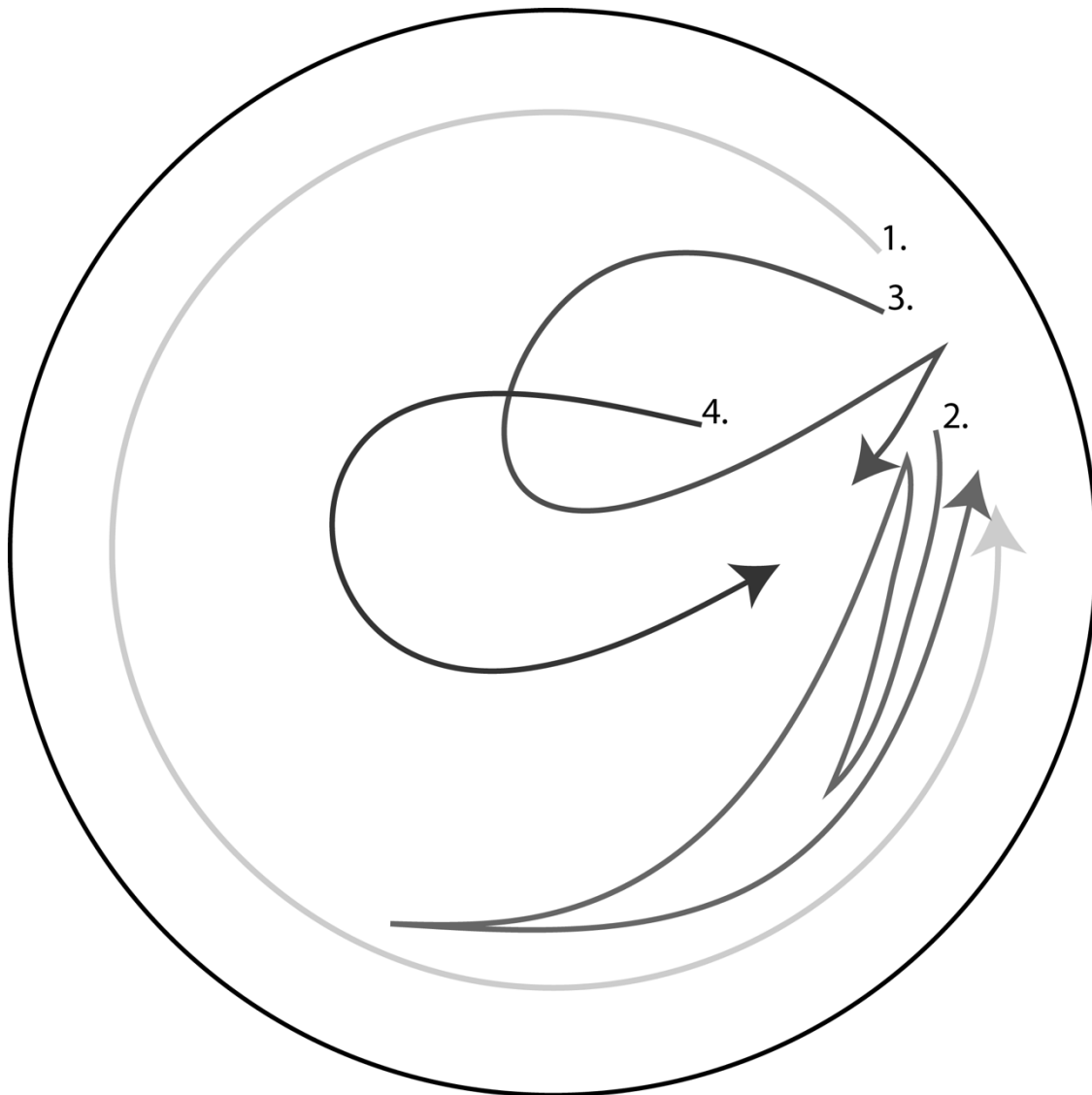


Figure 20: Buffer shuffler, playback functions

The illustration below (Figure 21) shows an example of the right hand movement used to rub the snare drum and explore the space with a skin-against-skin relation. The left hand holding the microphone intuitively followed the same path.

➤ See: audio file 28 – *Rumeurs 53*, intro.wav



*Figure 21: Snare drum movements*

This kind of beginning was crucial, as I experimented with the difference between empty spaces (in the sound check) and audience-filled spaces. The sound relation could change dramatically. The first movements' sounds incrementally put the space in resonance. I played them slowly and long enough (6'') to allow me to wait for the first delayed answer of the buffer shuffler.

When the snare sound moved from the acoustic instrument to the loudspeakers, I played more expressively to mix the sounds and thus set up the low balance within the space.

The three diagrams below show the duration (Figure 22), the speed of the movements (Figure 23), and the delayed time of the buffer shuffler responses (Figure 24):

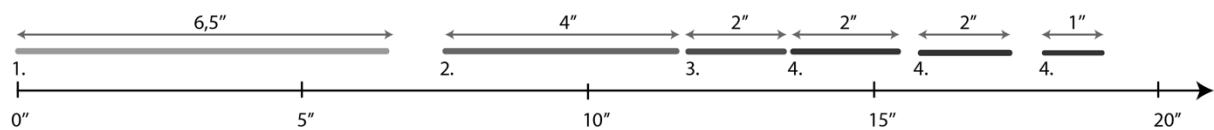


Figure 22: Duration of movements

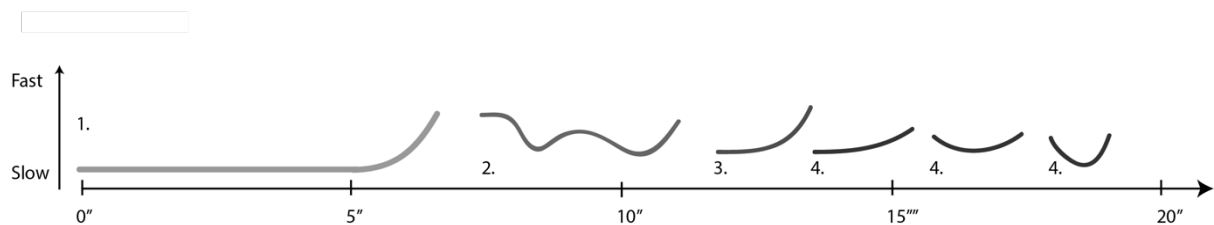


Figure 23: Speed of movements

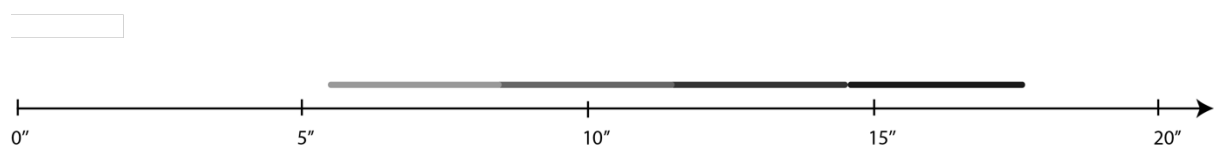


Figure 24: Computer's delayed sequences

Once the relationship with space was established (rubbing gesture 1), I simply let my ears guide the subsequent movements to start a dialogue and look for affordances with electronic delays within space. In this example with the random buffer shuffler parameter, 'ignore', applied to the first (3'') and last (18'') delayed sequences (Figure 24). The next one allowed me to set my drumming's general volume in relation to the delayed electronic sounds and the performing space.

The image shows three staves of musical notation for a drum kit introduction. The top staff is labeled 'Drum Set' and is in common time (C). It begins with a *mf* dynamic marking and features a series of eighth notes with accents, followed by a rest, and then more eighth notes with accents. The middle staff is labeled 'Dr.' and shows a similar rhythmic pattern with accents and rests. The bottom staff is also labeled 'Dr.' and continues the pattern, ending with a double bar line and a key signature change to two flats.

Figure 25: Transcription, introduction, drum kit

Rests between small musical motifs was important, as it gave space to the delayed electronic sounds and allowed for balance control. While the delayed recorded sounds played back randomly without apparent synchronisation to the acoustic part, the ‘backward’ and ‘ignore’ parameters contributed to the strangeness of the playback.

This kind of short introduction was very useful in establishing an intimate connection with the situation. I was then able to continue exploring my drumming milieu for the duration of the performance. The programmed random parameters helped me discover sonic relations, as they added unmastered elements to my playing and allowed unactualised affordances to emerge.

The next sequence is a good example of this kind of ‘game’. It involved feedback in relation to space using the looping effect of live recording:

➤ See: audio file 29 - *Rumeurs 53*, section 1.wav

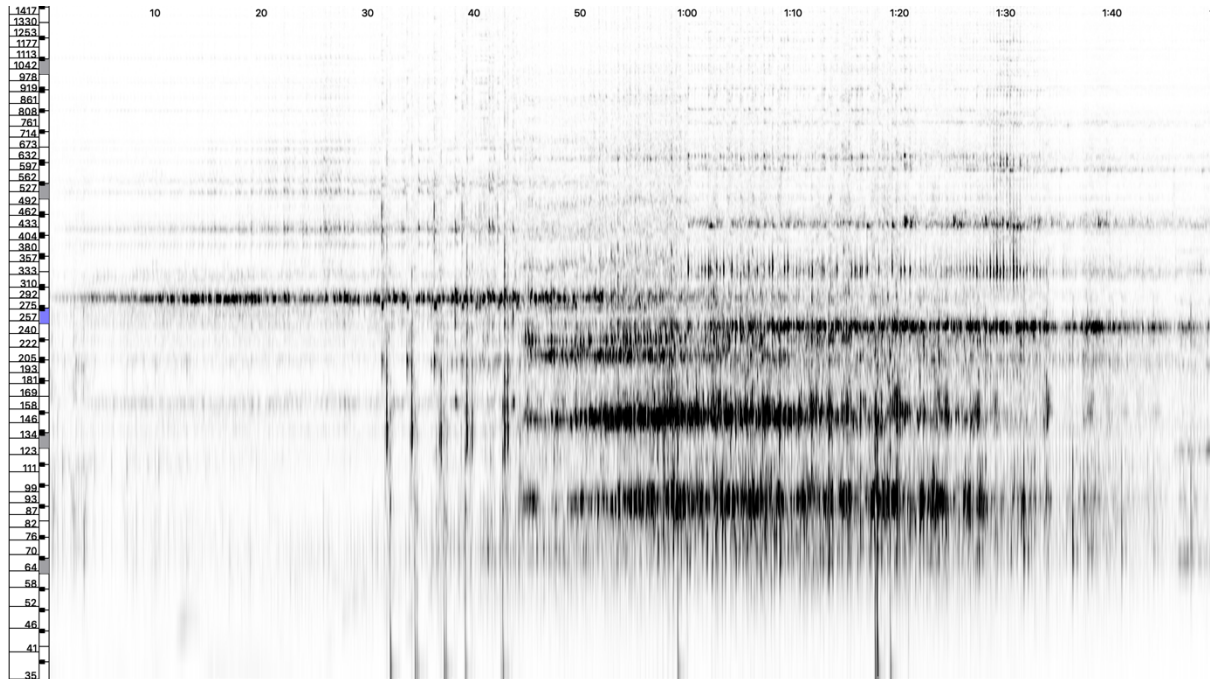


Figure 26: Sonogram, *Rumeurs 53*, section 1

I intuitively took into consideration the impact that the presence of the room could have on the live recording (microphone and loudspeakers in the same room). By practising with a mobile microphone in close proximity to the loudspeakers, I acquired skills in avoiding (or controlling) feedback in live situations. Following my ethos, while I knew of the existence of this feedback, I had never practised playing with it in my studio. I had only allowed for its emergence and discovery in live performances. In this example, I intuitively felt in the moment that the continuously recorded sounds were wrapped in an aura of frequencies adding distortion to the resulting sound. And because the space was vibrating from the acoustic and electronic sounds, the existing resonances were amplified. The sequence was shaped by the rhythmic work on my tom toms (vertical lines in the sonogram), which favoured the emergence of frequencies (horizontal element in the sonogram) in relation to the reverberation effect of the room, and used the space as a tool to distort the recorded sounds. The sounds picked up by the mobile microphone were delayed and played back within the room, whose existing resonant

frequencies were being amplified and continuously merged with the newly-recorded sound material in a loop, shaping the sonority *in situ*. In the sonogram, the drawing of the horizontal frequencies expands and illustrates the incorporation of the sound phenomenon into the composition of the ‘sonority’.

