

ROYAL
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SOUND PRESENCE

Performing with Bodies and Technology

KLANK PRESENCE
Uitvoeren met Lichamen en Technologie

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Abstract

In the last two decades, the question about the role of the body and perception in our engagement with the world has gained centre stage. However, relatively little research is undertaken to investigate bodily presence and inner states of performing musicians. Although music psychology makes great strides in uncovering basic principles and underlying processes of musical perception from an audience viewpoint, the import and contribution of the corporeal presence and the perceptual capabilities of the performer is receiving little attention. With this project I address these questions and construct a field of reference that enables an understanding of musical performance practices centred around the body. I do so by investigating physical performing through the lenses of the body, the instrument, and the performer's awareness, sensations, and perceptions. In order to frame this perspective, I unfold a number of theoretical positions about the constitutive role of the body, perception, and cognition. They encompass the capabilities and processes of the body in generating (a link to) the world, the sensorial processes that create awareness and the perception of presence, the ecological embedding in an environment through action and perception, and the relationship between body and instrument, sound and audience. This is complemented by an inquiry into performance as a cultural activity with transformational power and improvisation as a mode of playful engagement with the 'new', the unmarked space, memory, and awareness. An array of artistic projects provides concrete cases for analysis. They are centred around my practice of electronic music performance with movement- and gesture-based sound actions, but also cover open-form, exploratory forms of performance that emphasise interaction

between dance and music and investigation into listening through performative interventions in the urban space. Within these projects I carry out artistic research in a cyclical process of creation and reflection, which feeds into the pool of materials used for interpretation. The analysis process of this thesis is based on methods from qualitative research that lead to categorisations and that enable interpretation through key-aspects originating from the theoretical framework. To this end, I carry out detailed comparative observations of performance traces, which in turn allow me to identify recurring themes and to uncover elements that were not part of the original model. The resulting insights constitute a field of relationships, which covers the central issues about body, perception, awareness, and presence, and through my interpretation may facilitate the understanding of the fundamental role of the body in music making and listening.

Samenvatting

De afgelopen twee decennia is de kwestie rond de rol van het lichaam en van de perceptie bij onze betrokkenheid in de wereld een steeds centralere positie gaan innemen. Desondanks wordt er weinig onderzoek gedaan naar de lichamelijke aanwezigheid en de innerlijke gesteldheid van uitvoerende musici. Ook al boekt de muziekpsychologie grote vooruitgang bij het blootleggen van de basisbeginselen en onderliggende processen van muzikale perceptie vanuit het standpunt van het publiek, het belang en de bijdrage van de lichamelijke aanwezigheid en de perceptuele vermogens van de uitvoerenden musicus krijgen daarbij vooralsnog weinig aandacht. Met dit onderzoek ga ik in op deze onderwerpen; ik construeer hierbij een referentiekader dat muzikale uitvoeringspraktijken gefocust op het lichaam inzichtelijk maakt. Dit doe ik door de fysieke uitvoering, beschouwd vanuit het lichaam, het instrument, het bewustzijn, de gewaarwording en de perceptie van de uitvoerende, te onderzoeken. Om dit perspectief gestalte te geven zet ik een aantal theoretische standpunten uiteen rond de constitutieve rol van lichaam, perceptie en cognitie. Deze omvatten de vermogens en de processen van het lichaam bij het genereren van (een verbinding met) de wereld, de sensorische processen die zorgen voor het bewustzijn en de perceptie van aanwezigheid, de ecologische verankering in een omgeving door actie en perceptie, en de relatie tussen lichaam en instrument, geluid en publiek. Dit wordt aangevuld met een onderzoek naar de uitvoering als culturele activiteit met herscheppende kracht, en improvisatie als een manier van speelse betrokkenheid bij het 'nieuwe', de onbenoemde ruimte, herinnering en bewustwording. Een reeks artistieke projecten biedt concrete aanleidingen voor onderzoek. Deze projecten

steunen enerzijds mijn eigen uitvoeringen van elektronische muziek met geluidsactiviteit op basis van beweging en gebaren. Anderzijds hebben zij ook betrekking op vrije, verkennende vormen van uitvoering en onderzoek waarbij de nadruk ligt op de interactie tussen dans en muziek en op het luisteren aan de hand van performatieve interventies in de stedelijke ruimte. Bij deze projecten voer ik artistiek onderzoek uit in een cyclisch proces van creatie en reflectie, waarvan de elementen terechtkomen in een vergaarbak van materiaal dat dient voor verdere interpretatie. Het onderzoeksproces van deze scriptie is gebaseerd op kwalitatieve onderzoeksmethodes die leiden tot categorisering en die interpretatie mogelijk maken aan de hand van de belangrijkste aspecten uit het theoretisch denkkader. Hiervoor voer ik gedetailleerde vergelijkende observaties uit bij series van uitvoeringen, waardoor ik vervolgens terugkerende patronen kan vastleggen en elementen kan blootleggen die geen onderdeel uitmaken van het oorspronkelijke model. De hieruit verworven inzichten vormen een relatiestructuur die betrekking heeft op de kernthema's van lichaam, perceptie, bewustzijn en aanwezigheid, en die door mijn interpretatie het inzicht in de fundamentele rol van het lichaam bij het musiceren en luisteren kan faciliteren.

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The real thing is under the surface ... the space between all the physical objects, that's where we exist, really ... we really exist in between the empty spaces in reality.

(Viola 2013: 02:42, 5:42–5:53)

1

Introduction

1.1

Bark Float

Recently, on a morning while riding my bicycle to the lake to go for a swim, I passed along some freshly mown meadows. The smell of drying grass; the smell of hay on a hot summer's day brought back a childhood memory:

When I was aged four or five my family spent a few weeks of each summer vacation in the mountains. The location was Gspon in the Valais region, a small farming village high up on the slope of the valley leading to Saas Fee. Too small to undertake long hikes or climbs, I stayed back at the village, while my father and older siblings went up the mountains. My mother and I, and others who remained in the village, went to play in the shade at the edge of the woods above the village.

I remember a place that was on a path leading up into the woods, bordered by the 'bis' or 'suone' water-channels. These irrigation channels are brought down from the mountains to spread the much-needed water out over the arid slopes around the villages. This particular water-conduit was running down through the woods along the path like a brook, then branching out as narrow channels cut into the meadows, the flow of its water controlled by slabs of rock.

Playing in the dirt along the water in the shade of the trees, I remember breaking off a large chunk of bark from an alpine pine tree. The thick mul-

tilayered bark showed its smooth, dark-red underside, and I remember using the awl of my Swiss Army knife to make a hole through it so that I could stick a twig in it. The entire thing formed a float with a mast, which I immediately sent on its voyage down the stream.

The entire memory is laced with the smell of pine-sap on a hot summer's day: the bobbing boat rushing down the water-channels, myself running along the 'bis' to keep up with the little float, following it out into the sloping meadows, the smell of hay, and the sun on my skin. I don't remember what happened to the little raft.

Thinking back I have a distinct memory of hearing the rushing water in the stream up at the edge of the woods, which changed into the murmur of the current in the narrow troughs in the meadows, maybe the sound of some cow bells, and definitely the humming of insects buzzing about the grass.

Memories are fascinating in the way they embed experiences and attach them to sensations such as smells, sights, places, situations, and faces. To this day, the tactile sensation of the bark in my hands while making the little float is still with me, as are the smell of resin, the sound of water, the sights of mountain meadows, the feeling of the sun on the skin, and the memory of running through the woods and alpine meadows on that hot summer day decades ago.

This anecdote from my personal history brings to the surface a number of core characteristics of experience: it is situated in an environment at a specific location, it involves self-perception in action in a multimodal way, it contains a narrative or explanation of sense, and most of all, it depends on direct perceptions and sensations. This story may not be an unusual occurrence for a happy childhood; but it shows the child's playful engagement with the given elements of the environment, the curiosity and joy of making and giving sense to a toy, the immediacy and oblivious state of acting and moving within the world, and how taking everything in through the senses creates a unified and lasting experience.

I am fascinated by our perceptions, experiences, and memories, and how they form, inform, and transform moments of our life. This is even more the case when I am on stage, when as a performing, improvising musician, I engage with sound, instruments, and the others. And not just on stage,

but also while exploring sound, the materials and technologies that I need to make the tools I use to perform.

The sensory richness and unfathomable ‘thickness’ of experience while in play during performance prompts me to think, and motivates me to create and perform experiences, in ways that allow me to sense and feel the intensity, again and again; perhaps as an echo of and resonance to my young self’s full and uninhibited joy of playing in nature with wood, water, and sun.

1.2

Background

Music is movement in dynamic temporal shapes and textures that reflect the timings, tensions, speeds, and durations given by our bodies. Music can be narrative, emotional, engaging, social, poetic, internal, mathematical, and physical. Making music entails listening, playing, controlling, communicating, and sounding. In all these activities we are involved with everything that we are: body, mind, experience, memory, intensions, and desires. We are moved by music, we move with music, we move to make music, and through music we are able to move others. Sound is the material, time the canvas (Feldman 2000: 88), presence the brush, and body the substrate with which we shape sounding and listening into an experience.

The research for this artistic doctorate emerges from my practice as performing musician, digital media artist, and researcher in an arts university context. This work is embedded in overlapping fields and discourses that span the musical crafts of composing and performing, instrument building and technological developments in media arts, the development and evolution of a specific kind of performing art practice, scholarly perspectives on music, sound, and performance, the academic disciplines of psychology, philosophy and cultural studies, the academic disciplines of systematic musicology using music technology, and finally the emerging field of art as research, practice-based research, or artistic research.

As a performing musician I have always wondered why being on stage was such a different experience from everyday situations. Although rare, I

have experienced moment of extreme lucidity and incredible presence on stage that I know from few other contexts or moments in life. The level of attention and the capability to simultaneously perceive numerous different elements, the ability to take decisions before they become conscious, and the pleasure of engaging in play with seemingly trivial elements has proven to be an ongoing source of inspiration and curiosity. While moving from traditional styles of music and conventional instruments into the less charted territories of performance practices with the body and movements, electronic sounds and images, I experience a shift in corporeal presence, in mental focus, and in bodily awareness. The disparity in the affective impact of performance under these circumstances becomes evident, in particular between myself and other performers. When realising this difference, the issue about the role and import of the instrument's technology and its relation to our bodily abilities and needs becomes evident. Together with my curiosity about perception in general, and the ways in which we engage and interact with others and our surroundings, the questions about the body, presence, and experience become central.

1.3

Research Aims

The aim of this research is to reach a differential view about physical performing with sound and instruments that takes into account the body, the instrument(s), the performer's perception and awareness processes, the audience, and the wider social and cultural environment. The perspective from which these concerns are addressed is centred around the performer(s) on stage, and expands outward to include my own artistic practice, similar practices in other disciplines, as well as the social conventions and cultural dimensions of performing in this way. With these questions and goals as starting points, the motivation grows to dig deeper into the neighbouring fields of the psychology and philosophy of the body, in particular Phenomenology and Enaction. The challenge for me, and a recurring critique about this research, has been its broad scope. With the present thesis, a model is established that demonstrates how it is possible,

despite the breadth of the assembled topics, to unite theory and practice, and through analysis and interpretation to reach an overarching perspective.

Considering the requirements for a thesis in artistic research, the alternate point of view of the artist must be taken into account, as well as the (perhaps idiosyncratic) methods used to synthesise and generate insights. This implies that the nature of the outcomes is not universal or reproducible, and less 'objective' or detached than in the neighbouring scholarly or scientific disciplines. The position between the domains offers the opportunity to work within a mesh of relations instead of a linear method, and, as an outcome, to open up a field of significations and interpretations rather than to provide quantifiable answers or practical applications.

One of the aims of this research are the experimentations and method developments that are necessary to approach and work through fundamental questions concerning the performing body. The fact that this involves carrying out the research in relation to my own practice is not a weakness, on the contrary: it leverages my particular position as an artist-researcher, with the benefit of providing access to first-hand experience and knowledge about the process. The development of the model of this thesis and its validation, or at least the experience of working it through, can be considered one of the outcomes of this research process.

Finally, this approach motivates the development of my research in directions that are influenced by the questions, issues, and perspectives encountered during the process. On the way to the bottom of things, things and perspectives change and I along with them. Even if never stated explicitly, this is always an important goal of undertaking such a research journey. These shifts in turn enrich the artistic practice that provides some of the materials for analysis and interpretation, thus influencing the research in a circular way.

1.4**Approaches and Methods**

The approach chosen for this research is the development in parallel of the artistic and the reflective tracks. The core of the model developed here is to juxtapose theory and practice, concepts and experiences. Over the span of the doctoral trajectory, by operating at different levels simultaneously, the artistic projects advance, through iterations, in different pieces and performances, as well as through the development of specific configurations and compositions that function as vehicles for artistic creation and investigation (see Section 4.3 and Section 4.4). At the same time, thinking and writing about core ideas and concepts regarding the body, awareness, presence, and so on, is explored in a number of publications (see Section A.4) that form the building blocks of a growing conceptual and referential network. The network serves as an anchor to the reflection about artistic practice in relation to the philosophical, psychological, social, and cultural domains.

This approach leads to the following structure of the research process: after considering the significance of assembling materials and mapping, after taking stock of my own position, and considering the fields from which methods are borrowed, materials both from the relevant knowledge fields and artistic practice modules are laid out. In addition to descriptive writing about the artistic projects, a media portfolio is assembled that collects sufficient video and photo traces of each project to enable comparative work. With the array of elements in place, a process of auto-ethnographically and grounded-theory-inspired analysis is realised. Beginning by distilling keywords and concepts into a systematic categorisation, a four-fold method of descriptive and comparative observation is carried out, which uses specific aspects from the theory as lenses for in-depth, lateral, or transversal observations. These observations are combined and interpreted to obtain insights valid for all practice modules, to discover some blindspots in the investigation method, and to finally generate as outcomes a number of specific insights about performing with body and technology. The descriptive observation stages are carried out through

watching performance videos, thus connecting reflection to a (secondary) experience of the artistic practice.

1.5

Topic and Themes

This research addresses an overlapping zone between several themes. With the body as central anchor point, theories and practices, contexts and methods provide the cornerstones for this project. In which way they influence each other is a matter for continuous negotiation throughout this thesis. As an overview, the schema in Figure 1.1 provides an arrangement that lays out all the basic building blocks. Over the course of this thesis, a differentiated understanding about these relationships should emerge.

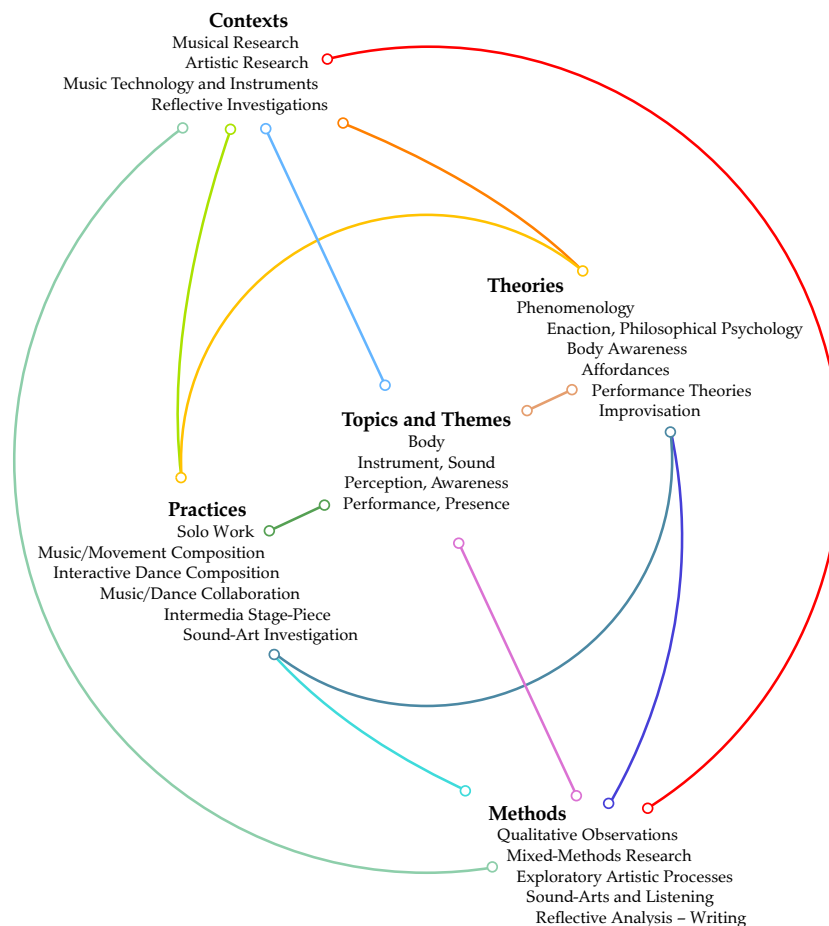


Figure 1.1: Overview over the topics and themes, theories and practices, contexts and methods of this project.

1.6

Key Terms

A number of key terms appear throughout this thesis. Even though they may be part of everyday language, in the context of this research, they have specific connotations that are important to consider before engaging with the processes unfolded in this text. Coincidentally, some of the terms also form the title of this thesis.

Body Primarily concerning the body of the musician or other performer, the **body** is the site of all physiological, perceptual, psychological, and conceptual being, as well as subjective, intersubjective, social and cultural inter-/action. It enables acting, moving, interacting and appearing as a presence in the world and to the others. In performing art(s), it also provides the base material to put on a stage and work with. The term may mean the body itself, or a body-instrument, or body-tool conjunction that functions as a unit. Finally, despite its immaterial characteristics, sound may also be considered to possess a body, through its tactile, proximal nature and the resistances and constraints it imposes upon the performing body.

Instrument The **instrument** is a tool enabling actions in specific modalities that would otherwise be difficult to carry out. For music, the instrument is an object with physical properties that is optimised for producing a range of sounds with specific timbres and specific manners of handling. For some singers, the vocal organ is also considered an instrument.

Technological instruments (acknowledging that any instrument has its technicity) use technical processes to simulate physical sound production phenomena. Usually they produce sound through an electrical or electronic process, projected by a loudspeaker, and are performed with a surrogate material or surface that enables physical actions.

Awareness **Awareness** as ability depends on conscious focus and attention given to a specific element of the environment. The attention can be directed at numerous elements and domains, senses or relationships. When directed at the body, this ability can profit from the inner senses that produce body sensations (proprioception, kinaesthesia, equilibrium) and the outer senses (visual, tactile, auditory) that produce environmental perceptions.

Presence The fact of being in a specific place is called basic **presence**. The body

provides us with this ability; with technology we also have to capability to be tele-present, even if not with the body. In addition to physical presence, we perceive the affective presence of an intentional subject as the present person, in particular on stage. The intensity of the perceived agency and intentionality, as well as the projected inter/subjectivity strongly influence the perception of presence. Performers modulate presence, consciously by emphasising intensities, and unconsciously by giving attention to inner or outer elements of the situation. The public registers presence through agency and intentionality, and the (inter-)subjective rapport established by the performers.

A physical phenomenon of pressure waves travelling through a medium, **sound** provides the raw material for the musical practices as well as the transmission channel for perception. Sound, like light, is not perceived directly, rather its perception is always attached to source objects and events, thus making it the carrier of intentions of a (sometimes hidden) agent. Sound is therefore always heard as being imbued with intentionality, a perception that provides an evolutionary advantage for survival. Sound acts at a distance, envelops and immerses the listeners in space. It also travels through the tactile sense, thus giving us an actual feeling of being touched by a metaphorical body.¹

Sound

Apart from naming the quality of an effort and the amount of useful work carried out in a task, the term **performance** denotes the situation of carrying a meaningful, intentional actions in front of an audience. Regardless of the discipline and the intention, this basic configuration always-already brings with it deep cultural associations to rituals and represents a primary, inherently intersubjective and therefore social situation. In performing arts, the moment of performance also carries the notion of play, of make-believe, and the 'as-if'; thanks to this, performance provides a framework within which transgressive behaviours can be enacted without threatening the social order or the individual.

Performance

Being between two elements or states of affair (Latin: *medius* - middle), the **mediation** layer translates, transmits, or otherwise stands between the two elements. It can be enabling as much as interfering. Mediation also denotes connection processes between of two otherwise incompatible ele-

Mediation

¹ And coincidentally, as an adjective 'sound' means healthy or sane.

ments: a buffering or cushioning of incompatibilities. The opposite of mediated is 'immediate', meaning that nothing stands in between, that there is no interference.

1.7

Chapter Outline

This thesis is grouped into four large parts with a substantial number of sections. In a broad arc, the four chapters cover methods, theories, practices, and analysis/interpretation (see Figure 1.2). More specifically, the chapters assemble perspectives and methods from a wider context, collect framing knowledge from six different theoretical perspectives, depict and discuss six concrete artistic projects, and finally attempt a reflection and synthesis process that unites all the assembled materials and crystallises them into overarching insights, statements, and a field of meanings that asks for continuous interpretation.

Chapter Two

Chapter two, Process, begins with a background reflection about map-making as a metaphor for knowledge organisation. As an underlying theme throughout this thesis, the processes of arraying and juxtaposing materials are explored and questions posed about approaches to heterogeneous elements assembled in a multi-dimensional fabric. The chapter then explores different methodical approaches that inform the processes shown in this thesis. The discussion of a mixed-methods research approach shows a combination of technological, empirical research with musical analysis, and experimental psychology, which was applied in a research project that ran in parallel with this doctoral research project, and provided some of the context and background for the projects presented here. Expanding and specifying aspects of this perspective, two strands of qualitative research methods are discussed, which inform the analysis and interpretation processes that are the goal of this research. The methods of grounded theory and autoethnography originate in the social sciences and provide approaches to experience-based research, where the materials used for analysis originate from inter-personal and subjective experiences. The chapter continues with a discussion about artistic research, its premises, problems,

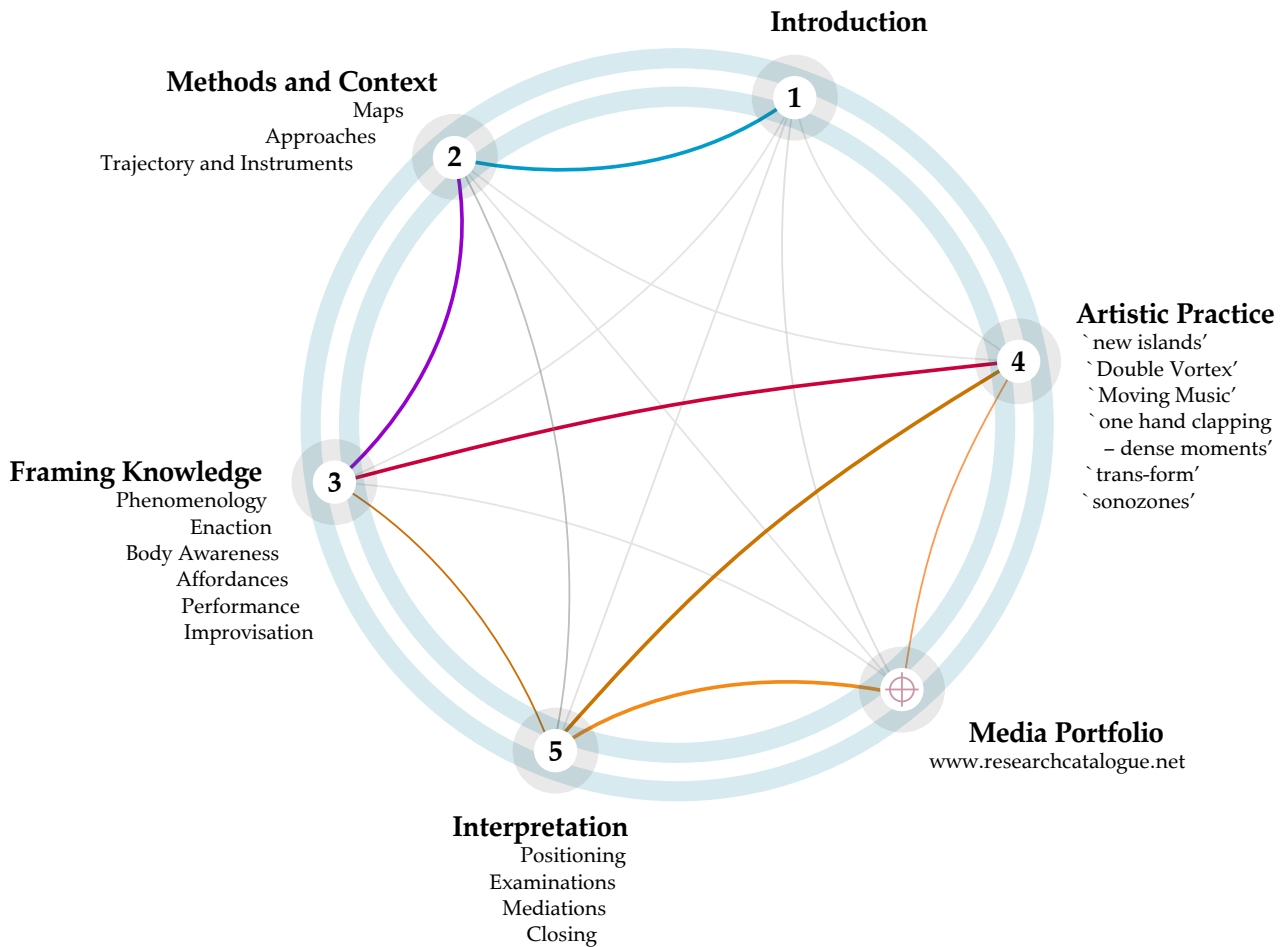


Figure 1.2: Overview of the chapters of this thesis.

and pitfalls, as well as the opportunities this perspective provides. Extending on this topic the question about reflection gets discussed, its place in practice-led research, and the different types of reflection occurring within and around artistic practices, in particular during performance. Following the fundamental domains of artistic research, the concrete material conditions of instruments and technology are laid out, thus situating the practice that is an integral part of this project. To round off the chapter a short overview over my personal trajectory as an artist is given, to convey an understanding of my motivations and perspectives.

In chapter three, Framing Knowledge, research into neighbouring fields of knowledge is undertaken. I investigate the fundamental aspects, questions, and practices that permeate my research. The chapter begins by looking at Phenomenology, on the one hand through its historical origins

and developments (albeit incompletely), and on the other hand by taking the key-concerns of my practise and bringing out those voices that prove to be useful for the further process. This includes sections about time-perception, the body's relation to the world through perception, as well as listening and sound. This section is complemented by a similar foray into philosophical psychology and more specifically the domain of Enaction. In this section, the evolution of the concept is unfolded from the autopoietic phenomena in cellular biology to the emergence of cognition and mind through the sensorimotor contingent link between body, perception and environment, to the radical view about the basic and extended mind.

After these philosophical sections, elements are assembled from the perspective of body awareness. These elements describe the body's physiological, sensory and perceptual capabilities and the way they form pre-reflective and sub-personal cognition. Based on these capabilities, different forms of body-perception and awareness emerge, which we can put into relation to the musician's particular training, skills and expertise. Moving from the body to the instrument, under the term of affordance, the ecological embedding and intertwining between bodily characteristics, perceptual capabilities and object relationships are discussed. This perspective permits to connect the physiological and corporeal domain of perception and cognition with the technical objects used in music making, and consider the influence instruments have on perception and expression in music performance.

The following section of this chapter looks at the topic of performance. It is first unfolded from a historical perspective, following the development of the concept of the ritual in anthropology. Beginning with the rites of passage and the role of shamans in primary societies, then moving to classical drama and theatre, the term is followed through to the establishment of performance studies that coincide with the emergence of performance or action art. Next is the perspective of performance theory and its evolution to arrive in a contemporary, post-modern position that resituates performance in a socio-economical context. The next section investigates the development of the idea of the performative, from speech-act theories to the gender-theory of the performed identity. The final section addresses the

concept of presence and the body in performance, by bringing together voices from philosophy, sociology and dance performance.

The chapter closes with a section on the topic of improvisation. This vast domain is mapped out through a number of keywords, bringing together voices from a variety of practices and historical epochs. Following a contemporary perspective that attempts to demystify the practice, aspects such as the unknown, the unmarked space, and the unique are unfolded. From these fundamental elements the section then moves on to investigate key psychological aspects such as memory, anticipation and presence, and finally addresses my core research question of awareness and mental states of reflection during performance and improvisation.

In chapter four, *Artistic Practice*, my work as an artist is laid out through six projects that I carried out in the last four years. All of these practice modules comprise making sound with technology, and all but the last project generate pieces for the stage, to be performed with the body and technological instruments.

Chapter Four

The first practice module, called 'new islands', is a platform for solo-performance with gestural instruments. Here, through the use of wearable interfaces that connect gestures to digital sound processing, physical presence and empty-handed performing are thematised.

The second artistic module is entitled 'Double Vortex' and is a composition for trombone, movement and live-electronics. In this constellation, movement instructions and the electronically augmented trombone form the material with which physical presence is explored.

The third practice module is 'Moving Music', a composition for interactive dance, where the dancer, through the use of wearable and spatial sensing, becomes a sort of instrumentalist. This is a mirror configuration to the trombone piece, and by comparing the effects and impacts of technology and the changed role of the dancer, an understanding about the role of the technology and movement emerges.

The fourth artistic module, 'one hand clapping – dense moments' is a collaborative project between a dancer and a musician and represents a long-term artistic investigation into modes of presence and interaction. This project is carried out in residencies and generates open-form, improvised performances where body and sound are present simultaneously and

each performer extends their domain by incorporating elements from the other discipline.

The fifth practice module, 'trans-form' is an artistic development process that results in an intermedia stage-piece. With the central theme of inter-/dependence on technology, the role of presence and the bodily actions by the dancer is embedded within a media-setting that brings together electronic sounds, digital imagery, and scenographic staging. In this charged environment, the conflict between the organic body and the power of technological presence is rendered visible and tangible.

The sixth and final module is 'sonozones', an investigation with sound-arts methods into listening and the effect of performative interventions in the urban space. A collaboration between four sound-artists, this project defines its process explicitly as artistic research, and through the outcomes, shows the opportunities and challenges of this approach.

Media Portfolio

Complementing these six modules is the online Media Portfolio that assembles video and photographic documentation of performances from the projects (<https://www.researchcatalogue.net/view/269265/269266>). This catalogue is used for the analysis and interpretation work that is carried out in chapter five.

Chapter Five

The fifth and final chapter of this thesis, Interpretation, brings together all the materials and concepts collected up to here and explores methods and ways to analyse and interpret the practice modules in view of the theoretical positions and the core questions posed. A first section situates the research perspective, restates the questions and goals, and with the help of a qualitative method, establishes an operative framework with which to approach the analysis process. In a movement across the six domains from the knowledge chapter, a number of keywords are collected and organised in relation to each of the practice modules. The analysis begins by addressing contextual questions about the artistic practices, before engaging with detailed observations of traces from artistic practice in the media catalogue. With the aid of the basic categorisation, four analytical operations are carried out, each producing a detailed descriptive report. As the final step of the process, an overarching blending lets common themes emerge and produces unexpected insights. The chapter closes with a discussion of the several ways that mediation is active in the practices and processes that

are observed in this thesis. These reflections about mediations include the role of the instrument, of sound, and of the body, and finally, in a wider social and cultural context, address the attitudes and responsibilities of the performing musician.

2

All maps are but representations of reality: They render the physical world in symbols and highlight important relationships — the proximity of one subway stop to another, say — that are invisible to the naked eye. If storytelling, the way we structure and make meaning from the events of our lives, arose from navigating, so, too, is the practice of navigation inherently bound up with storytelling, in all its subjectivity. (Tingley 2016)

Methods and Context

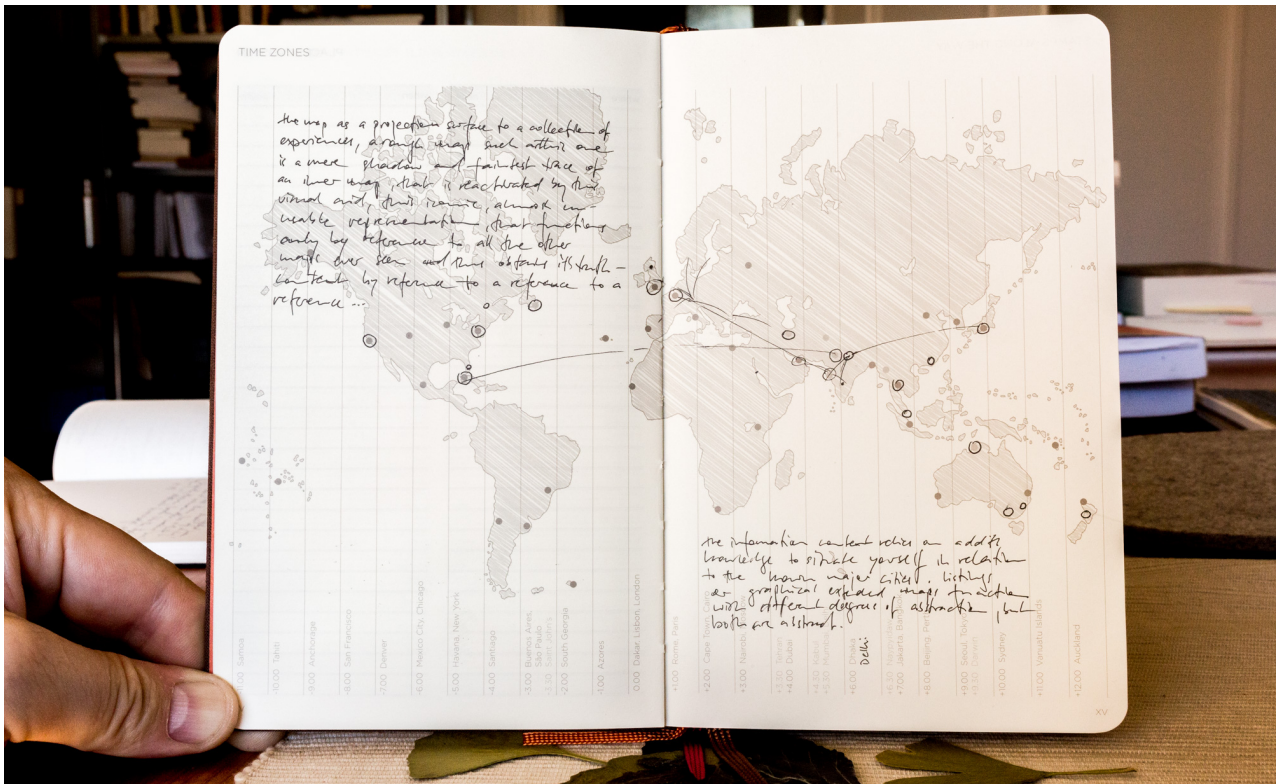


Figure 2.1: A map of the world. Its schematic reduction enables overlaying places and making their connections. The view from above reinforces the notion of having control over distances and knowing the geometrical relationships between places.

This chapter draws a trajectory or traces a path through a variety of perspectives and aspects of artistic practice, and does so in a manner that at times is necessarily personal. It serves to set the stage and illuminate the

ground on which the inquiry central to this project takes place. At times metaphorical and borrowing ideas and representations from neighbouring fields, most of the time in descriptive ways, the intent is to open the brackets of methods and processes that will help to frame the concrete artistic works as well as the reflective and interpretative movements that are accompanying them. In a loose collection of topics, both the methods and processes of the practice itself, as well as of the accompanying reflective inquiry are considered as a kind of mapping or collection activity, which provides the necessary materials for a subsequent analysis and interpretation.

The opening quote of this chapter touches upon the mirrored and reciprocal manner in which the weaving of narrative strands, the tracing of a route through territory, and the handling of place-holder symbols and representations are useful metaphors for understanding relationships between activities and events, between places, spaces, and the times of an ephemeral artistic practice, whose visible part might be taking place on stage in front of an audience, but whose inner workings and meanings remain hidden.

2.1

Maps

The diagrammatic or abstract machine does not function to represent, even something real, but rather constructs a real that is yet to come, a new type of reality. (Deleuze and Guattari 1988: 142)

One of the starting points of this project is the realisation that reflection on topics concerning performing arts is multidimensional by nature, in the same way that musical performance and its perception occur in a multi-modal manner. Understanding what disciplines, modes of thinking and perspectives are involved, needs to be based on the ability to perceive the influences that the different fields have on the practice. This perception, when connected to concrete elements of the practice, generates insights that are fruitful and help to extend the scope of actions both artistically and when communicating about the practice. Assembling these insights

into a meaningful pattern can give rise to new insights, but requires methodical thinking across or beyond the topics at hand. This pattern consists of the connections and novel relationships; understanding them represents a goal of research, in particular in the arts.

The process of assembling, laying out, and drawing connections between elements and insights resembles that of map-making, albeit with a different relation to the terrain and the 'real'. The craft of map-making provides a beautiful metaphor for the ways unknown or ill-defined zones may be explored, captured and arranged in the arts. Traditionally, maps are visual representations drawn on paper. By itself this technique implies a reduction of dimensionality, in a simplification that allows for properties to emerge, which are out of reach in the original domain. However, visual maps carry with them the danger of over-simplification by presenting in a seemingly logical and fixed manner the way the mapped-out elements stand in relation to each other.

Contrary to the physical world, where we have learned to expect the permanence of things, in the practice of and reflection on performing arts, there is nothing solid, nothing permanent. The constants or invariants that we use to scaffold understanding lie in the nature of the human being, in our biological similarities, psychological resemblance and imprints, as well as in the identities we must forge within our society. This provides a stable back-drop in the time-span of ordinary experience. The art-object which we create on stage is ephemeral. At best it persists in the sedimented experiences and memories, and the faint traces that technical capturing methods provide.

Thus the making of maps for the discipline of performing arts, by building representations of how things are interrelated, faces an absence that is worse than that of the 'territory', of not being able to be 'there' in the depicted places.¹

¹ The famous saying states: "A map is not the territory it represents, but, if correct, it has a similar structure to the territory, which accounts for its usefulness" (Korzybski 1933). And of course we also have to acknowledge Borges' short story "Del rigor en la ciencia (On the Rigor of Science)", where to increase the exactitude of the map it is extended to cover an entire empire, but hereby becoming utterly 'useless' (Borges 1998). The idea of a map with a scale of 'a mile to a mile' appears already in the nineteenth century in Lewis Carroll (1894).

2.1.1 Which Territory?

Performance's only life is in the present. Performance cannot be saved, recorded, documented, or otherwise participate in the circulation of representations *of* representations: once it does so, it becomes something other than performance. To the degree that performance attempts to enter the economy of reproduction it betrays and lessens the promise of its own ontology. Performance's being, like the ontology of subjectivity ..., becomes itself through disappearance. (Phelan 2003: 146)

The 'there' of performing arts is the performance itself, at least in its audience-facing state, and by itself leaves behind no artefacts, no tangible residues. The most radical type of performance art keeps all things in that state and emphasises their immediacy and unpreparedness. More traditional practices know practising and rehearsal as a preparatory processes aiming at the stage and the 'show'. Performing arts such as theatre have additional dimensions of preparation that are not based on action and skill development but on organising (that is, dramaturgy) and writing, on preparing a script for interpretation. The same is the case for western style composed music, where a notated form is elaborated beforehand, then transmitted to the interpreting instrumentalist or singer whose task is to give body to the music in performance.

These examples merely describe the inner layers of a much wider scope of practice. In addition, they only reflect a specific point of view on art processes, which originates from a position embedded within a specific cultural and social system. The silent assumptions about the framing context need to form part of the map-making as well, in addition to the layers directly surrounding the singularity of experience of the moment on stage.

Accumulating elements for assembling a map takes time, effort, displacement, and experience. Is this the same kind of effort as in an artistic practice? If the collection of experience forms the basis for the development of an artist's work, where a self-reinforcing adaptive cycle is set in place that enables artistic action, perception, evaluation, and re-targeted action, then the analogy should be valid for map-making as well. The process of reaching a place or datum, then shifting the position in order to

create a difference that defines the relationship to other places or data, provides a good analogy to the in-time process of the performing artist. The dynamic process of establishing relationships between one place and another becomes more important when dealing with relationships that connect one experience to another. The artist cannot help but to move through these phases, accumulating experience in the same way a surveyor might accumulate measurements. The crucial difference lies in the way experiences are subsequently recalled, re-affirmed through means of memory or media-traces. Contrary to how data is acquired for representational maps of real-world territories, the collection of the map-constituting elements in an artistic process represents its own challenge, not the least is finding an appropriate form to hold them. The data acquired in the field is only of the kind that can be represented, or in an inverse statement, the map is only carrying the data that can be recovered from the wild.

An even more crucial difference between map making and artistic practice lies in how the map is manifested, made to exist, made to represent the elements and their relationships.

2.1.2 Maps and Diagrams

The active role of the performing artist in making a diagram or generating a map becomes more evident when the performance is not about mere re-production and re-interpretation of pre-established ideas—acknowledging that even there, the act of re-creating and re-embodiment of the work is the central goal—but is based on a degree of artistic decision-taking within the timespan of the performance itself that potentially drastically alters the artistic outcomes. Here, the artists are actively engaged in creating a new node within the diagram of their practice, through the intrinsic and indissociable link with prior experience, both as performer and as appraising perceiver. This type of movement through the materials, through the assembled experiences, by reaching places and then shifting to the next one in order to map the distance travelled, could be an adequate description of creative processes. Contrary to the romantic notion of the lonely genius creating new things ‘*ex nihilo*’, in performing arts, those impulses and ideas that appear during creation processes do not emerge by themselves, but are the results of movements across exper-

iences, of a fight against resistances, and the subsequent establishing of connections between them.

Grasping, collecting, fixing these elements somehow, in order to be able operate on them after the moment of performance is essential. Musicological analysis for example, even contemporary forms of interpretation studies, needs the fixity of a work, an entity outside the pure experience of performance, as a base-material for their operations. And even experience-based trace analysis needs to be able to identify commensurable elements and possess or develop a vocabulary in order to investigate experience. Making maps could therefore signify for the performing artist the process and necessity of identifying invariants, of extracting and generalising them, in a way that enables communicating about experience without its source being present anymore.

The activity of finding or defining paths across an accumulation of materials, territories, strata, or planes constitutes navigation and “the various entangled lines constitut[e] the ‘map’ of an assemblage (...lines of flight)” (Deleuze and Guattari 1988: 512). If the territory, however, is the fleeting, ephemeral ‘actual’ of a performance and the map is a reading of solid traces, artefacts, and resonances of an intangible object, the relation between map and territory should be considered to have become inverted. Therefore great care has to be taken to avoid reifying the map at the expense of the ‘actual’. Nevertheless, if additional communication outside the place or time-space of performance is intended, engaging in a process of continuous re-readings and re-arrangements of the assembled traces is necessary. As a consequence, in artistic practice if not research through art, map-making of some sort is always occurring. The critical question then becomes what possible forms the maps may take, and how accessible and communicable they can be both for the artists and their audience.

The impossibility of ever fully grasping complexity in art might be exemplified by a reflection Robert Smithson makes about ‘mapscapes or cartographic sites’ when referring to a concept by Buckminster Fuller, which echoes the compression of performance:

The ‘dot’ is in a sense a concentration or dilation of an infinite expanse of spheres of energy. The ‘dot’ has its rim and middle, and could be related to Reinhardt’s mandala, Judd’s ‘device of the specific

and general or Pascal's universe of center and circumference. Yet, the dot evades our capacity to find it's center. Where is the central point, axis, pole, dominant interest, fixed position, absolute structure, or decided goal? The mind is always being hurled towards the outer edge into intractable trajectories that lead to vertigo. (Smithson and Flam 1996: 94)²

Although Smithson's central works are in the domain of land art and his writing about the 'mapscape' concerns his fascination with actual representational maps, what is interesting in his reflection about Fuller's 'dot', is the realisation that it cannot be fixed or tied down: its centre is unreachable. In a sense, the 'infinite of expanse of spheres of energy' correlate with the compressed moments of performance, where the 'concentration or dilation' are characteristic of the intangibility of the moment on stage, and the attempt to grasp and to generate understanding might lead to actual 'vertigo' and being hurled 'to the outer edge'. Fuller's 'dot' or Smithson's own "immobile cyclone" (Smithson and Flam 1996: 146) of phenomenal space mirror aspects of the singularity of the time and space on stage while performing.

2.1.3 Non-Representational Maps within Practice

The know-how and tacit knowledge (Polanyi 1967) that is accumulated through the process of generating experiences for the stage resides within the performers and their co-performers or collaborators. At first, the artist accesses this knowledge continuously in an unstructured, intuitive way; in time with a clearer sense of validity during the performance itself. In the densely compressed state during performance, the sum of prior experiences guides decisions, reactions, and perceptions. This can be seen for example in the sense of how much time has elapsed, of when a tension arc has concluded, or how rapidly changes in material need to occur in order to achieve a specific expression. Interestingly, these perceptions are all related to time, which is the dimension that is the most difficult to obtain

² The beginning of the quote should provide more context: "R. Buckminster Fuller has developed a type of writing and original cartography... His *Dymaxion Projection and World Energy Map* is a *Cosmographia* that proves Ptolemy's remark that 'no one presents it rightly unless he is an artist.' Each dot in the World Energy Map refers to '1% of World's harnessed energy slave population (inanimate power serving man) in terms of human equivalent,' says Fuller. The use Fuller makes of the 'dot'..." (Smithson and Flam 1996: 94).

an overview of while performing. These capabilities are in part based on our innate sense of time—although in the extraordinary circumstances of the stage these mechanisms fail relatively easily—and on training early in life, but the specific skills within the artistic practice can only originate and be developed by repeatedly experiencing the situation of *actively* shaping time during performance.

This skill can be compared with how the wave-pilots of the Marshall islands in Polynesia manage to navigate a “ ‘road’ [that] isn’t a single wave reflecting back and forth between ... atolls and islands; ... it is the path you take if you keep your vessel at 90 degrees to the strongest swell flowing between neighboring bodies ... Position your broadside correctly, ... and your hull would rock symmetrically, [like] a pendulum” (Tingley 2016). These navigators use as their invisible map as information that is not spatially organised and graphically represented, and can only be perceived through a specific type of experience, in this instance the physical sensation of a specific manner of swaying a boat undergoes when located on the ‘backbone’ of the ocean road of the Marshall islands.

Are the maps we make merely the laying out of elements after the fact in order to observe, analyse, and learn, or do they not constitute possible experimental arrangements of the practice themselves? Calling these arrangements a map might be stretching the concept, but may be one of the consequences of juxtaposing tangible information that is laid out in a coherent overview with these cycles of experience of different densities that generate the backbone ‘ocean road’ of artistic practice. Since a non-representational map needs to be discovered within the experience itself, the performing artist arguably makes use of such maps within individual performances as well as across the long-term developments of the practice.

Coming back to the examples of sensing time during performance, we can now also say that a kind of navigation occurs, that uses the non-representational map of duration sensing in performance to find the right trajectory.

2.1.4 Not Adding but Subtracting

What if making a map of a performative artistic practice is not an additive process such as assembling elements in heaps, placing elements on a surface in order to generate an overview, of laying things out side-by-side for comparison? What if map-making is more like an autopsy, a dissection, cutting through layered, dense convolutes of things, exposing strata, shapes, relationships that are only visible and valid because the trans-section goes exactly through *this* place and not that, and would be different if the cut was taken from a different angle (see Section 5.1.4)?

Of course these metaphors can only be useful if they are resolved with regards to their specific application. The question is then, what is a cut, what is an angle, what are strata, what is the matter that gets combined into a body or mass that we then cut through? Since the central topic of this project is the body in a technologically mediated performance situation, let us use aspects from this situation to approach these metaphors.

Cutting or slicing as an action means separating elements that are normally contiguous or dividing a homogenous mass into smaller parts. In the current context, the moment of performance and its experience represent a dense mass that needs to be reduced into smaller parts for comprehension. It consists of a multitude of aspects and elements present at the same time, which cutting might separate into clearer divisions and identifiably different elements. The body and the instrument, the stage space and the time-span of the performance, or the presence of the performer in relation to that of the audience represent such elements.

The angle of a cut represents the perspective, point of view, or lens utilised for separating the aspects, for dividing the complexity of the experience into manageable components. By changing the angle, that is, the perspective or conceptual tool, new relationships may emerge that can only be understood from that specific angle. Looking at affordances (Gibson 1986: 141) and constraints, for example, relating physiological capabilities and morphologies to perceptual abilities, or comparing the affective impact of a digital sound to a physical movement might be some of the distinct perspectives taken up in this project.

The strata of folded or compressed moments, spaces, and experiences of performance result from accumulated and intended materials, from the way an artist proceeds, but also from the manner in which the observer and map-maker approaches the materials. They are also constituted by the large number of influences that converge on and in the performing artists, be it from their education and training, or from the wider cultural and social frame within which any art practice is located. Prior experiences and expertise, memories of similar or divergent performances, stylistic or cultural schemata and their relation to the specific implementation in the performance: these can all be regarded as strata that are contingently present. Finally, the presence of the audience who witnesses the act of performing further alters and charges the situation.

The matter or material that gets cut up, laid open and divided is constituted at a first degree by the artist's corporeality, by the physical body itself, as well as by the object-nature of the instruments used, and by the physicality of the performance space's elements, such as floor and walls. The physicality, corporeality, materiality that is present forms a crystallisation core and vessel to contain and absorb significations, affects, intentions, and social as well as cultural values and categories. The forms, expressions, and affects of the artistic discipline itself constitute a further component of the material. They are called the sounding materials or movement materials, as if they were the raw materials for the performing practice.

The human organism in the enactive, sensorimotor integration is the result and an imprint of the evolution in its environment. For this reason the body can be considered to represent the ultimate map. Any attempt at understanding its significance in a cultural activity such as performing arts means dealing with an always-already established densely packed ontological presence, that can only be apprehended by subtracting, simplifying, reducing, slicing off, and therefore exposing within this maximal density a narrow cross-section and a slim sliver of meanings.

2.1.5 Mapping the Spaces of Practice and Reflection

Considering the spaces within which artistic practices evolve, the difficulty arises of how to delimit or determine their boundaries. Of course the simple answer always points to the visible and well-known forms of

presentation that each discipline inherits from tradition. In performing arts the concert or show is the canonical space wherein the art-form lives. Music in particular offers a few additional spaces of existence through the presence of artefacts or ‘products’ in ‘phonographical’ transmission (Walther-Hansen 2012). By the same token, theatre and dance begin to exist in a cinematic state of mass-market dissemination of filmed representations.

For the artist, however, the possible spaces within which practice resides are numerous, not just physically and concretely as rehearsal halls, dance studios or stages, but also in immaterial forms in domains where ‘music-ing’ (Small 1999) occurs, and above all, where the imagination about, within, and through the (sound) practice unfolds. The multitude of spaces where performing artists in particular are active results in no small measure from the necessity of continuous construction, that is, from the performative movement of the practice, and the need to declare its “space[s] as relational, places as negotiated, and both as contingent upon the moment by moment construction of multiple embodied selves” (Kozel 2007: 67).

In the case of corporeal musical performance with technological instruments, part of the task is to get involved with the construction or configuration of the instrument itself. On the one hand this happens through an engagement with sound processes in the abstract domain of software. On the other hand it means the selection of and practising with hybrid, physical and digital objects (interfaces). Addressing both domains is necessary in order to connect physical actions to the symbolic operations of digital signal processing. An essential skill is being able to negotiate between (sonic/musical) imagination, intended interaction forms, and the construction of the hybrid digital instruments.

The space of practice is not a euclidian geometrical void, where we assemble the activities and experiences as if on a two-dimensional map and obtain absolute control by having total overview of *all* elements. Practice should rather be equalled to a series of places where the artist dwells, when she is choosing to be in the performative mode of ‘making work’ as well as in mundane everyday states. “Unlike the abstraction of an infinite and homogeneous ‘space,’ place is from the first a qualitative matrix, a pulsing or

potentized field of experience, able to move us even in its stillness” (Abram 1996). This qualitative matrix is claimed for the practice, for the different states of the performative, and of the reflection that are simultaneously present in open-form, exploratory performance with technology, and that are also present in every-day states of the artist. Since a practice centred around performance also deals with the shift between being ‘at work’ and being “your plain old self” (Massumi 2002: 48), the continuous generation of identity as artist necessitates a “breathing space within ... social codes and conventions” (Kozel 2007: 67). Crossing this threshold in both directions produces a change of state that is part of the ‘liminal’ space (Turner 1987) (see also Section 3.5.1). Only the contrast between the two worlds assigns significance to performance. Only the shared experience of the mundane state opens the door for the audience to understand the performer. Only the ‘ordinary’ can generate the ‘extra-ordinary’.

2.2

Approaches

Bringing together systematically appropriate methods from neighbouring scholarly and scientific disciplines with practice-driven, creative, and subjective artistic developments represents a challenge for arts-based research. The difficulty is not to determine the procedures and activities to carry out but rather to argue for the validity of the research in a context that goes beyond the (performing) arts world. In the institutional contexts of academia, where funding and careers are at stake, it is necessary to appropriate values and criteria as well as discursive tools from competing theoretical disciplines. The challenge is to find the right balance between these diverging necessities: the need to be accepted and thus funded, and the need to carry out investigative work while staying true to artistic values and visions. Mixing fields and methods is not new by itself, in the social sciences and humanities this has been an ongoing practice and debate. Leveraging some of the achievements from other disciplines proves to be a viable strategy for arts-based research and research through artistic practices.

The following sections look at methodical frameworks that can prove useful for investigating artistic practice. Stemming from neighbouring fields in social sciences and musicological research, they inspire and provide guidance for developing an analysis and interpretation method for a musical performance practice (see Chapter 5).

2.2.1 Mixed Methods Research

Mixed methods research began in the late 1950s in the social, behavioural, and human sciences, when a third way was postulated to complement and unite the two dominant strands of quantitative and qualitative methodologies (Campbell and Fiske 1959). The central idea is that through triangulation a higher validity of results can be achieved (Webb and Weick 1979). Through the four types of data-, investigator-, theory- and methodological triangulation, but importantly also through between-methods triangulation three effects emerge: convergence, inconsistency, and contradiction (Denzin 1978). All three effects can provide richer explanations of social phenomena, because creative ways of collecting data need to be developed, thicker and richer data collected, different theories synthesised or integrated, contradictions uncovered, and competing theories validated (Jick 1979). Even if a short definition of mixed methods research describes it as “the combination of methodologies in the study of the same phenomenon” (Denzin 1978: 291), this does not explain how validity can be achieved, if this is indeed the goal. The purpose of mixing methods is understood as a critical step in designing a research project, which—apart from touching on a deeper level of knowledge generation—also has practical implications. Mixed methods research can serve to: “validate and explicate findings from another approach and produce more comprehensive, internally consistent, and valid findings; provide more elaborated understanding and greater confidence in conclusions; handle threats to validity and gain a fuller and deeper understanding; and provide richer-/more meaningful/more useful answers to research questions” (Johnson et al. 2007: 122). The gain of using this framework is as much a strategic one as it is pragmatic in guiding research activities. These inner and outer gains have to do with the context of the research, thus for example in social sciences the justification has a different import than in music research. A

comprehensive definition that is discipline-agnostic and positions triangulated mixed methods in a relevant way is given by Johnson et al.: “Mixed methods research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration” (Johnson et al. 2007). This research is done by blending empirical and systematic, quantitative with qualitative and interpretative analysis methods in a convergent concurrent design (Guest 2012).

*Research Project
'Motion Gesture
Music'*

An approach using this methodology was implemented in the research project ‘Motion, Gesture, Music’ (MGM), which I carried out as Principal Investigator at the Institute for Computer Music and Sound Technology (ICST) of the Zurich University of the Arts (ZHdK) between January 2014 and February 2016. The project was funded by the Swiss National Science Foundation.

The project investigated the perception, recognition and application of motion and attempted a definition of gesture in music. The focus was on issues of Perception, Cognition, and Embodiment within the context of a musical performance and composition practice. Based on practice-led experimental processes, the research methods covered empirical and qualitative psychological analysis, analysis of contemporary composition- and performance-practice, and the application of machine learning algorithms to gesture information. Situated in the broader context of systematic music research, the project focused on a specific area of research about musical composition, performance, and perception. The research was carried out through four parallel tracks, using simultaneous experimental studies and development processes as well as artistic creation. By addressing the subject matter from four different perspectives, the emergence of an overlapping space of interpretation was aimed for. Practice-based artistic projects both in interactive music and dance served as experimental settings (see Section 4.3 and Section 4.4).

Within these processes, analysis methods from the three related domains were applied (see Figure 2.2): Psychology, which mixes qualitative and empirical approaches, Music Analysis of contemporary composition-

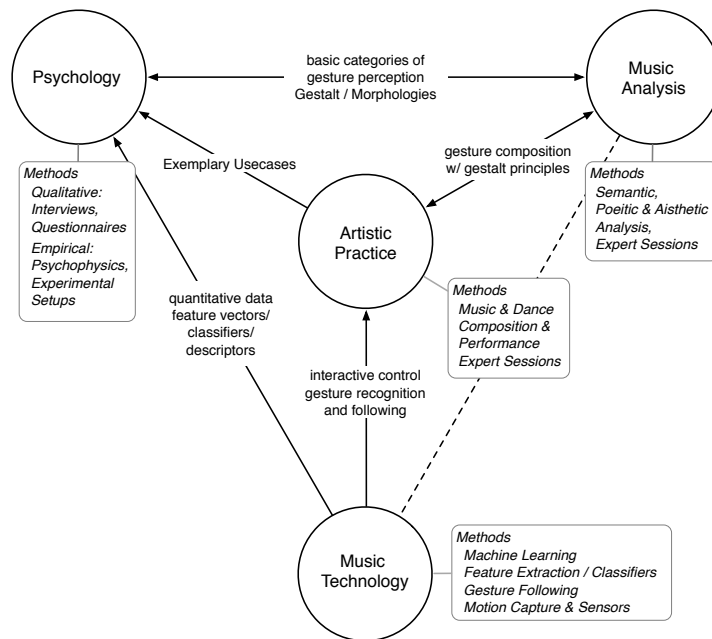


Figure 2.2: Project structure of the ‘Motion Gesture Music’ project at ICST/ZHdK. Note the triangulation between the four project tracks.

and performance-practices, and Music Technology with data acquisition and machine learning analysis of motion. The goal of the project was to find concepts, methods, and terminologies for the classification of motion and identification of gestures in musical composition, music- and dance-performances, as well as music perception. The practice-based processes generated concert pieces, but also provided visual and textual traces of the development processes, as well as an interpretation of artistic experiences in a reflective form. The psychological research approach aimed at identifying categories of motion and gesture that lie in the perceptual domains, that inform music- and dance-perception, and that support a possible taxonomy of gestures in music performance. The goal of the music analysis track was to build a conceptual apparatus and terminology that describes gesture and is applicable to artistic discourse and pedagogy about music performance and composition. The technical analysis was based on capturing motion data in different ways and applying machine learning algorithms, with the goal of recognising and classifying motion patterns and obtaining an automated interpretation of gestures. Through the triangulation of the results from the four tracks, the blending of categories produced various cross-disciplinary results. A number of peer-reviewed pub-

lications and book chapters came out of this research. This project formed a parallel and complementary development track to the present doctoral thesis.

For in-depth documentation about the MGM research project see:

<http://mgm.zhdk.ch/>

2.2.2 Qualitative Methods

Qualitative research methods are used in the social sciences to gather and analyse data that originates from interactions between people and from behaviours and group dynamics in social and cultural settings. Naturally, all information gathered in these circumstances will have a subjective or experience-based foundation. The critical step in working with this information is to cross-correlate it with other, verifiable or at least consistent elements. The difficulty in generating statements that can be validated through other means is that there is no independently verifiable data at the source. That's why social sciences or psychology have moved towards *quantitative* methods using systematic and normalised procedures, permitting the use of mathematical and statistical models. “[The] scientific canons includes criteria such as significance, theory-observation compatibility, generalisability, consistency, reproducibility, precision, and verification” (Corbin and Strauss 1990: 418). These empirical processes lead to experimental or data-gathering methods that are constrained and capable of answering only narrowly targeted questions. For social or cultural phenomena it is difficult to isolate and narrow down aspects without robbing them of their significance. Nevertheless, specificity and precision is valued and efforts are undertaken to make the steps of the method systematic and consistent and to let them eventually generate theoretical frameworks. Research about social, cultural and psychological aspects of music perception and performance needs an approach that does justice to the intricate web of interrelations that are not all quantifiable through empirical means.

Grounded Theory

Since the 1960's new ways of interpreting and analysing data from sociological and psychological research have evolved: “Glaser and Strauss (1967) proposed that systematic qualitative analysis can generate theory ... and aimed to move qualitative inquiry beyond descriptive studies into

the realm of explanatory theoretical frameworks, thereby providing abstract, conceptual understandings of the studied phenomenon” (Charmaz 2006: 6). Grounded theory happens through simultaneous data collection and analysis. The process depends on constructing codes from data and not preconceived hypotheses, by using comparative methods through all stages of a project, and by advancing categorisations and concept-building in parallel during each step of the project. “Qualitative, hypothesis-generating research ... uses two principles of (1) questioning rather than measuring and (2) generating hypotheses using theoretical coding” (Auerbach and Silverstein 2003: 8). The process of theoretical coding involves detailed note-taking, continuous ‘tagging’ or ascription of keywords to observed incidents, and a first iterative step of theory-formulation. “Event/action/interaction ... are compared against others for similarities and differences; they are conceptually labeled” (Corbin and Strauss 1990: 423). Through the analysis processes that run in parallel with data gathering, the researcher becomes capable of “discovering theory as emerging from data separate from the scientific observer” (Charmaz 2006: 10). Even though this demands an objectifying position, recent voices take a more *enactive* position, which makes the researcher become “a part of the world we study and the data we collect ... through our past and present involvements and interactions with people, perspective, and research practices. [Grounded theory] offers an interpretive portrayal of the studied world, not an exact picture of it” (Charmaz 2006: 10). The pragmatist position of grounded theory rejects determinism and ascribes to the actors of a situation their own agency: “Actors are always seen as having, though not always utilising, the means of controlling their destinies by their responses to conditions. ... Grounded theory seeks not only to uncover relevant conditions but also determine how the actors under investigation actively respond to those conditions, and to the consequences of their actions” (Corbin and Strauss 1990: 419). Considering the topic investigated here, taking up a different position than that of an observing researcher might prove useful as well.

The practice of autoethnography shares with grounded theory the background in social sciences, but specifically targets personal experience from a subjective and simultaneously ethnographical perspective. It “uses the

self as a lens to understand a wider culture” (Balaam 2011) and does *not* “privilege the researcher over the subject, method over subject matter, and maintain commitments to outmoded conceptions of validity, truth, and generalizability” (Denzin 1992: 20). Bringing together perspectives from a number of field that span a wider domain than that of anthropology and ethnography, different mixtures and weightings are evident in different authors writing about autoethnography. For the present investigation into one specific artistic practice, positions that engage with the performative aspects of story-telling and the body are particularly interesting. From that viewpoint, the autoethnographic method is also “informed by research on oral and personal narratives in performance and communication studies, situating the socio-politically inscribed body as a central site of meaning making” (Spry 2001: 710), thus crossing over into the domains of sociology as well as performance. If the body provides the substrate for experience and identity (see Section 3.5.3), and therefore the subject and its experience are rooted in it, the ethnography on the body and the traces inscribed within it, carried out by the subjects themselves, is necessarily subjective, contingent, and singular; these are all aspects shared with performing arts practices (Ellis et al. 2011).³

The living body/subjective self of the researcher is recognized as a salient part of the research process, and sociohistorical implications of the researcher are reflected upon ‘to study the social world from the perspective of the interacting individual’ (Denzin 2014: xv) ... ‘*What happens within the observer* must be made known, ... if the nature of what has been observed is to be understood’ (Behar 1997: 6). The researcher, in context, interacting with others becomes the subject of research, blurring distinctions of personal and social, self and other, and reevaluating the ‘dialectics of self and culture’ (Neumann 1996: 193) ... The autoethnographic text emerges from the researcher’s bodily stand-point as she is continually recognizing and interpreting

3 “As part ethnography and part autobiography, autoethnographers are often criticized as if we were seeking to achieve the same goals as more canonical work in traditional ethnography or in the performance arts” ... “These criticisms erroneously position art and science at odds with each other, a condition that autoethnography seeks to correct. Autoethnography, as method, attempts to disrupt the binary of science and art. Autoethnographers believe research can be rigorous, theoretical, and analytical and emotional, therapeutic, and inclusive of personal and social phenomena” (Ellis et al. 2011).

the residue traces of culture inscribed upon her hide from interacting with others in contexts. (Spry 2001: 711)

Applying the mixture of methods from a subjective position does not imply complete subjectivity, rather, the relationship between experience and social significance are brought to the foreground. “Autoethnography utilises the ethnographic research methods and is concerned about the cultural connection between self and others representing the society” (Ellis and Bochner 2000: 742). The method combines three directions, and as a pluridisciplinary approach its different researchers “vary in their emphasis on the research process (graphy), on culture (ethno), and on self (auto)” (Ellis and Bochner 2000: 742). Similarly to the grounded theory approach, the aim of autoethnography is to provide a methodical approach to deciphering cultural codes and the way actors in social situations interact. Above all it “should be ethnographical in its methodological orientation, cultural in its interpretive orientation, and autobiographical in its content orientation” (Chang 2008: 3). The main difference to other social science methods lies in the person(s) carrying out the investigations and in the subject of the research: in this method the *subjects* themselves are *doing both*. This split viewpoint produces a tension, which makes autoethnography as a whole a delicate proposition, in particular for a point of view that straddles the border between arts and social science. “The most compelling autoethnographic writing confronts the tension between insider and outsider perspectives, between social practice and social constraint” (Reed-Danahay 2009). The tension between the subjective ‘I’ and the objective, disembodied ‘it’ opens a field where the experiential and the discursive meet and where “[p]oetry, and the personal narrative, become tools for reflexive knowledge” (Denzin 2014: 212).

The subjective position claimed by autoethnography opens the field for investigation in the direction of interpretation of personal experience. A less extreme position that points in a similar direction can be found in reflections on methodology in the field of systematic⁴ musicology, which deploys empirical, experimental methods to generate insights about measur-

*Systematic
Musicology*

4 as opposed to historical musicology.

able aspects of music and music psychology, in particular in relation to the non-verbal agency of the body in music making.

Marc Leman's analysis of the positions taken up in 'the musicological literature' sees either 'first person or third person' perspectives. He states that for the subject in a first person position: "through the lens of subjective interpretation, personally experienced intentions enter into the domain of a linguistic-based description of the world" and that the third person descriptions, in contrast, "are about repeatable measurements of phenomena [...] that can be obtained by any observer or can be made by a machine. By putting knowledge of human information-processing mechanisms [...] into machines, it is possible to measure high-level structural and semantic properties directly from physical energy" (Leman 2007). But Leman offers a middle way, which is less reliant on interpretation and yet offers descriptions of intentionality. He asserts that "an important form of description may be based on corporeal articulations" and calls this the second person description and demands that "perceived action-relevant values can be articulated" [...] and that "the main difference [...] concern the distinction between experience as interpreted and experience as articulated" (Leman 2007: 82). This view on the relationship between physical articulations and musical perception, or the inverse relationship between bodily perception and language-based articulation hints at a possible avenue for the investigation of musical performance with qualitative methods, something which will be discussed further on.

2.2.3 Art and Research

Artistic research means research in which the artist is the agent and in which the processes of creation are the focus and object of research (Coessens et al. 2009: 92).

Contrary to the methods of the sciences and scholarly research, in artistic processes, the ideas, methods, and models developed have a certain degree of uniqueness, are usually idiosyncratic, and cannot easily be generalised. Traditionally, within artistic practices, the insights or practical knowledge gained remain private and are communicated, if at all, in a form more appropriate to their application in further artistic processes and not

as a transmission of formalised knowledge (see also Section 2.3). For performing and performance arts, the norm includes the initial discovery of possibilities, investigations of basic elements (such as interaction models, see Section 4.5.4), experimental processes, and finally the development of a coherent piece. The ‘writing’⁵ processes of this type of art can only occur in a situation that reflects and contains all the constituting elements of the chosen form. A distinction needs therefore to be made between investigations, materials, and methods development, and research. To clarify this, I would like to refer to three concepts that form an established part of the discourse on artistic research.

The first is the definition of research with which Christopher Frayling (1993) begins his argument in his seminal article, ‘Research in Art and Design’. This text is better known for identifying three basic types of artistic research, the categories of research for, about and through the arts, which Henk Borgdorff (2007) subsequently develops to form sharper distinctions. Frayling (1993) looks up the term ‘Research’ in the Oxford English Dictionary and finds two definitions: research with a little ‘r,’ the act of searching closely or carefully for or after a specific thing or person; and ‘Research’ with a big ‘R,’ meaning a professional practice that works towards innovation, introduction, and improvement of products and processes. These two definitions don’t cover the current usage of the term completely, but are nonetheless interesting in their distinction. For artistic practice in particular, the defining elements that differentiate between the two are of interest. Development of materials and methods, investigation of processes, and experimentation with forms and formats are always part of an artistic practice. They constitute research in the sense of finding and refining elements to be used for the practice, something which is made explicit with the use of the term ‘recherche’ in the German arts tradition, where it is used to name preparatory investigations made before engaging in the production of a work. This kind of ‘research’ with a lower-case ‘r’ carries out a search for and investigation into things that aid or even constitute the practice. The second kind of research that is defined by Frayling (1993: 1) is that of ‘Research’ with an uppercase ‘R’. Here, the definition hinges around pro-

*Which Type of
Research*

⁵ Of course I mean by ‘writing’ the composition process that uses symbolic means of generating structure.

fessional ‘innovation, introduction and improvement of product and processes’, in a design-oriented perspective. The presence of the idea of the ‘new’ is key and is applied to products and processes rather than methods and knowledge. The crucial question here is about the boundary between the two definitions: when and where does a creation process reach the level of innovation that makes it, according to Frayling’s definition at least, a proper research activity? Other criteria for differentiating the two modes are needed then. The classic definition of research in the sciences hinges on the generation of transmissible knowledge in an objective, generalisable manner (see also Section 2.2.2). For artistic research, this criterium is difficult to apply in its pure form, since by its nature art produces experiences that are subjective and singular, which is the opposite of objective and general. Nevertheless, by looking closely at processes and the nature of knowledge present in art, several activities that generate knowledge can be found. “Artistic research resides in the recording, expression and transmission of the artist’s research trajectory: his or her knowledge, wanderings, and doubts concerning exploration and experimentation” (Coessens et al. 2009: 91).

Epistemic Things

The second concept I’d like to look at is Hans-Jörg Rheinberger’s distinction between ‘epistemic things’ and ‘technical objects’ (Rheinberger 1992).⁶ In his view, the epistemic things on the one hand are that which is not yet known in an experimental setting. Those entities that are used as tools to execute the experiment, on the other hand, are the technical objects and they determine the representation of the epistemic things. Although Rheinberger is talking about the conditions for scientific experimentation, his model can be applied to and has been appropriated for artistic research. The assemblage of materials, processes, and situations that form the basis of an artistic practice are analogous to those of experi-

⁶ “When looking closely at an experimental system, which is an arrangement [Dispositiv] set in place in order to work on unanswered questions and the production of yet unasked questions—two structures or components can be distinguished within it. ... The first can be called the object of research, scientific object, or more generally the ‘epistemic thing’. ... What is interesting in such an object is specifically that which isn’t determined yet. It appears in a characteristic, noncircumventable diffuseness, which is inevitable since, paradoxically, it embodies that which is not yet known. ... For this an arrangement is needed, which can be related to as the experimental conditions or the ‘technical objects’ that are, contrary to the science object, of a characteristic determinedness. ... The technical objects define the manner of representation of the scientific object” (Rheinberger 1992: 70, my translation).

mental systems in the sciences. Here, too, the goal of artistic experimentation is, among other things, to discover unasked questions and to work on unanswered ones. However, the nature of these questions—or, more generally, of the epistemic things that artistic experimentations and investigations revolve around—is different. Whereas knowledge and the means of its production sit at the core of experimental activity in the sciences, it is less obvious what constitutes the nucleus of artistic practice. The question regarding this concept is whether an artistic production process can be considered as an experimental arrangement in Rheinberger’s sense? And if so, how could the epistemic thing be circumscribed that embodies the goal of our endeavour? Is it to be found in the experiences and the traces that the artistic process generates?

For a typical artistic practice, the artwork or process itself is the carrier of tacit and embodied knowledge. As Borgdorff (2011) states, the presence of this type of knowledge does not represent a research result in and by itself.⁷ On the contrary, for the investigations and experimentations to produce knowledge in a manner appropriate for research, they need to be reflected, articulated and disseminated in a different form, offering an additional perspective on the work and thus become situated in a wider discourse and social context. Borgdorff (2011: 55) proposes that “in the case of artistic research, we can add to the knowledge and understanding duo the synonyms ‘insight’ and ‘comprehension,’ in order to emphasize that a perceptive, receptive and *verstehende* engagement with the subject matter is often more important to the research than getting an ‘explanatory grip.” Through this additional discursive layer a new identity of the work emerges, in a new, second order form (Schwab 2014).

*Second Order
Work*

There is one more element that forms an important cornerstone of any argumentation about experimentation and creative processes. Even though artistic processes can be described, documented, and disseminated in various forms, and in this sense produce knowledge that may be

*Impulse for the
New*

⁷ “Art practice qualifies as research if its purpose is to expand our knowledge and understanding by conducting an original investigation in and through art objects and creative processes. Art research begins by addressing questions that are pertinent in the research context and in the art world. Researchers employ experimental and hermeneutic methods that reveal and articulate the tacit knowledge that is situated and embodied in specific artworks and artistic processes. Research processes and outcomes are documented and disseminated in an appropriate manner to the research community and the wider public” (Borgdorff 2007: 14).

communicated and transmitted, the core quality and key moments of an artistic process cannot be grasped. It is unknown how an artistic process does indeed generate new ideas and where impulses for ‘the new’ originate. This is, without a doubt, one of the hard questions in any reflection about art. Admittedly, however, it might possibly not be an interesting question to address, since the answers are dependent on too many material contingencies as well as the personal history and circumstances of the artist. In the discourse on artistic creation it should be taken into account that this is a phenomenon that is not well understood; it still forms an important subject of inquiry in other fields as well (Koestler 1964; Turner 2006).

Cognitive sciences have been dealing with the same question with regard to scientific innovation. The creation of new ideas and concepts is not the sole prerogative of the artist. In scientific processes, mental models underlie creative reasoning. Incremental series of models lead to new concepts and represent an attempt “to solve specific problems, using the conceptual, analytical, and material resources provided by the cognitive-social-cultural context in which they are created. They are located within ‘problem situations.’ So, to understand creativity, it must be located not in the act but in these problem-solving processes” (Nersessian 2008: ix). The processes, as well as the resources provided by the context, play a similar role in artistic creation. Here, the models are located within a different domain and the problems to be solved are of a different order. But the models and concepts inherent to an artistic process play the same dynamic, engaged, and communicative role in problem solving as they play in the sciences (Vygotsky 1962).