I found similarities to Alvin Lucier’s emblematic work *I’m sitting in a room* (1969).<sup>56</sup> The difference was that in my case, the sound source was not subject to distortion as it kept actively feeding the looping process, while the amplified frequencies (recorded continuously) were subject to the sonic alterations made by the architecture. I used rhythmic continuums to highlight specific frequencies, while the mobile microphone was reacting to what was given back by the situation. The impact of my index finger alternated with the vertical movement of the mobile microphone, generating the envelope effect discussed above. When I synchronized my playing with the buffer shuffler to reinforce the tom tom frequency (290Hz), three voices blended in space; the acoustic tom tom, and the left and right channels (the two mono outputs playing different parts of the buffer and processing sounds separately). The relative linear and repetitive rhythm was counterbalanced by the room’s resonances that enveloped the strikes on the acoustic drums, wrapping them in an interesting aura. The resulting sequence was specific to the situation and my openness to new possibilities for sonic articulation. I reacted to what the situation gave me, with no advance planning to control this web of relationships. It was a multi-directional approach in which all objects (including me) were on an equal footing. I simply contributed to this ecosystem by making choices (in this particular example, choosing to play with what I had just discovered). I developed a high degree of sensibility to the possibilities offered by the objects constituting a milieu of play (games) and discovery.

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<sup>56</sup> In his piece, Alvin Lucier continuously played back the recording of his voice in a room. Brandon Labelle affirms that ‘the piece develops in the direction of emphasizing the acoustic space inside of which the sound source (the voice) loses its original form through the resonance of the spatial situation’. This interactive process is where ‘the voice points up the architecture through its disembodied reproduction’ (LaBelle 2006:126).

## 4.2 Audio Scores

One strategy I developed to push this line of research further was to interact with small electronic pieces I viewed as audio scores.<sup>57</sup> The idea was to compose ‘unreal’ electronic sound worlds and offer them up for impromptu encounters with the present moment and the instrumental world. I discovered later that such an attempt could be linked to the idea of *musique mixte*<sup>58</sup> in an improvisational context. I was interested to see if I could find a coherent form of connection with pre-existing sounds. Vincent Tiffon reminds us that the question of making connections with electronic sounds produced outside the performance space leads to the presentation of a certain number of pairs: ‘fixed and mobile time, presence and absence, real and unreal’. Moreover, the presence of these pairs raises the question of ‘synchronism’, although different temporalities and the question of presence and absence require a particular implementation.<sup>59</sup>

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<sup>57</sup> Phill Niblock is one of the pioneers of this kind of score. As described by Ulrich Krieger, ‘he found the term ‘audio scores’ a few years back to describe a music that exists solely in the form of sound or electronic recording, and has to be examined, interpreted, arranged, or transcribed by each performer, each group’. In Niblock’s works, ‘the score exists at the very instant and in the same space as the sounds of the live instrument, with the musician having to react to what he hears without the aid of written instructions’. Ulrich Krieger speaks of communicating information ‘that on paper would be indescribable’. One has ‘to listen to the music coming from the loudspeakers and the sound generated in the space, and then make the right choices’ (Krieger 2012:290–91).

<sup>58</sup> Composing and interacting with short pieces on an electronic support seemed to be part of a genre that might be called ‘music for performer and tape’, or ‘mixed electro-acoustic music (instrument and tape)’, or perhaps ‘live performance of instrument with tape’. The French terminology speaks of *musique mixte*, with the closest English equivalent being ‘mixed work’. While referring to the mixing or melding of instrumental and electronic sound worlds played through loudspeakers, *musique mixte* differs from ‘live electronics music’ when it features instrumental sounds played live. These are associated with electronic sounds that are elaborated on in delayed time and played back through loudspeakers in the same space. Vincent Tiffon asserts that it is quite possible to imagine the very name of *musique mixte* becoming obsolete at the turn of the 21st century, inasmuch as the question of mixing acoustic and electroacoustic sources is becoming secondary. The two positions that view mixed work as an outgrowth of the electroacoustic world, or on the contrary an outgrowth of the instrumental world, open up a third way with the emergence of a truly independent genre. It would be a particularly unique genre that pulled off the blend of a music from the graphosphere (writing in the form of scored music) and a music of the digital sphere (the writing of sound set down on an electronic support) (Tiffon, 2013, 1300).

<sup>59</sup> Tiffon lays out a typology of listening for mixed works, and speaks of gradation that goes ‘from symbiosis to contrast via hybridisation, extension by resonance and diffraction, parallelism, complementarity, imitation, hierarchisation’ from which I drew my experiments (ibid. 2013:1370).



I wondered if the fixed status of my audio scores would modify the ‘improvised’ status of the performance.<sup>60</sup> As the audio score would be made of recordings of improvised manipulation of short electronic loops (MIDI-triggered drumming), I noticed that the recording reduced the fleeting nature of the improvisation, inscribing it in a paradoxical timeframe, and transforming it into an object. This was produced by the separation of improvisation, strictly speaking, from its emerging context. Of the improvisation, the recording only conserves ‘the decontextualised sound phenomenon’ (Saladin 2014:264–65). This kind of ‘decontextualisation’ process paved the way for interaction (i.e., playing with different times). For example, I could play (real time) with the time of an earlier improvisation (delayed time) in an attempt to re-contextualise an audio score. This would give the fixed part a new context of emergence (thanks to its meeting with the improvised live material during the performance).

The live interpretation of audio scores was based on imitation, and aimed at the introduction of a ‘supplement’ as in written music.<sup>61</sup> I also attempted to go beyond the limits imposed by the MIDI triggering (described in Chapter 1). In particular, I challenged the recurrent parallels between the acoustic and electronic attacks (which were due to the trigger-type sensor-based device I used to manipulate the electronic sound material). Looking for new encounters with my drumming milieu in live performances, I disconnected the recording of the electronic part from the acoustic drumming (triggering).

The audio scores presented below are examples of my attempts to explore the world of sound in small electronic loops<sup>62</sup> made of sound textures from some of my previous recordings. These

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<sup>60</sup> Christian Béthune argues that as orality in jazz could not be defined by merely the lack of writing, ‘the use of writing does not call into question the oral nature of a work’. Referring to Duke Ellington’s *Concerto for Cootie*, a composition that is entirely written out, leaving little room for improvisation, Bethune points out that ‘this concerto is only a work when enacted; a work whose being plays out only in its execution’. The work is not set down once and for all ‘inside an essential, absolute form to which it would be possible to refer ideally, without its sonic realisation’. On the contrary, ‘it is in the performance that – literally – the *Concert for Cootie* plays out in the totality of its being’ (Béthune 2004:447).

<sup>61</sup> Bruce Ellis Benson argues that the interpretation of a piece of classical music is not only a repetition, it is always more than that. The mimetic movement of interpretation (in classical music, and to varying degrees in most music styles) is likewise the introduction of a supplement (Benson 2003:114).

<sup>62</sup> I am referring here to the first experiments that led to the creation of concrete music, especially with the discovery of the *sillon fermé* (closed groove looping), or work done on the changes of speed (the transposition of pitch and rhythm). Marc Battier speaks of a period that witnessed the conversion of ‘the reproduction machine’

sound textures were taken from very short (1–2 second) sections of those previous performances. In doing so, I sought to explore some of my former works' potentially unactualised qualities.

#### **4.2.1 Ride up**

I made this audio score from a recorded sample of a rhythm played with brushes at a very fast tempo on a ride cymbal. My idea was to experiment with the 'up tempo' swing of the bebop era.<sup>63</sup> My interest lay in the exploration of the perceptual limits. Hence, I asked the following questions. When does the sample stop being heard as a rhythmic pattern and become perceived as a single sound? And, does pitching and speeding up a rhythmic sample to extreme tempos transform a rhythm's beats in partial frequencies of a sound?

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into a 'production tool'. He mentions the notion of 'reinvention', which was used throughout the 20th century by artists who appropriated machines and used them to artistic ends. The advent of new devices such as the *phonogène*, as well as sound processing derived from transpositions and changes in playback speed, act on one's perception of the sound spectrum. Battier refers to Pierre Boulez, who, in his *Études I and II* (1951), created changes in playback speed to the sound of an Africa senza using a *phonogène*. This resulted in the 'transpositions of the pitch and alterations in the lengths [of the sounds]'. He voiced the idea of a 'recording of the sound lengths allowing one to realise serial operations on this dimension' (Battier 2013:697–98). Closer to today's era, Brian Eno describes his approach to composing his first ambient-music album, *Music for Airports* (1978). After having his four musicians do 'improvisation exercises' in the studio, he came up with two piano parts that 'played melodic lines that interlocked in an interesting way'. He decided to create a piece of music from that sample, and made a loop of it on a 24-track tape recorder. He concluded by saying, 'I discovered I liked it best at half speed, so the instruments sounded very soft, and the whole movement was very slow' (Eno 1979).

<sup>63</sup> Fast-tempo choices were one of the first bebop innovations to which drummers had to adapt in the 1940s, when jazz bebop style became an avant-garde music form. From there, Jazz musicians sought to create music with more complex and elaborate structures, along with theoretical and practical knowledge.

➤ See: audio file 24 - *Ride up*.aif

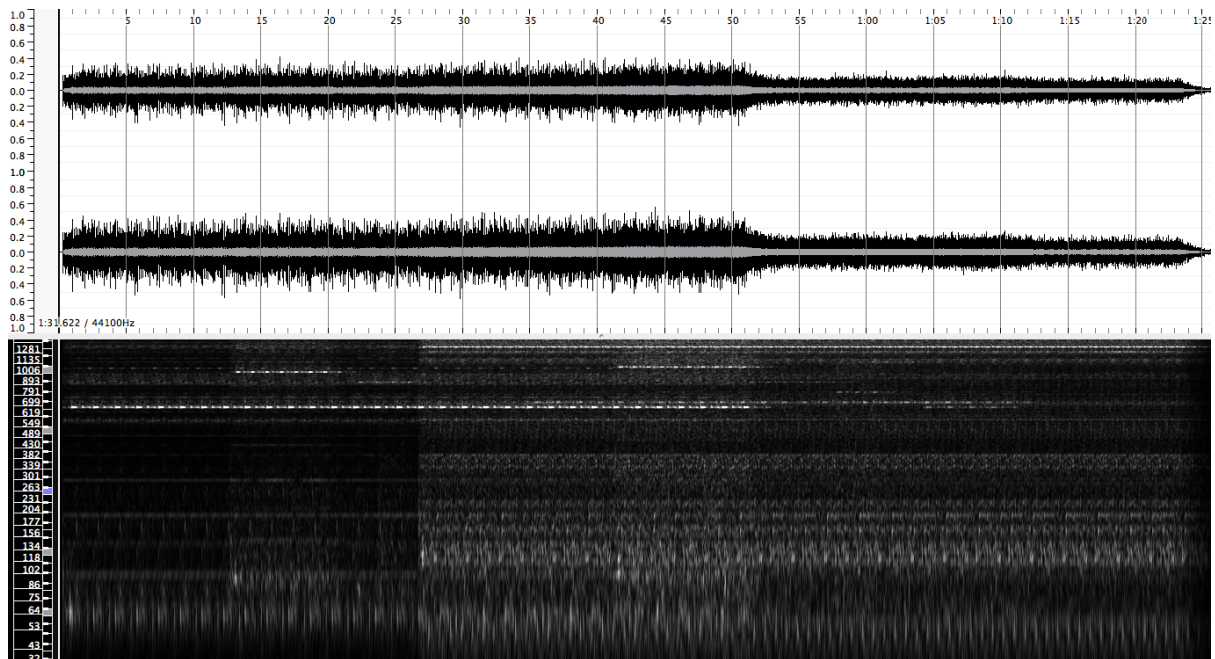


Figure 27: Sonogram, *Ride Up*

In this example, several things jumped out at me. First, the sample loop tended to lose its original shape, and the reference to drumming was no longer very obvious. Second, the sample was significantly transformed by its transposition several octaves above the original. And third, the loop's mechanical aspect was highlighted by the cymbal's metallic sound connecting it to the world of machines. On the sonogram (Figure 47), the structured shape reminded me of graph paper. The horizontal dotted lines represented the resonant frequencies of the cymbals, while the various triggering created intertwined rhythms and frequency variations. I liked its nervous (rhythm) and relaxed (sustained frequency) characteristics.

#### 4.2.2 Joey

The next audio score was made with the sample of a drum fill (tom tom, hi-hat and rims) recorded through a reverberation effect.

➤ See: audio file 25 – *Joey*.aif

This audio score helped me initiate the imitation process (imitation of electronic sounds with my acoustic playing) that would gradually shape my drumming and my body's drumming gestures. The reverberation, which was part of the original recording, was distorted by transpositions that gave the audio file its sonic quality. This was similar to my work with reverberated sounds. Rhythm and velocity changes were used to give some relief, as well as to challenge the mechanical aspect of the sample. Tempo variations of the triggered sounds resulted in an intriguingly complex texture.

### 4.2.3 Drum Organ

The third example is a loop created with a snare drum, cymbal and an organ sound. Here I took on my work's MIDI side by including an iconic sound of MIDI keyboard playing, the organ sound.

➤ See: audio file 26 - *Drum organ.aif*

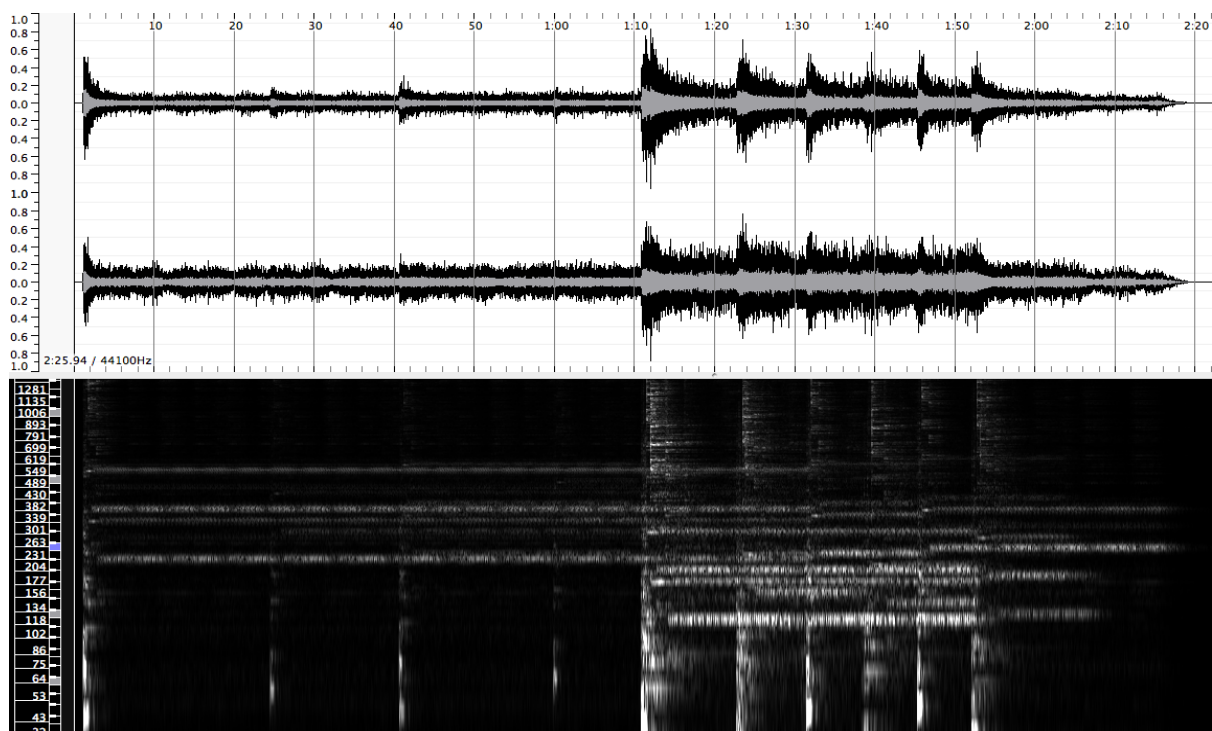


Figure 28: Sonogram, *Drum Organ*

Transposing the sample made the cymbal sound like a gong, which was easy to blend with my mobile microphone cymbal work (imitation). On the sonogram, one can read the organ's frequencies, looped over a long period of time (1'10"). I improvised around the organ continuum to challenge its musicality, slowly triggering new transposed samples to add new frequencies to the evolving texture of sounds. In wanting to challenge my perception, I looked for the boundary between the sample's harmonic and sonic character. I did this in order to see how I could interact with it using the sustained sound techniques (microphone gestures and reverberated sounds) discussed above.

Once carefully studied, the audio scores had to be inserted into my live playing. The number of electronic audio scores at my disposal varied. Depending on the situation, I could select or create new audio files ranging in length from ninety seconds to two and a half minutes. They could be looped or merged, played once, in layers, or in canon. It was also possible to create suites of electronic compositions by triggering several audio files in a row. At the beginning of each performance I had no predetermined plan and never knew if, how, or when I would use them.

#### **4.2.4 Audio scores in performance context**

What struck me listening to my audio scores in live situations, was the importance of the reverberation (distance) effect that resulted from their encounter with the performance space. In particular, the 'metallic' component of *Ride Up* appeared to be 'softened' by the room.

➤ See: audio file 34 – *Rumeurs 53*, section 6.wav

In addition to my first observation, two temporalities merged within the space, one fixed and the other mobile. The latter had the potential to change my perception of the former. Interacting with an audio score also raised the issue of presence and absence. I discovered two layers of absence in my work: the missing acoustic drum kit part of the recording (still present in my memory), and the electronic sounds that had been cut off from their physical source. This acousmatic listening introduced the question of the real and the unreal. I sought to explore

the possibility of giving fixed sounds a new reality with my live playing,<sup>64</sup> and seeing if and how those live interactions could shape my bodily gestures.

I started to carefully examine, learn and memorise the audio scores, in a way that is similar to what I would do with standard jazz scores. I then proceeded to improvise with the memory of the recorded elements (structure, sound qualities, events, rhythms, and so on). After months of practice, I was able to use my deep knowledge of the audio score to direct and shape my live performances. When performing, I could feel when and which audio score could be used and how to interact with it. In addition, I could anticipate its arrival and/or extend its duration with my live playing. In doing so, I was aiming to give mobility to the fixed time, presence to the (physical) absence, and a certain reality to the unreal.

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<sup>64</sup> With regard to the audio compositions of Phill Niblock, Ulrich Krieger describes the relationship the performer must develop when playing live. The performer must 'sculpt' sound masses live in performance. He does this not only with the sounds being produced live from his instrument, but also with the sound emitted by the speakers into the room. This for him is how sound can be shaped by the performer: 'everything added to the sound coming out of the speakers is interacting with everything else sounding in the room..., every single tone and microtone ... changes the final result'. Even the subtlest change in any of the parameters can cause a major shift in the overall sounding mass. Part of this 'new virtuosity' is about 'blending and interacting with, influencing and shaping the sound from the speakers', and this can be done by very refined and small means (Krieger 2012:293).

# Chapter 5 Live interactions

## 5.1 Audio scores and live electronics

Working with audio scores led me to consider extending my drumming milieu/ecosystem (acoustic drum kit, body, microphone, amplification and relationship with/within space) to live electronic processing (as briefly mentioned in the examples above). My aim was to further explore technical means capable of transforming my perceived relationships in and within the performance space. David Borgo (2014:36) considers electronic stimuli to be a new ‘interagency between humans and machines’, capable of actively searching for new information, ‘either to select behavior or to change a pre-given frame of action’. I also interested myself in Kevin Kelly’s vision of technology that includes culture, art, social institutions, and creation of all types. He writes that ‘technology is amplifying the way things change, changing the evolvability of the entire system, and bringing to light sound events escaping expectations’ (Kelly 2010:12). I saw this as a logical next step following microphone and amplification developments. At the same time, it was not so clear to me that more technology could produce better sounds or music. I needed to protect my body-instrument ecosystem by not spending too much time designing, programming and developing technologies, but rather staying focused on improving my ‘touch’ and gesture discovery process. Faithful to my economy of the means principle, I extended my research with relatively simple and easy-to-manage Max for Live patches (delay, buffer shuffler, reverberation). I was curious to see how such technologies could make my work evolve (playing with my own delayed and extended acoustic sounds) and shape me as a performer and as a person.<sup>65</sup> As we will explain in the following paragraphs, the evolving drumming gestures (reacting to my listening) allowed me to shape acoustic sounds with qualities close to electronic sound processing (imitation). In doing so, I observed I was able to ‘process sounds’ (i.e. shape the envelope and filter acoustic and/or amplified sounds) before the Max

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<sup>65</sup> David Borgo (2014:48) argues that ‘the improvisor’s lifetime engagement and expansion can show us a different way of being in the world, one in which our very notions of ourselves and the relationships with the socio-material world we inhabit are constantly in flux, under continual negotiations’.

for Live software input. My body gestures and a new drumming vocabulary were beginning to take shape and consolidate.

Many subtle and complex changes in microphone position and movements, finger/stick, strokes, pressure, and velocity had already produced many unexpected and interesting changes and sounds. Due to this, developing an effective relationship between drumming and live electronics was my main concern. I sought to expand my sensitivity to live electronics in order to ensure that my work coherently extended to the technology. I wanted to establish an ‘intimacy of control’ in which I imagined starting with a heightened awareness of timbral nuances and level sensitivity. In live electronics, Simon Emmerson (2007:92) proposes an interesting distinction between Local and Field. He argues that ‘Local controls and functions seek to extend the perceived relation of human performer action to sounding result’, and ‘Field functions create a context, a landscape or an environment within which local activity may be found’. Local and Field functions may have real and ‘imaginary components’, and ‘while these may both constitute elements of the field, they will have to be controlled in very different ways. The possibilities are vast and can create effects ranging from the documentary (real soundscapes) through the surreal (conflicting but apparently real), to the entirely imaginary’ (ibid. 2007:94). For example, an instrumental gesture can cause a reactionary sound in the electronic realm (as with Phill Niblock’s process mentioned above). Real and imaginary components could indeed involve pre-composed (audio scores), sustained (microphone or reverberation), or delayed (buffer shuffler) sounds. To explore Local and Field, I relied on an evolving series of principles whose function helped broaden and expand my live composing.

## **5.2 Key functional principles**

In looking for new affordances, diverse approaches helped me experiment with different interactions between audio scores (acousmatic) and drumming (instrumental).<sup>66</sup> Aimed at the emergence of a new drumming vocabulary, I found the imitation of electronic sounds, complementarity, merging, and other principles to be very useful in starting to explore further live interactions. Their analysis (below) also helped me better understand what live electronics

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<sup>66</sup> See also Simon Emmerson who discusses both the extension of the ‘Acousmatic into the Instrumental’ and the ‘Instrumental into the Acousmatic’ in his book: *Living Electronic Music* (Emmerson 2007:105–8).



added to the sound and gesture discovery process. Interacting with both live and recorded electronic sounds led me to extend my drumming milieu into space (as already shown above) and to further experiment by adding other principles when they arose in performance. These included convergence, separation, synchronism, non-synchronism, symbiosis, contrast, parallelism and complementarity. Below I will present a series of significant examples.

### **5.2.1 The imitation of electronic sounds**

The next example (*Rumeurs 53*, section 7) is an illustration of electronic sound imitation. The electronic sound quality was reshaped by the acoustics of the room, leading me to intuitively fill in the gaps (rests) in the audio score. This principle underlies all of my research. The sound balance between sources in this example was very important, and the vicinity of the loudspeakers helped me adapt my playing to the audio score's general volume and dynamic variations.

➤ See: audio file 35 – *Rumeurs 53*, section 7.wav

This sequence also demonstrates my attempt to add a live component to the fixed part (as discussed above), by reacting with small musical motives, anticipations, superimpositions, musical answers etc.

### **5.2.2 From complementarity to mergence**

In this second example (*Rumeurs 53*, section 8), I maintained the imitation principle with cymbal sounds by adding frequency material above and below the recorded part. It was necessary to keep in mind the audio score's structure, and know that the gaps in my playing would leave space for the audio score to emerge.