The artistic projects described in this thesis (see Chapter 4) encompass different work phases with varying intensities and foci. I believe that they can serve as exemplary cases for a reflection about artistic experimentation and the generation of insight and understanding through these processes. Many of the results of the projects, particularly in terms of the gain of knowledge, will remain encapsulated within the skills, methods, and familiarity with the materials, which are located within the practice and the forms that constitutes each project. Those elements of the exploratory processes and artistic developments that could be brought forward as

propositional knowledge are located in a zone where modes of interaction and interdependence are described not only as connectionist mappings (Gärdenfors 2004), but also where they represent underlying mechanisms of perception and social interaction.

2.2.4 Reflective Processes

To round off this section on processes and methods I would like to address one final topic. A lot of the discourse about practice-based research (Nelson 2013) and creative practices (Barrett and Bolt 2007), as well as artistic research (Coessens et al. 2009), knowledge production through artistic practices (Borgdorff 2011), and practice as research (Schwab 2014), talks about articulating insights and understanding, making them communicable and transmissible. The artists need to be ‘reflective’ (Schön 1983) to legitimise expressing themselves about the practice. In the movement from experience to articulation and communication, the artists need to process and transform the primary matter of artistic practice. The act of reflection, of re-investing themselves into and ‘merging the practices with new domains’ (Coessens et al. 2009: 93) brings the artists into a position with two competing viewpoints. These cover the inner and outer, the future and the past (Benjamin 1974)⁸, the presence and the absence of practice, and the verbal and the ineffable, in particular in non-representational performance-based art forms such as music or dance. The looping and mirroring nature of the act of reflection is already encapsulated in the etymology of the term. It implies an active engagement with something past, a ‘turning back one’s thoughts’ (Gasché 1986: 16). As a visual term, ‘reflection’ describes the process of mirroring light and images. In contrast, the equivalent term in acoustics might be ‘resonance’, which points to a passive re-sounding to external impulses with a set of pre-tuned capabilities.

The idea of reflection as a mental repetition of acts through thought, as a re-entering and ‘bending back’ (Latin: *re-flexere*) of the cycle of artistic practice with an altered perspective, leads Henrik Frisk to state that “reflection is the beginning of a map that itself is the beginning of theory that can

⁸ Of course the famous passage about Klee’s image of the ‘Angelus Novus’ by Walter Benjamin comes to mind: “The storm drives him irresistibly into the future, to which his back is turned, while the rubble-heap before him grows sky-high. That which we call progress, is this storm” (Benjamin 1974).

help us re-navigate the practice” (in personal communication, May 2016). With this statement he points out that a reduction occurs through reflection, which is necessary to generate the elements of *re-presentation* that a map produces of an original state of affairs (see Section 2.1). The process of organising these elements into a coherent layout, assemblage, or network of relationships can be considered to produce theory, in the sense of coherent knowledge organisation (see also quote by Polanyi at the top of Chapter 3). The map or theory growing from this process can be used, in reflection, to revisit the practice in order to find more clues and insights, on the one hand for renewed practice, and on the other hand for further reflection. Thus, the ‘a-posteriori’ activity of reflection lays down a new layer of experience and adds a stratum to the already stratified primary experience. Considering layering as a continuous process it becomes evident that “reflection is not just on experience, reflection is a form of experience itself” (Varela et al. 1991: 27). It is doubtful, however, whether the newly added strata of experience are knowable by default, since experiences are not mainly inscribed in the cognitive, propositional domain but equally, if not more so, in the sub-personal, pre-reflective sphere of the body situated in the world. Reflection should therefore be considered to encompass more than introspective thought processes dealing with memories or artefacts. “Reflection is, in a sense, an *experience of experience*, but even here it can be seen that as a reflective experience it retains the essential shape of intentionality as experience *of—and* implies that my own self-knowledge remains essentially *hidden*” (Ihde 1976: 37). Even if reflections about objective, external facts might stay in a descriptive mode, when dealing with art’s central element, experience, reflection necessarily involves the non-verbal, sub-personal *re-living* of an experience, which is an experience in itself. As part of the cyclical, looping nature of arts practices, if not life itself, these reflective experiences inform the next primary act: “[R]eflection is not only a secondary process or a commentary on experience, but also [a] process of thinking that transforms the doing. ... Thought impacts experience just as experience impacts thought. Or perhaps they caress each other ” (Kozel 2007: 9).

Within the state of performing itself, several dimensions and spaces are intertwined: the immediate moment with its task of performing what is at

hand, bringing forth the sound shapes, body actions, situational responses or simply presence, and self-perception/self-reflection in an observational mode that sits at the periphery of attention, yet provides the foundation for the mid- to long-term control and the extended perception encompassing the entire stage. The inner state in performance “relies on ... dynamics of reversibility and hyper-reflection. ... [and] entails a reflective intentionality on the part of the performer herself, a decision to see/feel/hear herself as performing while she is performing, a decision to see/feel/hear others performing while she watches them perform” (Kozel 2007: 69).

Reflection therefore resides in different spaces of the practice as well. Instead of adhering to the stark duality between ‘intuitive’ performance and ‘analytical’ reflection, experience shows that the two get intermingled and exist in both the on-stage and off-stage spaces, and are often in close temporal proximity to each other or even synchronously present in a mode of split, multi-level attention. Even ‘pure’ reflection itself exists in different spaces: there is a considerable difference between the thinking that takes place immediately after a performance, still being attached in episodic memory to specific actions and situations, and resonating physically as well as mentally to the immediate experience, and the abstract and detached reflection ‘in the armchair’, for example when writing these lines.

By definition, the time of reflection seems to be located after the primary experience. In fine arts processes, where work stretches out over longer periods of time, the change between an active and a reflective position occurs continuously within the contraction/expansion of the working cycles. The same is true of performing arts, in the time span that encompasses the preparatory phases and the moments on stage. Performing arts have as particularity, though, that during performance several states of perception co-exist simultaneously, including a state of reflection. In these situations, the ‘folding back’ of reflection can also happen during the doing of the (performance) practice itself: Experience inscription is a pre-reflective, sub-personal process as well as a conscious one. Attention, awareness and basic perceptions form part of it, are intentionally directed, and perform “a duet between reflection and the pre-reflective, between language and pre-linguistic, between concepts and pre-conceptual” (Kozel 2007: 16). Reflection and the pre-reflective co-exist and are deeply intertwined. This

The Pre-Reflective

paradoxical state is essential in all art, which aims after all at affecting the spectator on more than just the intellectual level. For the performer, who is in a heightened state of attention and awareness, the pre-reflective is complemented by reflection at different intensities, “in a constant sliding exchange” (Kozel 2007: 19). During the action, experiences occur on the pre-reflective level before appearing in thought: attention and the intentional focus of the performer depend on this exchange. Thinking of the pre-reflective as an essential element of art-making “can open a way for understanding the deep entanglement between reflection and experience, between thinking and making” (Kozel 2007: 23). In performance, the arising mode of multiplied awareness and split attention can engender a state which is embedded within the doing and where perceiving, performing, and reflecting occur simultaneously (see Section 3.6.5):

Like the recognition in contemporary physics of the impact of the observer on the observed, another operation beyond the ‘conversion of sense experience into reflection’ is necessary: ‘a sort of hyper-reflection (sur-réflexion) that would also take itself and the changes it introduces into the spectacle into account’ (Merleau-Ponty 1964: 38). ... This reflective dynamic could be described by the prefix ‘meta’ or simply as ‘reflection from the midst’ it is an immersed and kin-aesthetic reflection rather than unidirectional once-removed. (Kozel 2007: 22)

To what extent the hyper-reflective processes (see also Section 3.6.5) during performance can inform the reflective processes surrounding them depends on the capability of retention of *their* experience, and the subsequent transformation and articulation into words. By approaching experience from both the inside and the outside, the reflections within and about the performing act permit to learn from the practice directly and to communicate about it. The embedded pre- and hyper-reflections and the framing reflections provide complementary knowledge that should be leveraged in the process of articulating insights and understanding that which is aimed at others.

Instruments and Trajectory

The ways of developing and carrying out an arts practice such as music composition and performance is in many ways not different from that of developing and carrying out a reflective, analytical practice aimed at generating theories. On the material side of things, a musician deals with sounds, instruments, people performing, situations where music is heard; the researcher deals with materials of research, technological things that have the power to become epistemic things (Rheinberger 1992), experimental setups and procedures, and situations for communicating and disseminating insights and understanding. Of course, the topic, the focus, the language, the concepts, and the final outcomes take on different forms, much as the practice, in its different phases and themes does, shifting from piece to piece, from project to project.

The difference between a piece of music and a piece of research is evident in its outer form. However, the processes and the way they are structured resemble each other in many ways. Depending on the type of investigation and its goals, be it artistic and musical development and performance, or investigating ideas and attempting to uncover and answer questions that illuminate the practice, the progression of methods, the temporal unfolding of steps, bringing together, clarifying, and ultimately presenting the work is identical.

The theory-practice divide is a construct that has a firm hold in our culture and dates back to greek philosophy and the cartesian divide (see Husserl's reaction at Section 3.1.1, the quote by Bergson at 5.1, as well as the position by Coessens, Crispin, and Douglas (2009: 80) in 2.2.3).⁹ It is built on the assumption that thinking or reflection (Schön 1983) represent a separate activity from doing. In artistic investigations, in 'Art as Research' practices, this divide cannot be maintained. Here, the systematic domain meets the experiential domain and they cross-contaminate each other.

*Cross-
Contamination*

⁹ The concepts of *technē* vs *epistēmē*, their opposition and yet overlap is presented by Aristotle, where the former refers to 'craft' whereas the latter to 'pure knowledge'. See: Aristotle, Book VI of the *Nicomachean Ethics* (Broadie and Rowe 2002) and <http://plato.stanford.edu/entries/episteme-technē/#3>.

Working with technological instruments used in electronic music and sensor-based interactions manifests this dichotomy as well, and embodies a bridge between to other points of view. Mastering technology is necessary to a certain degree in order to be able to use it in the creation of artistic forms. Rather than theoretical knowledge about how the technology functions, the practice emphasises practical skills that cover the range from instrumental craft in hard- and software to the creative use in artistic situations. The methodical approach and analytical methods that are at the root of technological developments bleed over into the artistic practice; the reflective aspects of methodical experimental work inform the development processes for work with these tools. The artistic practice with technological musical instruments and hybrid processes is therefore situated at the point of intersection between a scholarly and reflective view, a scientific and technical perspective, and an artistic and experiential focus.

2.3.1 Technological Instruments

Although a number of standard devices and interfaces for performing with electronic sounds have established themselves in the past six decades, for example, tape-reels, mixing desks, turn-tables, guitar effects, laptops, and midi-controllers, they originate from and are geared towards methods of sound control that focus mainly on the ability to parametrically edit and control sound-processes, rather than re-create the physical engagement with an object and tool such as a traditional musical instrument. An entire field of design and development of a new type of instruments has emerged¹⁰ that thematises this necessity, but also struggles with finding the essential link between body and sound through electronic processes. I consider the development and definition of the material objects, that is, instruments, that are used to engage while performing, integral part of the practice, in a way comparable to the skills and knowledge necessary to develop and maintain a sound on a traditional instrument such as a double bass.¹¹ For examples of such an instrument developments and

¹⁰ See <http://www.nime.org> for an overview on the idea of 'New Interfaces for Musical Expression' and the concept of digital luthiery (Jordà Puig 2005).

¹¹ think for example of the skills for playing a reed instrument such as the oboe, where reed-cutting becomes part of the training.

some reflections on the hybrid musicianship they engender, please refer to (Schacher 2013a b; Schiesser and Schacher 2012a b).

In the field of electronic music an increasingly important topic is gestural performance with sensors and idiosyncratic interfaces. This practice has its own history and central figures (Krefeld and Waisvisz 1990). The interaction models used in this practice inherit developments from pop-cultural, non-musical activities such as video games play, where natural interaction with gestures and the entire body have become an alternate mode of interaction. New interface technologies regularly become available from these domains, be it wireless hand-held controllers, camera-based body recognition systems, or wearable sensing mechanisms and micro-controller platforms. The rise of the ‘Making and Do-It-Yourself’ electronics culture increases accessibility to and know-how about these devices. The application of sensors, micro-controller platforms, and increasingly powerful and small computers is pushing both hobbyist and professional instrument builders forward, fostering an increase of idiosyncratic electronic music performance systems. At the same time it stabilises the practice, thus enabling the development of a reflection and discourse, as well as a real expertise. The practice is developed by people who spend sufficient time practising these instruments and gain skills and expressive means that approach those of musicians performing with traditional instruments.

Gestural practice

One might argue that all real-time performances of electronic music are embodied, since they require the physical presence of the author and/or musician. Yet it becomes evident, when laptop concerts are considered where the action merely consists of controlling abstract sound-processes through a more or less elaborate technical interface, that this is not always the case (Parra Cancino 2014). The physical presence and movements of the performers are not considered to be part of the performance, they rather happen in an incidental fashion. Most electronic performers do not consider their physical presence to be integrative part of the performance. The movements and actions for the control of the sound-algorithms are purely instrumental and do not have musically or physically expressive qualities associated with them. For many electronic musicians this is not a deficiency but a deliberate choice.

*Performance
Practices in
Electronic Music*

There are minimal practices in electronic music bordering on sound art that consciously subtract the physical presence of the performer from the stage setting and go so far as to blindfold the audience (Demers 2009).¹² Indeed, some of the current forms of electronic music listening do not require a physical space at all: they exist in an abstract domain of digital production and the individual space of listening on headphones. From the perspective of an improvising instrumentalist, however, the loss of the ‘gestural’ and dynamic bodily space in performance presents a real problem.

*Instrumental
Skills*

When performing with a traditional instrument on a high level of concentration, focus and presence, numerous motor functions, perceptual adaptations and adjustments occur automatically and remain un- or pre-conscious. This is the result of the extensive training an instrumentalist has received. The integration of all of these functions happens naturally because the relationship with the materiality of the instrument as the physical manifestation of an acoustical principle—string, column of air, drum-skin or any other sounding body (vocal chords being a special case)—conforms to our knowledge of and skills within the physical world, which is a natural part of our human existence. Instrumental training imprints the musician’s body with instrumental and corporeal schemata that are guided through auditory, but also tactile, kinaesthetic and proprioceptive feedback. This extended sixth sense (Berthoz 1997: 31) “function[s] as non-perceptual or non-observational self-awareness, and as such ... might be regarded as a more immediate form of awareness” (Gallagher 2005: 54). This refers to our innate capacity for expression (Gallagher 2005: 85). The capacity of our body for proprioception forms the basis for all of these instrumental skills and also constitutes an inherent part of the appreciation of a physical performance (Leman and Maes 2014: 84).

*Technological
Objects*

The connection in the physical domain, which is an integral part of the traditional instrumental training, is not given per se when performing with a technologically mediated instrument. Of course, there is a technological object present, which executes the functions of the instrument in a certain manner: but its shape and physical aspect are primarily informed by the underlying technology and the industrial design of the product and

¹² See also <http://www.franciscolopez.net/> and <http://www.digicult.it/news/the-riddler-of-sounds-interview-with-francisco-lopez/> URLs accessed 23. August 2016.

not by the actions or behaviours necessary to affect or control the process. This relates to Rheinberger's notion of technological objects serving as a foundation for building epistemic things (Rheinberger 1992: 70) (see Section 2.2.3). The intrinsic knowledge about physical traditional instruments and their sound-generating characteristics is a cultural asset which is often absent in new technological instrument forms, where the sounding principle, the action space (affordances and constraints) and the dynamic musical potential are removed from the physical realities that human experience consists of.

A number of performers with 'gestural' interfaces for electronic music have reached a level of proficiency that may be compared to that of a traditional instrumentalist: Michael Waisvisz (1985, 1999, Torre et al. 2016), Laetitia Sonami (1991), Atau Tanaka (2000) just to name some influential figures in the field. All of them spent a considerable amount of time with a stable version of their instrument and invested time and effort to reach the fluidity and dynamics that transcend the affordances and constraints of their instruments. Whether and how their respective instruments influence their corporeal expression during a performance is an interesting question whose answer is obvious in some performers and not so much in others. Performance with electronic instruments involves aspects such as *enaction* (see Section 3.2), interaction and perception in the performer (and the audience), the choice of models for interface devices and sound generation processes, and the metaphors translating control or action to such processes. Embodied performance postulates an attitude that puts the body, its perception and action capabilities into the focal point and poses the question of what—in technologically mediated forms—its relationship with the interface and sound generating technology represents. Contrary to technical control strategies, which are common when interacting with electronic tools—by using metaphors from physical devices to exert parametric control—an embodied performance tries to reach a level of action or enaction on the instrument and sound that is appropriate to the body, the perception, experience, and the mental capabilities that allow us to maintain these complex relationships in balance. It is only at this level that the goal of immediate, non-mediated, musical, and instrumental action is achievable: this is where the performer regains a pre-reflective,

*New Interface
Performance*

sub-personal, and unfiltered access to the instrument much in the same way a traditional musician possesses it.

2.3.2 Personal Trajectory

At this point it is necessary to establish the various contexts and practices, both artistic and reflective, as well as concrete and abstract, within which this thesis is situated. This will first provide a necessarily personal positioning and subjective account and then one of the contexts necessary to understanding the relationships between all the elements collected here.

The musical culture and education from which this project arose needs to be acknowledged in order to understand the extended field that is the background of this project. Even if the specific works that form the portfolio accompanying this text are constrained within a deliberately limited field, they are informed by a personal history and socio-cultural context, as well as a trajectory through different aggregate states of ‘musicking’ (Small 1999).

Musical Education

My practice as a musician stems from an early education with *Orff* instruments (Orff et al. 1977) and standard school music teachings, that was complemented in the late teens by performing in bands. The range of subsequent music studies in jazz, contemporary composition, electroacoustic music, and media arts shows my development away from given styles to a more personal relation to music and sound. On this trajectory, as was typical for many in the Western European cultural context in the last two decades of the twentieth century, the primary activity is learning and practising instruments. In this context, the development of personal forms of creating music and sound work is not as relevant as conforming to recognised styles.

Instrumental practice

Instrumental practice can be a private exploration, but most often becomes a means to fulfil stylistic models in a given social context, which in my case happened in bands in popular styles such as rock, reggae, funk and then jazz; and during my music studies also in chamber ensembles and small orchestras playing contemporary as well as classical repertoire. The instrumental training on electric as well as double bass, the apprenticeship of musical interpretation in different styles, with their different ways

of transmitting the music: these all form a sort of *experiential anchor* and underlying *points of reference* for much of what is presented here.

The reason why *performance* (of music) remains one of the main intents and activities of my practice lies in the motivational drive provided by the direct relationship with the audience in the concrete socio-cultural context of a concert. As will be discussed later on, this focus has deep cultural roots, and persists in my practice from the early experiences up to today's artistic focus. The compressions and condensation occurring during the performance moment generates a state that is thick with meaning, signification, and mystery, and exerts a pull that wants to be satisfied again and again.

Performance

My position within different stylistic boundaries evolved with my personal evolution, in a move to emancipate the 'musicking' from given, rigid contexts, or rather to zoom in onto a particular field that corresponds most with my skills and vision as an artist. That the resulting field lies at the intersection of a number of musical/artistic practices and gives rise to an idiosyncratic hybrid form is characteristic of the deliberately ambiguous position I occupy as an artist. In all these activities, the immediacy of presence, the demands of providing full attention, and the mobilisation of most if not all resources in performance, informs my practice.

In traditional Western Music practice, in classical, contemporary or popular styles, the act of creating one's own music is considered *composition*, and is sometimes called 'writing', such as in 'song-writing'. The dichotomy between the act of making sounds, which is given to everybody, and the act of composing, which needs to be culturally sanctioned, creates a contradictory situation when thinking about music and its practice. If music is 'organised sound' (Varèse and Wen-Chung 1966), then there are dimensions of organisation at play that differ considerably from each other. From a naïve point of view, music should only be about the personal experience of sounds, affects and emotions, evoked purely through the sounds themselves. Upon closer observation it becomes evident that the manner how the sounds develop these effects, however, represents some of the most complex biological, psychological and cultural phenomena and processes possible. Each cultural context and each sub-division into stylistic and social groups generates a different mixture of elements, which carry the af-

Composition

fective power and significations of a music. Therefore, composition sits at a nexus that is always-already infused with social norms and demands. Negotiating the push and pull between inner and outer impact and signification becomes part of the composition process, and extending the boundaries and defining personal approaches to this issue one of the central tasks of the musician. On a personal and simple level, composition—synonymous for creation processes in most artistic projects—becomes a label and container to channel the necessary urge for shaping and exploring states of being and perception through organised sound.

*Extended
Composition*

The move from traditional instruments to technological means of digital sound and image processing represents an important step in my compositional methods as well as sound materials. By moving from operations with symbolic representations of sounds (music notation) to be performed at a later time by other musicians, to operating directly on sounds (with digital signal processes) with the added benefit of hearing the result immediately, thinking and planning about music changes and the type of music generated is transformed. Thanks to this shift, the meaning and moments of composition are altered, the separation between planning and performing is, if not suspended, then at least re-balanced in favour of performance. The structuring of the technological instrument, that is, the establishing of rules, relationships and processes between actions and sounds, takes the place of music writing, the fixity of musical materials in the notated forms gives way to a systemic approach, where structural, compositional decisions can be deferred to the moment of actualisation.

Improvisation

This leads to another element of music-making that is an invariant in my practice. The focus on performance engenders an attitude where it is not just the correct, pre-arranged sounds that are re-produced by the musician on stage, but where the situated awareness (Iyer 2002) of interdependence with audience and co-performing musicians or dancers becomes central. *Improvisation* as a term is of limited use here, since it carries with it a value judgement, at least in everyday language. But it nonetheless serves to point in the direction of a method or procedural choice that permeates my practice. The core element is the restitution to the performing artist of the power of decision during the act of performance. Naturally this doesn't occur in a vacuum or without boundaries, on the con-

trary: within pre-developed musical systems or interaction agreements, be they conceptual, material or interpersonal, a number of choices are taken before going on stage, whereas central decisions are left open to be taken in the moment. This is a shift of responsibility for the artistic outcome and quality, which entails an element of risk-taking. Its principal effect is that it generates a form of presence and awareness, which charges the performance in a particular and significant ways. As a consequence of the focus on performance, of the use of technological processes to manipulate and generate sound in real-time, and of the intent to leave important decisions to the moment of action, the question of instrumental practice is raised again.

3

A theory is something other than myself. It may be set out on paper as a system of rules, and it is the more truly a theory the more completely it can be put down in such terms. Mathematical theory reaches the highest perfection in this respect. But even a geographical map fully embodies in itself a set of strict rules for finding one's way through a region of otherwise uncharted experience. Indeed, all theory may be regarded as a kind of map extended over space and time.

(Polanyi 1958: 3)

Framing Knowledge

The experience of unusual mental states and difficult to explain bodily phenomena on stage, in particular during improvisatory and exploratory playing, through physical engagement with an instrument in actual performance situations, provides the primary anchor and motivation of this project. The curiosity to learn more about underlying causes for these states leads to the investigation of neighbouring scholarly fields, with the aim of finding core concepts and theories that can explain in part what is going on. In the course of inquiring into these issues in several directions, it becomes evident that the fundamental questions offer a complex and rich field of study. In this chapter, in an attempt to obtain an overview by covering a variety of perspectives contributing to a deeper understanding, several domains of theoretical insight are laid out and worked through.

Moving from the broad philosophical background of phenomenology and embodiment to the specific analysis of the interrelations between body, mind and environment in enaction, the chapter then turns to investigating a number of topics that are in direct connection with the musician's awareness of the active body. The potentials and relationships with the body offered by instruments widen the perspective and lead to considerations about the roots and significance of performance and the role of the musician in the social and cultural sphere. This is finally complemented by a look at the import and conditions of the musical practice rooted in improvisation, by going through key distinctive characteristics and the way

the required attitudes and methods for this practice inform mental state and perception for both artist and audience.

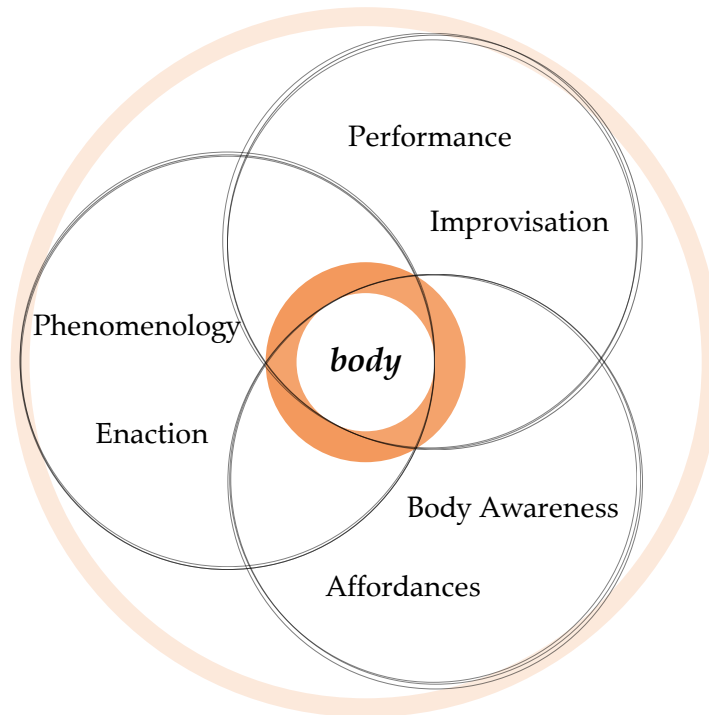


Figure 3.1: The six sections of this chapter arranged in relation to each other and to the central topic.

Investigating and arraying these theories serves not merely as an accumulation of knowledge and insights. The assembly of perspectives from each specific field frames the practice and provides points of reference and key aspects that are necessary for reflection and analysis.

The six sections of this chapter can be viewed in pairs, each topic relating and responding to its twin. The three pairs function at different levels of complexity and abstraction: the first looks at the philosophical and psychological background, the second illuminates the relationships between body, instrument and the environment, and the third determines the socio-cultural and artistic developments that inform my practice. The theoretical insights and concepts collected within the six framing fields provide the necessary foundations upon which to base reflections about my projects, as well as the qualitative analyses and interpretations of the practice that constitute the last chapter of this thesis.

3.1

Phenomenology

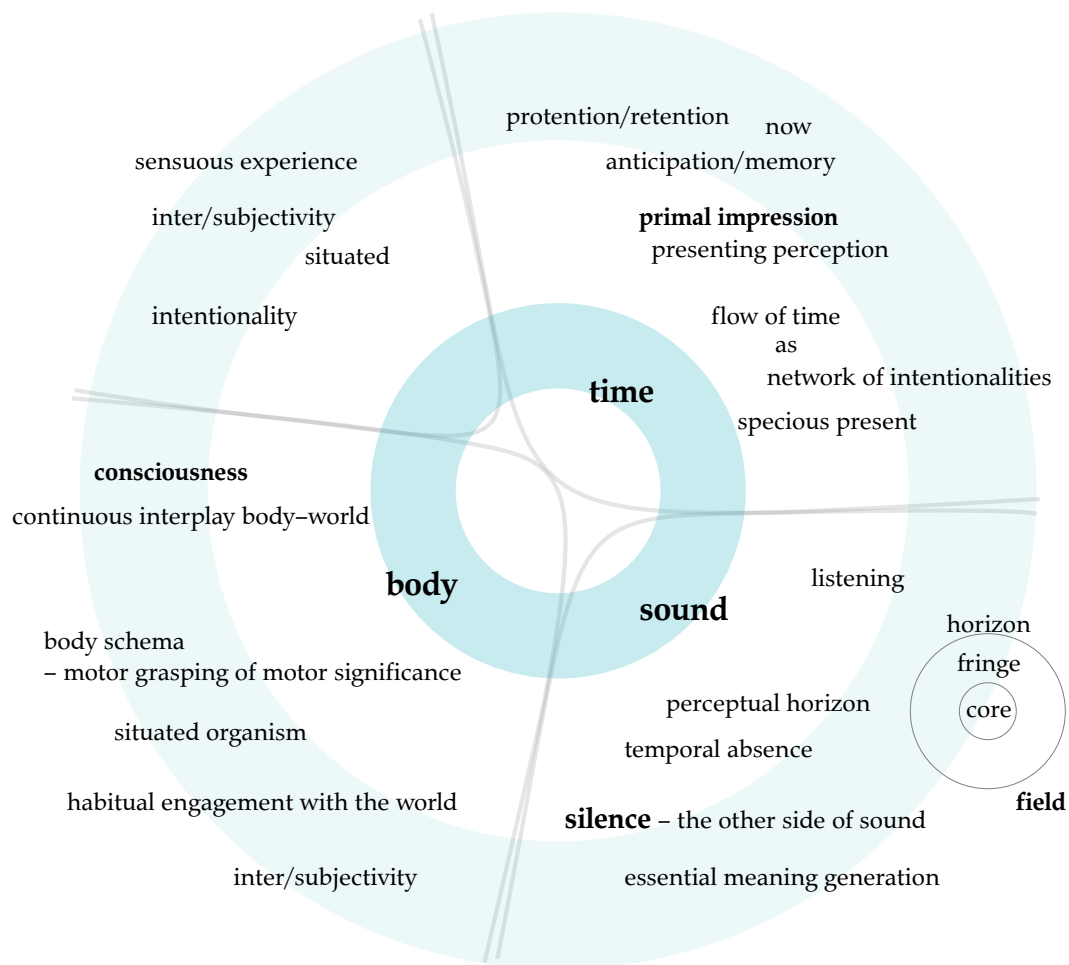


Figure 3.2: Clustered arrangement of the elements of Phenomenology that are discussed in this section.

The starting point is anchoring this thesis is the singular position of the musical performer on stage. When considering the musician's experience from the perspective of perception and the body rather than more abstract musical and cultural dimensions, a number of fundamental issues that inform music making, the performer's presence, and listening, come into focus. Even in the cultural sphere of music, the nature of experience is first and foremost situated with the body and the environment, before involving culture or even style.

The philosophical tradition that has most influenced and is most closely related to the embodied perspective is that of Phenomenology. Established by Edmund Husserl over a century ago, it was developed in several strands by thinkers such as Heidegger (his student), Merleau-Ponty, Ihde and others (see Figure 3.4).

The phenomenological viewpoint offers a number of key insights that are important for understanding the relationship between body, perception and experience. The nature of perception and its role in bridging between the subject and the world is a central theme of Phenomenology. The contribution of the body is particularly important to consider in the compressed and multilayered moment of performing, where the non-symbolic, direct perception of the body, the instrument, and the environment occur in a pronounced manner. As the basis of presence, the situating characteristic of the body grounds and enables complex interactions between the sensory dimension, the action potential and schemata of instrumental play, and the intersubjective interaction with others, be it performers or the audience. The most difficult to apprehend dimension of music and sound might be that of time; as one of the basic elements of conscious experience time forms an essential part of sound and therefore music. When considering the way that the present, the past and future are intertwined, in the model offered by the phenomenological position, the fluid and fleeting nature of the moment and of durations in music, in particular on stage, might be understood. The central perception for music is auditory, relating to sound and its presence through listening. The invisible yet enveloping characteristics of sounds and their relation to the body are difficult to apprehend as well. In listening's intentional relation to sound, through the attitudes of bracketing and reduction, the focal and peripheral perception, as well the sound's absence in silence can be addressed. This layered model of perception of sound can contribute to understanding the numerous aspects of perception that are simultaneously active in musical performance. The loose chronological order of the following sections selectively touches on these topics, less with the intention of completeness than to draw out the aspects of phenomenology that relevant to the questions about the music making body and mind.

3.1.1 Primordial Phenomenon

Edmund Husserl's position and achievements represent a departure from the dominant paradigms of his time. Retracing the steps of Descartes, he offers a critique of the relationship between matter and knowledge and the ensuing split between mind and body. He rejects Descartes' method of doubting since he contends that certainty is unobtainable and therefore doubt cannot serve to obtain proof. Experience of the world becomes for him the central topic, detached from beliefs about existence and the metaphysical, relating to the world through a focused bracketing (*epoché*), a suspending, disconnecting, and pure or transcendental approach he calls *reduction*, which enables a primordial experience of the world. "This belief is 'put out of action,' suspended, we make no use of it, previously experienced reality now becomes 'mere phenomenon' " (Husserl 1931) in (Schmitt 1959). He claims that it is through an intentional relationship with the experienced world that consciousness emerges (Husserl 1960). Intersubjectivity as well as the existence of society and history are his arguments against the solipsistic cartesian claim that mind can only be known from the inside. He argues that world experiences need to coincide in order to be able to take on the other's perspective in time and space (Dreyfus and Hall 1982). Experience, according to Husserl, is a sensuous, embodied apprehension of the world (Husserl 1975). The body offers dual perspectives, both as an object and as a subject, in the first case to be seen and touched, in the second case as the agent of perception. The second, inner perspective is based on bodily sensations and engenders consciousness and subjective experience (Husserl 1928). The given presence of the body in the world also generates a concrete position or point-of-view, which itself is a constituent part of experience. Contrary to idealist, abstract 'views from nowhere' (Nagel 1989), the phenomenological, embodied consciousness is 'always-already' situated and in a relationship to the perceived (Merleau-Ponty 1962: 77). Therefore perceptual consciousness depends on the body's position, activity, and effort, and the substrate of habituation arising from the individual's history (Husserl 1975).

Central to Husserl's work is the investigation of time perception (Husserl 1966), a topic taken up by Heidegger (2006), and that finds resonances in

Temporality

recent phenomenological thinking within cognitive neurosciences (Gallagher 2005: 197). On the topic of time, Henri Bergson's work at the end of the nineteenth Century had a crucial influence on Husserl. For Bergson, memory is the binding element between mind and matter (Bergson 1911), and time can be both a lived, real duration, 'la durée réelle', and a mechanically measured and absolute quantity as in scientific time (Bergson 1889). Husserl's model of temporality has its validity until today; his metaphorical as well as diagrammatical method conforms with our current sensibilities towards mathematical formalisations or naturalisation.

Husserl stipulates that time only exists through time-objects that fill time and that as objects exist through their duration in sensations (Dodd 2005). Consciousness of the elapsing time happens in a blending of 'protention' and retention, that is, an anticipating, forward looking consciousness of a future event that is coupled with the awareness of the fading into the past of conscious experience. In this model the 'operative' intentionality projected onto the coming event is the necessary mirror twin to the awareness of the passing of events. The 'now' emerges at the point where the processes of protention and retention overlap and intersect and thus form a 'primal impression'.¹ This by itself is not yet sufficient to generate the flow of contents in the 'now'. Only when the projected intentions, which by their future nature are yet unrealised, get their content fulfilled, does the 'now' change into the "primal presenting perception" (Husserl 2001: 4) in (Gallagher 2012: 115).

Specious Present

Thus the 'complex texture' of time perception has a three-part structure: At the core there is 'now' that holds the content of our intentional focus; around it are arranged the periphery or horizon of the just past moment and the intended immediately following moment (Varela 1999). This is not a static, but a continuously flowing state where the perceived present is continuously fading towards the perceptual temporal horizon of the past. This negates the experience of 'now' as a stable experience and produces a dual state, or the two vortices that are slightly de-centered (Merleau-Ponty 1964: 138), where the flow of time is not considered merely to be a lin-

1 "The primal impression is something absolutely unmodified, the primal source of all further consciousness and being. Primal impression has as its content that which the word 'now' signifies, insofar as it is taken in its strictest sense" (Husserl 1991: 67) cited in (Gallagher 2012: 115).

ear movement along a temporal axis, but rather “a network of intentionalities” (Merleau-Ponty 1962: 484). According to Francisco Varela (1999) it is William James (1890) who already exposes the duality that “on the one hand, there is the present as a unity, an aggregate, our abode in basic consciousness, and on the other hand, this moment of consciousness is inseparable from a flow, a stream.” Therefore, the flowing structure of temporality, instead of being a linear process, has a recursive or fractal property in which the just past, the anticipated future and the present influence or ‘enact’ each other (Gallagher 2012: 120). By bringing the neurobiologist’s perspective to bear on the basic elements along the retention/protection axis, Varela (1999) adds the notion that another pairing of basic poles is active within the ‘specious present’ (James 1890):² In a complementary or orthogonal dimension to Husserl’s time-axis, the conscious, intentional self is balanced by and paired with the pre-reflective, affective substrate of the body, active on a neurobiological level, as is shown by the enactive approach (see Section 3.2). Finally, consciousness of time is not a mental category constituted of other elements, it is rather a basic underlying stratum of consciousness that resists reduction (Varela 1999). This shows how phenomenological thinking, in Husserl’s conception at least, fundamentally detaches itself from empirical, experience-based concepts, and how it aims to provide transcendental, axiomatic elements necessary to understanding consciousness.

3.1.2 Focus on Perception

Building on Husserl’s method of pure reduction, Merleau-Ponty (1962) takes on a perspective that is concerned with existence and in particular the embodied relation to the *life-world* by being always-already intersubjectively, pragmatically and socially situated (Gallagher 2012: 3). Consciousness in its fundamental state is perceptual and emerges from the continuous, reciprocal interplay between the body and the world. In his view intentionality at the core of consciousness is what ties us to the world,

² “Beyond this cursory designation, however, reduction clearly points to the mode of “now” as having a unique or privileged status (PZB,35). Two lines of analysis lead to this. First, the texture of now, which James calls specious. In effect, now is not just a mere temporal location, it has a lived quality as well: it is a space we dwell in rather than a point that an object passes by or through. Second, it is in relation to the rich structure of present nowness that all other modes of temporality take form” (Varela 1999)

and consciousness as such is not a separate, isolated process but is constituted by the relationship of the embodied agent to the world, the ‘being-in-the-world’. Refusing the traditional dichotomy (Merleau-Ponty 1962: 202), the perceiving subject and perceived object form an intertwined, dual constellation. They depend on each other, informed by the body’s structuring schemata and motor habits and capabilities. These schemata mirror each other, the motor and perceptual capabilities are co-determined by the body.³ Perception cannot be dissociated from action, it is intertwined with motor activities and hence generates concrete bodily states rather than abstract knowledge (see Section 3.2.3). When perception apprehends a structure (that is, a *gestalt*) and reaches an equilibrium, meanings arise temporarily on a sub-personal level, the body being the subject, rather than the object of this agency.⁴ These states exist below the threshold of conscious, subjective awareness, and engender a type of entity that is not anymore object and not yet conscious subject. Its agency is located within perception but below the threshold of explicit self-awareness in a corporeal, embodied as well as outer, life-world space and thus forms the third term as a body-subject: “As far as spatiality is concerned, ... one’s own body is the third term, always tacitly understood, in the figure-background structure, and every figure stands out against the double horizon of external and bodily space” (Merleau-Ponty 1962: 115).

*Situated
Organisms*

As unfolded later by the autopoietic enactivists (see Section 3.2.2), Merleau-Ponty assigns the perceptual link with the world not just to humans but to all organisms. The situated organism, even if driven by instinct and not in possession of “perception and objective consciousness” does have a body and for that reason a world exists for it, within which it intends or ‘aims at’ certain projects (Merleau-Ponty 1962: 92).⁵ In order to understand the organism’s behaviour, it is not enough to explain reactions to object stimuli by the reflex arc, as modelled by James (1890). The situ-

3 “The analysis of motor habit as an extension of existence leads on, then, to an analysis of perceptual habit as the coming into possession of a world. Conversely, every perceptual habit is still a motor habit and here equally the process of grasping a meaning is performed by the body.” (Merleau-Ponty 1962: 177)

4 “Whether a system of motor or perceptual powers, our body is not an object for an ‘I think’, it is a grouping of lived through meanings which moves towards its equilibrium” (Merleau-Ponty 1962: 177).

5 “The body is the vehicle of being in the world, and having a body is, for a living creature, to be intervolved in a definite environment, to identify oneself with certain projects and be continually committed to them” (Merleau-Ponty 1962: 94).

ation, the point-of-view, and actual embedding in the environment must be taken into consideration as well. In the case of a person this includes social and cultural dimensions as well as symbolic meanings. The adaptivity, complexity of behaviour, and the meanings exhibited by the situated organisms are not the result of a ‘mind’ but an emergent trait of the system arising in the interweaving between the organism and its environment (see Section 3.2.4). In fact, Merleau-Ponty claims that mentality is itself the result of interactions between the organism and the environment, and in order for actions and behaviours to become meaningful they do not need be explicitly conscious (Crossley 2012: 136).

One way this emergent structure manifests itself, according to Merleau-Ponty, is in the combined senses engendered by corporeal patterns on a pre-reflective level. These corporeal schemata are not established by “external processes of association” through intellectual means, on the contrary, it is “the body which ‘catches’ (kapiert) and ‘comprehends’ movement. The acquisition of a habit is indeed the grasping of a significance, but it is the motor grasping of a motor significance” (Merleau-Ponty 1962: 165). The habits and the compound pre-reflective know-how, or embedded ‘knowledge’ that are present in the body by virtue of its intertwined nature with the environment⁶ form the body-schemata. They do not represent objective knowledge about the body’s posture and location of body-parts, but according to Merleau-Ponty (1962: 121) rather “potentialities already mobilized by the perception of ... the central end of those ‘intentional threads’ which link [the body] to the objects given.” The pre-reflective structures thus provide the underlying scaffolding that is a prerequisite for action, prior to intention and conscious perception of the environment. It is through these capabilities the “body has its world, or understands its world, without having to make use of [the] ‘symbolic’ or ‘objectifying function’” (Merleau-Ponty 1962: 162). The involvement through action, even if only potential, shows that there is no need for an “abstraction from the world” (Crossley 2012: 137) and that meaning arises from those habits that have been cultivated. When going beyond the basic sur-

Body Schemata

6 “The theory of the body schema is, implicitly, a theory of perception. We have relearned to feel our body; we have found underneath the objective and detached knowledge of the body that other knowledge which we have of it in virtue of its always being with us and of the fact that we are our body” (Merleau-Ponty 1962: 239).

vival behaviours, the body can initiate a change from a “literal to a figurative meaning, [and] it manifests through them a core of new significance”; when corporeally given resources for achieving these meanings are surpassed, “it must then build itself an instrument, and it projects thereby around itself a cultural world” (Merleau-Ponty 1962: 169).

*Embodied
Subjectivity*

In Merleau-Ponty’s view, by virtue of its engagement, the body through its actions generates *subjectivity*. It becomes a subject in relation to the environment, thus reveals its own subjectivity to itself, and in the social context to the others. This public being and the fact that it is “falling beneath perception” (Merleau-Ponty 1962: 421) of others through intentional conduct automatically generates *intersubjectivity*. In the relationship with the other the aim is not knowledge, but communication as primary form of interaction. In this relation meaning arises from the other’s actions and triggers immediate responses without requiring a recourse to reflection. By the same token, the field that is established by social interactions is always-already present and intrinsically linked in the same manner as the link to the natural world. Being an embodied subject and relational being (Van Manen 2014: 225) means to be always-already situated relative to the social world; this forms a foundational part of the fabric of existence since the social dimension exists before being made aware, even if only “obscurely and as a summons” (Merleau-Ponty 1962: 422).

3.1.3 Listening, the Invisible and the Horizon

Taking the phenomenological method of bracketing and reduction and applying it to the domain of auditory experience, Don Ihde (1976) explores the phenomenological perspectives developed by Husserl and in particular by Heidegger with respect to sound and listening. Starting from the *descriptive ontology* of what he terms a first phenomenology, he expands his position to a second phenomenology, that is pointing towards the significance of the *existential* dimension (Ihde 1976: 23), which represents a naturalising attitude that remains *descriptive*. In an arc that addresses language and voice, musical elements, and the noise of the environment, he uses the phenomenology of presence to approach the question of perceptual horizon in the auditory domain and the enigma of silence.

*Core, Fringe,
Horizon*

Intentionality is the core of any experience capable of generating mean-

ing (Berthoz and Petit 2008: 124); for aural perception this means having a directed attention to sound (Ihde 1976: 35). In the visual domain, the experience consists of an explicit *core* which is where things reside that receive our attention and visual focus. Surrounding this lies the *fringe* that implicitly retains a continuous and peripheral presence, before falling off to the *horizon*, which is at the edge of the visual field and delimits that what is beyond (Ihde 1976: 38). The experience of this *field* is subjectively coloured and depends on the intentionality of perception but remains structurally stable as a state of being ‘immersed’ in the ‘surrounding world’. In the auditory domain, the metaphor of the *field* and the perception of its states are more difficult to apply. Since sound has an enveloping and permeating character, attaining an attentional focus in the same unambiguous manner as with vision is not possible. Auditory focus may be attained to a certain degree, however it is not possible to “isolate it from its situation, its embedment, its ‘background’ of global experience” (Ihde 1976: 44). The act of listening demands an opening up and entering into a mode of resonance, which by itself already precludes an exclusive attentional focus (Nancy 2007: 14).⁷ And even though focused listening resembles the act of pointing at something, the periphery’s presence remains much stronger than in the visual mode. Furthermore, listening is not merely a function of the ears, the entire body takes part in it as well, and is even capable of providing, if not a focal, then a very distinct global perception of the immersive aspects of sound through our corporeal capacity of vibratory perception (see Section 5.3.2).⁸

The foreground, background, and absent (hidden) states that are evident in the visual field are much less easily attributed in the auditory domain. Where the objects receive presence and materiality by their visual appearance, the sounds remain fleeting, non-persistent, and are only with difficulty made coherent. The normally experienced coherence of the senses

Invisible

7 “To listen is to enter that spatiality by which, at the same time, I am penetrated, for it opens up in me as well as around me, and from me as well as toward me: it opens me inside me as well as outside, and it is through such a double, quadruple, or sextuple opening that a ‘self’ can take place” (Nancy 2007: 14).

8 “Sound permeates and penetrates my bodily being. It is implicated from the highest reaches of my intelligence that embodies itself in language to the most primitive needs of standing upright through the sense of balance that I indirectly know lies in the inner ear. Its bodily involvement comprises the range from soothing pleasure to the point of insanity in the continuum of possible sound in music and noise. Listening begins by being bodily global in its effects” (Ihde 1976: 45).

enriches and stabilises object perceptions (Berthoz and Petit 2008: 105), but cannot contribute to a phenomenological description of the perceptual horizon of each sensory channel. Presence or absence from the perceptual scene follows analogous pattern in the visual and auditory domain. Whereas the visual horizon sits at the edge of visibility or occlusion, the auditory horizon is much harder to pin down. Mute objects are inaudible and therefore stand beyond the horizon of sound (Ihde 1976: 50), yet remain silently present, visually present in the silence that defines the horizon of the auditory domain. In this case the visual category circumscribes the auditory horizon; whereas its own horizon gets defined by the *invisible*, which lies truly beyond the visual domain. From this dependency Ihde concludes that “an inquiry into the auditory is also an inquiry into the invisible. Listening makes the invisible present in a way similar to the presence of the mute in vision” (Ihde 1976: 51). This duality reflects what Merleau-Ponty explores when he writes about the circular dependencies between the touching and the touched, the visible and the seeing, and even tentatively between the voice and the hearing. The ‘chiasmic’ cross-influence of the “touching in the visible” and the “seeing in the tangible” (Merleau-Ponty 1964: 143) should therefore also be considered as operating between the visual and the auditory.

*Unreachable
Horizon*

The non-present presence, or present absence that is constitutive of the auditory horizon does not need to have any metaphysical meanings attached to it. On the contrary: with reality being only that which is given by experience, in the empirical sense, the reduction and ‘epoché’ of phenomenology becomes an essentially required attitude. The horizon as limit can only be understood in relation to the notion of focal centre and peripheral field, by itself the concept does not describe anything specific (Ihde 1976: 105). It cannot be ‘observed’ directly, and even in the peripheral field the horizon is noted “almost indirectly” (Ihde 1976: 105). Whereas in the visual domain the edge of the field has a *spatial* characteristic, in the auditory domain, the limit of audibility is *temporal*. The disappearing sound is not so much located in space as in time, and spatial perception in the auditory domain is as much a function of time as of space. The field of audition is therefore not exclusively topographical, and cannot be represented as a static scene arranged around the listener, but rather as a dynamic

flow of sound events that appear and recede, a continuous becoming and disappearing without the notion of persistence of objects. The presence of sound depends on a medium where the energy can travel, a process that takes time and extends in time; in order to exist the reception of sound depends on a resonance-phenomenon that stretches in time. Contrary to “the simultaneity of the visible”, to be read by the eye in a sequential movement, through sound’s foundation in duration develop a “contemporaneity of the audible” (Nancy 2007: 16).

So although the “*the horizon situates the field which in turn situates the thing*” (Ihde 1976: 106), in the two sense modalities it does so in two fundamentally different ways. In the temporal domain of sound, appearance is not immediate and not localised in one place, it rather spreads through space building its pervasive resonance (Nancy 2007: 13). In this all-encompassing re-sounding field “the horizon is a *receding*, a *withdrawing*, that which is *beyond* what is its presence” (Ihde 1976: 108).

As a consequence of describing the auditory horizon as being beyond the point where event-ing (the giving of an event) occurs, this generates a contradiction that needs resolving: silence. According to Ihde, “silence is a *dimension* of the horizon” (Ihde 1976: 109). And even though this seems enigmatic on its own, and considering the fact that there is never any actual silence in our sensory experience, there is a simple explanation or example case: it points to the mute objects, those material presences that have no sound, yet are present in the other senses. This does not describe an absolute silence as if a void had opened, it is rather the relative state of an object that is not *currently* producing sound within the dynamic flow of the sounding world experience. As with the hidden faces of a solid object, silence is the “other side of sound” (Ihde 1976: 110), the necessary condition for the temporal presence of sounds, a counterweight of non-intentionality to the core of sound which is intentional experience. Absolute silence is beyond the field of perception and is not involved in sound’s becoming. In its relational state, however, silence has the function of enabling sounding. “The silence of horizontal phenomena continues to withdraw, but in its withdrawing may be heard the giving, the eventing that sound is in its coming-into-presence. Beyond this limit silence continues to escape” (Ihde 1976: 111). In the experiential state of listening, silence

Silence

opens up the field that allows the perception of the minor event. The re-treating, space generating quality of silence engenders a mode of “listening to small sound, tiny sounds, quiet sounds and loud sounds out of context, musical, visual or otherwise” (Voegelin 2010: 81). In that sense, silence is a provider of focus, creating the condition for attaining the perceptual core, while at the same time, in its absolute form of absence, delimiting the sonic field.

*Resonating
Meaning*

In the auditory sense modality, and building on the body’s resonating capacity, to be listening is to be (in-)tending “toward a present sense beyond sound” (Nancy 2007: 6), where meaning develops. Listening bases itself on the will to understand, with the intentional component of experience. By the nature of sound, however, which constitutes as much the limit as the content, listening reaches ‘an edge, an extremity, a margin’ (Nancy 2007: 7) and is reflected back. This limit can probably only be perceived in a suspended form of reduced listening (Schaeffer 1966), if at all. If sound’s principal characteristic is that it exists through “a *coming* and a *passing*, an *extending* and a *penetrating*” (Nancy 2007: 13), then its absent state, the edge of its manifestation at the auditory horizon is an essential component that is necessary for generating its meaning and sense in resonance (Nancy 2007: 7).⁹

⁹ “To be listening is always to be on the edge of meaning, or in an edgy meaning of extremity, and as if the sound were precisely nothing else than this edge, this fringe, this margin—at least the sound that is musically listened to, that is gathered and scrutinized for itself, not, however, as an acoustic phenomenon (or not merely as one) but as a resonant meaning, a meaning whose sense is supposed to be found in resonance, and only in resonance” (Nancy 2007: 7).

3.2

Enaction

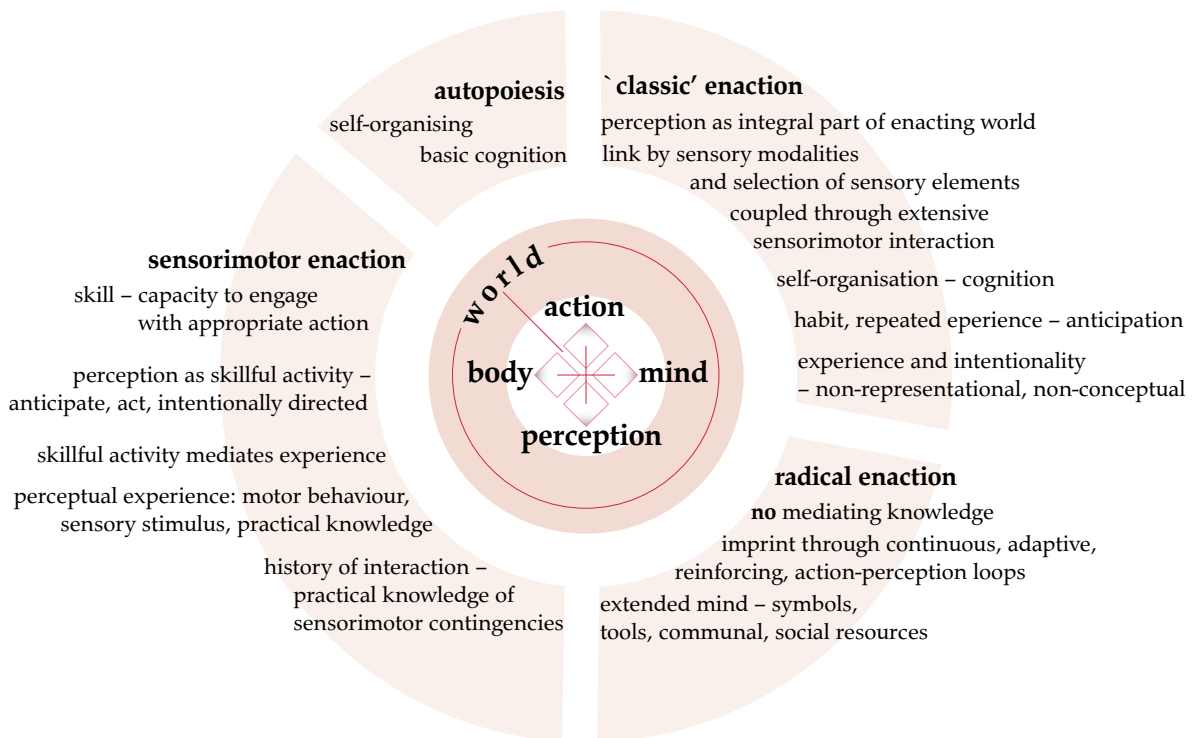


Figure 3.3: Enaction principles discussed in this section.

In the musical performance situation, the body's relation to instruments, other musicians, the audience, and the musical environment in general depends to some extent on low-level corporeal processes of sensing connections and feedback in the action-perception loop. Many of these connections are bodily rather than mental, pre-reflective rather than conscious, sensations rather than perceptions, and occur at fundamental levels of physiological sensory and motor integration. Considering the interrelation with the environment as the main factor for constituting bodily awareness and possibly mental processes, enaction provides a way of understanding our basic bodily engagement with the world.

3.2.1 Original Conception

Enaction is the intertwining of action and perception with the environment. "A living organism *enacts* the world it lives in; its effective, embodied action in the world actually constitutes its perception and thereby grounds

cognition” (Stewart et al. 2010: vii). Enaction is the interrelation between mind and body that produces and/or arises out of the way cognition (the basic mind) is a function of the sensorimotor interdependency and interaction with the environment. In some definitions a kind of world-making is attributed to enaction as well, but not necessarily providing a propositional representation through mental content.

The concept of Enaction was formulated a quarter century ago by Varela, Thompson, and Rosch (1991), the term itself might be regarded as a conflation of ‘embodied action’ but also relates to the idea of self-generating context by acting, that is, ‘enacting’ the relationship to the environment. They posit that having a body with sensorimotor capacities and by being embedded in a biological, psychological and cultural context, perception, and action form the inseparable foundations for lived cognition. This is the result of perception being guided by action in continuously reinforcing loops that leave imprints in the organism, which may be called cognitive structures (Varela et al. 1991: 173). They emphasise that perception is not merely a passive conduit from the environment to the organism, that it is not merely the result of an imprint from the embedding environment, but that perception is an integral part of ‘enacting’ the surroundings, of bringing forth the world. The organism and its world are interdependently linked by the specification of sensory modalities and the selection of sensorily relevant elements (Varela et al. 1991: 174). The embodied organism or situated agent is continuously coupled with its context through the mediation of sensorimotor action, and obtains an identity through self-initiated, autonomous actions that are the result of self-organising patterns of neural activities, that is, cognition. The continuous interdependence of sensation and movement influences, yet does not entirely constitute those self-initiated processes. However, it is centrally responsible for providing to the enactive, situated organism “meaningful world items in an unceasing flow” (Varela 1999) (for a concise overview over the different ideas collected under the *enactive approach* see (Thompson 2007: 13)).

In this framework *embodiment* can not be merely understood as the fact of *possessing a body* and being encased in a body with its mass and well-defined extension and limits in the physical world. On the contrary, it needs to be considered as the embedding and enmeshing of an organism

within its environment through *extensive* sensorimotor interactions (Hutto and Myin 2013: 6).

The type of cognition that originates from embodied interaction exists both in simple and complex organisms. Even in the most primitive life-forms, the engagement through an adaptive action-perception loop gives rise to a type of perceptual experience. This experience is charged by the phenomena that it produces the intertwined enactive relationship with the environment. By virtue of the self-organising activities it expresses a sort of intention. In and by themselves, experience and intentionality are not representational or conceptual, they merely reflect the coupling to the world. Nevertheless, they are a form of cognition and therefore in the most basic of ways form the beginning of mind, in all organisms, be they simple or complex (Hutto and Myin 2013: 13).¹⁰

Life-Forms

Experience, on this low level, cannot be equated with knowledge, not that of the propositional kind at least. But it exceeds the realm of pure sensory input triggering a reaction, and does so by leading to changes, inside or outside the body, which enable altered perception-action couplings at a later time. The looping, continuously repeating exchange from organism to environment becomes a central factor, where experience is the reflection of this history, and acquired behaviours form habits of a sort (Hutto and Myin 2013: 17). Layered, repeated experiences also give rise to a fundamental cognitive capacity, that of anticipation. On the simplest level this capacity arises from the variety of experiences collected during the continuous ‘enactive’ engagement with the environment and enables having ‘expectations’ that are not directly derived from the situation at hand, but rather from its similarities to previously encountered situations. (Hutto and Myin 2013: 37).

Anticipation

It must be emphasised that even if coupling through action-perception adaptation and guided acquired experiences constitutes cognition, in no way does this imply awareness or consciousness on the part of the organ-

Skill

¹⁰ The following is the definition of cognition by the original proponents of enaction and autopoiesis in relation to biological systems. “A cognitive system is a system whose organisation defines a domain of interactions in which it can act with relevance to the maintenance of itself, and the process of cognition is the actual (indicative) acting or behaving in this domain. Living systems are cognitive systems, and living as a process is a process of cognition. This statement is valid for all organisms, with and without a nervous system” (Maturana and Varela 1980: 13).

ism. One way to describe the way behaviour gets shaped by repeated exposure to the environment with a given set of sensorimotor capacities and through it the acquisition of experience, is by the development of skills (Howard et al. 2015). On the most basic level a skill is the capacity to engage in a situation with an appropriate action. This entails having the appropriate sensorimotor capabilities but also possessing a way of intentionally and effectively entering into an ‘enactive’ exchange with the surroundings. So in more complex circumstances skills encompass the ability to anticipate, to act and to intentionally direct the process of engagement. This connects to the phenomenological idea that action determines perception, which is itself determined by availability for action, and in this intertwined manner ‘enacts’ perceptual experience, thereby making perception a kind of skillful activity (Noë 2004: 2)(see Section 3.2.3).

3.2.2 Autopoiesis

Before formulating the idea of an intertwined relationship between organism and environment as the concept of ‘enaction’, the biologists Maturana and Varela were investigating biological systems and cell mechanisms (1980). They were investigating how single-cell organisms function as autonomous systems¹¹ in relation their ‘milieu’ and what the minimal conditions and constraints for living at that level are. The ability of these organisms to regenerate themselves, and to self-organise within themselves and within their environment is understood and defined by Varela as ‘autopoiesis’.¹² This mechanism describes the capacity for the living organism to enter into an exchange with its environment, maintain itself as a separate entity within it, and to self-organise, replicate, or repair its constituent parts. Later proponents of ‘autopoietic’ enactivism also contend that by virtue of the basic conditions that connect the organism with the environment through action and perception, emotion, as well as self-organising dynamics, basic *cognition* develops (Thompson 2007). By ex-

11 With regard to this domain of investigation, Varela’s later co-author Thompson (2007: 44) states that: “the paradigm is the living cell. The constituent processes in this case are chemical; their recursive interdependence takes the form of a self-producing, metabolic network that also produces its own membrane; and this network constitutes the system as a unity in the biochemical domain and determines a domain of possible interactions with the environment.”

12 Greek from the verb ‘poiein’, to ‘pro-duce’ the passage from concealment to into being (Agamben 1999), to make, generate, or create.

trapolating from a simple to a complex, second-order organism such as the multi-cell organism of the human body, they claim that “the human mind emerges from the self-organising processes that tightly interconnect the brain, body, an environment at multiple levels” (Thompson 2007: 37).

The perspective provided by the autopoietic understanding of enaction, through emergent properties,¹³ perception, cognition, and basic mind, provides a low-level, systems-theory informed description of processes on a cellular level. This is a powerful way to address the question how to define life as such and the necessary conditions for the appearance of a minimal form of cognition. The evolution from these low cellular levels to the human forms of enaction through action, perception, and cognition is a large step which is not covered by this perspective. Yet, from this precise and narrow perspective emerges the wider view on ecological embedding that leads to the perspective of sensorimotor *enaction*.

3.2.3 Sensorimotor Enaction

Building on this perspective, and shifting the focus from biological systems to sub-personal processes, the position established by sensorimotor ‘enactivism’ claims that action, perception, and experience are intrinsically intertwined. The claim is that “perceiving is a kind of skillful bodily activity” (Noë 2004: 1), where the mastery of navigating the environment generates emergent experiential capabilities without the need for top-down, cognitive input. The relation between sensory experience and movement, mediated by skillful use of implicit, practical, non-propositional knowledge generates perceptual experiences. In the continuous feedback loop between behaviour and sensory stimulation, experience is inscribed on a pre-reflective, sub-personal level. Through the continuous and direct interaction with the context and by leveraging the practical knowledge obtained, “perceptual content becomes available to experience when perceivers have practical mastery of the ways sensory stimulation varies as a result of movement” (Noë 2004: 119). The repeated process generates, as we have already seen with Merleau-Ponty, a habit that develops during and

¹³ “In complex systems theory, an emergent process is one that results from collective self-organization. An emergent process belongs to an ensemble or network of elements, arises spontaneously or self-organizes from locally defined and globally constrained or controlled interactions of those elements and does not belong to any single element” (Thompson 2007: 60)

because of a ‘history of interactions’ (Myin and Degenaar 2014: 94), which is what produces practical knowledge of the sensorimotor contingencies (O’Regan and Noë 2001).¹⁴

*Non-
Representational
Resonance*

Instead of relying on an internal representation through a type of cognitive model, by virtue of the enactive interweaving, the world itself becomes “an external memory” that is “probed at will by the sensory apparatus” (O’Regan and Noë 2001: 946), “guided by practical knowledge of the effect movement will have on” the sensory stimulus (O’Regan and Noë 2001: 970). In the different sensory modalities, different dependencies on patterns of contingencies exist. These patterns inform how “perceptual experience emerge from the continuous and reciprocal (non-linear) interactions ... and is thereby constituted by motor behaviour, sensory stimulation and practical knowledge” (Thompson 2007: 256). The sensorimotor position insists that there is no propositional or conceptual knowledge involved in generating an experience, and that having expectations—sub-personal *protensive* capabilities (see Section 3.1.2)—concerning the variations effected by movement constitutes the central element of practical knowledge (Noë 2004: 119).¹⁵ Thus the ‘embodied’ relationship with the environment obviates the need for internal, symbolic representations (Myin and Degenaar 2014: 90).¹⁶ Rather than relying on a representational model of the world based on propositional knowledge, so-called practical knowledge, that is, the imprint through continuous, adaptive, and reinforcing action-perception loops, can be considered to emerge out of the resonance phenomenon. The perceiving organisms, through the repeated process of adapting to external impulses and the resulting environmental changes of its own action in a looping manner, enters into a resonance with its context. In fact, from its first engagement onwards, the perceiving organism never leaves the resonating relationship with its world, and through its history of interactions obtains a sensitivity to the changes in the environment, in a

14 Sensorimotor contingencies are describes as “the ways in which stimulation in a certain sense modality changes, contingent upon movement of actions of the organism” (Hutto and Myin 2013: 25).

15 Noë makes this point abundantly clear with the claims that “the work of the enactive approach is done by the perceiver’s expectations of the sensory effects of movement, not their knowledge of those effects” (Noë 2004: 119).

16 This means that practical knowledge of this kind is not a mental construction; it is independent of symbolic mental propositions and rather an imprint through the continuous exposure to the environment that might even be generating mind in the first place.

state of ‘attunement’ (Myin and Degenaar 2014: 93). Through this interactional relationship that is taking place in a continuously self-reinforcing cycle, the adaptation to external environmental conditions serves to coordinate the behaviour in the face of stimulation. Above all it enables anticipation or expectation, which is the essential skill necessary to effectively negotiate changing situations. Experience can therefore be described as patterns of “changes laid down in an organism’s history”, where even “without being representational, these changes can still retain their causal power and allow for a bridge between the past and the present” (Myin and Degenaar 2014: 94).

3.2.4 Radical Enactivism

In the field of epistemology in general, and in the discourse on enaction in particular, two types of knowledge are distinguished: propositional knowledge, that is, ‘knowing that’, and practical knowledge, that is, ‘knowing how’ (Ryle 1949). In the sensorimotor position on enaction, the fundamental claim concerning the generation of perceptual experience is based on the notion that skillful activity that is informed by knowledge of sensorimotor contingencies *mediates* experience (O’Regan and Noë 2001: 940). The capability of actively engaging with the environment therefore depends on the “readiness to hand or ‘knowledge how’ based on the accumulation of experience in a vast number of cases” (Varela et al. 1991: 148).

With the aim of better understanding “the nature of experience” (Hutto 2005: 403), the radical enactivist position criticises the recourse to the claim that any kind of knowledge is involved in generating basic cognition and mind.¹⁷ In order to clearly demarcate their position from cognitivism and to dispel any ambiguities regarding the denial of requiring information or content for engendering cognition, they state that any form of basic mind is *content-less* and *non-representational* (Hutto and Myin 2013: 5). Radical Enactivism “not only retains the enactivist’s hostility to cognitivism, it defines itself in such terms” (Menary 2006: 11)

With the intention of cementing this claim, two complementary theses are brought forward that address this problem: “The Embodiment Thesis

¹⁷ Hutto states that “the fact is that the nature of know-how is not always carefully explicated and this is important because enactivism relies so heavily on this notion for its distinctiveness” (Hutto 2005: 389).

... equates basic cognition with concrete spatio-temporally extended patterns of dynamic interaction between organism and their environments” (Hutto and Myin 2013: 5). “The Developmental-Explanatory Thesis ... holds that mentality-constituting interactions are grounded in, shaped by, and explained by nothing more, or other, than the history of the organism’s previous interactions. Sentience and sapience emerge through repeated processes of organismic engagement with environmental offerings” (Hutto and Myin 2013: 8).

The first thesis is very closely aligned with the point of view of ‘autopoiesis’ that we’ve have already seen (3.2.2). The distinctive feature of the radical position might be the emphasis on the fact that the type of cognition rendered possible by the dynamic engagement of organism and environment is considered as a kind of ‘proto-mind’. This statement contrasts the point of view that cognition, not mind, is a function of the behavioural or experiential engagement of the organism with the environment (Thompson 2007: 124).¹⁸

The second thesis emphasises the temporal and repeated characteristic of the organism’s engagement with its environment to explicate the generation of a basic mind through nothing more than the organism’s history of exposure to the environment. In contrast to the sensorimotor position, that postulates that the exposition to the variances in perception of ‘sensorimotor contingencies’ generates the practical knowledge needed for cognitive experience, in the radical position, the repeated interaction with the environment suffices to engender basic cognition. In a sense, interaction history replaces accumulated experience and behavioural patterning, and the (neural) imprint of sedimented engagements replaces conceptual or representational mental contents. Thus perception as temporally extended explorations of the environment is not depending on any kind of ‘mediating knowledge’¹⁹ in order to generate experience and perceptual presence (Hutto 2005: 399-400). The only form of information accepted by the

18 “‘Autopoiesis’ pertains to the self-producing organization of a living system, whereas ‘cognition’ pertains to the behaviour or conduct of a system in relation to its environment” (Thompson 2007: 124).

19 “One could always define the changes brought about by the history of interactions as (implicit) knowledge. The real worries arise when these get a causal role, when this knowledge ‘mediates’ current behaviour. For then the ‘knowledge’ is no longer ‘implicit’, or merely in the patterns of behaving or acting, but it stands separate from these, to guide them. The latter is a typical cognitivist idea and the concern of Radical Enactivism is that sensorimo-

radical position is *co-variance*, that is, the causal link between an present state of affairs and its producing state of affairs (for example, the footprint as a trace of an individual's foot) (Hutto and Myin 2013: 66). This relationship does not by itself carry semantic or intentional content, as long as no interpreting action takes place.

Even though radical enactivists do not fully endorse the extended mind hypothesis because of its cognitivist and representational focus (Hutto and Myin 2013: 138), the necessity for the interactions with the environment to generate cognition provides a strong argument for a mind that is exterior to the brain (Hutto and Myin 2013: 136, Noë 2009). In this sense, using the radical enactivist position allows to affirm that “basic cognition is not contentful; basic minds are fundamentally, constitutively already world-involving. They are, as we say, extensive” (Hutto and Myin 2013: 137). This perspective reflects the phenomenological principle of being-in-the-world (see Section 3.1.2). The active externalist position proposed by Clark and Chalmers (1998) acknowledges the “active role of the environment in driving cognitive processes”, where *in some cases*, through reciprocal interaction, a ‘coupled system’ emerges. The radical position insists, however, that *any* cognition is extensive, linked and dependent on the external elements in the world (Hutto and Myin 2013: 137).

Finally, the radical position doesn't deny that there *are* contentful and representation-based cognition processes, playing an important role in life, but they argue that this capacity is “a late-developing, scaffolded, and socially supported achievement” and that it originates from shared “social practices that make use of external public resources, such as pen, paper, sign and symbols” (Hutto and Myin 2013: 152). The capabilities that develop from operating on external symbols enable propositional thinking, which may even detach itself from the context within which it occurs, as an abstract, decoupled activity on internal symbols. Nevertheless, the “coupled activities are the ultimate basis for decoupled contentful activities” (Hutto and Myin 2013: 152), which would not be possible without the external framing. This frame encompasses social and even cultural dimensions from where originate the “communal and collective resources that

*Extended,
Extensive and
Scaffolded Mind*

tor enactivism commits to that idea by committing to ‘mediating knowledge’ ” (Myin 2016, personal communication)

stably augment and expand the resources provided by our basic cognitive capacities” (Hutto and Myin 2013: 153). In this wider setting, we encounter the expanded resources in cultural practices such as rituals, music making and the significations of performance on the social life.

3.2.5 Connections and Differences

Laying out Phenomenology and Enaction side by side permits to understand the influences, interactions and key differences between the two positions. The timeline in Figure 3.4 shows that almost a century lies between the beginning of each field, possibly making the enactive position a child of Phenomenology.

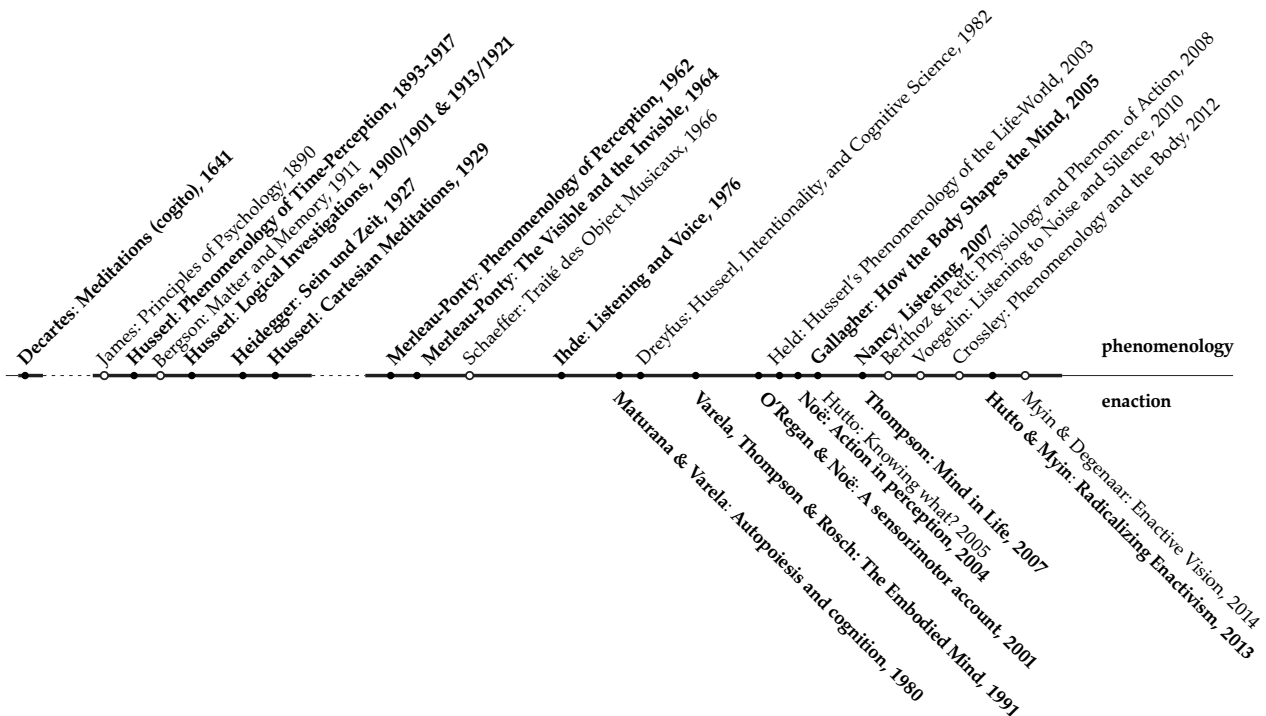


Figure 3.4: Timeline of cited authors, juxtaposing the two sections on Phenomenology and Enaction.