➤ See: audio file 36 – *Rumeurs 53*, section 8.wav

To push the ‘merging’ principle to its extreme, I sometimes created feedback with my tom tom’s skin (2’51”). While the subtle relationship between the microphone’s level of input, its position over the skins, and the distance of the speakers was typically checked when balanced (discussed above), this live exploration had a new component. Feedback is a phenomenon that goes beyond the simple sustaining of a sound. This is because, in order to generate sound pressure, it changes the quality of the relationship a sonic event has with a room. At the end of the sequence, the sound phenomenon reveals the presence of the space in a very different way. Mathieu Saladin says that ‘feedback places at the forefront of performance the importance of the room and the place of the body within the performance space.’ (Saladin 2014:245). In fact, listeners who up to now could freely choose their listening position found themselves thrown into an acoustic dimension of a very different kind. The sound became physical and the vibration of the performance space entered all bodies within the room. There were no loopholes.

### **5.2.3 Convergence in favour of an overall sound**

The next example (*Rumeurs 53*, section 5) illustrates my work converging acoustic drum beats (beat frequency) and delayed electronic sounds (frequencies). To do this, I used subtle tempos, with dynamic and impact variations, to merge the various elements. Despite the heterogeneity of the material, I considered the sonority as a whole.

➤ See: audio file 33 – *Rumeurs 53*, section 5.wav

This sequence is also a good example that includes mistakes and failures in my work. It took me twenty-five seconds to understand what the situation needed. The movement toward the 12” tom tom (on my left) aimed to establish a symbiotic relationship between the acoustic instrument and electronic delays. The sequence took time to start, but once I got beyond the instrumental resistance (choice hesitations), the pursuit became obvious.

## 5.2.4 Non-synchronized synchronism

The principle that gained the most importance in my improvising with a computer, was that of synchronism or non-synchronism. Because my playing was producing delayed sounds, I had to take into consideration, and experiment with, rhythmical interactions (between acoustic and electronic sounds). As my research focused on sound, I intuitively opted for an open use of delayed sounds. I was looking for new ways to interact with the digitized responses. In terms of rhythmic interactions, I wanted to avoid over-synchronisation that could potentially limit, or even freeze, my playing within the rhythm, tempo, or dynamic limits imposed by the computer. In accordance with that choice, I set the Max patch to a relatively long delay time (ranging from 3" to 12"). This prohibited any diktat from the machine and left substantial spaces for interaction. I wondered if I could find simple ways to sync live and at will with the machine, and create situations where the computer could follow my tempo, rhythmic impulses and dynamic changes. The length of the time delay became an important element, as the space left between the acoustic sounds and the electronic responses constituted a new musical game with the machine. The duration of the recorded sequences (3" in the buffer shuffler) allowed me to experiment with different kinds of beating, drumming and dynamics. The sequences were long enough to record my playing changes, and every three seconds, the computer would return the most recently recorded ideas in quite responsive and evolutive ways. The next audio file is an example of the live and evolutive non-synchronized synchronism idea.

➤ See: audio file 32 – *Rumeurs 53*, section 4.wav

The beginning of the sequence is full of scribbling and hesitations. Rests are of great importance since the sequence is based on tempo feeling. I was knowingly feeding the computer's buffer with my musical flow while reacting to the digital delayed sound during the gaps in my acoustic playing. I then started to anticipate the delayed responses in order to create the illusion that the computer was reacting to my live drumming, which, in some ways, was the case. This kind of non-synchronized synchronization depended primarily on my live drumming, as the delayed sounds came from what was recorded in the computer's buffer. In fact, the more I sought to synchronize with the machine, the more the responses from the computer became predictable. I was simply interacting with my own delayed drumming and was able to master its tempo,

rhythm, and dynamic variations at will. At the end of the sequence (1'49"), the electronic responses and the acoustic drumming were superimposed in almost perfect synchronism. At a live performance, the perception of the situation can be confusing to the listener because he never knows whether the computer is leading me or I am leading the computer. I developed a fundamental attitude of freedom vis-à-vis synchronism (with electronic sounds).

### 5.2.5 Separate layers, contrasts and hybridization

I also experimented with non-listening techniques, contrasts, and hybridization in separate layers. I had the intuition that 'sonorities' could be composed without focusing too much on the convergence principle. The following example shows how I worked on different layers (see the sonogram below) with separate developments.

➤ See: audio file 31 – *Rumeurs 53*, section 3.wav



Figure 29: Sonogram, *Rumeurs 53*, section 3

I played with two aims; to make all sounds blend within the room (one big sound entity), and to enable the layers to evolve separately (different layers making the sonority). This

sequence can be heard in various ways because the performance space mixes the elements, offering listeners the possibility to choose between the separation or convergence of the three voices. Whether in connection with the whistles or interaction with the skins, where the third layer's continuous stressed rhythm and delicate dynamic variations are heard, I was opening the possibility for both the listener and myself to change our listening prioritization.

### **5.2.6 From symbiosis to contrast**

Different approaches can be mixed within a sequence. In the following example (*Rumeurs 53*, section 2), I began with the principle of convergence, seeking first the symbiosis of elements, and later the separation of my work into several voices.

➤ See: audio file 30 – *Rumeurs 53*, section 2.wav

Two voices were superimposed when, in a limited perimeter, I was able to control the amplified cymbal sound and use the snare drum skin to extend my playing to the whole drum kit. The two voices had separate but linked developments. The main voice (the cymbal) was played in interaction with the electronic delays, and was somehow isolated from the rest of the drum kit.

Looking closer at the transcription below, we can see the integration of the amplified cymbal with the coordinated drumming when the right (timpani) stick on the snare drum played two distinct voices moving between the cymbal and the snare drum part (first and second staff).

The image displays a musical score for a drum set, divided into four systems. The first system is labeled 'Cymbal Snare' and 'Drum Set'. The second system is labeled 'Cy. Sn.' and 'Dr.'. The third system is labeled 'Cy. Sn.' and 'Dr.'. The fourth system is labeled 'Cy. Sn.' and 'Dr.', with a 'Hi-Hat' part below it. The Hi-Hat part is marked 'Hi-Hat open' and 'Hi-Hat' and features a series of quintuplets (groups of five notes) indicated by the number '5' above the notes. The notation includes various rhythmic symbols such as 'x' for cymbal hits and 'o' for snare hits, along with standard musical notation for drums.

Figure 30: Transcription, *Rumeurs 53*, section 2

We can easily follow the movement of the right hand back and forth from the cymbal to the snare's skin. Thanks to their superimposed setting, the distance between the impacts was very short and favoured this kind of playing. Towards the end, the cymbal and the bass drum played the same motif, while the microphone moved towards the floor tom in order to mix it with the hi-hat quintuplets' ostinato. This created a convergence similar to what was done at the very beginning of the part.

In my live performances, a decision-making process began to develop. I realized I was intuitively improvising, while aware of varying scribbling possibilities and opportunities I had previously experimented with in either the rehearsal studio or earlier performances. I remarked that when a specific sequence was reaching a potential culmination, I simply made new choices, breaking with what had just been done, and redirecting my search for new affordances. I also noticed that aural and physical contact with my playing milieu was crucial to whether a particular musical idea was picked up, developed, or ignored. I found myself engaged in a creative process of discovery from which gestures and sounds continuously evolved as derivatives. My aim was for my practice to be free of pre-established functions, meanings, and

motivations, outside pre-established concepts of materials or structure. Sounds that emerged from my practice had, in essence, endless possibilities because they had been emptied of meaning, form, and function. I did not consider them to be musical objects. Instead, I viewed them as ‘derivatives’ of an environment of gestures, and the result of a process preserving the idea of still unactualized possibilities.

# Chapter 6 The decision-making process

## 6.1 Navigation through form

Live performances were also used as context for discovery in regard to the underlying question of form. As mentioned, my work previously did not include premeditation or intentionality because I was using my drumming and un-mastered gestures to test and explore what was possible within my drumming environment. In this context, I saw myself as an operator, or as Roland Barthes terms it an ‘operator of gestures’.<sup>67</sup> Justin Yang (2014:89) talks of ‘instantaneous feedback altering where the gesture goes next, informing what is motivating the gesture and shaping the meaning and purpose of the gesture’. In Anthony Braxton’s view, it becomes an act of navigation: ‘the mystery of navigation through form’ (Braxton in Yang 2014:89). During performances, I continuously moved through time, within a creative context where multiple (and interdependent) events were occurring at every moment. This allowed the navigation itself to become the product of the movement. As an improviser I was aware of the idea behind the phrase: ‘what the music wants’. This refers to the attention given (by musicians) to the evolving soundscape during improvised performances. Following that, I sought to extend the notion of ‘touch’ (as mentioned earlier) to the idea of being touched by immediate feedback and crucial aural experiences. I developed an openness to whatever might happen next, and an awareness of the many possible choices at my disposal. I considered ‘form’ as operational rather than representational. For David Borgo (2014:46), ‘the act of improvising produces a temporal and sensual immediacy, it allows complexity to emerge from a simple and contingent beginning’. As I had already shifted my focus from content to context, I sought to envisage a shift from structure to structuring.

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<sup>67</sup> For Roland Barthes, ‘The artist is by status an operator of gestures [...]. Thus, in gesture is abolished the distinction between cause and effect, motivation and goal, expression and persuasion. The artist gesture – or the artist as gesture – does not break the causative chain of actions, [...] but he blurs, confuses it, he starts it up again until it loses its meaning’ (Barthes 1991:160–61).



The series in the example below highlights this decision-making process. Every decision made during the performance led to a direction change. Little by little, I developed a new awareness of what might be called ‘the conditions for the appearance of sound’. They were made of parameters I considered as stimuli and tools for spontaneous compositional narrative. These parameters could be identified in listening to the recordings afterwards. I sought to explore the formal limits of my improvised performances<sup>68</sup> and drew from Makis Solomos (2013:308) to experiment with the idea of form-movement according to the logic of blending form and sound material. I wanted to see if the composition of *Rumeurs* live would fuse with the materiality of sound and take the form of ‘sonorities’ throughout the different sections of the performance.

To avoid systematic use of the groping around and accumulation that Rzewski (2007:282) identifies at the start of the improvised form,<sup>69</sup> I sought to begin performances with an awareness of the many possibilities I had previously sketched in the studio and during earlier public performances. My idea was to establish a beginning by making choices. As I will discuss in detail later, these choices determined a certain number of connections that were simultaneously tools and general framework. I was focusing my attention on a set of conditions for the appearance of the sound, conditions in which I extended my gesture work to act and compose in movement. This attitude favoured the advent of unexpected sonorities in the continuity of the flow of the performance. This was because I was acting from micro-material

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<sup>68</sup>From the New Orleans-style collective improvisations to the advent of soloists, from the twelve-bar blues to the AABA form, from the theme-improv-theme form to the open forms of free jazz, and from the diagrammatic proposals of Anthony Braxton to the group experiments of the free improvisation scene, the question of form was subjected to a certain number of experiments throughout 20th century jazz and improvised forms of music. Improvisation has occasionally drawn criticism and certain reservations, notably the so-called ‘bell curve’. This is one of the recurrent overall forms of improvisation, and comes down to, as Pierre Boulez maintains, ‘an irremediable alternation between excitement and rest’. The ‘bell curve’, most often the target of criticism in the ‘process of improvisation’, is not the only form that improvisation can produce. That said, Mathieu Saladin adds one ought not ‘to content oneself with stigmatising this form as musically uninteresting’, since that would probably be to ‘miss what is being played there’(Saladin 2014:189–91).

<sup>69</sup> Concerning the ‘bell curve’, Frederic Rzewski argues that such an implicit ‘convention’ continues to have a certain importance. The natural form of improvisation would be, in his eyes, ‘a kind of modified square wave: like breathing, a natural rhythm’. It can be summarised in this way, ‘Zero: begin with nothing, grope around; Accumulation: slow rise, long duration; High point: stable, relatively short plateau; Exhaustion: quick fall back to zero’. Consequently, the musician ought to ‘accept this form for itself’, ‘intensify it’, and explore it. That is to say, he should ‘plumb it in order to go beyond his initial perceptions of it and focus on the many treasures underlying its process’ (Rzewski 2007:282).

to macro-time by articulating sounds within inter-connected sections. When a sonority was achieved, I followed my intuition and simply implemented new sets of sounds through assumed ‘transitions’ (from one set of conditions to another). Identifying these transitions facilitated cutting performances into sequences and analyzing them afterwards.