However, the inheritance is not direct since the two positions are not situated in exactly the same field. Whereas Phenomenology is situated within philosophy, and based on the positions and methods of this discipline extends and disrupts certain of its premisses, Enaction sits at the boundary between physiology, cognitive sciences, psychology and philosophy. This difference has historical reasons, in particular the developments in the sciences between the early to mid twentieth century, the last

years of the twentieth century, and the first decade of the twenty-first century. The paradigm shift that stands between the two viewpoints is visible in the interdisciplinary and boundary-crossing position of Enaction.

The historical background of Phenomenology reaches back to Descartes and has strong echoes with psychology of the late nineteenth century. The important contribution of this position, in particular in the work of Husserl, needs to be seen in relation to the prevalent discourse of its time. The development and continuing impact of the work of later thinkers, in particular Merleau-Ponty and Heidegger, makes Phenomenology one of the important strands of twentieth century Philosophy. In a similar manner, the development of Enaction from its roots in cellular biology, to the application in defining the ecological embedding of different types of cognition, proves to be a significant strand in philosophical psychology and offers important contributions to the position in the cognitive and neurosciences today. The influence of the phenomenological perspective on the development of Enaction is perceivable, even if different terminologies are used and the scopes of the topics are different. Enaction's main statement about the indissociable intertwining of body, perception, and environment echoes the phenomenological tenet that mind and body are coupled with and dependent on the world to exist. The main difference between the two positions is that Enaction does not take into account the self, the other, and culture to explain how cognition emerges from the body's connection with the world. Inversely Phenomenology does not consider physiological effects and the absolute dependency between action and perception to formulate the intertwined relationship between the body and the world. The two fields can be considered as two lenses with different focal lengths, one trained on the macro level at biological and ecological processes, the other in a wide angle at the perceptual link on sub-personal and pre-reflective levels and their constitutive effect on cognition. Thanks to these different scopes the two perspectives can coexist and provide complementary views on the body and the world. "The conception of the phenomenal body," states Hansen (2006: 41), "as a kind of primary access to the world (a world that includes the body) resonates with the privilege of the operational perspective granted the living (human) organism in autopoietic theory. Specifically, it establishes the phenomenal body and its operational

perspective, not as a correlate of the objective body and the observational perspective, but rather as the source of both perspectives, indeed the very possibility of having a perspective as such.”

3.3

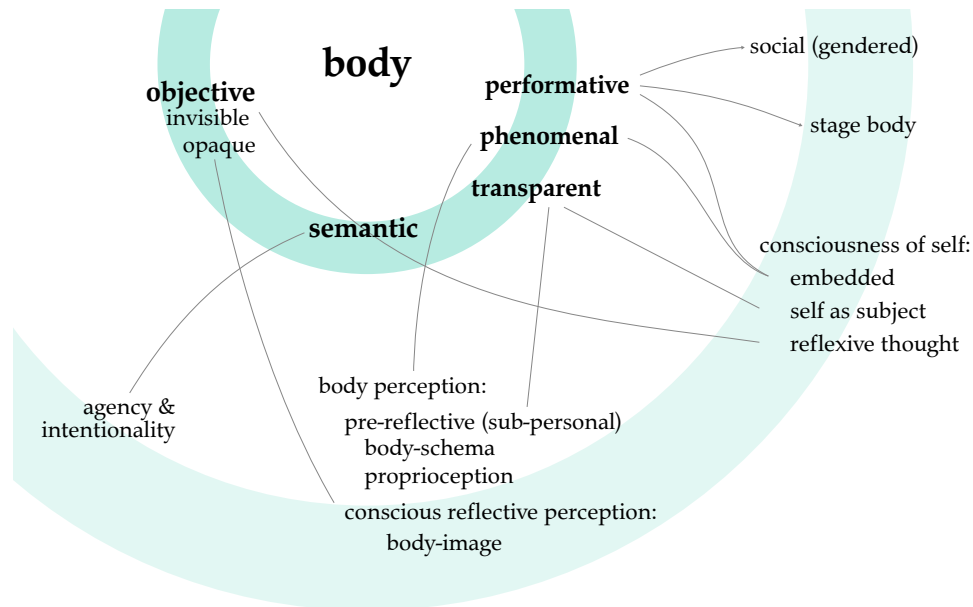
Body Awareness

Figure 3.5: Diagram of body awareness, perception, and signification.

Let us move from the general perspectives of Phenomenology and Enaction that address how body, mind and environment may provide foundations to cognition to body awareness in the specific context of the musical practice at hand. The musician's body is the site of performing, perceiving, and experiencing musical actions. It represents a layered, complex, and interwoven manifold, where all the concepts and perspectives seen thus far intersect, interact, and contribute to the charge that makes a performance a significant cultural event. Underneath the conscious perceptual content that the musician is occupied with while performing, we find a variety of elements constituting pre-reflective bodily awareness. Within the context of this chapter the perspective chosen addresses primarily bodily effects, capabilities, and categories of body awareness, and the interdependence between perception and action.

3.3.1 Levels of Bodily Awareness

Acknowledging the presence of a multiplicity of possible perspectives offers an approach to mapping body perceptions from different angles. Even when limited to perception and awareness, different ways of consid-

ering the body need to be taken into account. Depending on the chosen perspective, they deal either with the ‘given’ physiological properties of corporeal perception or the ‘constructed’ experience of the music making body.

Performative

The term ‘performative’ was first defined in the linguistic domain and signified speech and utterances as a signification constituting act (Austin 1962). The term ‘performative body’ was defined in critical theory within a gender discourse and signifies the “stylized repetition of acts” (Butler 1990), which constitute the gender identity. For a more in-depth unfolding of the term ‘performative’, see Section 3.5.

In the musical and performing arts context, the term ‘performative’ is interpreted on at least two levels. On the primary level, of course, it simply means ‘belonging to the domain of the performance’. In this simple sense performance denotes activity in a social context; here a performative body could also be called ‘the stage body’. In the second sense, the meaning of the term is similar to the two usages shown above where a constitutive process is implied. However, since the body’s main domain is that of action, the term ‘performative’ is also tied to the notions of agency and intentionality, efficiency and effort.

*Types of Body
Perception*

Based on the enactive and phenomenological concepts, Legrand (2007) proposes the distinction between four types of body perception: the opaque body is the object of an observational body experience; the invisible body is the body that is absent from experience; the transparent body is experienced only ‘as one looks through it to the world’; the performative body involves a pre-reflective experience of the body. The first two types of perception can be related to a bodily self-perception that is either ‘objective’ and observes the body as a separate entity or does not take the body into account at all. These perspectives look at the body either from the outside or from nowhere; in a musical situation the body becomes either an object or instrument, or it disappears entirely from view in favour of an awareness of music, or symbols, technology, or social dimensions. The latter two modes involve the body as connected in an implicit way with the experience, either as a foundational condition of perceiving the ‘world’ or below the threshold of perception of a peripheral body experience, in a pre-cognitive awareness of one’s own corporeal presence.

These inner perspectives produce a duality that permeates the situation of the performing musician where both modes are active in anchoring the experience. Listening and the constantly on-going adaptation of the performance through the intentional action of musical interpretation happens through the transparent body, in the first person perspective. The observational awareness or attention, which is directed towards the musical elements that are being performed, is peripherally framed by the transparent body perception, be it with regard to the situatedness on stage or particularly in the interaction with other musicians. In a certain sense, the concept of ‘performativity’ is applied in an analogous manner to awareness, where agency becomes a necessary constituting element. “This performative awareness that I have of my body is tied to my embodied capabilities for movement and action ... my knowledge of what I can do ... is in my body, not in a reflective or intellectual attitude” (Gallagher 2005: 74).

The physical actions of performing music on the instrument and the control over the instrument and one’s body occur predominantly in the pre-reflective performative body guided by motor patterns and body-schematic elements that are acquired as part of extended training and practising. These actions are based on a knowledge about what the body can do, which is pre-reflective and situated in the body itself, not on the conscious awareness of it. Thus the specific controls of the body parts necessary to produce, sustain and expressively control sound are all integrated on a level below that of conscious control: “expressive movement ... is necessarily embodied—enabled and at the same time constrained in specific ways by the structure and performance possibilities of the motor system” (Gallagher 2005: 146). Since the adaptive feedback concerning both the auditory and the tactile or kinaesthetic loops (Kim and Seifert 2010) continuously affects the performance at a pre-reflective level, the body takes over most of the control, running in a mode of performative awareness. Within the musician, the intentional musical actions and the awareness of them engender a type of conscious content at a higher level of representation; on the one hand they appear as abstract musical symbols, notes, words, or sounds that have their own perceptual identity as objects in a metaphorical sense. The body-schematic patterns needed to ‘play’ musical elements, on the other hand, do not appear in reflective

awareness, thus leaving room for ‘symbolic’ perception, such as melody, harmony, and rhythmical structures.

The main question is now what kinds of awareness the performing musician experiences. Underneath the conscious perceptual content that occupies the musician while performing, we find different elements that constitute pre-reflective bodily awareness (see Figure 3.5). The primary stratum might be found in the neurological and physiological mechanisms of proprioception and the somatic, kinaesthetic sense (Berthoz 1997). Further modes of awareness include the body-image and body-schemata, pre-reflective somatic perception and musical awareness, the impact of agency and intentionality, and different degrees of awareness of self during performance.

3.3.2 Proprioception

Proprioception is the fundamental constitution of the sense of agency and ownership of movement, and is constituted by stimulation through the actions of the agent (Gapenne 2010: 168).

At this level, a large number of bodily signals are present and form a system that enables automatic control of posture, locomotion, and physical actions adapted to specific tasks. “Besides somatic proprioceptive information from kinetic, muscular, articular, and cutaneous source, contributions also originate from the vestibular and equilibrical functions. Visual sense is also a source of information vital to posture and movement” (Gallagher 2005: 24). These elements together form the basis for the development of body-schemata, which are “a system of sensory-motor capacities that function without awareness or the necessity of perceptual monitoring” (Gallagher 2005). This proprioceptive information is defined as the result of a non-conscious process. Somatic and proprioceptive awareness, however, can take both a reflective and a pre-reflective form, a distinction that is important for my argument in the context of the performing musician. If “the first element of broad self-consciousness that somatic proprioception provides is an awareness of the limits of the body” (Bermúdez 2000: 149), then for the trained instrumentalist the physical contact with the instrument whilst playing provides a pre-reflective self-awareness that is informed by the instrument, constitutes an element of

the sense of agency, and generates a clear context for the bodily awareness (Gallagher and Marcel 1999). A body-schema can be extended through habituation as shown by Merleau-Ponty in his example of the woman with the feather in her hat (Merleau-Ponty 1962: 165).²⁰ Similarly, a musician's training aims at imprinting instrumental dimensions and shapes as well as the sound-producing and -controlling actions and adaptations into extended body-schemata that will be executed pre-reflectively. For the expert musician, the intentional actions that are part of playing the instrument will build upon this pre-noetic knowledge without the necessity of making the body experientially visible. "To be proprioceptively aware of one's body does not involve making one's body an object of perception ... Proprioceptive-kinesthetic awareness is *usually* a pre-reflective (non-observational) awareness that allows the body to remain experientially transparent to the agent who is acting" (Gallagher 2005: 73, my emphasis).

3.3.3 Body-Image

On the next level peripheral awareness of the body may be transformed into fully focused attention on the body. Since the musician, through instrumental training, has achieved a fusion between body and instrument in the domain of the body-schema, the perception will be observational and begins to constitute a body-image. This "body-image consists of a system of perceptions, attitudes, and beliefs pertaining to one's own body" (Gallagher 2005: 24). The body comes to the foreground experientially, when a challenging aspect of instrumental performance reaches the limits or exceeds the scope of what has been entrained. This occurs during the learning phases of instrumental training and to a lesser degree during any practicing or rehearsal. Like a dancer who learns a new choreography, the positions and movements need to be consciously controlled (Legrand 2007: 501) but in relation to the instrument. However, in this instance of conscious body-perception, the instrument may revert to its original object character, and fall outside the fused integration of body-schematic autonomous actions. The physical act of playing changes in that situation to a state where the individual instrumental actions have to be

²⁰ "A woman may, without any calculation, keep a safe distance between the feather in her hat and things which might break it off. She feels where the feather is just as we feel where our hand is" (Merleau-Ponty 1962: 165).

controlled in a willed (intentional) manner. The body might in this case be perceived consciously and reflectively, but with the instrument and the individual playing actions of the body dominating the perceptual field as separate entities.

3.3.4 Awareness during Music Performance

The next tier of awareness that follows involves the body only indirectly, since it deals with musical awareness. A self-observational awareness is in place, whenever a performance moment occurs. Beyond the somatic or kinaesthetic feedback loop that is guided by sensory-motor adaptations in the instrumental control, the auditory perception guides expressive aspects of the performance through a different feedback loop. “When the status of habituation is reached, the body-image retreats into the background in order to enable the concentration on the sonic-expressive shaping of the entire piece of music, something to which the pre-reflective, proprioceptive and auditory body-senses are continuously subjected” (Kim and Seifert 2010: 111, my translation). This would indicate that a lower-level listening occurs, which is pre-reflective and forms part of an overarching musical awareness concerned with global control. The best example of this awareness is the perception of musical forms, especially of longer duration. Through a low-level listening, a sort of reduced listening (Schaeffer 1966), without conscious involvement and without reflective or attentional focus, non-propositional memory serves a cumulative function. This memory buffers musical impressions without a descriptive or narrative level attached to them and forms part of the perception of the flow of music and the passing of time.

Time perception can be regarded as a function of memory, of storing the stream of lived experiences (Held 2003), which itself provides a constituting part of self-awareness and the higher-level extended consciousness (Damasio 2000: 172 ff.). The three-fold nature of the present, based on anticipation, memory and an extended present (see Section 3.1.1), enable musical anticipation and the sensation of elapsed, fluid time, and durations. The feeling concerns rather short time-spans; only through non-observational listening can longer musical forms be felt. This is a type of pre-reflective perception that does not work by counting beats or se-

quences of other musical events—even though musicians are trained to count rhythmical and temporal forms to orient themselves in large temporal arches—but which occurs at a lower level. The ability to ‘absorb’ the sum of auditory impressions and musical elements and—as if from the amount of material accumulated—‘deduce’ the elapsed time evidently belongs to the domain of pre-reflective perceptual skills useful in music.

Pre-reflective awareness of musical elements can, with habituation, sink to a lower level of pre-reflective somatic proprioception. This closes the loop between the musical awareness played out on a metaphorical level (Lakoff and Johnson 1980) and the sensory-motor integration in the body. An example for this is the perceptual skill of intonation, which is the capacity to fine-tune the pitch of a note on instruments, which don’t offer a static system of tuned notes, such as strings or horns. Through long periods of ‘attunement’, the musician can obtain the capacity for a sort of ‘instinctive’ pitch correction, related either to other voices within the music or in relationship to the sonic characteristics of a single instrument. Another example is rhythm and the micro-timing effects that occur when complex rhythms ‘lock’ or ‘groove’, such as in African, Afro-Cuban, or Jazz music (Iyer 2004; Meelberg 2011). Training of consciously focused awareness can give way to a pre-reflective adaptation of timing and rhythm, which relies on auditory but also kinaesthetic and proprioceptive bodily cues. This skill does not exclusively belong to trained musicians; any person will experience this to varying degrees, for example when dancing.

3.3.5 Agency and Intentionality

The sense of agency is important for the higher level of self-awareness that is needed to perceive and maintain the coherent stream of perception and actions that are making up the musical performance. However, in analogy to the bodily awareness that occurs both in the neurological, physiological, and the somatic domains, as well as within the reflective self-awareness, the sense of agency is a constitutive element of the low-level processes that the body establishes to guide its actions *and* of conscious self-reflection. “[T]he sense of ownership for actions depends on sensory feedback for proprioceptive, visual tactile sources. It is generated as action takes place. The sense of agency, however, is based, in part, on

pre-motor processes that happen just prior to the action” (Gallagher 2005: 237). Bidirectional streams of sensory information, the afferent and efferent streams, are constantly compared and integrated in the lower regions of the brain and produce a regulatory feedback that forms part of our awareness of actions. “To the extent that consciousness enters into the on-going production of action, and contributes to the production of further action, even if significant aspects of this production take place non-consciously, our actions are intentional” (Gallagher 2005: 238).

A sequence of actions needed for the performance of musical materials is at the outset always intentional. Even when a large part of fine-motor adaptations and body control remain pre-reflective, a higher-level awareness of musical contents fills the perceptual field of the musician. A consequence of how the sense of agency is constituted, however, can be seen in how a self-determined situation on stage, such as performing open-form music, creates a heightened level of awareness, both on the pre-reflective and reflective levels, thanks to a pronounced sense of agency and intentionality.

Intentionality is a big topic in philosophy of mind, which can be located on all strata of the constitution of cognition and consciousness (Searle 1983). “Intentional behaviour is characterised by the presence of a reason (i.e, motive, desire, belief) to act in a way that will bring about the intended effect. Two elements are constitutive of the phenomenology of intentional behaviour: the source of the action (i.e, the intention to act) and the perception of the effects of a given act. The link between the two is made possible through embodiment” (Tsakiris and Haggard 2010: 39–40). Intentionality and directedness are anchoring points for the interpretation of the actions of others and are recognised “in the dynamic patterns of the subject’s interaction with objects and people” (Proust 2003: 316). The goal-orientation of action and intentionality develops directly from perceiving the others bodily movements, not merely in the sensorimotor elements of movement, but in the dynamics of interaction, in the ‘kinetic melody’ and timings of the relation established to the environment and the target of action (Proust 2003: 300).²¹ In this context, as we have seen earlier, un-

21 “It is a fact of experience that when a perceiver observes someone else’s bodily movements, she *directly* perceives the movements as goal-directed and intentional. Moreover, what is consciously perceived and stored in memory is not the pure sensorimotor aspect of move-

derstanding intentionality makes an essential contribution to the perception of object-directed-ness of action (see also Section 3.4.2). In the performing arts context, intentionality and goal-directedness are not used as pragmatically as in everyday situations. A dancer, for example, moves and carries out actions with the body that are motivated by the shaping of dynamic flows and the relationships between body, time and space. The intentionality of these actions is clearly visible in the subjective assertion by the dance of dynamics of form and movement, but the goal-orientation is less immediately visible, it is encapsulated in the expressive language of the dance. In music, and in particular in electronic music, the perception of agency is sometimes blurred, made ambiguous by the use of automatic technical processes. This issue will be observed in the practice modules that are discussed in the later chapters of this thesis.

3.3.6 Awareness of the Self

The topic of consciousness is one of the big and hard questions of philosophy of mind. In the position taken up here the focus is put on the musician's self-perception and on the levels of explicit self-consciousness.

A distinction needs to be made between the physiological, somatosensory level of pre-reflective awareness which only generates a diffuse sense of self, but which, in an ecological, embodied manner (Bermúdez 2000: 131), engenders a 'core self' (Damasio 2000: 17). The reflective or explicit body perception builds on this lower level in order to contribute to the constitution of a sense of identity and provide the sense of the 'being-in-the-world' that Merleau-Ponty determines as the basis of all perception (see Section 3.1.2).

The different levels of awareness or consciousness depend on how explicit the elements presented to perception and reflection become. Three modes of consciousness of self can be related to levels of explicitness and are analogous to the body perceptions presented earlier. The first mode corresponds to the performative body and is "embedded within the experience of the environment, for example 'affordance', unreflective feeling of location and movement in space, proprioceptive awareness, feeling of act-

ment, but rather part of its teleological content, that is, a specific dynamic interaction between behaviour and environment, as involving *this* or *that* part of the body, with *this* kind of timing and *that* portion of space being a target of the action" (Proust 2003: 300).

ing. ... Elements within the content are explicit” (Pinku and Tzelgov 2006: 659). The second mode is analogous to the transparent body that constitutes the frame through which the world is perceived, without becoming explicit itself. It presents the self as a subject, the “[consciousness of self] as subject, e.g., intentional actions, being immersed in thoughts” (Pinku and Tzelgov 2006). The third type concerns “mental states which involve reflexive thought” (Pinku and Tzelgov 2006) and is analogous to the objective body observed as if from the outside. In this form of awareness, the self becomes explicit and an element of reflection: the self-perception comes to the foreground.

During a performance the musician oscillates between the three modes of consciousness of self. The primary sense of self, where it is embedded within the experience of the environment and the actions, is an indispensable and essential form of presence, and not just on stage. The performance is built on the foundation of a primary, pre-reflective, sub-personal awareness of the performing body and its extended body-schema that includes the instrument. In parallel, reflective awareness and attention gets focused on the intentional contents of the music, letting the body frame the experience in a ‘transparent’ manner. Finally, the body can become the focus of awareness itself, an object in the shape of a represented body-image, constituted through a conscious reflection about the corporeal activity and the emerging resonances with the environment (Kim and Seifert 2010).

Affordances

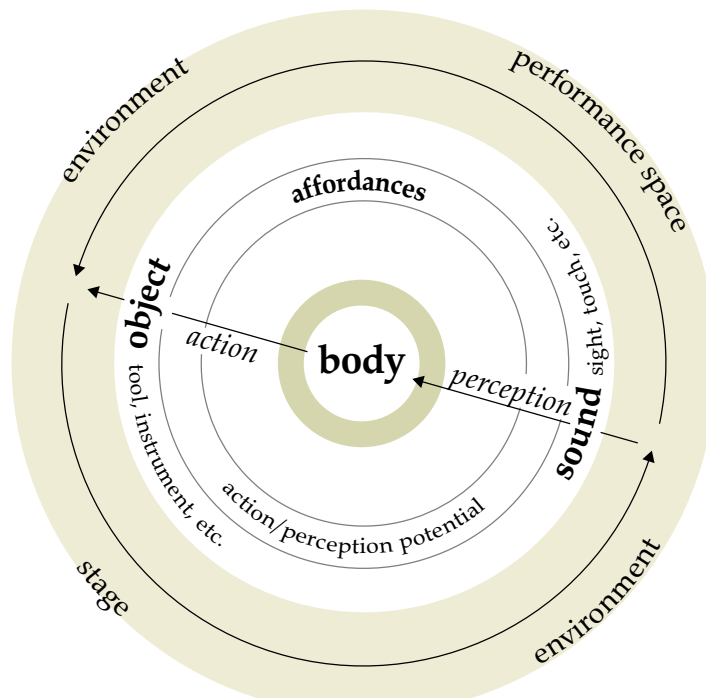


Figure 3.6: The relationships between body, object, sound, and environment as mediated by affordances. Note the action-perception loop that emerges from the cyclical influences.

When thinking of sound and music perception, the relationship to the sources of sounds is key and, therefore, also the relationship we have on a physical, sub-personal level with the tools and instruments that produce them, with the physics of sound, and with our auditory and psycho-acoustic capabilities. The concept of ecological embedding applied to music perception implies a direct relationship between source, sound, and subjectively perceived image.

What does the instrument offer to the musician in parallel or in addition to the production of sound? In what way is the materiality, the sounding potential, and the cultural significance of the instrument related to an ecological connection with the musician? And how do technological instruments, such as computers, change (within) that relationship?

As the source of sounds, musical instruments with their rich cultural history and field of associations have a profound impact on our imagination

of music making. With the exception of the voice, all man-made (traditional) musical sounds are generated by vibrating objects which exhibit specifically tuned physical properties. Within a single culture, the modes of sound production are commonly known and form the basis for understanding the act of music making (Feld 2012). Sounds that have never been heard before, and do not resemble any other sounds that were experienced earlier, are not easily identified, get confused with other sounds, or are simply ignored. The pre-reflective auditory processes responsible for these decisions are part of the filter and inhibition system most of our perception is based on. Since recognising sounds is an evolutionary necessity, we are highly attuned to categorising and localising a sound's origin rapidly and pre-consciously, even if that means occasionally mis-identifying it. This capability is transferred to recognising musical sounds and instruments, voices and acoustical signals.

*Ecological
Embedding*

'Affordances' are what James Gibson (1986) defined as the ecological potential, as that which an object or environment is offering in terms of actions or cognitive resources. The term denotes the process of perceiving "a value-rich ecological object" (Gibson 1986: 140). He derives the concept from 'Gestalt' psychology's terminology of valence, invitation and demand (Katz 1950), but emphasises the importance of ecological embedding. In his definition, the process of perceiving the potential of objects or other states of affairs for interaction is essential; the relational link between opportunity and its perception is what characterises an affordance. Perception is on the one hand the essential element that brings the potential to the surface, the embodied capabilities of the agent on the other hand are what permits it to experience and enter into an interaction with the object. "An affordance points two ways, to the environment and to the observer" (Gibson 1986: 141). The interdependence between potential and capability, between offer and mode of engagement, is extended to include inner sensation and outer perception, and operates on both pre-reflective and conscious levels, in a 'tuned' feedback cycle. For Gibson, this shows the manner in which "exteroception is accompanied by proprioception—that to perceive the world is to coperceive oneself. ... The awareness of the world and of one's complementary relations to the world are not separable" (Gibson 1986: 141). Recent research ties valence and arousal to

the constitution of emotions and memory (Kensinger 2004), and within the ecological perspective these dimensions play an important role. Through perception the value-rich aspects colour the subject-object relationship, leaving experiential traces that inform experience.

When looking at musical instruments as culturally defined objects, that were built with a very specific aim, the task of isolating and identifying affordances poses a challenge. To understand the scope of *objective* affordances (Paine 2009) that are clear in traditional instruments, but need to be deduced or extrapolated in Digital Musical Instruments, we also have to add the concept of *perceptual* affordances (Norman 1990) that emerge when entering into contact with the instrument. These perceptions form a multimodal field that encompasses the traditional five senses and emerges when attentional awareness is guided towards the instrument in any of the sensory modes. Perceptual affordances represent also the potential for perceptions that arise out of the *interaction* with the instrument. These secondary perceptions can be tied to the five senses as well, if they manifest themselves within the outside perceptual field and in direct relationship with the instrument. An example for this affordance is the sound generated from playing an instrument, that is contained in the auditory event that originates from an instrumental action.

Potentials

The perceptions and/or awareness that emerge *within* the player when interacting with the instrument, however, represent a separate type of perceptual affordance, which—even though derived from contact and action with the instrument—do not exist independently of cognitive or pre-cognitive processes of the performer (see Section 3.3.4). The inner effects of contact with the instrument are based on a kind of sensing that is occurring within the body, such as somatic, kinaesthetic, vestibular and equilibrium sensation. These effects can not be called perceptions, but rather belong to the pre-reflective, pre-cognitive levels of our perceptual system. An example of this type of affordance might be the level of comfort or the complexity of physical adaptation an instrument demands for its correct playing position, for example, holding the violin clamped under the chin. Or the pre-conscious adaptations to playing resulting from the perception of vibrational forces transmitted through the body, such as the modulation of a vibrato as felt through the changes in the vibrating string.

Object Perception

For the musician, the awareness of the instrument happens through an *object* perception. Even though the instrument might only be peripherally perceived, while the focus lies for example on the sound or the musical instrument, nevertheless this “object perception involves an experience that is *directed at* the object. The relation at stake here is ... an intentional relation” (Gallagher 2003: 56). When the musician shifts the attention from sound to sound production, the intentional focus moves from an outer perception of sound as a goal to an object perception of the instrument. In both types of attention the instrument is peripherally present and the awareness can at any time be moved onto this object. “Attention can be directed either proprioceptively or exteroceptively, and it can be ... viewed as an alteration of the balance between focal and peripheral awareness. ... Even when the attention is fixed firmly on the ... dimension of tactile awareness, the exteroception dimension remains ... in background awareness” (Bermúdez 2000: 139). The instrument, the musical content and the body may move to the periphery of the perceptual field or obtain focal attention as a ‘perceptual object’. In contrast, we perceive our bodies through an inner senses of proprioception and kinaesthesia. We can become consciously aware of our body as an object, but “it is also possible that proprioceptive awareness can function as a non-perceptual or non-observational self-awareness ... and as such might be regarded as a more immediate and more reliable form of awareness than object perception” (Gallagher 2003: 54). A musician’s training aims at imprinting instrumental dimensions, as well as the sound-producing and -controlling actions and adaptations into an extended body-image and a number of body-schemata. By understanding the interrelationship between the somatic and physiological layers of perception and the cognitive processes that are applied to interpret and act on them, an essential part of the communicative aspects of corporeal actions come to the foreground.

3.4.1 Instruments

A view on mechanisms and metaphors active in electronic music production should clarify the indirectness of this connection. The continuous search for *new* ‘interaction’ models or *new* interfaces for expressing music with technological tools shows the deficit with regard to the quality of

the connection in Digital Musical Instruments, in particular between the action and gesture domains and the sound producing processes. Beyond the attempt to resolve this problem by always adding new techniques and tools, the question to be asked should rather be if this deficit or conflict can be converted into a fruitful tension and how.

By looking at the most common instruments and techniques, we can identify basic principles of connecting the physical world of actions and gestures with the abstract domain of digital sound processes. The representation of digital processes needs to occur in metaphors, these processes are too complex to be grasped and acted on directly while performing. Using visual metaphors by displaying sound in waveforms or spectrograms is a common strategy. Physical metaphors see a widespread application as well, visible in the levers, wheels, knobs and sliders, as well as the analog device metaphors of the tape-reels, patch-bays, and signal-chains. By themselves, these metaphors are useful to enable easy access to complex sound processes, the problem is their limiting effect on our cognitive and perceptual capabilities.

There are a number of conceptual models for the control of digital sound processes which originate in real-world scenarios and can therefore cognitively be handled through behaviours shaped by everyday experiences. The two main models of control are those of the instrument and the cockpit. The first model builds on the instrument's dependence on continuous energy input to produce sound. Rather than presenting mechanisms for generating larger time-based structures, the instrument offers a palette of options, that need to be actively selected, combined and performed by the musician. The second model of action puts the performer into an observer perspective, where, from a position of overview, single control actions keep the system within the boundaries of the intended output, while the sound processes produce their output without the need for continuous excitation and control. A third and less common model is that of dialogical communication and interaction where generative aspects form part of the sound processes. The most interesting manifestations of this model generate an 'inter-subjective' exchange with some form of autonomous agent.

The types of interaction and their position on the conceptual axis between direct parametric control and 'natural interaction' depend on the

level at which the musician acts or ‘inter-acts’ with the digital domain. Different complexities demand different tangible objects and instrumental interfaces. In the case of one-dimensional and precise parametric control, individual objects such as knobs, sliders, or buttons are cognitively appropriate, since they represent in their physical form the singular dimension of the parameter and can be handled discretely. In the case of higher-dimensional or model-based action patterns, control objects with more degrees of freedom are required. The mode of ‘interaction’ with more intertwined dimensions should reflect the relationship and dependency of those degrees of freedom present in the digital domain.

The most extreme example of entangled degrees of freedom that we can cognitively handle encompasses our entire body. Leveraging this level of complexity, at least through extraction of information about posture and kinematic qualities of the body, is attempted by the camera-based motion controls for games, where full body movements are used for control. This might be appropriate when the goal is to affect a virtual body that mirrors the capabilities of the natural body. It becomes problematic, however, when the correspondence between the actions in the physical world and the result in the abstract digital domain are modelled after categories that originate in the abstract domain. Empty-handed and movement-based controls in an allocentric frame—an outer spatial frame of reference—work for metaphors of control that reflect spatial qualities. Object-based, instrumental actions with tangible interfaces in an egocentric frame—a spatial frame of reference anchored on oneself, for example with wearable sensors—or an object-centric frame, are effective for actions on abstract entities without clear correspondence in the real world. Digital instrument design and interface developments oscillate between these two poles. There is, however, a tendency to shift away from action and behaviour patterns that are based on the bodily capabilities shaped by object ‘interaction’ with physical instrument towards symbolic and metaphorical projection onto a disjointed digital model.

A smartphone with its touch-screen, for example, gets used as—but was also designed to become—a generalised object with repeatable and representable movement patterns, the so-called ‘gestures’ of pinch-to-zoom, swipe, and so on. These action patterns were copied from the natural

world. Slight dissonances or new interpretations of these patterns are learned and absorbed readily when constituting part of the interaction vocabulary of an information device are based on them. Technological instruments such as the turntable or a tablet get integrated rapidly into a musician's movement and instrumental vocabulary. Turntable-ism is a prime example of the re-appropriation of a music playback device into an instrument, subverting codes of musical style as well as social codes of 'stealing' music or the disregard for the 'authentic' musician's voice (Eshun 1998: 14). Today, in a further shift, the turntable finds itself translated into an abstract interface that is merely a representation of the turntable. The digital interface for DJs reconstructs the actions of scrubbing with a Vinyl Disc on a platter through a disk-like interface on a touch-screen or physical controller, which affords the same movement types and, through it, the same sonic transformations of digital content as a turntable. This kind of mimicry and design-genealogy within instrument building illustrates the fact that successful instrument developments engender cultural movement-, action-, and gesture-tropes, which survive technological transitions because of strong habituation and the effectiveness of the metaphorical elements they use. Electronic music performances provide a good use-case to observe these shifted relations. Here, the pattern- and image-projections occur in a pronounced manner and, in some cases, the motor imagery or gestural interaction models are translated into purely metaphorical forms.

3.4.2 Body-Object Relationships

When considering the importance that musical instruments have on our ability to imagine producing sounds in a meaningful manner, the primary relationship to take into account is that of an active body interacting with, exerting control over, and imposing intentions onto a tool or object. The 'body-object articulation' is a charged field and contains not just the pragmatic value of its usage, but also the signifiers of agency²², or in political terms the inherent power-relationship (Foucault 1977); the articulation constitutes a body-weapon, body-tool, even body-machine complex, which becomes a relevant topic and urgent concern in technological per-

²² It is interesting to consider the term 'agency' in its German translation: 'Handlungsmacht' could be translated back as the power to act (Stockhammer 2015).

formance practices and the way technological and information-bearing tools pervade our current life-world (Haraway 1987).

Even though the body-object-movement relationships and kinaesthetic patterns that are offered by technological instruments exist in the same domain as those offered by traditional ones, no new forms emerge, and culturally defined and explicitly designed motor images and interaction patterns prevail. In order to enable the manipulation of sound with intentional actions, even a technological instrument that is based on digital (non-tangible) processes to generate sound needs a control- or performance-interface that is based on physical characteristics; it needs to provide methods of access through proxy layers that enable physical or even gestural interactions. The way technological instruments mediate and alter the path from an imagined and anticipated sound-event to its sonic manifestation tells as much about the 'technicity' (Simondon 1958) of the instrument as about the basic mechanisms for making music we depend on.

The temporal unity of an action and its sonic result, for example, is a critical element to maintaining a sense of causality and agency. The translations that are necessary to link a physical action to the production of a sound expose the perceptual boundaries of the physical properties of sounding objects, moving bodies, and the action-sound coupling that are always present in the natural world. The immediate bond between bodily action and sounding result gets broken by the use of symbolic machines. The computer-programs with their associated graphical user interfaces are executing logical or mathematical operations in order to generate sounds. Although technology is optimised to hide this fracture, for example by becoming so fast as to appear immediate and transparent, our necessary and indissociable reliance on embodied perception for identifying sound sources as a matter of survival generates an inherent tension that permeates any performance with technology.

How this tension can be fruitfully exploited to generate meaningful relationships for performing arts is stated succinctly by Kozel (2007: 70–71): "If we create responsive relations with others and our environments that transcend language, then by means of intentional performance with technologies we can regard technologies not as tools, but as filters or membranes for

our encounters with others.” This statement emphasises the fact that musical imagination and performance is part of a deeply cultured activity and is always already oriented towards others (Decety and Chaminade 2003). This applies to all levels of ‘technicity’ of instruments, even primary vocal utterances of musical nature, and shows that current musical practices, be they in actual performance situations or in phonographical, mediated forms of listening, contain the dual function of affectively touching the performing as well as the perceiving subject, who are each-other’s ‘other’ in the communicative, highly enfolded moment of ‘musicking’ (Small 1999).

Examples of the mediating and disruptive characteristics of technological instruments will be discussed in the practice modules in later chapters (see Sections 4.2, 4.3, 4.4, and 4.6), and their influence on the affective impact of performing will become obvious in the interpretations carried out in the last chapter (see 5).

3.5

Performance



Figure 3.7: Cluster arrangement of the performance topics discussed in this section.

Fundamentally, performance is not only about *acting* differently, but also about *being* different, or existing in an emergent state. It is not about inserting a splice between reality and fiction; it is about their deep entwinement. (Kozel 2007: 66)

The above statement by Susan Kozel illustrates how an artistic process is situated in an interstitial or in-between space of styles, practices and forms, a position that is characteristic in interdisciplinary work based on hybrid forms. It shows how the state of being in performance straddles the line between make-believe and realisation, and brings to the foreground the speculation that is inherent to all types of cultural production, and in particular to performance, where illusion and utter presence coincide.

The following section looks at ‘performance’ as a concept as well as an activity, and traces the evolution of the term from anthropology and linguistics, to performance theory and techno-cultural perspectives. Recently the term ‘performance’ has been supplanting ‘representation’ as one of the core characteristics of cultural production. In Fischer-Lichte’s definition, “performance is understood not as the representation of something pre-determined, but as a dynamic process that brings forth the reality to which it refers” (Fischer-Lichte 2012: 32, my translation).

3.5.1 Cultural Origins and Theories

There are several perspectives at play when investigating the concept of performance. There is a historical dimension as well as cultural, artistic, and socio-political aspects to be considered (see Figure 3.7).