## **6.2 Live composing from sound material through evolving and expanding sonorities**

Transitions were at the heart of the process of live composing. They were the consequences of choices made during the performances. The examples below show how I used the different parameters at my disposal to move from one section to another.

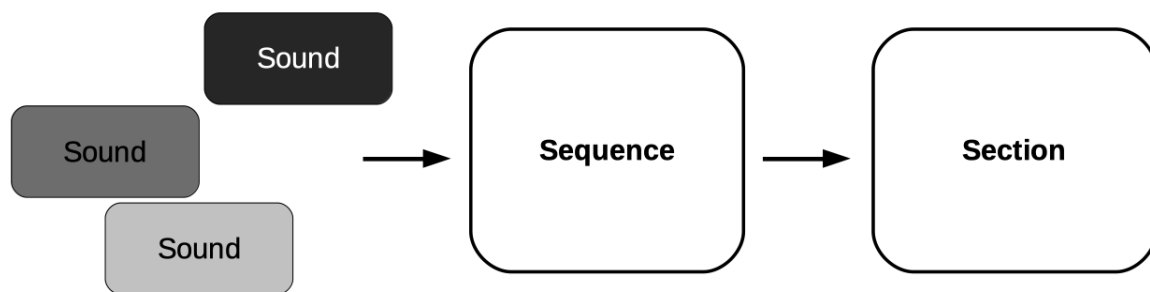
I noticed three main types of change:

1. **Change of focus** – The transition between the introduction and the first section (*Rumeurs 53*, 49”) when I left the series of initial tests (described above) to focus my attention on the emerging sounds. (There is no technical change in this transition.)
2. **Technical change** – The transition from the first to the second section (2’39”) when I turned on the reverberation patch during the buffer shuffler fade out.
3. **Mix of focus and technical changes** – The transition between the third and fourth section (7’15”) when I turned on the buffer shuffler to focus on rhythmic interactions with the electronic delays.

➤ See: audio file 27 – *Rumeurs 53*, full version.wav

The decision-making process mentioned above underlay the evolving and expanding sonorities composition throughout my performances. This included going from sound material to motifs, phrases, sequences, sections, and so on. This observation brought to light what could be understood as a virtual, immaterial and multi-directional score, simultaneously elaborated on and performed. This is confirmed when listening to the recording after the fact. Focusing on

sound emergence, I was simply articulating sounds within increasingly larger sequences. This followed the idea of live ‘composed sounds’, or the merging of form and sonic material through improvisation.<sup>70</sup> The live composition work resulting from my scribbling gestures tended to fuse with the materiality of sounds at different levels, (i.e., sonic events, sequences, sections).



*Figure 31: Sound, sequence, section*

Because the sounds derived from my drumming had been stripped of their idiomatic signification and cut adrift from any conventional musical sense or meaning, I was able to hear them for what they were and consider them for their own intrinsic qualities (Scott 2014:101). But far from limiting myself to this isolated materiality, I was intrigued by the idea of experimenting with the potential for interaction and connection, as well as the movement and relationship with other sounds within my drumming milieu. The potential to constitute varied, surprising, complex and extensive networks of musical phenomena was calling me. In my mind,

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<sup>70</sup> Musicologist and expert of Xenakis and spectral music, Makis Solomos talks of ‘composed sounds that encourages one to imagine whole sections of the work according to the model of sound composed on a vast scale, that is, according to the logic of merging form and the [sound] material via the principle of construction’ (Solomos 2013:308).

sounds were not solely expressive or representative, but in their essence had endless possibilities (as previously mentioned). According to Scott, sound is not limited by its own innate qualities, ‘its surface may reveal hooks and crevices with which it is able to connect and combine and form new relationships with other sounds’ (ibid. 2014).

During live performances, various sounds can emerge within different contexts and relationships. Some are even isolated with no specific connection to other sounds, whether at the beginning of a sequence or surrounded by silence. These same sounds can potentially be heard connected to extended or delayed sounds or with audio scores. They may be recorded and delayed, to meet acoustic or electronic sounds when played back in the loudspeakers. They might even be heard as comments or punctuation (for other sounds), forming intersections, contrapuntal gestures, call and responses, polyrhythms, and so on. Examples of connections can be heard in the sequences below.

#### Connections with long and extended sounds

- See: audio file 30 – *Rumeurs 53*, section 2.wav
- See: audio file 31 – *Rumeurs 53*, section 3.wav
- See: audio file 36 – *Rumeurs 53*, section 8.wav

#### Connections with short percussive sounds

- See: audio file 29 – *Rumeurs 53*, section 1.wav
- See: audio file 33 – *Rumeurs 53*, section 5.wav
- See: audio file 35 – *Rumeurs 53*, section 7.wav
- See: audio file 37 – *Rumeurs 53*, section 9.wav

These meetings can also form longer sounds, musical phrases, sequences, or become a significant part of patterns, vectors or dynamic shapes. Due to the randomness in programming of the electronic parameters (buffer shuffler), potential functions and relationships could not be predetermined. Instead, they were part of a movement, taking form, whose direction and culmination could not be planned in advance. When the sonic event reached its final location

within this context, it was no longer perceptible as an independent or separate element from the whole. Similarly, neither could the resulting sounds, phrases, sequences or structures be separated from the interactions that created them. To paraphrase Richard Scott, the meanings, functions or identities of individual sounds were created by their empirical realization and context, dependent positioning, and timing, within much broader sequences of events and interactions, many of which could not be predicted (Scott 2014:102). In addition, the notion of ‘vector’, borrowed from Xenakis and spectral music, underlay the process.<sup>71</sup> It was a matter of generating truly singular events, and articulating them in increasingly larger sets without losing the meaning of those singularities.

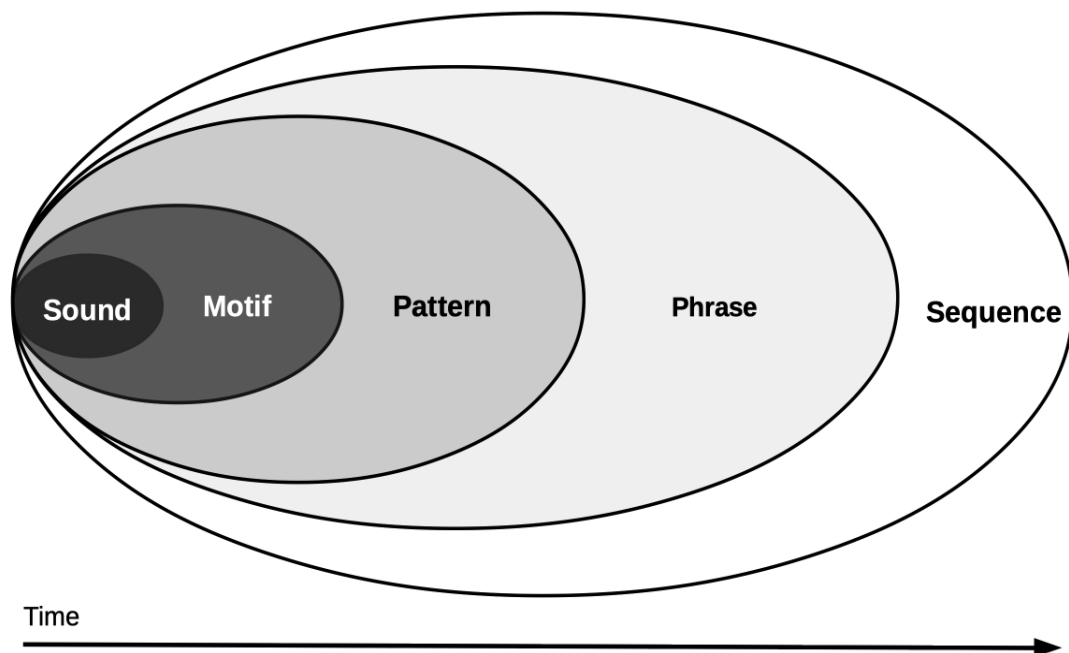


Figure 32: Increasing larger sets

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<sup>71</sup> In the work of Iannis Xenakis and in spectral music, the notion of vector is often linked with a process (composition). For *Rumeurs* I sought to shift that notion to the context of improvisation.

This process gave each live composition a certain unique direction, its own ‘sense’.<sup>72</sup> The idea, which had taken hold, was to develop a practice in which the performance’s composition followed the sound. Unlike a live performed piece using sound to generate sensations or effects, I (and by extension the listener) allowed myself to be used and led by the sound and its evocative power.

### **6.3 A multi-directional approach**

In Deleuze and Guattari’s view, all becomings are molecular: ‘the molecular has the capacity to make the elementary communicate with the cosmic; precisely because it effects a dissolution of form that connects the most diverse longitudes and latitudes, the most varied speeds and slowness, stretching variations far beyond its formal limits’ (Deleuze and Guattari 1987:308). Drawing from that, I worked to develop my sonic events’ potential for multiple connections in multiple directions, and formed structures that Deleuze and Guattari call ‘assemblages’. Richard Scott says that the concept of molecular places a particular emphasis on the potential of the undetermined, dislocated, microscopic particle. The molecular fragment is emergent, insecure and unresolved. It can make multiple connections in multiple directions and such affinities are derived by means of complex and changing external relationships. It has the capacity for responding more freely to attractive and repulsive forces to produce new patterns of behaviour and connection with other fragments (Scott 2014:101). That’s how the sonic events in my *Rumeurs* performances started to form identifiable waves, planes, vectors and trajectories in a complex decision-making environment.

The underlying question of such a multi-directional approach was, how could I best explore the potential of the different relationships in my drumming milieu? Adam Parkinson (2014:71) suggests extending the notion of ‘hidden worlds’ from the instruments to the sound themselves. In his opinion, these ‘hidden worlds’ are structured as a virtual multiplicity with hidden affordances and unactualised qualities. Therefore, we should consider our work with sound as

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<sup>72</sup> Tristan Murail speaks of ‘the vectorisation of musical discourse, which means that every process goes in a certain direction and possesses a sense, if not a meaning’ (Murail in Solomos 2013:415).

exploration, and an extension of our capacities to affect and be affected. In that sense, I was not only playing with my drumming milieu, but was an integral part of it. I was playing and making decisions according to the present moment, sometimes playing against it or deliberately staying outside (not listening or playing at all, and allowing amplified, extended and delayed sounds be themselves). With this approach, I became able to direct my attention and actions to the sonic evolutions of my live explorations. I was able to prioritize sounds over personal tastes, beyond mastery or virtuosity. My use of technology favoured and amplified this move, challenging and modifying my drumming evolution with the creative use of digital possibilities (e.g., the use of the accidental or the unexpected, thanks to the programming of random parameters). Affordances changed through the ever-evolving feedback loop of experience-experiment-consolidation-experience. This favoured new possibilities, combinations, and sound articulations, which resulted in my work repeatedly transformed across time and space as my experimental practice progressed. I myself was also transformed by the increased narrowing of possibilities, always interested in knowing what would happen next. As Parkinson (ibid. 2014:59) says, music is relational, and I share his view; sound needs to be encountered by something (someone). Sounds have potentials that ask for new approaches, as new articulations, and encounters. They are neither fixed nor inert, and different encounters produce different sonic pieces. Parkinson (ibid. 2014:61) adds that virtual multiplicities are topological spaces, populated by attractors which structure the behaviour and tendencies of real systems. To take this reasoning further, my instrument's various sonic qualities exist as 'attractors' within the 'virtual multiplicity' of the drum kit. They are also actualised through encounters with my drumming milieu (body, microphone, amplification, electronics, performance space, and so on). Sound, on the other hand, can be understood in a similar way, possessing a 'virtual' dimension capable of actualising different qualities.<sup>73</sup>

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<sup>73</sup> Adam Parkinson writes that 'our encounters with sounds are structured by material and cultural circumstances, which bring forth different qualities of that sound. We encounter sound through the prism of memory and experience, in the presence of cultural forces, as well as the material specifics of room acoustics and hi-fis, allowing for myriad different actualization or local manifestation' (Parkinson 2014:61).