Rites of Passage

Around the turn of the twentieth century, European culture takes a turn towards performance, by establishing research into ritual and theatre. The Belgian ethnographer Van Gennep (1909) identifies a universal structure underlying most rituals or ‘rites of passage’, which he defines as “rites which accompany every change of place, state, social position and age”. In their function to guarantee a safe transition to individuals and communities from one state to another, for example in births, puberty, weddings, pregnancy, sickness, famine, war, and death, Van Gennep subdivides the ritual into three phases: the separation phase, where the person in question is detached from their everyday and social context; the threshold or transformation phase where the individual is put into an ‘in-between’ state that enables previously unknown experiences; and the final phase where the individual is re-integrated into the community and given a new status (Fischer-Lichte 2012: 16). In each of these phases, the traversing of boundaries and establishing of new boundaries plays a crucial role. During the threshold phase in particular, most established boundaries are eliminated and transgressions of all kinds become possible. These transgressions represent a prerequisite for enacting a transformation, and for establishing the transformed status after the ritual.

Rituals and classic drama

Around the same time, in their studies on ritual, the so-called ‘Cambridge ritualists’ attempt to prove that antique Greek theatre had its origin in rituals, in particular in pre-Homeric chthonic cults (subterranean, sac-

rificing cults), that predated the Olympian gods. The cults were present in that of Dionysos, which carried a Bergsonian ‘durée’, that is., an indivisibility of life, and were based on “instincts, emotion, desire which attend and express life” (Harrison 1912: ix). In a break with the predominant view of the day, the Cambridge group’s insight into the early origins of Greek ‘high’ culture contradict the notion that the civilisatory achievements of classical theatre and poetry were an expression of refinement and nobility. On the contrary, the works of art, theatre plays and texts so adored by the neo-classical Romantics are now considered to be the late consequences of a culture that had its origins in ‘primitive’ or ‘savage’ rituals (Fischer-Lichte 2012: 18).

These two historical perspectives provide a basis for understanding performances in their social and cultural dimensions in a more contemporary context. In rituals a social reality gets created, whereas in theatre plays the main outcome is the production of an aesthetic reality. In both cases the performance is self-referential and constitutive of the new reality.

In the 1960s, cultural anthropologist Victor Turner is influenced by these studies on ritual and identifies the transformatory power of the threshold states as the central element in performance. Based on the three phases present in rituals of *separation*, *threshold/transformation* and *integration*, Turner (1969) notes the changes in social status of the individual and the renewal and cementing of groups that the entire community undergoes through the carrying out of a ritual. The performances of specific songs, for example, help to cement the state and status of a member of the community in relation to loss, desire, and dependence (Feld 2012: 27–29). Turner coins the term ‘liminal’ for the transgressive, boundary-crossing central phase of a ritual, and ‘liminoid’ for the analogous moment in a cultural performance. In time, the first of these terms becomes a key concept for the newly developing field of performance studies. Following the model proposed by Van Gennep (1909), Turner understands the threshold state as a mode “betwixt and between the positions assigned and arrayed by law, custom, convention and ceremonial” (Turner 1987: 95). This ‘liminality’ provides a release from constraints and “reveal[s] the freedom, the indeterminacy underlying all culturally constructed worlds, the free play of mankind’s cognitive and imaginative capacities” (Turner 1969: 128). The

Liminal

function of entering the liminal state in ritual, for example in tribal societies, has a stabilising function, because even if within the liminal state boundaries are expanded and a variability in experience is generated, the goal of the transformatory process is the reintegration of the individual into the 'communitas' and thereby an affirmation of "the continuity of proved values and norms" (Turner 1977: 69).

Outsider Status

Whereas for the person undergoing the transformation through ritual this has a stabilising function²³, for the member of the community in charge of the ritual, having this role might signify being cast as an outsider. In various cultures this is the role of the 'Grenzgänger', the one who crosses boundaries on behalf of his community. The initiation of shamans, for example, occurs through rites of passage (Eliade 1964: 38), with recurring themes shared among a wide group of peoples on all continents. However, the shaman performing a ritual as the opening of a bridge to another domain, for example by entering the spirit world in an ecstatic state of trance, has a different meaning than a member of the community being led through a ritual and through the liminal state and transformation in status in order to subsequently be fully re-integrated into the group. The ordinary community member might, nevertheless, for the short time-span spent in the 'liminal' state of the ritual, live through similar experiences as the 'outsider', priest, medicine man or the shaman.²⁴ In contrast with the seriousness and the consequences produced by the ritual, Turner's emphasis in coining the second term 'liminoid' relates to the notion of 'play' that operates in a cultural performance and theatre in particular (Turner 1974b: 64), in mode of 'as if' or mimicry that defuses the seriousness of the situation (Schechner 2010: 3).

Play and Social

Drama

The distinction between ritual and theatre echoes the views on 'play' developed by the Dutch historian Johan Huizinga (1938), who identifies the common human activity of playing as a foundational cultural category.

23 "I see liminality, in tribal societies ... as the provision of a cultural means of generating variability, as well as of ensuring the continuity of proved values and norms" (Turner 1977: 162).

24 "As well as the betwixt-and-between state of liminality there is the state of outsiderhood, referring to the condition of being either permanently and by ascription set outside the structural arrangements of any given system, or being situationally or temporally set apart, or voluntarily setting oneself apart from the behavior of status-occupying, role-playing members of that system. Such outsiders would include, in various cultures, shamans, diviners, mediums, priests, those in monastic seclusion, hippies, hoboes, and gypsies" (Turner 1974a: 232-233).

In his wide-ranging overview of the human activity of playing, he identifies key elements that belong to play as well as to ritual and performance. Being ‘in play’ encompasses the freedom present in play, a “free activity standing quite consciously outside ‘ordinary’ life as being ‘not serious’ ” (Huizinga 1955: 13). Furthermore, play happens in a clearly delimited time and space, is carried out with agreed upon rules, and in a mutually maintained state of ‘make believe’ and ‘illusion’. With ‘play’ Huizinga offers an all-encompassing model of cultural activity endowed with the same reach and pervasive presence than our contemporary concept of the ‘performative’ (see Section 3.5.3).²⁵

The importance of Huizinga’s model of play as a precursor in the formulation of the key concepts in performance theory should not be underestimated. Turner’s development of a theory of the *social drama* builds on Huizinga’s insight that ritual and play represent specific social moments that have the function of transforming the participating individuals and groups (Turner 1969: vii). In the crisis of a family, community or institution, where the integrity of the social unity is threatened, a corrective process is attempted in order to heal the breach and regain balance, or, in the case of failure, clearly acknowledge the division (Turner 1974a: 37–41) in (Loxley 2006: 152). These activities and procedures, under different signs and significations, share with play and ritual the characteristics of the suspension of everyday rules, the agreement on and the enactment of specific actions, and the intense and utter involvement. This is why, in addition to rituals, Turner identifies social *drama* as a category present in all societies, precisely because they share the central transformational characteristics, but in relation to the entire social group. Compared to classical, theatrical drama, social drama differs by the degree of seriousness of its impact on society. In contrast to sacred and ritual ceremonies, theatre serves an aesthetic function, enabling a transformation in liminal states not through ecstatic trances but by participating in an ‘as if’ situation and by reaching a

25 “Summing up the formal characteristics of play we might call it a free activity standing quite consciously outside ‘ordinary’ life as being ‘not serious’, but at the same time absorbing the player intensely and utterly. It is an activity connected with no material interest, and no profit can be gained by it. It proceeds within its own proper boundaries of time and space according to fixed rules and in an orderly manner. It promotes the formation of social groupings which tend to surround themselves with secrecy and to stress their difference from the common world by disguise or other means” (Huizinga 1955: 13).

form of ‘catharsis’, that is, release and purification of emotion, through partaking in a play situation.

Connected to the pervasiveness of play in Huizinga’s model and the transition from ‘serious’ to ‘make-believe’ play in different types of drama, sociologist Goffman (1959) regards all everyday behaviour as containing aspects of performance, or as Schechner puts it: “all social interactions are staged—people prepare their social roles ... ‘backstage’ and then enter the ‘main stage’ areas in order to play out key social interactions and routines” (Schechner 1977: 186). Goffman makes the distinction between expressions actively produced, and those that are given off involuntarily. Both forms pertain to behaviours embedded as social play, in a form of role-playing that qualifies as performance, albeit outside the explicitly declared frames of play and ritual.

The establishing of relationships between ritual and theatre, the juxtaposition of the social drama with the aesthetic drama of theatre marks the transition to the beginnings of a ‘Performance Theory’.

3.5.2 Theories of/as Performance

Distancing himself from the field of ‘Theatre Studies’, which in his anglo-american context is mainly concerned with literary plays of classical culture, Schechner creates an interdisciplinary field that combines theatre studies, dance theory, ethnography, anthropology, and musicology under the term ‘Performance Theory’. The central focus of this discipline lies on the performance event itself, that is produced either by performance artists in modern society or in rituals of indigenous cultures (Fischer-Lichte 2012: 49).

As a guiding model, Schechner establishes a layered taxonomy where the key terms *drama*, *script*, *theatre*, and *performance* refer to different scopes of a performance and encompass each other in widening circles. In his view the *drama* is “a written text, score, scenario, instruction, plan or map” that can be transported independently of individual persons. A *script* is “all that can be transmitted from time to time and place to place; the basic code of events” and is tied to people who can convey the conventions through oral transmission. The *theatre* is an “event enacted by a specific group of performers” and consists of the actual performance carried out

by performers and is usually “the manifestation or representation of the drama and/or script”. The *performance*, finally, encompasses the “whole constellation of events ... that take place in/among both performers and the audience” (Schechner 1977: 71). However, depending on where the boundaries are drawn, the four terms may also relate to each other in two opposing pairs, where theatre represents a specialised kind of performance and drama a specialised kind of script. These alternating dependencies become particularly relevant when looking at other forms of performing arts, which are not tied to narrative or representational paradigms, but focus on the contextual signification, such as in Performance or Action Art.

Derived from Turner’s categorisation of drama, Schechner proposes a circular, reciprocal relationship between the social and the aesthetic drama that is activated by the flow of social and cultural energy. In the context of his ‘performance theory’, for example, this might occur when a theatre artist uses social and political actions as material for the aesthetic drama, or when the political activist uses theatrical techniques in his action within the social, public domain (Fischer-Lichte 2012: 50). He distances himself, however, from the perspective that lets Turner locate “essential drama in conflict and conflict resolution” and instead proposes that the aim of drama is “*transformation*—in how people use theater as a way to experiment with, act out and ratify change” (Schechner 1977: 191). Consequently, the difference between the social and aesthetic drama lies in the degree and the permanence of change effected.²⁶ Whereas in an aesthetic drama the transformations, through a costume for the performer for example, are temporary, in the social drama or ritual, the change in status is permanent. In some cultures this permanence is signalled by markings on the body of the transformed individual (Schechner 1977: 192).

Common to both the ritual and rite of passage as well as the aesthetic drama is the fact that the performers, priests and shamans do not experience transformation themselves; it is rather the audience or initiation can-

26 “The function of the aesthetic drama is *to do for the consciousness of the audience what social drama does for its participants*: providing a place for, and a means of, transformation. Rituals carry participants across limens, transforming them into different persons. ... Aesthetic drama compels a transformation of the spectator’s view of the world by rubbing their senses against enactments of extreme events, much more than they would usually witness. The nesting pattern makes it possible for the spectator to reflect these events rather than flee from them or intervene in them. That reflection is the liminal time during which the transformation of consciousness takes place” (Schechner 1977: 193).

didate who are transformed. This distinguishes the ritual from the social drama, where all involved agents experience a transformation (Schechner 1977: 194). In an aesthetic drama it is the audience who is the recipient of the ‘cathartic’ or other transformation, whereas in the social drama “all present are participants, though some are more decisively involved than others” (Schechner 1977: 192–193).

*Behaviour
Recorded*

Acknowledging Goffman’s insight that all everyday behaviour is a social performance (Goffman 1959), Schechner makes a clear distinction between ritual and theatre, the latter of which he calls “twice-behaved behavior, performed for pleasure, involving narrative” (Schechner 1990). The narrative element is balanced by the mimetic or referential nature of theatre performance, but also contains an experimental aspect, that permits the modelling of situations and the exploration of situations in a mode of ‘play’. Despite the distinction between the two, the element that unites ritual and theatre is that behaviour is ‘re-coded’, that is, that it consists of elements that are predefined and re-interpreted or re-embodied by the performer during the actualisation. These “organized sequences of events, scripted actions, known texts, scored movements” (Schechner 2010: 35) are, according to him, the defining characteristics of performance, and should be understood, in their subjunctive mood of the ‘as if’, as “the surest way to link aesthetic and ritual performance” (Schechner 2010: 35–36). The common threads and ‘points of contact’ between the two lie in the pre-defined sequences of acts, and the tradition that arises from transmitting these patterns from performer to performer. These *actuals* share the cornerstone qualities²⁷ already seen in ritual and play, with marked differences in what is *at stake* and the *irreversible* changes brought forth by ritual, as well as cultural significance in belief-systems and religious impact of the performance.

Shifting Contexts

Schechner’s perspective on performing arts is that as art form it is primarily based on ritual and the enacting and re-behaving of predefined behaviours. It depends on a social embedding and a cultural set of cat-

²⁷ “An actual has five basic qualities, and each is found both in our own actuals and those of tribal people: 1) *process*, something happens *here and now*; 2) *consequential, irremediable* and *irrevocable* acts, exchanges, or situations; 3) *contest*, something is *at stake* for the performers and often for the spectators; 4) *initiation*, a change in status for the participants; 5) space is used *concretely* and *organically*” (Schechner 1977: 46).

egories that reference an intention of functional transformation. Since his establishing of this theory from a perspective situated at the intersection between theatre and anthropology (Schechner 2010), the cultural as well as the economical and political landscape of performing has considerably changed. Parallel practices in Performance and Action Art have evolved, and mediatisation has affected every aspect of culture, leading to hybrid art forms involving technologies and media channels (Auslander 1999), in ways that cannot be adequately described by the theories dating from the second half of the twentieth century. Performance is now considered to permeate society and cultural practices on all levels and in all domains (see Section 3.5.3). The core elements of ‘play’ and ‘make believe’ begin to disappear in the type of performance art that develops in the 1960s from happenings and action-art, for example in action-painting and body-art (Pollock, Klein) (Warr and Jones 2000), light-sculptures and video art (Turrell, Paik) (Dietz 2002), and the Fluxus or Vienna Actionist movements (Marranca 1999). At present, contemporary Performance or Action Art has left its theatrical roots behind and has moved to the edge between the symbolic, the naturalistic, the material, and the contingently situational. The balance between the radically ephemeral action, theoretical research (Brandstetter 2006) and reflection movements (Phelan 2004), as well as the process of commodification in an art-market where re-enactments obtain the status of artefacts (Abramovic 2012), and in the establishment of archives (Lessenich 2011), provides performance art with a different status in the context of the arts.

This shift leads Fischer-Lichte to propose a different definition of performance, that is at the same time more loose and more foundational: “The term denotes certain symbolic acts that do not express something pre-given or pre-existing, but produce the reality they refer to. The reality arises *by carrying out* the action. A performative act can only be thought of as an embodied one” (Fischer-Lichte 2012: 40, my translation).

In a departure from performance theory’s orthodoxy, McKenzie proposes a critical reading of and through post-structuralist and socio-political theories in order to examine performance in terms of power and knowledge relations. By broadening the scope of what constitutes performance and by re-reading the term in its (English) signification of not just action but also

*Social-Political
Performance*

effort, efficiency and achievement, McKenzie takes up a position that looks at social and political developments as an “emergent stratum of power and knowledge” (McKenzie 2002: 18). By constituting a new cultural category, performance as a concept provides a key access point to understanding the subject “as fragmented rather than unified, decentered rather than centered, virtual as well as actual” and the performative objects of cultural production as being “unstable rather than fixed, simulated rather than real” (McKenzie 2002: 18). As a consequence of this instability and exploded state, there exists no clearly identifiable knowledge that is being generated. The superpositions of intents and discourses in many practices at the same time indicate that the acts of performance and the objects they produce occupy a multiplicity of states and are present in “a variety of sociotechnical systems” (McKenzie 2002: 18). The subject is (in)formed by the technological, economical, and political transformations in society and merely attains a fractal status, a position that shifts and shares its position between the different strata of significance. The driving force in and of a subject is not oriented against a repressive regime anymore, as postulated by Foucault (1977), but is rather “‘excessive’, intermittently modulated and pushed across the thresholds of various limits by overlapping and sometimes competing systems” (McKenzie 2002: 19). In relation to artistic performances, McKenzie acknowledges the shift that performance theories have achieved, by moving from product to process, but critically identifies a paradigm shift from ‘theatre to theory’ (as exemplified in anthologies such as that of Reinelt and Roach (2007)). The role of theatre as a source and model of study has to relinquish its place to the performing of the theory itself (McKenzie 2002: 41).²⁸ Another aspect which demonstrates the changing context and import of performance, in the multitude of ways it informs and underpins action, is the “hypermediation of social production via computer and information networks” (McKenzie 2002: 42), and within the last decade, of the public spaces through the rise of the social media sphere. The incorporation of media technology in almost all aspects of live performance (Auslander 1999), as seen for example in the ubiquity of video in theatre and dance productions, exhibits as one of its consequences the

28 A shift that is manifested for example in the emerging field of performance philosophy: <http://www.performancephilosophy.org/>

fact that “computer systems can break up and recombine elements, ‘distributing’ or rather redistributing performative presence. Words and acts break down, embodied performances can be recast in relation to discursive performatives, as both performances and performatives are immersed in a network of citationality” (McKenzie 2002: 42). The fragmented, deconstructed, or exploded web of references evoked here corresponds to the indissociable interconnectedness of the subject in society, as well as the presence of the technological ‘performative’ in almost all domains of contemporary life.

3.5.3 Performativity

The extended meaning of the term and the references established by ‘performance’ and their significance in the sociological, psychological, as well as the economical domains can be traced to two other distinct, yet related positions.²⁹

The term ‘performative’ was coined by Austin (1962) in the context of linguistics concerning spoken statements. He found that verbal utterances not only describe states of affairs, in ‘normal’ locutionary statements, but that through the utterances actions could be performed as well. This particular kind of utterance is self-referential, signifying precisely what it expresses and constitutes or transforms reality by naming it. In the words of Butler: “Let us remember that Austin distinguished between illocutionary and perlocutionary performatives: the first characterize speech acts that bring about certain realities, as when judgments are pronounced by a court ... The second characterizes those utterances from which effects follow only when certain other kinds of conditions are in place” (Butler 2010: 147). This distinction assigns power to utterances that were previously not considered, or whose agency had to be attributed elsewhere. As a consequence, a ‘performative’ utterance that exerts or produces change is assigned an agency of its own, a transformational power on the world. The distinction between producing and transforming, between the signifying and the social contexts, highlights the power-relation exerted through these speech acts. “Whereas illocutionary performatives produce ontolo-

*Effective Speech
Acts*

²⁹ In some sense, Huizinga (1955) provides an insight into the foundational character of meaning that emerges from (playful) action. His position may be considered a precursor to both the speech-act and gender theory positions.

gical effects (bringing something into ‘being’), perlocutionary performatives alter an ongoing situation. In this sense, the illocution appears more clearly to rely on a certain sovereign power of speech to bring into being what it declares, but a perlocution depends on an external reality and, hence, operates on the condition of non-sovereign power” (Butler 2010: 151). Even though Austin defines the execution of a speech act as a social performance, he denies this characteristic to utterances made in a theatrical context, and considers the transition from a serious pragmatic context to a frivolous, non-serious staged situation as the divide between a successful and a failed speech act (Fischer-Lichte 2012: 39).

Derrida (1988) refutes the argument that the non-serious nature of the stage context removes performative agency from a speech act and that this determines its success or failure. He contends that in Austin’s distinction the meaning of an utterance depends on identifying the context within which it is made and that the intersubjective nature of speech acts prevents this condition from ever being fulfilled. Although the “ambiguous field of the word ‘communication’” (Derrida 1988: 2) may be delimited, context remains indeterminable and dependent on discursive norms (Humphreys 2010).

Performed Identity

In critical theory the ‘performative’ act is understood as the mechanism with which “social agents *constitute* social reality through language, gesture and all manner of symbolic social sign” (Butler 1988: 270) cited in (Fischer-Lichte 2012: 41). Butler uses the term ‘performative’ in particular to signify how the “stylized repetition of acts” (Butler 1988) constitute a necessary condition for the constitution of gender identity. Through repetition and ritual, “the acts, gestures, and desire” produce identity as “an enacted fantasy ... *on the surface* of the body” and “are *performative* in the sense that the essence or identity that they otherwise purport to express are *fabrications* manufactured and sustained through corporeal signs and other discursive means” (Butler 1990: 185–186). This means that gender identity possesses no intrinsic, biological heritage, it is a social construction adapted by education, socialisation, and in most cases forms part of a familial transmission of gender stereotypes, which is not made conscious. The constitution of identity is a process that has to be performed through “acts and gestures, articulated and enacted desires [and thus] create the il-

lusion of an interior and organizing gender core” (Butler 1990: 185–186). Through this process, however, it is impossible to generate a stable identity. The repetition of stylised acts generates a fluid, continuously modified state of becoming in which “performativity is not a singular act, but a repetition and a ritual, which achieves its effect through the naturalization in the context of a body, understood, in part, as a culturally sustained temporal duration” (Butler 1990: xiv). The insight into the *reversal of cause and effect* is the core of Butler’s concept of the performativity in gender identity. Constitution of identity depends on its performative expression in order to generate what are normally considered to be the signs of gendered essence. That which is generated by the performative acts is only manifested or realised by the act itself, there is no pre-existing model or schema; it is rather the result of “the way in which the anticipation of a gendered essence produces that which it posits outside itself” (Butler 1990: 34). The act of the performative constitution of identity is a process of *embodiment* (Fischer-Lichte 2012: 42), above all it represents “an active process of embodying certain cultural and historical possibilities” (Butler 1988: 273). Repetition leads to transformation but results in a fluid, dynamic process of continuous redefinition, in a reinforcing loop that is never completely under the control of the individual. Thus the “conditions under which the process of embodiment is carried out are neither determined by the individual’s power and agency—it cannot freely choose which possibility and which identity to adopt—nor is it determined entirely by society” (Fischer-Lichte 2012: 42, my translation). Traditional social dichotomies are attacked by this perspective; society on the one hand exerts physical violence on the individual, and on the other hand enables the self-constitution by the individual, even if this means going against the predominant social norms (Fischer-Lichte 2012: 42).

3.5.4 Presence and the Body in Performance

A common characteristic shared by the various forms of performance presented thus far is the necessity to be taking part in the performance in person; this holds true for the performer, the initiation candidate, the audience member, the member of a tribe, and most other agents imaginable. Only technology through telematic presence (Ascott 2005) or through the

recordings of performance acts can alter this relationship, but even then it remains anchored in relation to the basic fact of direct involvement in an original ‘actuality’, be it ritual, theatrical, social, or political. Shared physical presence in a commonly agreed upon time and space provides the foundation for performances, certainly in the arts, and to some extent in the public sphere as well. If we subscribe to the idea that performative acts are by definition embodied (Fischer-Lichte 2012: 40), and that therefore physical presence and shared experience of the act provide its foundation, then we have to ask what is meant by ‘presence’.

Presence

In its simplest form, the term presence is unambiguously related to spatial (co-)location and expresses the occurrence at the present time of a state of affairs. Whether this depends on being perceived is highly dependent on context. Presence, from a perceptual point of view, means that things show up and are available (Noë 2012: 32). In the context of performance, presence always means co-presence, since the performative act is relational and intersubjective by definition. In performing arts, where it occurs in a specifically marked and delimited spatial and temporal domain, presence depends on the perceived intensity of physical actions. The performer uses the phenomenal body, (*Leib*) (Merleau-Ponty 1962: 121)³⁰ and not the semiotic body, (*Körper*) (Franck 1981) to produce affects, that is, to elicit pre-emotional sensory stimuli in the spectator (Fischer-Lichte 2012: 61) (see Section 3.3). The same way as for the spectator partaking in the performance, for the performer an increased intensity is necessary to produce a multi-focal awareness and hyper-reflection (Kozel 2007: 70). Presence may even be imagined: an impression of presence can emerge even when no one is there, a perceptual phenomenon occurring for example in immersive environments (Wei 2013: 70). The mere fact of presence, the intensified quality of presence, and the subjective impression of presence share the necessity of the presence of a body, be it a living person, an animal or even an object: they produce the subjective impression that some-thing/somebody is really there (Féral 2012: 30). Presence on stage, in a performance,

30 “Due to the dialectical reality of the visual and its complementary relationship to touch, Merleau-Ponty discusses the assemblage of the body at once as phenomenal body and as objective body, as sentient and sensible, as two segments intertwined in ‘one sole circular course which goes above from left to right and below from right to left, but which is but one sole movement in its two phases’ (Merleau-Ponty 1964: 138)” in (Voegelin 2010).

produces an energy that begins to circulate between performer and audience, in an emphatic (Berrol 2006) and co-performative loop (Iyer 2004: 162), and is active on bodily, affective and pre-reflective levels, as well as through conscious awareness of shared attention and experience (Eilan et al. 2005; Vuoskoski et al. 2013). “Through the presence of the performer, the viewer experiences the performer and at the same time her/himself as an *embodied mind*, as a continuous ‘becoming’. The circulating energy is perceived as a transformatory force—and in this sense as a life-force” (Fischer-Lichte 2004: 171, my translation).

In the performing arts and in Performance or Action Art in particular, generating presence through body techniques (Mauss 1973) is a key aspect whose process hinges on (more or less) controlled embodiment (Crossley 2007). The body becomes the material, the tool, the instrument that is at the same time a substrate, a shifting platform, and a malleable material for the performer to use. The double presence of both the phenomenal and the semiotic bodies (see Section 3.3.1) provides an ambiguous state that is leveraged to expose the foundational and shared being-in-the-world between the performer and the spectator (Fischer-Lichte 2004: 139). In addition to producing a shared experience, the body is the site of ‘self’ and embodied agency and by virtue of the multiple modes of its presence produces “the suspension between the ‘real’ physical matter of ‘the performing body’ and the psychic experience of what it is to be embodied” (Phelan 2003: 167). By having a corporeal presence, a ‘body real’, and by engaging in a performative act, with a ‘psychic real’, the performer “boldly and precariously declares that Being is performed ... in that suspended in-between” (Phelan 2003: 167). This occurs on all levels of corporeal perception, principally in the pre-reflective, kinaesthetic domain (Gapenne 2010) (see Section 3.3.1),³¹ instead of that of conscious, conceptual thinking. Even if corporeal presence forms the nucleus of performance, this does

*Body in
Performance*

31 “Referring to the presence of the agent/actor addresses taking up and dominating of the space in such a way as to attract the attention of the others. ... Therefore, the phenomenal body of the performer, through the specific physiological, affective, energetic and motor states, operates directly on the phenomenal body of the others and is capable of producing particular physiological, affective, energetic and motor states. The effect the phenomenal body of of someone performing in front of other(s) is capable of producing correspondingly depends on the perception by the other(s). The effect of ‘presence’ is produced in a performative manner through the interrelation between the acts generated by the specific presence of the phenomenal body of the performer and the perceptual acts of of the one sensing this presence in a bodily manner” (Fischer-Lichte 2012: 61–62, my translation).

not guarantee that it has a central place in perception and appreciation. On the contrary, through the normality of bodily presence in any performance, the performer's body tends to disappear (Nachmanovitch 1990: 51–55) and give way to the perception of that which is performed, be it music, dance, a figure, a persona or a speech (Phelan 2003: 150). This effacement of the body shifts the core of performance to a subjectivity, to the subject and the content of the action (see the invisible body in Section 3.3.1).³² Without the corporeal presence, however, the performer could not appear to the other and convey meaning through the act and in the moment of performance, and would not be able to produce the disappearance of itself together with that of the singularity of the performance moment: “The disappearance of the [art] object is fundamental to performance; it rehearses and repeats the disappearance of the subject who always longs to be remembered” (Phelan 2003: 147). It is only through the presence of the body as the focal core of performance that experience and tacit knowledge of both performer and spectator obtain a subjective anchor. Due to the processual nature of performance, however, this link remains fluid and ephemeral, only active and constrained within the temporal boundaries of the action and merely carried onwards in memory, if at all (Dewsbury 2000: 482). “Without a copy, live-performance plunges into visibility—in a maniacally charged present—and disappears into memory, into the realm of invisibility and the unconscious where it eludes regulation and control” (Phelan 2003: 148).

32 “Performance uses the performer's body to pose a question about the inability to secure the relation between subjectivity and the body *per se*; performance uses the body to frame the lack of Being promised by and through the body—that which cannot appear without a supplement” (Phelan 2003: 150–151).

in current usage of the word is not present in the etymological roots of the word, which denote the un-foreseen; originally improvisation means dealing with the unforeseen (Latin: *improviso*). The capability to adapt to unforeseen circumstances with behavioural patterns and combinations of known elements combined into a new configuration is a feature of evolution that is probably responsible for cognition in the first place (see Section 3.2). “The fact that we are constantly dealing with unforeseen aspects in our surroundings and negotiating and adapting continuously to changing demands shows that improvisation is indeed a primary mode of interacting with the world” (Nachmanovitch 1990).

This overview on the topic of improvisation is presented from a point of view of a contemporary music and performance practice, which has left musical styles and idioms such as jazz, classical, even free play behind and looks at improvisation from a vantage point situated between sound art, performance art, technological instrumentalism, and experiential experimentation on stage (neither theatre, nor jazz, without songs, melodies, rhythms, or lyrics).

In contemporary performing arts such as theatre, music, and dance, improvisation means the creation of the content of a performance during the performance itself.³⁴ The means and conditions necessary to make creation an act of producing something ‘new’ depend on the stylistic and social context. In Western music the topic itself has been contentious for a long time, even before jazz and its improvisation practice appeared. Extemporisation in ornamentation and cadenzas (Levin 1990), indeed the practice of extemporising entire fugues on the organ (Renwick 2001), formed part of the skills of a musician, before the separation between creator and executor, between composer and interpreting musician emerged. In Non-Western music traditions the relation between fixed and in-the-moment decisions and performed forms is less pronounced and not such a contentious topic. Oral tradition (Abram 1996) that doesn’t rely on nota-

34 The episode by Rzewski illustrates this: “In 1968 I ran into Steve Lacy on the street in Rome. I took out my pocket tape recorder and asked him to describe in fifteen seconds the difference between composition and improvisation. He answered: ‘In fifteen seconds the difference between composition and improvisation is that in composition you have all the time you want to decide what to say in fifteen seconds, while in improvisation you have fifteen seconds.’ His answer lasted exactly fifteen seconds and is still the best formulation of the question I know.” (From ‘Letter to Lacy’, a brochure published by Wiener Musik Galerie in 1990 to accompany a series of concerts). Frederic Rzewski quoted in (Bailey 1992: 141)

tion depends in a different manner on memory, the re-enacting, and re-embodiment of the music by the performer. In these traditions the individuality of the performer has a different space for expressing itself, and the spaces for in-the-moment shaping are organised differently, yet prescribed in many ways to a similar degree as with Western notation (Clarke and Kini 2011).

3.6.1 Collective

Collective or group improvisation, in music and particularly in ‘free’ play, has become the standard format. This mode of play and development depends on the notion of joint and playful engagement. Although this is now practiced mostly in groups with a few players that have a multitude of sounds at their disposal, the practice grew out of large workshop ensembles such as the Association for the Advancement of Creative Musicians AACM in Chicago in the 1960s (Lewis 2008), the British free improvisation group AMM (Prevost 1995), and various large ensembles (for example the London Improviser’s Orchestra)³⁵. These groups “re-imagine the orchestra along improvisative and communitarian lines [ranging] from Cornelius Cardew’s ‘Scratch Orchestra’ to Lawrence ‘Butch’ Morris’s ‘Conductions’, in which an improvising conductor functions literally as a centralized conduit of musical current linking other improvisers” (Lewis 2006: 432). In these ensembles, regardless of aesthetic orientation, stylistic context and discipline, group dynamics and the attitude of each player becomes a pivotal element of the practice.

The freedom that supposedly is the basis for the communal experience is a shared but also limited resource: the positive ‘freedom to’ act is counterbalanced by a negative ‘freedom from’ constraints and limitations (Peters 2009: 52-53)³⁶. Through this tension, the rules of social interaction and power are equally present within ‘playful’ performances. In the model so-

³⁵ See <http://www.londonimprovisorsorchestra.co.uk/> accessed 28. October 2016.

³⁶ “Free-improvisation is more about power than about freedom. ... For all the talk of dialogue, we witness here in the ‘pushing and pulling’ of improvisation the dialectic of the negative and the positive freedom, of the collective and the singular, the ‘yes’ and ‘no’ of the work played out in full view of the audience. ... it is inevitably framed in terms of either a negativity that strives to establish and maintain a regime of noninterference ... or, conversely, a more risky proposition that recognizes a certain desire for mastery and accepts that issues of power and the freedom to actualize this power aesthetically are an integral part of improvisation” (Peters 2009: 52-53).

ciety of the improvising collective, each player is entering in to a shared space, becomes dependent on the others, and is at the mercy of the whims of the others, in particular their attitude of self-centred, inconsiderate self-promotion. Even if the agreed-upon mode is not competition, in the balanced states between individuation and collaboration, this tension cannot be eliminated. “A highly competitive atmosphere creates artificial tensions, and when competition replaces participation, compulsive action is the result. ... Imposed competition ... destroys the basic nature of playing by occluding the self and by separating player from player. ... Natural competition, on the other hand, is an organic part of every group activity and gives both tension and release in such a way as to keep the player intact while playing” (Spolin 2014: 409).

Collective play offers the benefit of entrainment (Nachmanovitch 1990: 99), reciprocal impulses, dialogical exchange, and the generation of tension through social rather than musical interaction patterns. It builds on the common sense of purpose, *sensus communis*, and a “consensual ground” (Peters 2009: 46) of respect, of the mutually agreed frame. “Since improvisation is fundamentally cooperative, closer to group mind than singularity, it will exhibit different characteristics, many of which will be out of step with the hierarchical, logocentric traditions of European pedagogy and its critical canon of genius” (Toop 2016: 19)

Solo performance and improvisation, in contrast, cannot depend on the definition of the stage situation as a common ‘playground’ or joint endeavour. The lone individuals have to source impulses, ideas, forms, and dynamics exclusively from themselves and in relation to the audience. Nevertheless, this form of improvisation offers the advantage of concentration on the substance and materials instead of social interaction and joint navigation of contingencies. The emphasis on communication and intersubjective exchange is replaced by a focus on individual presence and expression. The task and demand of the performer is oriented towards the ‘what’ rather than the ‘how’, which is an attitude that exhibits an inverted relationship to a central aspect in group improvisation.

Still, in every collective improvisation the drive of the individual exists to attain the state of the solo player, to get a moment in the spotlight. Each player oscillates between the role of a collective actor and that of the indi-

vidual voice, the attention moving between the own ideas and playing and what is occurring in the collective. Through this tension, the consensus that is necessary to achieve a common beginning gets inevitably eroded, transformed, even destroyed. For this reason the “success should not be measured against a consensual goal or *têlos* that drives the work ever urgently toward a communicative conclusion. ... The primary aim of free-improvisation is to ensure that this ongoing and endless destruction is not short-circuited by the finished art-work or by a spurious community promoting an ideology of oneness” (Peters 2009: 51).

3.6.2 Unique

Individuality or subjectivity, in contrast to virtuosity in reproduction, mark improvisation as a practice that is oriented toward the singular, rather than the widest possible appeal. Even if intent on creating the ‘new’, nevertheless, improvising is a constant negotiation with stereotypes. Bailey remarks lucidly that “perhaps it is free-improvisors more than any other artists (including famous composers) who are *most* aware of the dangers of clichés, which, of course, does not stop them from falling back on them” (Peters 2009: 83). The tension between individuality and stereotype, between personal expression and stylistic convention prevails in so-called idiomatic improvisation (Bailey 1992: 18).

In contrast, a mode of improvisation that fully embraces the moment’s demands, such as non-idiomatic free play (Bailey 1992: 83), de-personalises the performer by putting her in a state where self-affirmation gives way to a total engagement with the task, with the social situation, with the materials and forms arising in the moment. In a certain sense, the individual becomes part of the fabric of the moment and is subjected to its conditions and contingencies: “it’s not personal when you’re on stage, it’s a-personal”, says dancer Julyen (Hamilton 2016: in private communication). The heightened level of concentration, attention, and interaction, as well as the de-personalisation “secures the total involvement of the performer ... [and] provides the possibility for the player to completely identify with the [material]” (Bailey 1992: 17).

One of the tropes of improvisation, that of originality, is based on the notion that the individual’s ‘genius’ is the source for the ‘newly’ created

expression. In stylistically strongly framed practices, namely idiomatic improvisation, more so than in open-form and 'free' modes of improvisation, the originality can only be granted in relation to the templates provided by the style.³⁷ The material that is generated in the moment reflects the mastery of the idiom or the language and is often carried by a stylised attitude of performing as well. If we consider originality as that quality which contains aspects that are unique to the individual, the question of degree of novelty and of individuality emerges. These two aspects are always contextually bound and in each situation weighted differently. A performance in a conventional venue in a conventional format, for instance, is strongly influenced by the expectations and the norms of behaviour that form part of the prevailing conventions.