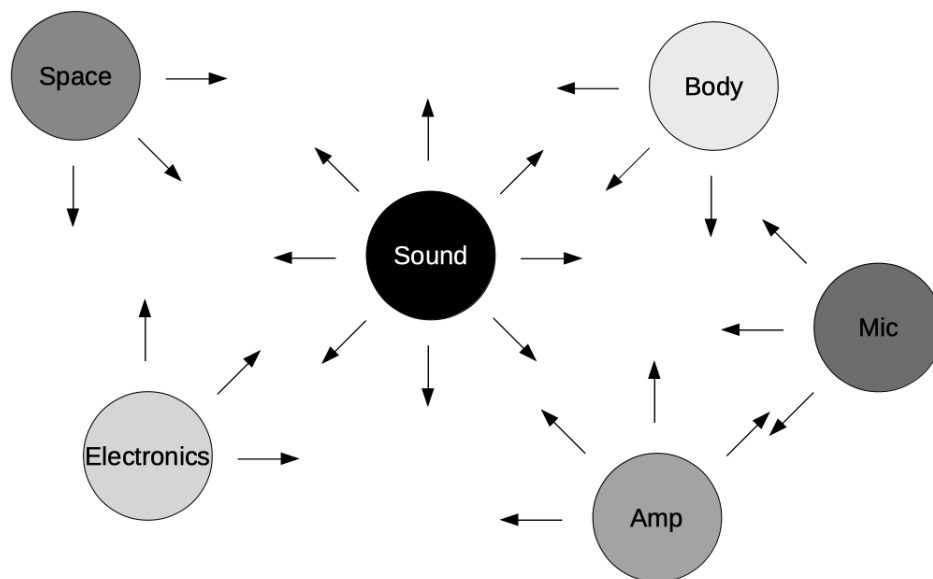


Figure 33: Multi-directional approach

For the *Rumeurs* series, different contexts and circumstances produced different listening, and hence different musical experiences and results. While each of my sounds possessed multiple affordances and could be experienced in many different ways, any encounters with them actualised only one (or very few) possibilities within the multiplicity. This while whole sonic worlds remained to be explored.

## 6.4 Exploration and serendipity

For the last performance of the series, *Rumeurs 66*, my strategy was to foster uncertainty through a combination of exploration and chance encounter. Adam Parkinson argues that ‘the uncertainty of improvisation actively fosters chance encounters and facilitates serendipity, the possibility that combinations of objects brought about over the course of performance, through



the demands of that performance, may reveal new affordances in sound and technologies' (ibid. 2014:64). This live solo performance was part of a programme produced in collaboration with the Notes Inégales ensemble, who regularly invited musicians and soloists for evenings that unfolded in three parts. The ensemble typically opened the evening, the guest musician performed the second set (in which *Rumeurs 66* was recorded), and the guest would join the ensemble for the third (and last) set. The venue, Club Inégales, was a small bar located in the basement of a building in central London. The performance space was relatively small (just under one hundred square surface metres and less than three metres high). The drum kit was positioned centre-stage against a wall, so that the ensemble could perform as usual for the first and the third set. The amplified loudspeakers faced the audience on both sides of the drum kit. A pair of stereo microphones was positioned two metres from the front of the bass drum, pointing to the centre of the stage and, as usual, set up to produce the best possible balance between the acoustic and amplified sounds for the recording. The room had a relatively short reverberation time, which was altered by the presence of a large audience. The situation was such that the acoustic and amplified sounds would not benefit from the acoustics of the room as much as they would in larger venues. Rather, the small dimensions of the space added to the attenuation effect of the bodies, creating a direct listening situation close to what I was used to in my rehearsal studio. To foster exploration and chance encounter, the Max patch (*buffer shuffler*) was used without interruption, and with random parameters, from section 2 to 13. The Max patch also confronted my vocalization gestures throughout the performance. These parameters formed a sort of continuity between the sections underlying other parameters that typically developed within the limits of the sections.

The constant aesthetic evolution of my *Rumeurs* performances resulted from building unpredictability throughout the ever-changing relationships between my various drumming parameters. In *Rumeurs 66*, parameters were periodically chosen along the way, and articulated within different combinations to favor the serendipity mentioned by Parkinson. I intuitively sought to extend the process initiated at the very beginning of this research<sup>74</sup> to the parameters of the performance. In other words, I wanted to undo performance connections in an effort to form new ones. Improvisation and strategies to foster uncertainty were methods I used for exploration, and the use of technology favoured chance encounters and revealed affordances. I was performing from an off-centre position, seeking affordances with no commitment to any

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<sup>74</sup> Replace existing drumming skills with new ones. See also Chapter 1: écritures corporelles.

predictability. To paraphrase Justin Yang (2014:88), I was playing in conditions characterized by invention with an open-ended sense of movement in a world of velocities and trajectories, I could potentially access an endless number of forms, figures, and meanings. In Yang's own words, 'As the artist begins a gesture there is instantaneous feedback altering where the gesture goes next, informing what is motivating the gesture and shaping the meaning and purpose of the gesture' (ibid. 2014:89). In my work, multiple and interdependent events occurred in each instant, and the creative movement throughout the performance was continuously informed by 'instantaneous feedback'. As part of this ecosystem, I found myself engaged in a conversation, moving and navigating through an ever-evolving feedback loop. Following Anthony Braxton's 'navigation through form', this can be thought of as 'moving through quanta of time where multiple, interdependent events occur in each instant' (Braxton in Yang 2014:89).

## **6.6 Prioritization: making choices**

Looking closer at the key parameters used for the different sections of *Rumeurs 66*, I realized I was navigating through a system of prioritization. In the earlier performances, the morphology of the sonorities gave shape to the sections, as they were composed around a limited number of parameters. In *Rumeurs 66*, however, a more complex articulation underlay the process. The parameters order of appearance demonstrates my strategy of installing a series of fixed elements upon which I could superimpose a number of variables. This analysis, however, was incomplete and needed to be confronted with the choices made throughout the performance to make parameters influence each other. As a drummer, I had learned to consider variables (rhythmic melodies) as leading parts on top of fixed patterns or ostinatos. Drummers are able to quickly make voices move from one limb to another while continuing to manage the distribution of complex ostinatos to other limbs. I intuitively transposed this to my prioritization system, affecting ongoing parameters with new choices. For *Rumeurs*, it was a question of highlighting work done on the spatio-temporal qualities of sounds, their relationship with other sounds and the surrounding space and interactions with myself, all without foregoing their evocative power.

- See: audio file 39, *Rumeurs 66*, full.wav

The examples below show the influence that chosen parameters have on other parameters (variable or fixed) for the development of the performances and the advent of sonorities. Significant shifts can be observed in the resulting sounds according to my choices. At the beginning of the performance, we see the first shifts in the introduction, when, for example, I started focusing on the feedback. Later vocalization gestures can be observed (section 1).

See:

- audio file 40, *Rumeurs 66*, intro a.wav
- audio file 41, *Rumeurs 66*, intro b.wav
- audio file 42, *Rumeurs 66*, section 1.wav

The same observation prevailed when I turned the buffer shuffler on (section 2 and 3).

See:

- audio file 43, *Rumeurs 66*, section 2.wav
- audio file 44, *Rumeurs 66*, section 3.wav

Sections 4 and 5 are of particular interest, as their parameters are identical (four limbs coordination and imitation of electronic delays) but opened in significantly different sonic worlds.

See:

- audio file 45, *Rumeurs 66*, section 4.wav
- audio file 46, *Rumeurs 66*, section 5.wav

We can also compare two sections (5 and 10), both played mainly with cymbals. In section 5, I focused on the cymbal frequencies, while in section 10 I focused on the reverberation patch's sound processing. In addition, the buffer shuffler Max patch continuously and randomly

processed the string's end, challenging the resulting sound and my reactive listening. In comparing the two, I noticed the active playing in section 5 led to a more dynamic sound result, while section 10 developed more slowly around electronically reverberated sounds.

See for means of comparison:

- audio file 46, *Rumeurs 66*, section 5.wav
- audio file 51, *Rumeurs 66*, section 10.wav

Following Makis Solomos, musical processes focusing on sound can be defined as an 'energy-related phenomenon'. I discovered that if it touched the listener, it was not because he or she 'understood' it, but because they were carried along by 'transformations of energy' (Solomos 2013:495–96). The idea was to grant associations and memories the possibility, and the time, to make their way back to the surface. This would mean an area spatialised by time, inside which past, present, and future coexisted.

# Chapter 7 Aesthetic evolution

## 7.1 Greater heterogeneity

A critical change occurred in my live performances, and the multidirectional approach described above was a decisive step in moving away from idiomatic and more conventional drumming. Scribbling with a mobile microphone, amplification, and electronics influenced the way I played and articulated sounds on the acoustic instruments. Little by little, I moved away from a drumming style based on rudimentary and traditional rhythms towards one consisting of surprising, complex and extensive networks of sound phenomena. My gestures had become more complex, and entirely dedicated to the process of creating and articulating sounds. Greater variety and fast moves between sound sources, drumming techniques and dynamics within musical motifs allowed more variations and creative combinations. My interactive work with electronic sounds had become better integrated into my drumming, paving the way for new sonic interactions. By the end of the process I was placing less emphasis on the extension of the sounds provided by the Max patch, and paying increasingly more attention to the consolidation of gestures and my acoustic instrument's evolving sounds.

Hence, as can be heard in *Rumeurs 66*, this aesthetic approach represented my evolution to a new level. Time played a key role (over six years of studio practice and performance research). During this time, my drumming was shaped by scribbling gestures and my ability to listen, all the while interacting with and imitating digitized sounds. This process profoundly influenced the way I was producing sound material, both acoustically and via the mobile microphone.

I clearly remember something happening during the last performance series. A step forward was being taken. My drumming was freed from its exclusive relationship with the electronic sounds and was clearly finding its autonomy. I was playing and articulating new sounds in the image of the computer's digitally processed distorted sounds. As I will explain below, this aesthetic evolution was reflected in my acoustic drumming at many different levels.

## 7.2 Evolution in the coordination and independence of limbs

While extending the function of sound and sonic exploration was at the heart of my practice, I had encountered difficulties escaping more conventional drumming in some of my earlier performances (such as *Rumeurs 53*). As a result, my drumming was often juxtaposed with my sound research. By the time I recorded *Rumeurs 66*, more than a year later, I was using an evolved multiple-limb coordination. This development is illustrated by comparing excerpts of the two performances (see below).

The latter recording (*Rumeurs 66*) revealed the use of four-limb drumming during most of the performance. Those sections added up to eleven minutes forty eight seconds out of the fifteen minutes and thirty nine seconds (almost 80%) it took to complete the performance. In comparison, I used the four limb approach over a shorter period (8'08") out of the twenty-five minute twenty-second long performance (~30%) in *Rumeurs 53*. In addition to playing time, there are other significant and perceptible drumming differences between the two performances as well.

See for means of comparison:

- audio file 30 – *Rumeurs 53*, section 2.wav (2014)
- audio file 45 – *Rumeurs 66*, section 4.wav (2015)

In both sequences, I placed the same small cymbal on my snare-drum skin and used the mobile microphone to simultaneously play it and distribute my sonic work to the whole drum kit. In *Rumeurs 53*, section 2, my acoustic drumming was clearly separated from the mobile microphone work. While intentional, this illustrated the state of my research at that time. The coordination between the snare-drum and the bass-drum was of central importance and directly inherited from the bebop techniques and its derivatives.<sup>75</sup> In *Rumeurs 66*, section 4, I

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<sup>75</sup> In the 1940s, Bebop drummers started to develop a new kind of drumming coordination by experimenting with ride cymbal ostinatos, adding left-handed snare-drum accents and off-beat bass-drum accents. Such an innovation in drumming coordination techniques opened the door to a new four-limb independence and style of polyrhythmic playing.

integrated the sound research and the vocalization gestures into my four-limb drumming. As can be heard on the recording, I was no longer exploring just a single element (the cymbal placed on the skin). To the contrary, I was integrating scribbling microphone and vocalization gestures within the live sequence, which was composed of heterogeneous sound sources (skins, cymbals and the wood of the drums). In addition, my drumming benefited from the microphone's movements above my drum kit's resonant elements. These created the amplitude and dynamic effects that gave my work its singularity.