Individuality

The performing artist's individuality and originality is perceived in relation to these value-systems and gets identified in an act of judgement. In many cases the spaces for showing or perceiving individuality are limited by the format of what is being played, by the social context, by other performer's presence, and even by the audience's knowledge about the field and style of the performance. The space for choice, for finding personal expression within the practice, and the idiom is variable and extends beyond what is termed improvisation to include the spaces of interpretation present in notated music or any otherwise organised music, dance or performance art. The mark of true individuation, of an actual freedom for decision taking during performance may be when the performance approaches and extends the limits of the pre-given and the known in a consistent manner.

The pseudo-individualisation of jazz-improvisation for example, which is criticised by Adorno (2002), is present in almost all forms of time-based performance art. The individuality sought within pre-coded structures of style and convention is necessarily differential by degree only and is motivated more by social recognition and self-affirmation of the performer than by the core demand within the art form itself. It is evident that

37 "No idiomatic improvisator is concerned with improvisation as some kind of isolated activity. What they are absolutely concerned about is the idiom: for them improvisation serves the idiom and it is the expression of that idiom. ... improvisation supplies a way of guaranteeing the authenticity of the idiom, which also, avoiding the stranglehold of the academic authority, provides the motor for change and continuous development" (Bailey 1992: 18).

“the achievement of individuality requires a principle of free choice that runs right through the Western tradition of post-romantic art and its legitimating discourse. Such discourses put increasing weight on individual acts of creation, subjectivity, intentionality, and originality, thus forging a language ... rich in possibilities for the self-promotion of improvisation” (Peters 2009: 78). More than promotion of improvisation as such, often it is self-promotion of the individual artist that is the goal.

Taking the famous adage about immature poets imitating and mature poets stealing (Eliot 1920: 114),³⁸ imitation or mimesis can be considered as one of the powers propelling artistic production. In fact, what the aphorism indicates is that expertise (or maturity) can be detected in how foreign materials or ideas are assimilated and transformed into a unique and individual statement. Imitation-learning forms one of the foundations of human intellectual and skill development and still prevails in oral traditions, in particular of performing art practices such as music or dance. Since a perfect imitation is never possible, mimesis in performance produces its own effect that is not a “passive rehashing of the given, [rather] ... mimesis concerns the re-production not of the given but of the *transition* from the marked to the unmarked that constitutes the originary gesture of art: the imitation of a *movement* that ... ‘interrupt’ the given and produces difference” (Peters 2009: 4). The appropriation and creation of a shift or difference is one of the core functions of interpretation within an idiomatic tradition, as the means to create a personal statement. In open-form practice, where the emphasis is put on the contingent, imitation provides a means for commentary as well as reference and memory. From mocking mimicking, empathic repetition, to aligning with an idea by another performer, mimesis is a tool for synchronising play among several performers.

Mimesis

For the individual, a possible source for imitation may be their own prior experience, recalling and reconstructing an earlier experience. In the best case, “improvisation is not simply the ‘refuelling of learnt behaviour’, it is a performative embodied practice, ‘a partial and temporary resetting which consist of attempts to make something new in the moment’ ” (Amin and Thrift 2002: 85–87) in (Kozel 2007: 71). In such a moment the performer effectively re-creates, based on earlier discoveries and sedimented

Re-inscription

³⁸ This aphorism is also attributed to Pablo Picasso and Igor Stravinsky.

experiences, in order to respond to the demands of the moment. Thus a re-inscription (Badiou 2008; Varela et al. 1993) in a palimpsest occurs, effected by the laying down of an additional layer of experience over the previous exemplar; this is a continuous process that occurs in learning as well as globally in any form of memory formation (Schacher and Neff 2015: 340). Taking into account the wider context, Bennett Hogg (2011: 89) remarks that even “free improvisation ... is not ordinary, but instead represents a play across memory, history, embodiment, and a culturally situated consciousness. The conditions of possibility of improvisation are the palimpsests of what music is or has been. ... if we improvise for the first time, such improvisation is only possible because there is ‘prior organisation, prior differentiation’—‘music.’” Imitation and recalling prior experience do not produce the same effect, the temporal distance and the blurring of memory prevent this. Mimetic play is either directly confronted with the source or has an immediate enough connection for the semblance to be recognised. However, there is no opposition between the mimetic re-production on the one hand, and recombination of a pre-given into something unprecedented or original on the other hand. On the contrary, these two states are interdependent: the former provides the substrate for the latter, the latter provides the motor for the former. Imitation or (re-)presentation is productive in its active state, which in improvisation is the case by definition. This opens up the field of reflection on improvisation to the dualities between “presentation and representation, production and reproduction, ..., creation and preservation, ... spontaneity and receptivity” (Peters 2009: 35).

3.6.3 Unmarked Space

The improvisation begins, but with this body, these materials, this instrument, those words, in this language, the contingency of what is there and what is available. The hyperawareness of the ... improviser is not simply a heightened self-awareness but is, rather, an awareness of the above contingency that must be affirmed if the improvisation is to begin. (Peters 2009: 71)

Every improvisation, at the outset, starts from an empty canvas. This does not mean that it is based on nothing or comes from nothing, on the contrary: it is chock full, charged with experience, cultural codes and expectations. The potentials accumulated for the improvisation are all present, equally weighted, yet the freedom of choice is not yet bound by decisions taken and references established. “The moment of stillness prior to the initial improvisatory gesture of the work is not an aesthetic vanishing point where both absence and presence between them threaten to erase art but, rather, the space/time where a shared freedom can be recognized and reaffirmed” (Peters 2009: 28). The moment of beginning, in a stylistically unconstrained context, is therefore without inscription, unmarked. The first action, gesture, or sound renders the potential into an ‘actual’ and anchors the remainder of the improvisation. It is a turning point or pivot between the before and that what counts, it is “a liberation—from the absence of work. Silence, stillness, blankness are all valorized as originary aesthetic essences only to be cancelled by sound, movement, or figuration” (Peters 2009: 36).

The blank state of beginning contains the unknown, an emptiness full of potential of what might happen that will evolve into a temporary known, simultaneously creating the already past, and the memory of the known. The unknown is “that which was previously unimaginable, that which we could not have thought of doing next” (Leigh Foster 2003: 3–4). In a mirror state with research’s quest for questions that establish new ‘unknowns’ rather than answers that are connected to the already known, improvisation depends on the opening of a time/space for the unknown to unfold. The actions and movements through that space are as much determined by the pre-given as by the blank space that waits to be filled. “Action introduces the known (the manufactured); then understanding, which is linked to it, relates one after another, the nonmanufactured elements, the unknown, to the known. But desire, poetry, laughter unceasingly cause life to slip in the opposite way, going from the known to the unknown. Existence, in the end, discovers the blind spot of understanding and right away absorbs it completely” (Bataille 2014: 122). Although each sequence of actions in improvisation is subjected to “the originary movement from the unmarked to the marked space and the contingency of the fixing process”

*Unknown and
Known*

(Peters 2009: 4), the stability is temporary and ephemeral. The ‘understanding’ or stable, manifested form is propped up, scaffolded and kept alive by the continuous, sustained sequence of actions. It disappears as soon as the performance ends.

In a Chain

During the improvisation, the flow of elements and the chaining of actions creates a coherence, particularly through the multi-layered, situational links that the improviser uses to negotiate the space, which becomes more and more marked and filled with points of reference. Bound, channeled, and helped by these resistances, in control of the direction or merely tumbling from one moment to the next, the improvising performer creates a continuously becoming present moment, “an unbroken now—something akin to what Gertrude Stein called a ‘prolonged present’ (1926: 16-17) to what William James (borrowing from E.R. Clay) called ‘a specious present’ (1890: vol 1., 609) and to what Henri Bergson called ‘a live present’ (1911: 176)—an ongoing flow of movement from an ever-changing ... world of possibilities” (Sheets-Johnstone 2009: 30). At the same time, the increased accumulation of knowns (experience) in the unfolding performance demands a movement away from certainty and fixity towards more unmarked space or towards a point of balance between the two. It “presses us to extend into, expand beyond, extricate ourselves from that which was known. It encourages us or even forces us to be ‘taken by surprise.’ Yet we could never accomplish this encounter with the unknown without engaging the known” (Leigh Foster 2003: 3–4). That which is present prior to the beginning of a performance serves to frame the improvisation, the situation, the life-state; it takes away from performance the existential threat that truly unknown situations pose, which would force the individual to act in modes of utter survival. As a substrate, the pre-given contains layer upon layer of elements of evolution, education, culture, and an individual’s life history. These common and shared traits and experiences undergird each improvisation but also contaminate it and render the achievement of a clean and clear state impossible. In that sense, Derrida’s statement about the impossibility of improvisation³⁹ brings to the foreground the unavoid-

39 “It’s not easy to improvise, it’s the most difficult thing to do. Even when one improvises in front of a camera or microphone, one ventriloquizes or leaves another to speak in one’s place the schemas and languages that are already there. There are already a great number of prescriptions that are prescribed in our memory and in our culture. All the names are

able influence of the already prescribed and preprogrammed stereotypes that cannot be evaded and that blind the improviser in a crucial manner to the boundless possibilities.

Qualitative differences arise in the balance between the known and the unknown, the amount of unmarked space and the situational demands, on a sliding scale between re-producing or re-creating the pre-given and the cliché of the well established forms, and the materials and open spaces that exist without templates. “All improvisation takes place in relation to the known, whether the known is traditional or newly acquired. The only real difference lies in the opportunities ... to renew or change the known and so provoke an open-endedness which by definition is not possible in idiomatic improvisation” (Bailey 1992: 142). The task is therefore, as we are made to understand from Bailey’s statement, to push towards the open-ended, the re-configuration and translation of the given, rather than chasing after a clean-slate ‘new’ which cannot exist.

Open-ended
Balance

3.6.4 Memory, Past and Future

Independent of the style and idiom, of the cultural or disciplinary context, any performing art lives in time and depends on memory to function. The sense of rhythm, of tension, and the unfolding of an (even abstract) narrative depend on the retaining of what went before. In improvisation, beginning with the initial mark, the first action, sound or gesture anchors the open-ended development of the unfolding chain of events. Keeping track, referring back and connecting elements requires memory and anticipation of a particular kind. Regardless of the type of performance, the inner and outer perspectives are based on handling and negotiating inner and outer references in memory, be they in the pre-reflective, sub-personal states of the body (see Section 3.3), or higher level peripheral or focal perceptions of performance actions and their consequences. In dance improvisation the duality between inner and outer is more evident, even if such

already preprogrammed. It’s already the names that inhibit our ability to ever really improvise. One can’t say what ever one wants, one is obliged more or less to reproduce the stereotypical discourse. And so I believe in improvisation and I fight for improvisation. But always with the belief that it’s impossible. And there where there is improvisation I am not able to see myself. I am blind to myself. And it’s what I will see, no, I won’t see it. It’s for others to see. The one who is improvised here, no I won’t ever see him” (Derrida 1982) in (Kirby and Kofman 2002).

a neat separation ignores the fused state of the body and mind in the doing. “*Associational* memory, ... concerns images, facts, and movements or movement qualities that are stored in memory until triggered by existing conditions during an improvisation. *Kinesthetic* memory [refers] to the seemingly unconscious ability of the body/mind to remember and reproduce specific movements and/or qualities, complex coordinations, or habitual movement responses” (De Spain 2003: 32).

Beyond (before and after) the space of an ongoing improvisation, reactivating the known depends on memory. “Improvisation requires a powerful memory: memory of the parameters of an instrument, of the body, of available technology, the parameters of a work’s structure and one’s place within it at any one time, the parameters of an idiom, a genre and its history, it’s possibilities” (Peters 2009: 82). In the case of an engagement with more than the body, when dealing with the material conditions of the instrument and technology, improvisation depends to varying degrees on memory. A highly skilled, expert improviser relies on integrated body-schematic sedimentation resulting from instrumental training, in order to focus on the sound instead of the instrument. The economy of memory through the ‘down-loading’ into body-schematic patterns of complex movement conglomerates such as instrumental playing techniques lessens the cognitive load (Schacher and Neff 2015).

Traces

After the improvisation is finished, the strongest trace of it resides in the memory and the experience that is present for each person who was actively partaking in the performance. Other traces, such as recordings might help to reconstruct single aspects of the performance, but lack the plenitude of entwined modalities that crucially make up the moment of improvised performance. However, memories do not remain in a stable state, they are rather ‘slipping in the opposite way’ (Bataille 2014: 122), and are continuously recovered in a process in which

seeing and memory forget the object itself and enter the subject’s own set of personal meanings and associations. ... [this] suggests that the forgetting (or stealing) of the object is a fundamental energy of its descriptive recovering. The description itself does not reproduce the object, it rather helps us to restage and restate the effort to remember what is lost. The descriptions remind us how loss acquires

meaning and generates recovery—not only of and for the object, but for the one who remembers. The disappearance of the object is fundamental to performance; it rehearses and repeats the disappearance of the subject who always longs to be remembered. (Phelan 2003: 147)

The disappearance and loss of the primary experience and the subsequent need to recover, in whatever form possible, traces of the bygone moment, are part of the process of sedimentation. In the cyclical practice of the performer, the process is also the prelude to a coming improvisation, which will in turn be informed by the recovered and sedimented experiences.

For improvisation with its contingent, unforeseeable course of action, anticipation is one of the central driving factors, both for performer and audience. Based on the levels of structure given by body, education and culture, perception is honed and attention is (in-)tended towards the upcoming event and action (Huron 2006). The capability of anticipation is not only a cognitive one. In many forms of improvisation, in particular in the non-verbal performing arts of dance and music, it is in the corporeal domain with its pre-reflective pattern recognition capabilities that the information necessary for anticipation is present; for the performer it is as if “the beast in the body is sniffing out the next thing” (Hamilton 2016: personal communication), whereas the listener/viewer can only follow improvisation by means of resonating and mirroring (see Section 4.2.5). Life-long experience of being exposed to activities and disciplines such as music or dance lay the ground for reading the direction in which an improvisation is heading. Through the intensified presence in the moment of improvisation, the three phases of the present described by Husserl (1991) (see Section 3.1.1) seem to extend and expand their reach: “There is a forward-looking imagination which, while mainly concerned with the moment, will prepare for later possibilities. Rather in the way memory works, perhaps, a piece can be criss-crossed with connections and correspondences ... Simultaneously, events remembered and events anticipated can act on the present moment” (Bailey 1992: 111–112). The intersecting lines of intentional and protentional awareness (see Section 3.1.1) in the connection of the yet-to-come with the just-passed in the extended present, emphasise the feeling of being present in-the-moment and hint at the fact

Anticipation

that and the manner how impulses, actions and reactions are intertwined and connected (Huron 2006: 17).

3.6.5 Awareness

Improvised performance inherits all the characteristics of performatively charged, ritual significations that are attributed to performances in general (see Section 3.5). However, given improvisation's focus on recombining and re-creating the given into something 'new', the demands on the attention of the performer and the audience are intensified and more resources need to be invested in order to fulfil the aesthetic, situational, social, and individual ideas, goals, and expectations. The highly concentrated state of the performer, for whom the challenge of the situation and the skills available should be in a balanced state (Csikszentmihalyi 1990), increases awareness and mobilises more perceptual resources.

Hyper-Reflection

Negotiating the demands and complexity of the improvisatory moment only becomes possible through a multi-level awareness that leverages corporeal, sub-personal, and conscious cognition. In this mode of compressed presence, "the thinking and creating body ... is what recalibrates ego and superego, critic and comic, attentivist and activist, and individualistic and communal impulses ... [and] grounds the development of consciousness as a hyperawareness of relationalities" (Phelan 2003: 147). This 'hyper'- or 'meta'-state of awareness covers all aspects involved in perception during the improvisation; the shifting focus during the doing even encompasses elements that are beyond the immediate actions, forms and impressions. "This notion of a pre-reflective experience located both outside and inside oneself, like a topographical weave, ... allow[s] for the 'obverse' and the 'reverse' of experience to shine through, and to intersect at oblique angles" (Kozel 2007: 20–21). By engaging in the process between known and unknown, marked and unmarked, remembered and anticipated, by delving into the negotiation from moment to moment, it is possible "to become aware of our own theories and biases, our histories and desires, our delimitations and our methods, and even our results and conclusions. ... But that awareness, like the moments it is attached to, is fleeting" (De Spain 2003: 36). Although the "reflexive awareness" (Leigh Foster 2003: 7) operates primarily on a perceptual, observational level, a parallel

reflective activity occurs as well. Outside of performance, in an everyday setting, reflection does not necessarily have to be an ‘introspective’ mental activity, it is “in a sense, an *experience of experience*, ... it retains the essential shape of intentionality as *experience of*” (Ihde 1976: 37) (see Section 2.2.4). In improvised performance, the two complementary types of experience collapse, fold up, and provide the potential for being simultaneously lived. The performer does not just react to the perceived, but establishes a level of reflective activity that has its own agency, and will later be crucial for the recuperation of concepts from raw experience. Hence, “hyper-reflection is a process of thought that takes into account its own functioning” (Kozel 2007: 22) and takes place *during* and not just around improvised performance.

Art, really, is an engagement with the way our practices, techniques, and technologies organize us, and it is, finally, a way to understand our organization and, inevitably, to reorganize ourselves. (Noë 2015: xiii)

4

Artistic Practice

Art is relational, it is not the thing itself that counts, but the links, rapports, and bridges it produces between individuals and between the states of being through the processes of its making and perceiving.

What is not visible in a single performance but is implicitly understood, is the necessity of a process of development, refinement and decisions that leads to a singular performance. In projects that span a longer time-frame, such as the ones presented in this chapter, the processes repeat, modulate and, in the cyclical nature of contraction and relaxation between performances, gradually mature. Any artistic method depends on these principles, as does all learning and accumulation of experience. What distinguishes the projects presented in this chapter is their shared topical focus as well as the investigative nature of their processes, which are intent on generating understanding about methods and underlying issues in addition to generating art works. From my point of view as the artist who is involved in creating and performing these different pieces and is furthermore in charge of comparative analysis across disciplines, the repeating, iterative nature of these activities becomes a central characteristic with which to consider the methods used. Being able to attain an overview enables to discern the connections that exist between the phases of compression and relaxation in each cycle on the one hand, and cross-contamination to and from the parallel tracks on the other hand.

4.1

Arraying Projects

The following chapter lays out a number of projects or modules that are part of my artistic practice. The main focus of the following sections lies on a descriptive approach for each of the pieces, to lay bare their makings and attempt to isolate some aspects of significations, in order to provide a basis for detecting systematic relationships between the formats and activities. The practices discussed here fall into two categories that are connected by common strands: on the hand those aimed at performance on stage and on the other hand the one aiming at experience gathering in exploratory processes. Other projects that are situated in between these practices or cover neighbouring domains such as installations and audio-visual compositions are omitted in order to better focus on the core topics.¹ For each of the modules presented here, a collection of videos (and some photographic materials) are available in a Media Portfolio on a dedicated webspace. Reading each of the following sections should be accompanied by viewing the corresponding media documents, always keeping in mind that they do not represent the works themselves, but only provide a lower-dimensional trace of the original experience.

*A Hybrid
Musicianship*

What should become evident throughout this chapter and what will also be the topic of the final chapter is that a number of strands and topics run through the different projects.

The first five projects, 'new islands', 'Double Vortex', 'Moving Music', 'one hand clapping', and 'trans-form' are all aiming at being performed on a stage. The processes and constellations of each project contain aspects of musical practice that bring electronic sound- or media-processes into a relationship with the body and movement, through a mode of physical, gestural performance. The relation between the instrument and the body, as well as their significance with regard to the spaces for sound and movement represent key aspects. Each in their own way, the projects thematise the translation, hybridisation, and mediation effected by the presence of the technological instrumentation and the emphasis on bodily presence and action. A central issue in each project is the question of its position in

¹ See <http://www.jasch.ch> for documentation of additional artistic projects.

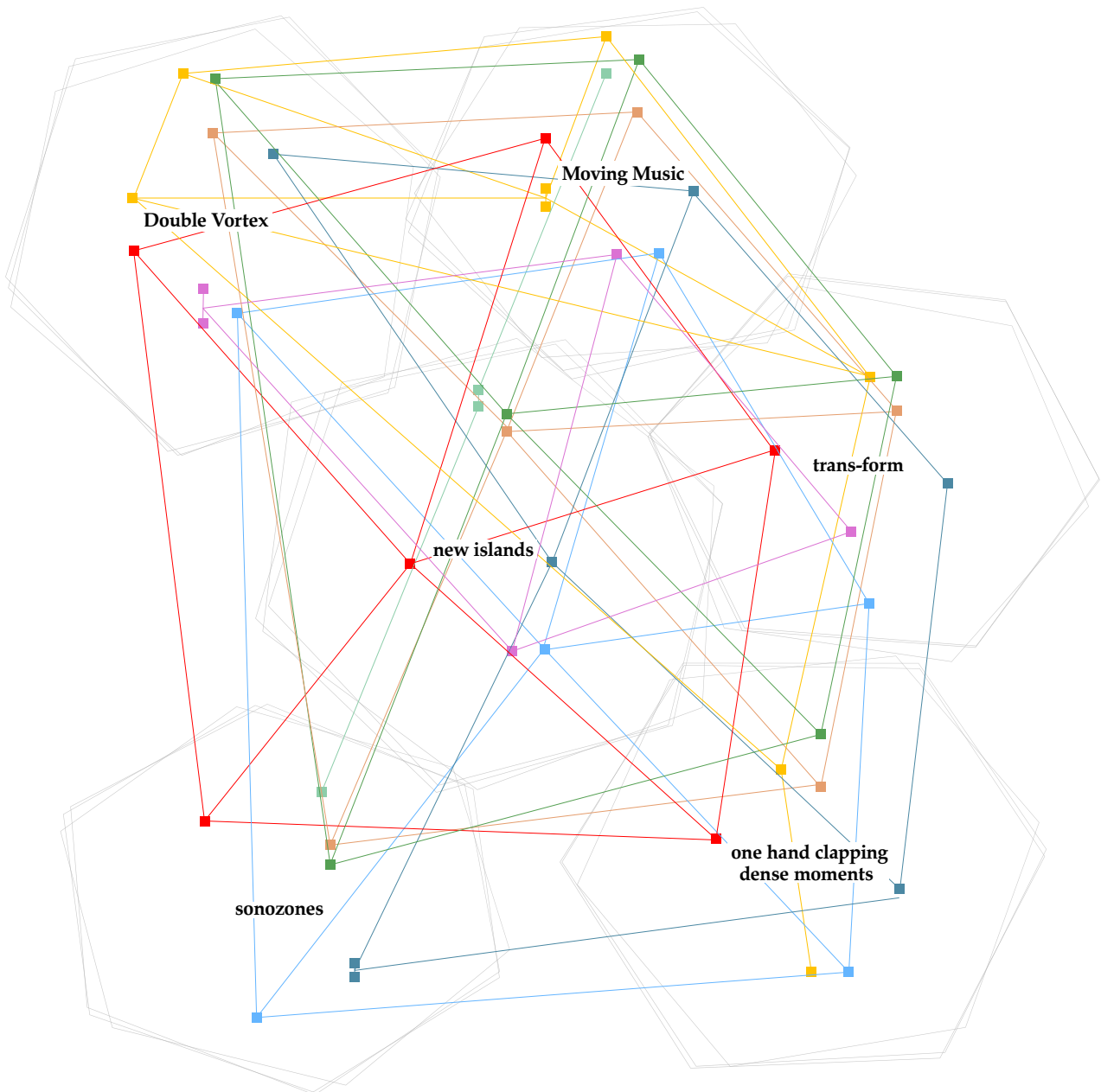


Figure 4.1: The six artistic modules of this chapter, arranged in relation to each other (for details about the connections see table 5.3).

the field that stretches between the poles of composition and improvisation. Through the organisation of movements, interactions, behaviours, techniques, sounds and gestures, and always located within the frame of performances for the stage, the projects do generate art works or identifiable pieces. However, their state remain fluid; even if single performances appear as completed works, it is important to consider them as momentary snapshots subjected to situational contingencies.

The sixth project, 'sonozones', contains performance aspects as well, but is situated in public spaces and is concerned with sound's agency and the impact of listening and intervening in the (sub-)urban context. Here as well, technology provides tools, instruments, and layers of mediation that enable engagement in different modes with the sites and topics of the project. The goal of this project is not the well-determined moment on stage, with its concentrated attention, but rather the processual nature of an investigation with artistic means into sound's presence, role, and impact in the urban context.

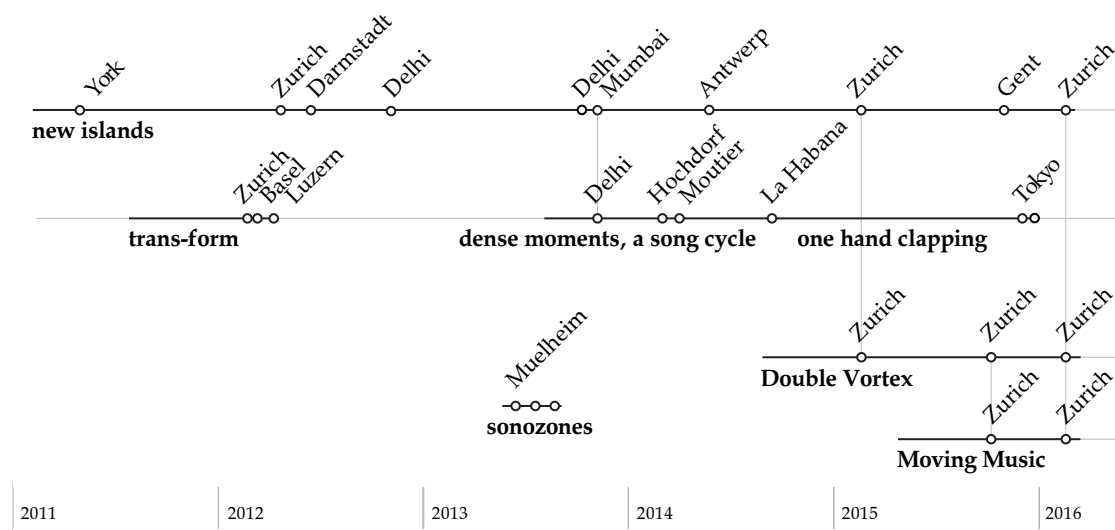


Figure 4.2: A timeline depicting the temporal evolutions and relationships between the six artistic modules and the main performances documented in the Media Portfolio.

Video documentation for all performances is located on the Media Portfolio page: <https://www.researchcatalogue.net/view/269265/269266>.

4.2

'new islands'

New territories are only truly discovered by going there. This holds true for both the stage and the world at large. On stage, the physical presence of the performer is one of the clearest points of reference. It carries expression, intention and captures the attention of the audience. Developing the potential of gestural actions for musical performance is key, as this music unfolds through an exploratory attitude and improvised forms. The combination of actions and gestures with directly or abstractly linked sounds creates a particular sonic space. The signs and gestures may evoke dance, music conducting or even martial arts, yet keep their identity and remain in a domain of their own. – *Extract from the project's press text*



Figure 4.3: Video-still of the performance of 'new islands' on 25. January 2016

Video documentation is located on the Media Portfolio page for **new islands**
<https://www.researchcatalogue.net/view/269265/272400>.

4.2.1 Platform

The cycle of performances entitled 'new islands' for sensor-gloves and live-electronics represents a long-term solo-repertoire track by Jan Schacher and has evolved since May 2011. Within the network of pieces discussed in this entire chapter 'new islands' represents the 'ancestor' or precursor piece of those works that are focusing on the topic of gestural electronic music performance and the technologically mediated presence of the performing body.

An exploratory platform, rather than a fixed composition, the pieces in the cycle have evolved through each of the performances since early 2011. The central musical method uses a mixed mode of prepared, 'composed' structures and sound transformation processes, that is combined with an improvising, instant-composition approach. By following an implicit narrative, which provides a guiding line along which to develop sounding states and mental imagery, temporal as well as dynamic durations and tension arcs develop. Integral element of the process, the sensor gloves and corresponding software framework constitute an instrument rather than a composition. The characterisation stems from the fact that the system depends to a large extent on the musician's decisions for changes in sound character and processing capability. The temporal form and musical character of the piece hinges mostly on the sounds that are input into the system and the decisions taken and manipulations effected by the musician. Therefore, even without changing any of the technical and software's 'composed' framework, each performance produces a different piece, whose success depends as much on technical mastery of the 'extended instrument' as on the state of imagination, presence, and self-perception of the musician on the day of the performance.

Technical Implementation

The basic idea of the empty-handed performance without an interposed screen is based on technical methods for exerting control or influence sound-processes without having recourse to the conventional cockpit-like control arrays or the traditional physical instrument. Various technologies are available today to make this possible and an entire field of development, investigation, and new instrument design has emerged in the past

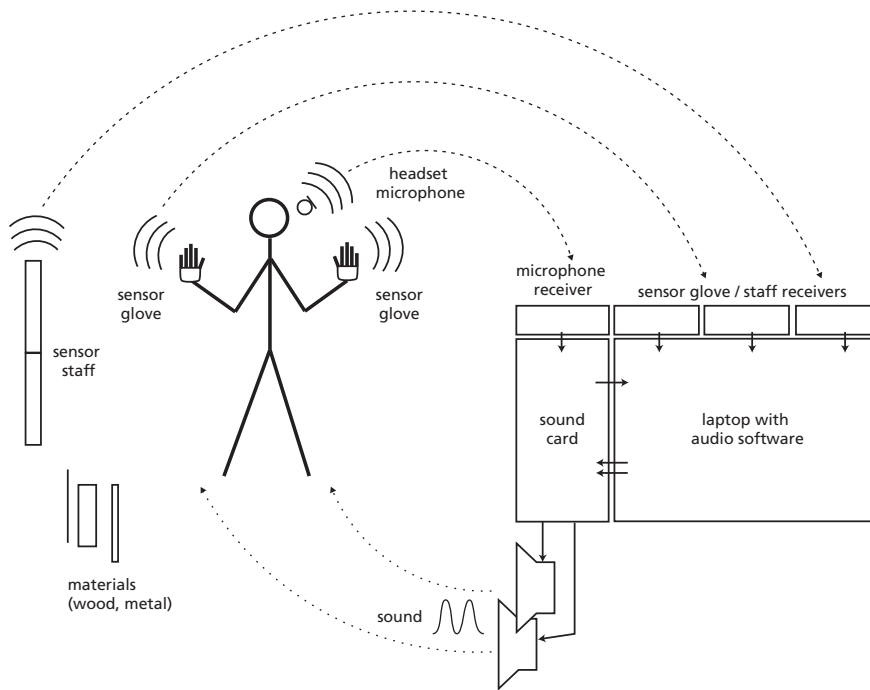


Figure 4.4: System overview for 'new islands': The performer is equipped with a wireless headset microphone, a pair of wireless sensor gloves and in addition uses a wireless sensor staff and other materials such as wood-blocks and metals. The technical system consist of the receivers, audio card and a software-system effecting sound transformation processes.

15 years.² The devices or interfaces chosen for this project are a pair of sensor-bearing gloves and at a later point a sensor-equipped staff-like interface (see Figure 4.4).

The gloves were hand-made between 2001 and 2005 and have stayed in a stable form since then; any electronics and motion sensors are updated as the available micro-controller and wireless technology evolves. My application of the gloves for 'hands-free' performance dates back to at least 2005; I used them mainly to control processes in audio-visual live-performances. As technology evolved and has become more affordable and easy to implement, all the elements have become wireless, providing complete freedom of movement on stage. The gloves are silk under-gloves whose fingertips have been removed to enable other actions, such as playing a traditional instrument (originally the double bass). Each glove carries a flex-sensor on the four main fingers, which measures the overall bend of the finger.

Instrument

² Refer to the New Interfaces for Musical Expression NIME conference with academic publications and the corresponding curricula being offered in a number of universities: <http://www.nime.org>

On the back of each hand is placed a nine-degree movement sensor. This sensor corresponds to movement sensors used in current smartphones and produces three-dimensional data for acceleration, rotation, and the magnetic field. The first set of parameters describes the measured acceleration in (fast) movements; at rest the sensor reports the pull of gravity and thus provides information about spatial orientation that is similar to that of a joystick. The second set of parameters reports changes in rotational speed and is particularly sensitive to flicking and twisting movements of the sensor. The final set of parameters reports the strength of the local magnetic field and—in combination with the gravity vector—is used as a digital compass, permitting to measure the absolute attitude of the sensor in space (this provides orientation values in relation to the spatial frame of reference). Under the first finger of each hand is located a push-button, and a small pressure sensor is placed on the side of each first finger, positioned in such a way as to enable pressing it with the thumbs or the neck of an instrument. Finally, the cables leading to all of these sensors are collected on the back of the hand and connect to a bracelet, which carries all the necessary electronics such as micro-controller, wireless module, and the rechargeable battery.

*Extended
Instrument*

The basic technical setting for the sound processing hasn't changed since the first performance of this cycle of pieces in 2011. The microphone-signal is routed through the sound-card, get's transformed and augmented in the software, the resulting sounds are played back on a standard stereo PA-system, to be heard by both the performer and the audience (see Figure 4.4). The sound-processing software consist of a global audio-routing system feeding a number of modules, as well as control layer that manages the overall settings. The sensor inputs and mappings are in part done separately in dedicated tools, the connection and translation of movements and action-patterns however is integrated in one of the top layers of the software. The mappings and pattern recognition are of considerable importance for this system. Action patterns, for example, are used to trigger specific sound changes. One gesture that is easily recognised, even in the video recordings, is the closing of the fist in a grasping movement and the corresponding release. Depending on the orientation and elevation of the hands, these actions have different functions and trigger discrete events:



Figure 4.5: Screenshot of the software system as used in the performance in January 2016.

in one case they activate the capturing of sound into one of the granular engines, in another instance they control the freezing of a reverb-tail that provides textured sound-surfaces. Other parameters are continuously affected by sensor-values and are connected, for example, to the horizontal compass-direction in which a hand points.

Part of the sound-processing is split into two halves, corresponding to the two hands. A number of processing modules are identical for both hands, such as filters, reverbs, delays, and panorama (see the two columns on the right in Figure 4.5). In addition, each hand is assigned two specific processes: the left hand start/stops and modulates a so-called 'munger' module that generates a rough irregular kind of cut-up granulation; the right hand starts/stops and modulates a long-duration granular process that is used mainly to produce very-fine grained time-stretched playback of incoming sound-fragments; in addition the left hand controls a ring-modulator, whereas the right hand affects a pitch shifting module.

Over the course of evolution of the cycle of pieces, the 'empty-handed' gestures afforded by wearing gloves were extended by further controllers, cameras and other sounding materials. The sensor-staff (Schacher 2013b)

in particular was added because empty-handedness poses a big constraint on the possible types of gesture and their significance; adding this instrument, with its particular sound character, alters the sonic identity as well as gestural identity of the performance.³ Holding an object with instrumental action affordances is easier to comprehend, both for performer and audience. The fact of picking up, holding, and manipulating the object, then putting it down to turn the attention to a different sound situation provides a legibility which is missing from the continuously present gloves. In some development phases of this project, using a camera to observe the performer's body in space provides different interaction possibilities that generate game-like sequences. The optical sensing mode has the benefit of covering movement that extends into the stage space, rather than just the personal space or 'kinesphere' (Camurri et al. 1999: 328).⁴ The addition of woodblocks, sounding metal bits and an additional microphone was part of experimenting with the issue of empty-handed versus object relationship, these objects provide the additional benefit of being physical sound sources, with a distinct identity and clear attribution as a sound's origin.

4.2.2 Guiding Ideas

Inspired by the performances with the lady's glove by Laetitia Sonami (1991) and the idiosyncratic hand-held instrument by the late Michel Waisvisz (1985), the solo work for sensor gloves is intended as an experimentation platform for a type of musical performance, where the musician steps in front of the audience without the barrier put up by a laptop or cockpit-like controllers. The character of the piece is heavily informed by the staging. The corporeal presence and the avoidance of conventional electronic music performance tropes exposes and compresses the physical presence, the attentional presence, and the performative presence of the musician.

Contradictions

With an attitude of deliberate risk-taking, the musician enters into a dialogical relationship with the space, the technological system, the sound-world of the pieces, and the global situation of being on stage in front of the

³ See for example the video of the performance at the DARE 2015 conference in Gent. At minute 02:30 the quarterstaff enters into action. <https://www.researchcatalogue.net/view/269265/272400>

⁴ See also the section dedicated to the dance movement piece 'Moving Music': section 4.4

audience. This is a contradictory situation, since it contains the makings of composition, of a framework for performing with gestures, an experimental, or rather experience-gathering setting, a story or at least a narrative undercurrent, and possibly even a statement; all of this without being situated in a solid set of cultural references and codes, at least with regard to the content of the performance. Susan Kozel (2007: 66) captures this contradiction in the juxtaposition between the utopian potential and the social norms when she states that: “the paradox of performance, as a set of actions and as a concept, is that it manages to capture a creative, even utopian, potential for transformation at the same time it evokes a strait-jacket of conformity to codes and productivity quotas. Do we perform to express ourselves or to keep up with externally imposed expectations? Like a glimpse of a fantasy world, performance can bring to life a person, idea, or story.”

The question of gesture in this setting applies to several aspects. One is the instrumental relationship with a live-electronic system through wearable interfaces that is used with the aim of entering into a mode of performing that is intuitive and not primarily control-action based. The other is the theatrical significance of an exposed performer carrying out strange, empty-handed actions in mid-air. It is impossible not to attribute to these gestures a goal-oriented, yet unknown but meaningful purpose. “To a great extent, the perception of music is influenced by the listeners’ mental reconstruction of the performer’s efforts” (Waisvisz 1999: 120). This is particularly the case when a cause-and-effect relationships between a gestural action and a change in sound is perceived. For the performer, this distinguishes instrumental actions from abstract gestures. The former belong to the instrument and its modes of performing, the latter are situated in the performative space and are related to the body’s performative states and the evolution of a particular performance. The relationship between sound and gesture in performing with an instrument is thick with association. “Gesture ... is not something ‘out there’ that we perceive, but a culturally and experientially encoded phenomenon, something we know and do as embodied and—crucially—social beings. Gesture actively affects our listening and we know it as much from our bodily experiences of motion,

Gesture

touch, and resistance as we do from a purely auditory experience of sound” (Hogg 2011: 88).