This became evident when I compared *Rumeurs 53*, section 4 with *Rumeurs 66*, section 7.

See for means of comparison:

- audio file 32 – *Rumeurs 53*, section 4.wav (2014)
- audio file 48 – *Rumeurs 66*, section 7.wav (2015)

Initially, both examples are identical in the sense that the same cymbal was placed on a skin to alter both its timbre and duration. In both cases, as I began playing, I focused on the coordination between the bass-drum and the prepared skin. *Rumeurs 53*, section 4, consisted of interactions with electronic delays and jazz-rock drumming coordinated around an assumed strong backbeat. In *Rumeurs 66*, section 7, playing based on my perceptions of sound, the backbeat quickly gives way to interactions with the electronic delays and drumming. Thus, my reactive listening led me to diversify the sound sources as much as possible while I was feeding the computer's buffer and interacting with it. The resulting sounds were more complex and attested to my willingness to integrate sound research with new coordinating gestures aimed at the emergence of more elaborate sounds.

- See: audio file 50, *Rumeurs 7*, section 9.wav

My four-limb coordination was evolving throughout most of the sections of *Rumeurs 66*. For example in section 9 I focused on using of the back-beat and integrating the tom toms and a wide variety of dynamics.

### 7.3 The consolidation of vocalization gestures

The vocalization process underlying this research gave birth to a ‘voice’ that was detached from the acoustic drum kit (in the loudspeakers), producing over time a new drumming vocabulary. This was noticeable when I went back and listened to the recordings of *Rumeurs 66*. New sound combinations resulted from the dynamic use of vocalization movements, bending effects, hand and finger techniques, stick-changes, and so on. This consolidation of gestures, however, did not equate to predictable sounds. If new vocalization gestures and their consolidation allowed the shaping of creative sounds, my scribbling work and its articulation within coordinated and independent drumming systems allowed ever new combinations of sounds. This preserved the improvised nature of the work. This is important because my aim was never to work with predetermined sounds or sonic material, but to instead allow the emergence of new sonorities through dedicated drumming gestures. My new drumming vocabulary started to take shape when I began transposing my gestures dedicated to playing the mobile microphone to my acoustic drumming. Although without its magnifying power, I gradually started to play as though I had the mobile microphone in my hand, scribbling within (acoustic playing) and over (mobile microphone) coordinated and independent systems.

The beginning (intro a) of *Rumeurs 66* is a good example of these moves.

➤ See: audio file 40, *Rumeurs 66*, intro a.wav

The five musical phrases of the sequence were composed by alternating sounds, instruments, and techniques (forefinger, palm, bending effects to vary attacks, frequencies, and sound durations). I mixed coordination (right hand, left hand, right foot) with independent systems (separation of both hands and foot into separate voices), and alternated techniques (fingers, hands, foot). This allowed sounds to interact and respond, reflecting their interactions with the electronic delays. For example, in the recorded sequence above, one can easily follow the evolution of the snare-drum sound (release left free) throughout the sequence. Similarly, even



though their envelope was changing (finger or palm attack, bending effect, or release shortened), the tom tom frequencies followed suit.

I used coordinated drumming techniques to distribute small musical motifs to various instruments. I also used independence techniques to create continuity between chosen sounds at several levels. Although the musical motifs were made of mixed sound material coming from 10” and 12” tom toms, snare-drum, and bass-drum, they were simultaneously distributed to different voices. This was produced by an intuitive combination of movements and sounds (10” tom tom, snare-drum, right hand, 12” tom tom, left hand and bass-drum right foot) played on the drum kit at the same time small musical motifs (coordination) and separated voices (independence) were being played.

The musical phrases of the introduction (audio file 40 above) can be better understood via a comparative listening with the audio documentation of my studio research (audio files 13–17 below). In these recordings, the evolution of gestures and playing style that underlie the sequences of 2011 can be heard in the introduction of *Rumeurs 66*. The two sequences, separated by four years, shows an evolution in sound shaping. What was achieved via the mobile microphone in 2011 was still present in 2015, when scribbling gestures and the combination of hand and stick techniques ultimately shaped my acoustic playing and gave birth to my new drumming vocabulary.

- See: audio file 13 -17, vocalization phrases 1–5

## **7.4 The separation of the mobile microphone and vocalization gestures**

Once freed from its exclusive relationship with the vocalization gestures, I imagined using the mobile microphone to keep a certain unpredictability in the sonic results, just as I had done in

rudimental drumming.<sup>76</sup> Because the microphone had helped me shape my new acoustic drumming gestures and was again available for experimenting, I began playing with scribbling microphone movements over my new acoustic drumming vocabulary. Simply put, I used the disconnect to experiment with a scribbling microphone over scribbling acoustic gestures.

The result can be heard in *Rumeurs 66*, section 1. This section took the shape of an interesting mix of intriguing amplified sonic entities with more recognizable drum kit sounds. The live microphone movements, integrated with my new drumming, captured emitted sounds on their way, as they always had done. The difference lay in my merging the new sonic vocabulary with the microphone capturing it from above the drum kit. The sounds of section 1 were shaped by the drumming techniques described above (*Rumeurs 66* introduction), and reshaped by the microphone's movements. As a result, sound envelopes were composed in two layers because their attack, decay, sustain and release were shaped by the separation of vocalization gestures and the microphone's free-flowing movements over the heterogeneous sounding surfaces and perimeter. The microphone's angle of capture, its distance from the sonic surfaces, and the speed of the vertical and horizontal movements added to the unpredictability of the result.

➤ See: audio file 42 - *Rumeurs 66*, section 1.wav

The beginning of section 1 (0''–11'') is a good illustration. Compared to the introduction in which I was playing in a limited area, the distance between sound sources in section 1 is bigger (12'' tom tom, cymbal, snare-drum, cymbal, 14'' tom tom, and so on) and induced bigger microphone movements (from drums to cymbals and vice-versa). Each sound's final shape was created by the microphone movements (left hand) following the right hand (strike) over the vibrating surfaces. This varied due to the moving speed of the left hand and the distance between the chosen instruments. When I used low speed over more distantly spaced instruments, as in the beginning of the section, I had time to take into account the microphone movement and to react to the surprising attack and release of sounds. I was also able to discover the sound envelopes corresponding to the vertical movements to and from the cymbals. When I played faster, movements were more surprising. As we can hear on the recording (12''), the

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<sup>76</sup> See early research, Chapter 3.

increased playing speed along with the greater distance between instruments favoured the mix's unpredictability of acoustic sounds, and captured resonant frequencies along the way. Thus, some of the frequency changes (bending effects) were due to the microphone movements (13", 15", etc.), while others were played physically on the skin (17", 19").

Other examples (section 3 and 5), reflect different microphone work. In section 3, I stopped playing the whole drum kit to concentrate on the mix of bending variations, feedback loops and delayed sounds in order to work on extending my layered sonic entities.

➤ See: audio file 44 - *Rumeurs 66*, section 3.wav

In section 5, I made slow movements over the cymbals, building a metallic sound texture with moving cymbal frequencies. As with the drum kit discussed above, the microphone moving over cymbals was mixed with its displacement from one cymbal to another to shape the sounds.

➤ See: audio file 46 - *Rumeurs 66*, section 5.wav

From sections 2 through 14, I kept the 'buffer shuffler' on and came full circle, as the computer was playing captured sounds composed by its digitized aesthetic criteria. Meanwhile, I continued to feed the looping process by producing ever more elaborate sounds.

## **7.5 The fixed microphone**

The dissociation of the mobile microphone from the vocalization gestures also allowed me to explore new uses for it. For example, in section 6 (from 17"), the microphone was fixed on the edge of the snare-drum, while I played with plastic brushes. Due to the microphone's position, close to the usual percussion recording settings, the result is a regular snare drum sound. When

I placed a small cymbal on its skin (25"), the cymbal sound was displaced to the foreground. Thus, with two different fixed microphone positions, it was possible to achieve a three-step evolution that included the snare-drum's bass frequencies, conventional snare-drum recording, and the prepared drumhead (with cymbal).

➤ See: audio file 47 - *Rumeurs 66*, section 6.wav

Due to its close proximity to the drumhead, the drum's bass frequencies were highlighted. Around the amplified snare-drum, I mixed different kinds of beating (bendings on snare-drum, hi-hat, rolls, bass-drum). In this sequence, I was working with different ideas. I kept playing and recording (buffer shuffler) the beating on the snare-drum (right hand) while introducing a slightly different beating with the hi-hat pedal (left foot). This right hand. left foot diagonal technique I was using is also a bebop classic.<sup>77</sup> However, since I de-synchronized the two voices to play intentionally with two fluctuating tempos, sound discovery was still in the foreground.

I developed other possibilities by experimenting with fixed distances and microphone recording positions in sections 7, 8 and 9, where I clipped the microphone to the top of the hi-hat's rod.

See:

- audio file 48 - *Rumeurs 66*, section 7.wav
- audio file 49 - *Rumeurs 66*, section 8.wav
- audio file 50 - *Rumeurs 66*, section 9.wav

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<sup>77</sup> This was a drumming evolution, thanks in large part to bebop drummer Max Roach. While keeping a continuum on the ride cymbal (right hand) Roach would focus his research on the left hand playing the snare-drum and the right foot playing the bass-drum, inventing a new four-voice drumming. The two diagonals of the human body – left hand (snare-drum) and right foot (bass-drum) on one side and right hand (cymbal) and left foot (hi-hat) on the other side – were the fundamental co-ordination of this kind of drumming. Both diagonals had different functions: to play the tempo on a regular basis (cymbal and hi-hat), and create rhythmic counterpoints (with his snare-drum and bass-drum).

This microphone position allowed me to play freely with my four limbs and capture the drum kit as a whole. This is especially effective in section 8, when I played with a small cymbal on the snare-drum. Around the acoustic snare, I created a sound mass from a mix of delayed drum kit sounds, bass-drum and emerging hi-hat. The full drum kit's recorded and delayed sounds thickened the sound continuum I played with my feet behind the prepared acoustic snare-drum.

In sections 12, 13 and 14, other examples of the microphone at the top of the hi-hat's rod showed different results. With the distance from the microphone I knew I had to focus more on the acoustic playing.

See:

- audio file 53 - *Rumeurs 66*, section 12.wav
- audio file 54 - *Rumeurs 66*, section 13.wav
- audio file 55 - *Rumeurs 66*, section 14.wav

In section 12, I moved towards an interactive game with the varied (prepared snare-drum) and delayed sounds. In section 13, I explored the drum kit with staccato sounds played in the image of the introductory part (sound motifs distributed in layers). In section 14, I played with the amplified hi-hat frequency (already highlighted in section 13) to extend and thicken the sonority with my four-limb drumming. Different choices give different results and articulation possibilities were multiple if not infinite. In this regard, the end of the performance became metaphorical when I turned on the mobile microphone to capture one last tom tom hit and let it fade out in suspension, as if to say 'to be continued...'

# Chapter 8 Conclusion

## 8.1 The birth of a new voice

This extended period of research was a very rewarding process. The long-term instrumental practice I implemented opened new drumming possibilities and paved the way for a singular approach to the drum kit. Through evolving gestures dedicated to sonic research embedded in creative co-ordination and independent systems, I designed a sound-oriented framework for the live composition of dynamic musical phrases that can be a resource for contemporary and improvised practices. I believe I have contributed to the widening knowledge and possibilities for acoustic drumming and, throughout the different chapters of this research, have been able to show the emergence of a still-evolving language, the birth of a new voice: my voice.

In Chapter 1, I defined the term ‘vocalization’ and showed how it refers to the Afro-American contribution to jazz and improvisation. I also showed how sound is in constant relation with the body. In exploring that relationship, I introduced a certain number of strategies, among which was listening to my sounds via an amplified microphone. This important step helped me initiate the shaping of new drumming gestures. I discovered that drumming with a mobile microphone in hand tended to ‘vocalize’ my drum kit, reducing my sounds into an amplified single voice. I also showed how my own solo investigative style differed from other similar approaches, and how I reduced the orchestral properties of my drum kit to a specific voice. I then explained how improvisation and listening strategies helped me initiate a process of ‘écritures corporelles’.

The methodology and research framework were presented in Chapter 2. This consisted of three areas of research; solo drumming, studio and live performance practices with a certain number of challenges, and strategies and stimuli aimed at building and internalising vocabulary to create new musical works. The underlying principle of ‘economy-of-means’ was also presented, and resulted in a specific exploration of every aspect of my research within the *Rumeurs* series.

The vocalization process was further investigated in Chapter 3. My exploration of the vibration modes of drums and cymbals helped define my initial research (my drum kit's sound qualities). This led to my use of the microphone as a virtual drum stick and its integration within my four limb drumming, and paved the way for unmastered drumming gestures and unexpected sound results. I extended my exploration to question my drum kit's sound durations, which ultimately paved the way for their extension to electronic processing.

In Chapter 4, I explored the relationship between acoustic and electronic sounds within space. I discovered I could use the context of performance as a tool and support for improvisation. This led me to imagine and compose small electronic pieces (audio scores) to challenge sound relationships and extend my work to the space itself.

I described in Chapter 5 the challenges, stimuli and strategies I used to perform and compose live sonorities and extend my work with electronic delays and processing. Some key functional principles were presented and analysed. The 'imitation of electronic sounds' principle paved the way for the advent of new adapted and dedicated drumming gestures. The result was the emergence of a new drumming vocabulary, witnessed in the audio recordings.

In Chapter 6, I showed how my decision-making process took shape around my exploration of the underlying idea of form-movement. I was composing through evolving and expanding sonorities of live sounds. This revealed new potential for sonic interactions within space. I developed a multi-directional approach to live composing, fostering chance encounters and serendipity in the making of choices during live performances. Chosen parameters influenced each other, highlighting new interactive possibilities.

In Chapter 7 I presented the results of this long term research process and showed how the aesthetic evolution of my work was due to a process of complexity and increased heterogeneity. This became visible in the evolution of my drumming coordination, the independence of my limbs, and the consolidation of vocalization gestures. In addition, the separation of the mobile microphone and vocalization gestures paved the way for new interactions in the ever-evolving process.

## 8.2 An extended language

By the end of the *Rumeurs* series, the drum vocabulary, resulting from evolving gestures, served as a new basis for my everyday practice, new ideas, and new projects. I believe it will continue to evolve, and it is my hope to keep the discovery of new sonic articulations and the resulting sounds intact, in order to expand my drumming vocabulary and future playing. My range of sonic possibilities has been extended, merging traditional drumming with new gestures, and it is my intention to preserve the heterogeneity of my playing as much as possible. As my own body has been transformed by un-mastered body gestures paving the way for new drumming skills, I feel there were before and after research stages, and a clear separation between my former and present drumming practice. After the research, I experienced in various professional contexts, when asked to return to more traditional drumming, that I was limiting my performance. This was not true when asked to bring my own musical world to a project. The result of this dynamic drumming is a specific language, a singular voice that needs to be considered as such, especially when put into other musical contexts. In order to better integrate it into collaborative projects, I noticed the importance of demonstrating and explaining my approach, the possibilities for articulation, and the still-evolving sonic range to my fellow musicians and composers. When done, I felt very enthusiastic about my sonic proposals, and can say that despite constantly evolving, its core is solid enough to be shared with others. (See the experimental sessions with the pianist Jill Richards: *Impro 2*, *Jardins d'équinoxe 2*, and with the Ensemble Notes Inégales: *Notes Inégales 1, 2, 5*, in Appendix 2).

In the near future, I plan to take my work to more complex architectural spaces, chosen for their specific acoustic properties, and to use whole buildings as sound boxes (sound coloration induced by the quality of the building materials, room size, effect of distance, and so on). The careful choice of spaces could potentially aid my search for new articulatory possibilities. I am also very interested in experimenting with multiple loudspeaker settings within either one or several rooms, or spreading into multiple buildings/locations. Doing so will allow me to experiment with sound amplification and displacement through loudspeakers with different acoustics, playing with distance and new sounds from my drum kit (distance, reflexions, movements, etc.) and with electronic processing (Max patches created for specific performance situations).



I am also interested in extending the discovery process from ‘what my drumming milieu wants’ towards ‘letting the drum kit play’. To do this, I see two distinct directions: 1) Putting my drum kit in touch with its surrounding sounds and letting the drums and cymbals play themselves, activated by the amplified sounds of a city or landscape (via transducers); 2) Extending the drum kit’s sounds with controlled feedback loops in the context of sound installations or live (sound art) performances. Within this realm, I would not act so much as a drummer (I would not be playing the drum kit), but as a co-actor of emerging sounds led by the drum kit and its intrinsic properties. I would be literally be ‘letting the drum kit play’.

It is my hope that the research this thesis represents will enhance existing literature on the subject, while offering researchers, drummers, and performers a template for future creative research and new perspectives in drum kit development. I believe that the proposed evolving techniques, dynamic drumming, multi-directional and vectorized approaches to live composition offer an alternative to musicians, improvisers and composers for the continued development of sonic structures in musical projects. My proposed methodology of alternating personal practice and live performance discovery is not totally new, but proved very efficient and is easily transferable to any practitioner, whether inside the field of music or sound art practices or not. What I consider crucial in this process of replacing existing skills with new ones is one’s openness to all possibilities. This includes establishing an un-masterable performer/instrument relationship, exploring materials/concepts that resist mastery, and extending the collaboration beyond the limit of human intentionality. The question is, how can we best explore things that might exist independently of human thought? I think one answer can be found in building ecosystems capable of transforming our perceptions, actively searching for new information, and/or altering predetermined actions. In this research I stripped down my work to its most elemental form in order to redefine the relationship between it and myself. From there, I emphasized hesitation and uncertainty. As a result, instrumental affordances and my own abilities co-determined each other. Once my practice was devoid of pre-established functions and meanings, creation could emerge before any pre-established concepts. I am convinced that within the coming decades it will be critical for artists and musicians to experiment with a combination of openness to encounters and exploratory engagements with sound and aurality. This will be crucial not only to creating new works of art and artefacts, but to finding new means to engage and imagine our existence and inhabit the world alongside and

among objects on an equal level. To paraphrase Jane Bennett (2004:349),<sup>78</sup> the process of modifying is never fully under the control of any one body. It is instead always subject to the contingency of aleatory encounters with other modes that could apply equally to singular engagements with instrumental practices of all kinds. In this sense, and as Bennett suggests, musical encounters may be related to, and even be part of, a larger ethical project. The process described in this research proposes to erase the subject/object relationship commonly accepted in the learning of instrumental skills, replacing it with becoming a developing actor. The different steps were all subject to a process of discovery which were simultaneously moments of growth. I can affirm I entered each of them as a transformed person, surprised by what I discovered, and by how I had been shaped both as a musician and a human being. I witnessed a sort of real time creation of myself within an ever-expanding process of invention and consolidation.

My belief is that today's drum kit learning pedagogy could also benefit from a sound-oriented approach. From beginner to advanced drummers (and in regard to other instrumental learning), I believe that a pedagogical approach to the drum kit, from sound and creative research to evolving gestures, could pave the way for the discovery of new drumming and instrumental skills. To date, the study of sound as a core subject in drumming (and general music) education is still an emerging practice. It is my belief that the aesthetic parameters and experimental approach described in this thesis could enhance existing instrumental studies. The ever-expanding sonic textures, drumming articulations and extended scribbling techniques used in my research have highlighted some of the instrument's under-used potential, and provide a guide for the development of expressive tools for the drum kit. Lastly, I believe the process proposed in this thesis could be pursued by others, allowing the emergence of a plurality of results or musical aesthetics.

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<sup>78</sup> Jane Bennett talks of 'Things Power', the connection between a desire to be aware of and talk about real 'things' (what Adam Parkinson, 2014, defines as objects) with ecological concerns.

## Appendix 1: Performance History

1. 7/12/2010 Eglise St-Merry, Paris
2. 9/12/2010 Hôtel de ville, Martigny
3. 11/12/2010 Salle Paderewski, Lausanne
4. 14/01/2011 Schloss, Leuk
5. 27/03/2011 Gare du Nord, Basel
6. 9/04/2011 Château Mercier, Sierre
7. 24/07/2011 5 Continents, Martigny
8. 10/09/2011 Centre d'Art Contemporain, Porrentruy
9. 15/09/2011 Théâtre Valère, Sion
10. 16/09/2011 Théâtre du Crochetan, Monthey
11. 8/10/2011 Galerie d'Art, Fribourg
12. 23/10/2011 Label Art, Sierre
13. 27/10/2011 Club Inégales, London
14. 14/01/2012 Forum Wallis, Leuk
15. 27/01/2012 Zeughauskultur, Brig
16. 13/02/2012 Oriental, Vevey
17. 14/02/2012 Oriental, Vevey
18. 15/02/2012 Oriental, Vevey
19. 8/03/2012 Club Inégales, London
20. 21/03/2012 Ancienne église, Leytron
21. 31/05/2012 Kirche, Leuk
22. 20/08/2012 RAME, Saillon
23. 19/10/2012 College of Art, Johannesburg
24. 24/10/2012 Private session, Johannesburg
25. 14/12/2012 RSR Espace 2, Lausanne
26. 4/01/2013 RSR Espace 2, Lausanne
27. 5 /01/2013 RSR Espace 2 - Lausanne
28. 20/05/2013 Forum Wallis, Leuk
29. 24/08/2013 Maison d'ailleurs, Yverdon-les-Bains
30. 28/08/2013 RAME, Saillon
31. 20/09/2013 Fondation Louis Moret, Martigny
32. 21/09/2013 Fondation Louis Moret, Martigny
33. 22/09/2013 Fondation Louis Moret, Martigny
34. 05/10/2013 Manoir, Martigny
35. 13/11/2013 Concert series, Copenhagen
36. 14/11/2013 Concert series, Copenhagen
37. 15/11/2013 Concert series, Copenhagen
38. 17/11/2013 Concert series, Copenhagen
39. 3/12/2013 Thinkdance studio, New York
40. 4/12/2013 Thinkdance studio, New York

41. 5/12/2013 Thinkdance studio, New York
42. 6/12/2013 Thinkdance studio, New York
43. 14/02/2014 Ferme asile, Sion
44. 15/02/2014 Ferme asile, Sion
45. 23/02/2014 Goethe Institut, Johannesburg
46. 25/02/2014 Rhodes University, Grahamstown
47. 27/02/2014 College of Art, Windhoek
48. 1/03/2014 Magahony room, Cape Town
49. 5/06/2014 Eglise de la Ville, Martigny
50. 6/6/2014 Eglise des Jésuites, Sion
51. 7/6/2014 St-Stefan Kirche, Leuk
52. 14/06/2014 Triennale d'Art Contemporain, Turtman
53. 4/09/2014 Hik & Nunk, Monthey ..... **Rumeurs 53**
54. 12/09/2014 TEDx, Martigny
55. 4/10/2014 Keller Theater, Brig
56. 25/01/2015 Oh Festival, Leuk
57. 6/03/2015 Fabbrica del Vapore Milano
58. 1/04/2015 Centre interculturel, Sierre
59. 3/05/2015 Kunstmuseum, Thun
60. 19/06/2015 Théâtre de Vidy, Lausanne
61. 29/10/2015 Sévelin 36 Lausanne
62. 30/10/2015 Sévelin 36 Lausanne
63. 31/10/2015 Sévelin 36 Lausanne
64. 1/11/2015 Sévelin 36 Lausanne
65. 8/11/2015 Hemu Sion
66. 21/11/2015 LJF Club Inégales, London ..... **Rumeurs 66**

## Appendix 2: Audio recordings

- audio file 1 – *Mother Africa* main theme.wav
- audio file 2 – Ancien Pénitencier.wav (acoustic solo performance)
- audio file 3 – Eglise de Martigny.aif (acoustic solo performance)
- audio file 4 – Impro 2.wav (duo with Jill Richards)
- audio file 5 – Jardins d'équinoxe 2 (duo with Jill Richards)
- audio file 6 – Notes Inégales 1.wav (working session 1)
- audio file 7 – Notes Inégales 2.wav (working session 2)
- audio file 8 – Notes Inégales 5.wav (working session 3)

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