Experimentation

Contrary to artistic works that are commonly motivated by the piece itself and by the impact it manages to have on experience for both the artists and the viewers and audiences, the intention and driving force for this process is indeed experimentation, or the creation of situations, within which, through repeatedly applying the same method, insights and experiences can be gathered. The goal of this experimental process may not be the production of a communicable type of knowledge, but rather the discovery of states of being and sounding that expand the domain of the known (see Section 3.6.3). By working along these lines certain aspects of performing with technology that are difficult to access can be brought to the foreground. The most evident topic is the problem of balancing technology’s dominating presence with a proper musical focus. By removing the centre of attention from instrumental actions on the technological instrument, it should become possible to emphasise the process of exploring the musical potential and significance of gestures, in particular through a focus on direct corporeal presence and the act of creating abstract sound-worlds in the moment. This shows that the relationship to the technological instrument is one of control and dependency; in this particular configuration it has a signification that goes beyond the usual musician-instrument bond.

Agency

Over the course of the process and across the different performances one topic or question has repeatedly emerged: that of agency. Attributing the agency to anybody else than the musician might seem unusual, in particular from the point of view of the audience, which clearly perceives the performer as the one taking all the decisions. From the outside, the agency of the musician is perceivable in the power to form, inform, and conform a time-space on a stage. The agency of the artist is given by the conventional staging, where an audience accepts willingly to partake in the performance, without knowing or recognising central elements of the practice that is being presented. But from the performer’s perspective, in relation to a complex technical instrument as well as an unstable stage and sound situation, the matter is not that simple. The agency of technology is effective in the extension offered to human sound-making potential, but also in the constraining effect of technology’s inherent rigidity. And finally there is in

all performing arts an aspect of co-performance and therefore co-agency that resides with the audience itself.

4.2.3 Thematic Evolution

The core element in this long-term development arc, its gestures, sound-processes, and ideas, have gone through numerous iterations and cycles of compression and decompression, and have evolved along a series of conceptual, thematic, textual, and sonic materials. The central theme has proven to be remarkably stable and has remained the same throughout: A musician performs in front of the audience the exploration of sonic and performative situations. Or metaphorically speaking, the musician takes the audience to an unknown sound place that is being created live, to the proverbial '*new island*'.

This brings to the foreground the question about the narrative that is established around the piece. As with any art-work, some kind of discourse about/around the musical or performance piece is necessary in order to provide an anchor for communication and conceptualisation. The narrative element necessary for the dialogue with the public makes use of external points of reference that are shared by all,⁵ be they social, political, or as is the case here, poetic. In addition to these exterior factors, an inner narrative is developed, helping the artist during the development and performance of the piece. Part of this narrative contributes to mental imagery and to the determination of atmosphere or colouring of the piece. In the case of the long-term process of repeated cycles of performances that is described here, the 'back-story' evolves as well, crystallises, and occasionally produces unexpected points of reference of poetic nature. Throughout the process, the title serves the purpose of contextualising the experience for the audience, without constraining the imagination. Over the course of the project, additional materials, both textual and sounding, have found their way into the narrative strata of the pieces, contributing exterior impulses to the formation and/or embedding of sonic situations.

Narrative

The very first version of the piece in 2011 is entitled after the central element it tries to manifest. A description from that time states that: "Traces' is a piece for wearable sensors and electronic sounds. The sounds are cap-

Traces

⁵ at least within a certain segment of culture

tured, shaped, displaced and transformed by the interpretation of traces of movements and gestures in a body-centric space.” According to this description, the focus is put onto the gestural aspect, giving it a provisional status and invoking the disappearance of the movement and some kind of agency of memory. It is not entirely clear from this description by what means the actions are carried out on the sounds or indeed what the sounds themselves are.

*Possibility of an
Island*

The performance the following year requires a more poetic and evocative image; this is found in the quote at the beginning the eponymous novel by French author Michel Houellebecq (2007): “*there is in the midst of life, the possibility of an island.*” The central elements of the work are described in a press text as follows: *On stage the physical presence of the performer presents the only point of focus. No other elements are apparent, thus emphasising the invisible nature of the electronic instruments and opening the perceptual space for physical expression. By deliberately stepping away from traditional ways of playing electronic music instruments through mixing desks, keyboards or mice the affordances of abstract movements for musical performance become apparent. The combination of visible actions and gestures with directly or abstractly linked sounds creates mental images both in the performer and the audience.* It is evident from these few lines that the main technical and presentation framework for the piece is already well established, but the thematic link remains elusive. The quote evokes an island that can be seen in the standing apart of the moment of the performance, but also of the artists position in a wider context. No explanation is given and various interpretations exist.

now is a ship

During the preparations for the next performance a few of month later, the mental imagery of ‘islands’ sparks the imagination and establishes a connection to the following poem:

*now is a ship
which captain am
sails out of sleep
steering for dream.*

(e.e. cummings 1964: 9)

Instead of serving as a text given to the audience in a programme booklet to contemplate, these four lines become the raw material for the vocal

performance. Using only sibilants, and fragmentary syllables, the poem forms the backbone for a number of performances, as the core of the inner narrative of the performer.⁶ Of course, poetic language encapsulates and renders subjective ideas and thoughts by an artist. In this case, the ideas of presence in the 'now', and of navigating a space that contains dream associations strongly resonate with the already established narrative substrate, however, they only do so for the performer. An colleague who has witnessed, over the years, a number of the performances makes the following statement: "I was able to let go and dwell in the web of linguistic, emotional, philosophical and perspective-changing 'synaesthesia' of the piece. The grains of sound were grains of discovery—within the stretched phrase all possibilities seemed to be conveyed but not accessible to the conscious mind. It gave me all the time I needed to discover and visit that island" (Schacher and Neff 2015: 345).

The latest change in narrative elements for this project is the addition of field recordings into a compositional structure with clearly defined sonic phases (see Figure 4.6). This abandons some of the key ideas of indeterminacy (Cage 1961) and open-form improvised composition (Bailey 1992), and adds an increased emphasis on atmosphere (Böhme 1995). By placing field-recordings from a walk in Shibuya's Yoyogi park and a subway ride in Tokyo, as well as a recording of heavy traffic on a rainy highway in Newfoundland, memories of these places begin to compete with the abstract sonic spaces. For me, this establishes a direct relationship with a past experience; for the audience memories of other places may be triggered or generic situations may come to mind. These sounds are thick with context and place-ness, but they "do not carry meanings in and of themselves, [they] are the sites of complex mediated sets of relationships between physical sounds, perceptual systems, personal associations, culturally significant gestures, bodily and emotional responses, observed actions and reactions, and culturally learned listener expectations" (Hogg 2011: 88). Judging by the audience's feedback after the last performance, the evocation of these places through their acoustic remnants produces an effect of

*Yoyogi Park/New-
foundland*

⁶ Listen for example to the performance at Troubleyn Theatre Antwerp, Belgium, on 15/05/2014. At time 04:26 the first line appears. <https://www.researchcatalogue.net/view/269265/272400>

imaginary travel or transportation, in a similar mode that would occur in a cinematic situation (Normandeau 1993).

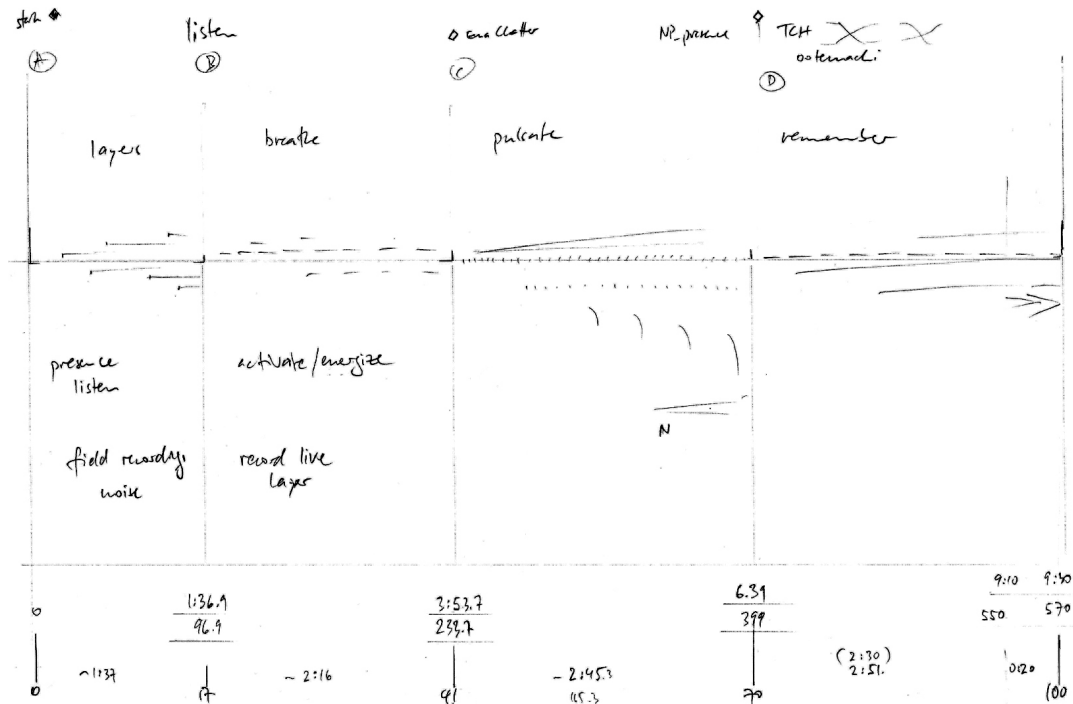


Figure 4.6: Newly added graphical score with phases and times for fixed media materials (January 2016).

4.2.4 Experience

Based on the explanations and descriptions offered about the platform, the (extended) instrument, the evolution of the guiding ideas, and the shifting narrative, an attempt can be made to address one of the aims of this process-driven artistic project: inner experience. Inner states and experience are some of the most ephemeral and ineffable elements of performing arts, both for audience and performer (De Spain 2003).

*Objectivity is
beyond me*

No objective facts exist and apart from brief glimpses and scant traces there is hardly any basis for an in-depth analysis. To quote Derek (Bailey 1992: 85): “there is, as far as I know, no general view to be given. So I propose to base my account ... largely on my playing experiences within the music. Objectivity will, I am sure, be quite beyond me, ...”

The following section represents an attempt at unearthing inner images, states, and reflections that occurred during the latest, documented performance of this piece. These are memories of and short reflections about

moments and aspects of the performance, retrieved from memory without recourse to the video-recording. For the reader, however, watching the video of the performance before continuing to read might help to clarify or at least anchor these thoughts in a second order experience of the performance.⁷

There are distinct memories about:

- The situational difficulties at the beginning before going on stage: the pressure, the compression before going on stage; a short disruption and surprise by the microphone change-over with previous performance; starting the technical system and checking all recordings.
- The transition in to the limelight and the intent to arrive as quickly as possible in the piece, in the right mode for navigating the piece, for presenting and carrying the new form for the audience.
- The immediate familiarity with the instrument (gloves) and the required activities to start into the extended instrument/composition.
- Certainty about the temporal extent of the space that the piece will take up, but sensing the unknown state of the situation to a degree, that is due to compositional changes, the new structure, external references, field-recordings, and the changing role of the voice.
- The preoccupation with manifesting the piece means keeping in mind where in the structure I am, what the *manipulations* with the hands and the voice will produce, and how the flow of the pieces evolve in time.
- The affirmative presence in a frontal position facing the audience is quickly surpassed and displaced by the notion of creating, on the stage, a physical space with different places, where the action and the sounding of the different parts of the piece have different meanings. These places are delineated, sketched or drawn (mapped) by taking possession of a spot and performing a section in/on/around it.
- The problem of feedback adds an external constraint, that I attempt to mitigate, by looking for places that are 'shadowed' or less exposed to the speakers. The result is a mixed motivation for moving.
- Inner states: concentration and an intense, tense, intending tension, that is aimed at keeping the piece together, in the face of unmanageable

Memory Traces

⁷ See the video of the latest documented performance here (Video 1a): <https://www.researchcatalogue.net/view/269265/272400/300/200>

combinations of disparate elements or domains (sound, action, sounding, listening, space, movement, gesture, figure). The sensation *of*, or underlying focus *on* control is fluctuating, not always coherent, sometimes even disappears or is torn away from me.

- The feeling of drifting in the sonic spaces and places of the piece, which are now suddenly filled with other places originating from field-recordings, and which trigger imagery and memories of their original experience. I am in a passive mode, I am running after the piece, I hang helplessly in the web of structures I had prepared but lost the grasp of (feedback from audience members indicates that this state was noticed). I am exposed to the unplanned direction the piece takes, I am subjected (unterworfen) to the situation that I have created. I am not master of the vessel anymore, the undercurrent and flow I created pulls me away, I am in the riptide pulling me in a direction that I have no control over, and my attempts at finding a way to laterally escape do not really provide me with the steering I need. In the end I am washed ashore of the ‘new island’ and return to the edge of the piece and performance space like a shipwrecked survivor from a storm or a like a surfer after a wash-out.

4.2.5 Drawing Connections

The traces of inner experience and associations that remain after the performance—and in this case were collected six moth later—exhibit a particular characteristic: They address the perception of acting within a stage space as well as the temporal space of a performance. However, they do not retrace changing emotional or perceptual states, the traces of which seem to be harder to retrieve than specific outer conditions or concrete inner preoccupations. They address presence and the creation of a narrative, through the evocation of space. The question is what this space represents.

Stage Space

Over the course of the performances, but also in relation to other performance experiences (see Section 4.5), the importance of the stage space has evolved. The tacit assumptions about solo musical performance have given way to a more differentiated approach to physical placement and movement in space. If the dimensions of the given stage permit, this leads me to wander around the stage with the intention of creating an extended *place*, instead of occupying the conventional focal point in the centre spot.

The extension of the space, surface, or frame of action might have the purpose to burst the bubble, to indicate the potentially boundless nature of the performance space, and to better include the audience. The opening up and stretching out of the space of action provides an opportunity for more focused presence within the abstract places that emerge within the piece. If taking possession of the wider space succeeds, I am asserting my presence not just in the time of the piece, but also in the space and the localities of the performance.

The reported traces reflect my inner experience (see Section 4.2.4). It is more difficult to obtain equivalent material from audience members. This poses the question about the symmetry between the experience on either side: is it possible to determine the elements of experience that are identical, similar, or unique? Does the mirroring occur on levels that are comparable? It is safe to say, that if there is mirroring happening, the mirror will be distorted. Or to push the analogy even further, that the mirror exhibits strange ways in what it reflects and what it doesn't. If art is indeed a strange tool (Noë 2015) with a cultural purpose, and if it functions to alter or operate in the cultural sphere, then only the simplest and most basic methods and effects of this strangeness can be described. Mirroring maybe one of them. On a pre-reflective level the mirroring, even if distorted, may lead to associations and resonances of own experiences, affective impact through corporeal elements, affective response to the exposed-ness of the performer, and an intimacy through the shared experience.⁸ It is more difficult to perceive how skills and expertise are mirrored that are for example visible in musicianship. The audience's own experience in performing music and dancing on a everyday, lay-person skill-level provides a template against which a mirroring resonance can develop.

The effects that each performance produces are partly due to mirroring. For the *audience* the effects may be discomfort or doubt, arising from the empathic co-performing with the performer, who is putting himself into a risky situation, or at least the impression that not everything appears totally planned and under control. The performance can potentially produce a degree of alienation, because of the unknown nature of sound

Strange Mirror

Audience Effects

⁸ One kind of intimacy is that of the sound material generated by the zoomed-in, microscopic quality of pre-vocal mouth sounds.

processes and the limited legibility of the opaque manner with which decisions are taken and performed. The context of the performance provided by the concert hall and formal framing as concert performance produces expectations that are informed by cultural norms, standards, boundaries, and overall 'normalcy'. These expectations and anticipations are only shared to a limited degree: the audience and the performer share being in the moment, they follow together the unfolding of the performance and keep in mind in a similar way what went before and what comes afterwards. The link that occurs in the shared perceptual, experiential and memory space produces a strong mirroring effect.

Performer Effects

Some effects of (entering) the stage and the performance are unique to the *performer*. The position in the limelight and the attentional focus changes the performer's position in relation to the audience as well as his mental states. This is informed by the outer frame, the physical boundaries, and the corporeal position on stage. The performer can be in a frontal position, explicitly facing the audience or have his back to the audience. The attentional focus (and gaze) can point inwards or outwards and be focused on the inner sphere of the piece or the outer space of the stage. Negotiating the necessities and contingencies of the stage produces in the performer a state of 'hyper'-attention and multi-level focus. The audience members sense this state but short of entering into an actual performance mode themselves do not share it.

Closing

During creation the musician/agent is negotiating multiple domains simultaneously. However, control is only partial and agency is distributed, which is visible in how the pre-composed, organised, spatial, narrative sonic elements, and performative actions are counterbalanced by the contingent, situational, and singular constellations that arise within the performance.

Above and beyond the material condition of the instruments and tools used, which is informed by but not entirely dependent on the use of technology, the central theme of this constellation lies in the relationship established between performer and audience. The relational significance of the 'showing-doing' (Schechner 2002: 28) and the narrative and communicative intent relates this type of work closer to abstract theatre than to a musical concert. Between artist and listener/viewer, the presence of the

gestural electronic sound technology mediates this relationship. However, this 'filter' or 'membrane' extends to include more than just the instrument and technology: the embedded aesthetic and cultural schemata and codes contribute in an equal and indissociable manner to how the artist and the partaking audience member connect: "When we perform we mediate inner and outer. We translate, we regulate, we discover, we get surprised, angry, fearful, hurt, exhilarated. If we create responsive relations with others and our environments that transcend language, then by means of intentional performance with technologies we can regard technologies not as tools, but as filters or membranes for our encounters with others" (Kozel 2007: 70).

With the focus on relational impact rather than virtuosity, the emphasis on the creation of sonic spaces and situations rather than intricate and brilliant technical or compositional solutions, this work represents a 'lowercase' or minor gestural performance in the vein of minor literature (Deleuze and Guattari 1986) and poor theatre (Grotowski 2012). Doubt, uncertainty, risk-taking and the will to create situations that are unknowable beforehand form and inform the performances, the experience of vulnerability and being exposed are a central part of the meaning, significance and statement of the pieces (see Section 5.3.5).

4.3

'Double Vortex'

But my seeing body subtends the visible body, and all the visibles with it. There is a reciprocal insertion and intertwining of one in the other. Or rather, if, as once again we must, we eschew the thinking by planes and perspectives, there are two circles, or two vortices, or two spheres, concentric when I live naïvely, and as soon as I question myself, the one slightly decentred with respect to the other. (Merleau-Ponty 1964: 138)

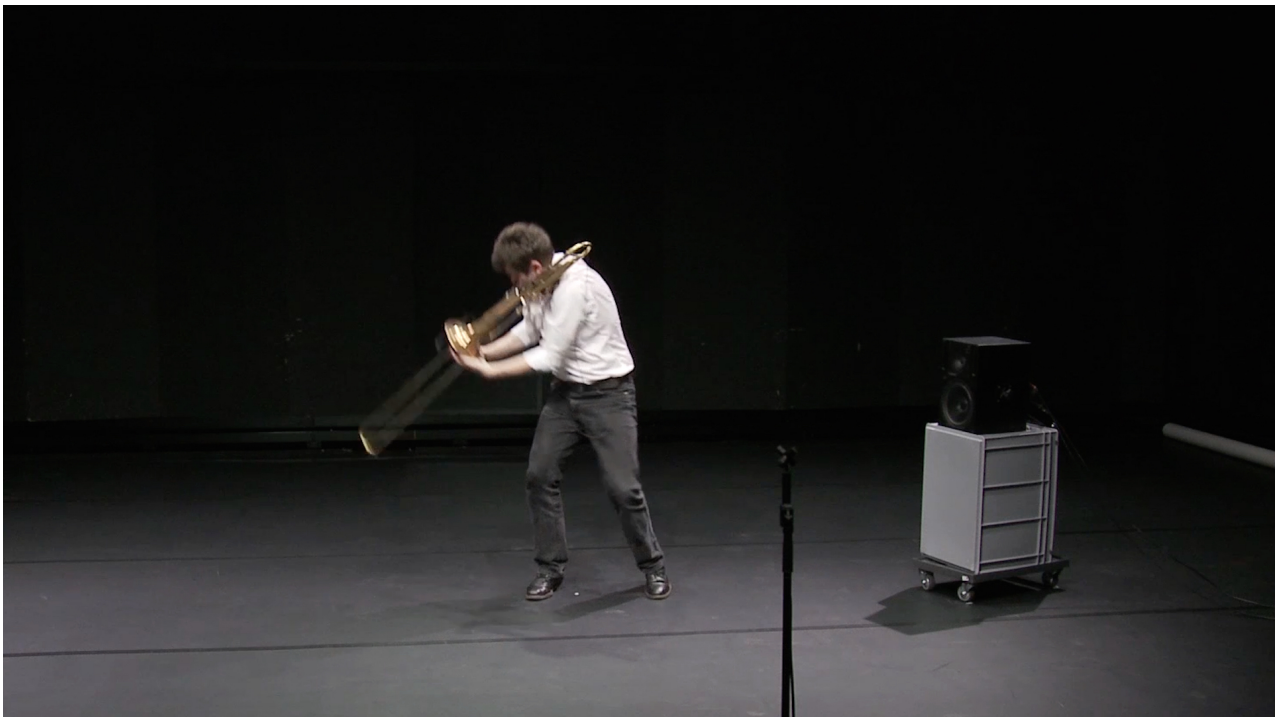


Figure 4.7: Stage configuration of 'Double Vortex' with the moving performer and a single speaker.

Video documentation located in the Media Portfolio page for **Double Vortex**
<https://www.researchcatalogue.net/view/269265/272402>.

'Double Vortex' for trombone, movement and live-electronics is a collaboration with trombonist Beat Unternährer. The development of the work was part of the artistic strand of the research project 'Motion Gesture Music' and took place between November 2014 and February 2016.

4.3.1 Piece and Context

A trombone player steps to the centre of the stage and performs a piece that lasts approximately 15 minutes. On the instrument, a wireless microphone is visibly mounted as well as a small wireless sensor-pack that is less prominent. The stage, originally flanked by a pair of speakers, now only contains one speaker that is positioned on a box at hip-height a few meters to the right, half-facing the performer. At the front right corner of the stage is a table where the second musician is positioned, facing the performer and operating the live-electronics in a traditional control-desk setting. The trombone player is equipped with a few materials that enable extended playing techniques, such as double-reeds to be inserted in the tube instead of the mouthpiece, or a rubber plunger that acts as a mute. These materials are ready at hand, in such a way that the performer doesn't need interrupt the playing when inserting or applying them.

The music is constituted entirely by the sounds that the trombonist generates and all live-electronic sound processing has at its source the sounds that are captured through the microphone during the performance itself. The performer's movements are captured with the aid of a wireless motion-sensor that is attached to the trombone next to the musician's head. The motion-sensor provides information about the energy of movement, and in particular measures the instrument's angle of inclination and the absolute orientation in space.

Research Context

This work is embedded within a research process that brings already defined hypothesis and questions to the table. The process of composition, development, and performances of the piece forms one central axis of research, with the aim of generating insights through practice. In the wider research context, there are other practices that run in parallel, provide cues and guide-lines and are in turn informed by the process taking place in the musical creation of 'Double Vortex'.

A core questions posed by the research project is how a musician's corporeality, presence, and movements do influence, colour, charge a musical performance, in other words, what effect the embodied presence has on musical performances.

This investigation into 'gesture', movement's crucial entwinement with expression, is not merely carried out by analysing existing works, although that method forms part of the wider circle of the research context. The process of modulating the aspects of corporeal presence, and to actively shape movements in a musical-, and later also dance-performance, falls within the domain of Art as Research. This is a crucial step in the search for understanding about those elements that reside inside the practice, be it during the development process or in the particularly dense moment of performance.

The complexity of the research questions that are framing this work engenders the need for the development and reflection of methods and means, which can accompany in parallel the artistic work and form a counterweight to the doing and exploring that constitutes most of the concrete activities. A mode of collection of traces and of observation is necessary, in order to provide materials for analytical work as well as for the processes of mapping, making diagrams, and building assemblages.

In this sense, the artistic practice is biased and stained, informed, and subverted by attitudes and modes of operation that are important in adjoining or outside fields and obey other laws of relevance than the ones at play in the musical practice itself. An example of this is the necessity for textual sources of some sorts (scores) necessary to carry out semiotically informed systematic analysis from a Music Theory point of view. Without the symbolic representation of notation, the methods and tools used in that discipline are of limited use and produce interpretation that may miss the point of the work.

'Double Vortex' is situated in an electronic music performance practice that is based on real-time sound processing and gestural interaction. This practice lives on concert stages, for example in the context of a festival, or in an extended mode on dance stages, through performances with technology. Through this filiation it inherits a number of assumptions and tropes that put a limit on the potential for altering the format. The piece is built on a framework that falls well within the current practice of electronic music making. In this regard the choices of elements are fairly standard: instrumentalist and composer or live-electronics performer collaborate, the instrument is amplified with microphone and speaker, the instrumentalist

Framework

is technically sensed, and the sounding results are augmented with digital sound processing. The traditional framing establishes a sort of base-line or ground truth with regard to musical practices, such as composition, development of interactions and sound processing, the process of rehearsing and performing of such live-electronic pieces, and ultimately the mode of perception by an audience as well. This frame allows for a 'differential' method in composing and at the same time provides easy to follow guide-rails, such as for example duration of the work, placing in the performance space of performers and audience, or the information and narrative provided alongside the piece. The frame doesn't exclude a deliberate stretching of those boundaries but it helps to focus the energy on those elements that are deemed essential to fulfil the intended goals of the piece.

Interactions

The instrumentalist interacts with sound processing in several ways, reflecting varying degrees of inter-dependence with the algorithmic system. The connection goes from purely analogous amplification, to sensor-controlled sound manipulation with standard effects, to almost independent generative and interactive decision making by the machine-learning algorithms (see Schema 1 and 2). The piece explores the performer's physical presence and actions by sensing his movement rather than analysing the audio-signals. The composition formalises physical movement as a full-fledged compositional element and prescribes movement-only sections that have a 'musical' character. The intention is to render evident the connection between movement and sound, by overlaying of technical processes over the musical actions. Live-electronics and motion sensing represent a third compositional layer, which has the potential to problematise the relationship between musician, instrument, movement, and sound, as well as with the algorithmic, autonomous system. Conceptually, the technology sits at the nexus between the instrumentalist's actions and the natural or electronically extended sounds. The ensuing sound world consist of concentric layers of ever more abstract sound characters that keep the trombone player's sound and actions at their core.

For the audience, the declaration and subsequent recognition and reading of these technologies during performance generates expectations: they want to see and recognise the linkages and dependencies that are at play through technical means. In the composition the manner in which these

expectations are played with is that the system sometimes fulfils them and sometimes proposes an alternate mode of interplay, the most abstract of which are autonomous, algorithmically generated musical decisions. The compositional concept builds on the premise that, in addition to musical and sonic characteristics, any instrumental performance—with electronics or without—will contain elements of physical presence and movement. These elements form an integral part of the piece's content, affective power, and presence, and informs the act of performing the piece.

		<i>a</i>	<i>b</i>	<i>c</i>
1	<i>legato / melodic lyrical singing melody</i>	härter kraftvoller, definierter -> rhythmisch - Groove possible go into loop	unbestimmter, nebulös, glissando	even less defined (air) -> change of material
2	<i>flatterzunge / triple zunge</i>	combine high-speed with high staccato - add voice (easier from airier to triple tongue) spielerisch	narrower range / high energy -> texturklang -> rauher	(gegen die Phrase) gleiche Intensität lower dynamics / less sound unter dem kochtopf-deckel (single impulse !)
3	<i>high impulse w/ real sounds intervallic</i>	tonpulse, strukturen textur	knällige Attacke aber leise	ff sehr laut (reissender klang)
4	<i>glissando</i>	aggressiv	hektisch drängend statt aggressiv	weicher spielerischer stop-n-go
5	<i>sound and voice</i>	ff Mittelbereich klingt normaler	Übergänge - Mixturen -beatings atmosphäre lange Entwicklung weniger dynamikmöglichkeiten	pp lower register fragile brüchig
6	<i>air pulses / legato</i>	ungefärbtes rauschen (add overtones) rauschen färben -> kleines Hörnchen	only air: modulate sharp attacks ohne zunge <- modulate from pulsed to continuous ->	mit zunge pulse dynamics pp-mf-> pops

Table 4.1: Compositional approach to dynamics (column a–c), timbres (row 1–6), in a qualitative organisation of trombone playing techniques. (Double Vortex I, January 2015).

4.3.2 Composition and Machine Learning

The composition for this piece is built using a modular framework, where playing techniques and dynamic qualities as well as movement-sound relationships constitute the skeleton of musical material, which is re-embodied by the musician in each performance in an open, improvised mode (see Table 4.1). Different ways on relating musical playing techniques and movement characteristics are explored either perceptually, or with the aid of the motion sensing, which provides a technical as well as conceptual bridge between the two. The compositional juxtaposition of movement- and sound-instructions leads to sections during the piece,

where the activity of simultaneously playing and moving both body and instrument has the effect of producing a perceptual shift between eye and ear. In some of the sections complex movement patterns are overlaid to the musical elements. They influence the instrumental sound through a physiological impact, affecting the breath and destabilising the air-column by disturbing the player's posture. Through sensor-linkage, movements are also mapped directly to electronic sound processing, in some instances they influence effects-parameters such as amount of reverberation.

Two sections of the piece deal explicitly with autonomous decision-taking in human-machine interaction. Here, the question of agency and intersubjective interaction, or simply the interplay between trombone player and algorithmic system is at the core of the composition. The intended interaction model is that of a conversation between two subjects. However, in some instances the algorithms may exhibit abstract autonomous behaviours, which may not appear to the listener as directly linked to the actions of the musician.

*Supervised
Learning*

This piece explores the potential of using machine learning (ML) techniques as generative algorithms. In this piece, the instrumentalist interacts with sound processing in several ways: the connection goes from purely analogous linkages to almost independent generative and interactive decisions taken by the ML algorithms and the mapping mechanisms.

In some of the configurations of the piece, the supervised learning algorithms take on the role of observers or of mirrors, but also that of a co-performer. These alternate modes require defining the relationship between pattern recognition and sound processing. Diversity is achieved by setting the time-frames and observations-windows to such ranges as to correspond to the phrasings and larger formal structures of the piece. By overlaying several modes of observation, the combined ML algorithms obtain an emergent property that manifests independence, through decisions that are not determined by prior composition or programming. To what extent this behaviour constitutes machine-subjectivity will be discussed in the following sections (see Section 4.3.3). In addition to these mirroring and observation behaviours of the *algorithms* the piece has an overall structure that divides it into several sections; the decisions to move from section to section belong to the *instrumentalist*.

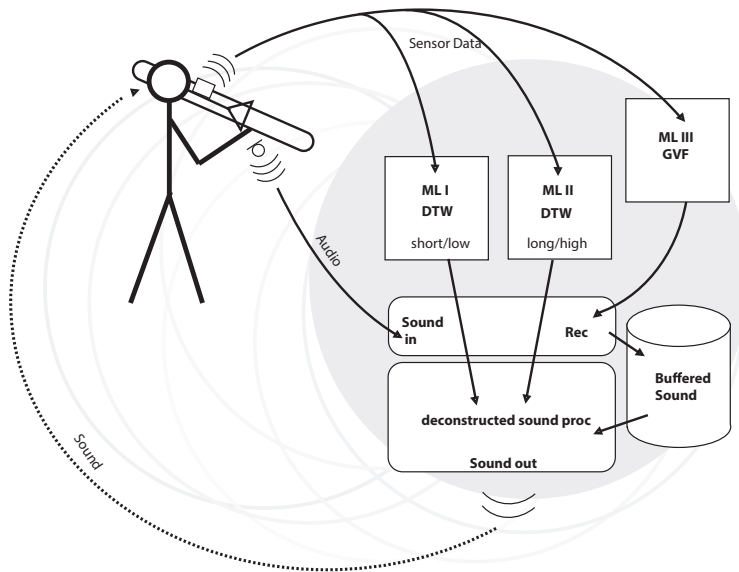


Figure 4.8: Relationships between trombone player and software agent. Of the three machine learning pipelines (ML), the first two (DTW) control sound generation, the third pipeline (GVF) controls the capture of audio. A central element is the sound feedback given to the musician.

The machine learning software tool is configured with three pipelines that simultaneously observe the trombone player's movements (see Figure 4.8). Since we are using two flavours of supervised ML algorithms, two instances of Dynamic Time Warping (DTW) and one of the Gesture Variation Follower (GVF), we need to train them, that is, provide them with templates for the classes of data to look for. The configuration of sensors with the placement on the instrument, along with the notion of using patterns that are specific to the performer, necessitates that training is done by the instrumentalist himself, in as close to concert circumstances as possible. Training might eventually become part of the performance itself, since this training by demonstration (François 2013) can be integrated in real-time in the regression-based algorithms (GVF, XMMs).

In the case of this composition, and in view of the trombone player's movement repertoire with the instrument, six archetypal movement sequences are trained, that can be recovered easily while playing (see top of Figure 4.9). These are movements of the trombone executed in vertical and diagonal up/down directions or in circular clockwise or counter-clockwise sweeps. They can be done while playing, either fully formed in the proper tempo or as parts of other shapes. Training sets that repeat the move-

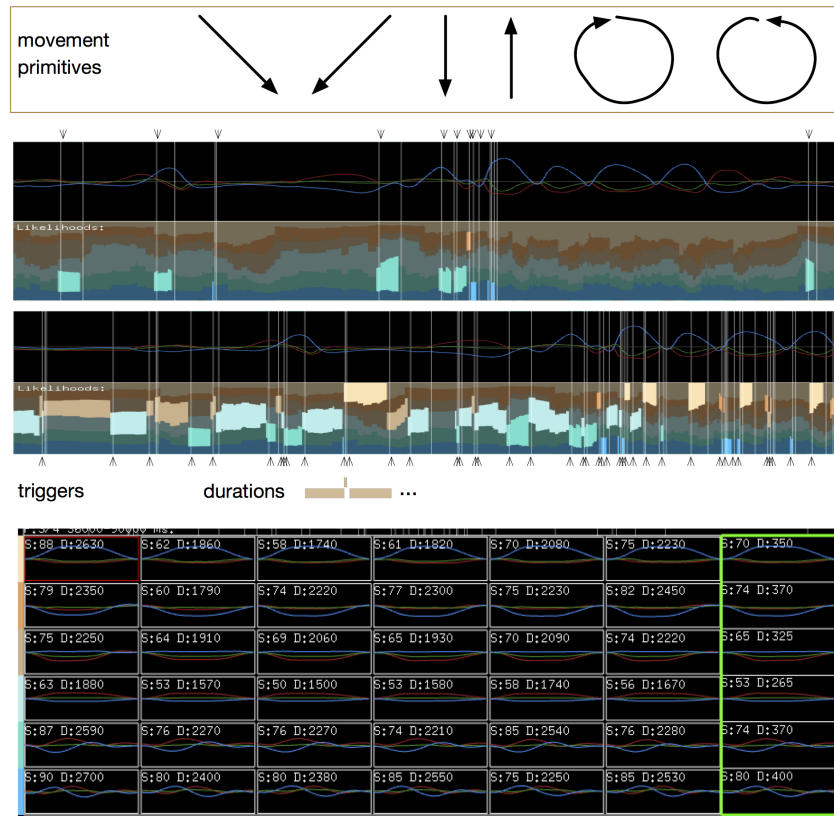


Figure 4.9: Schematics of the six movement primitives (top), display of two different sensitivity settings that change the DTW’s reaction in relation to the same movement segment (centre), and the training matrix containing six times six template recordings of 3d sensor data.

ments too precisely lead to a very narrow window of recognition; the ML algorithm is too well trained. Providing a set of templates that vary broadly in the temporal as well in the spatial aspects will render the recognition of the movement primitives more tolerant to deviations and have a lower threshold for producing meaningful results.

Through different parametrisations of the algorithms, varying degrees of sensitivity to the trombone player’s actions are achieved. The output of the algorithms is used to control live-electronics processing for capturing and subsequently deconstructed rendering of the sound materials originating from the trombone player himself. In order to achieve this, the failure points of the algorithms need to be explored, that is, the state where the output of the algorithm doesn’t reproduce the original templates in a recognisable form. In addition, the difference in reaction time between the two types of algorithms needs to be leveraged. DTW is quite robust, however its response comes too late because it only provides results once

an entire segment is through. The GFV on the contrary, in particular in streaming mode, is relatively fragile but produces results in a continuous manner, by providing information on where within a template it believes the sequence to be. We use these different behaviours to operate two functions of the autonomous behaviour: the first algorithm is used to trigger the response of the system through deconstructed sounds; while the decision for capturing these sounds is given to the second, less predictable algorithm.

4.3.3 Emergent Behaviour

The use of machine learning algorithms results in the emergence of a musical effect that seems to represent a 'second voice'. The 'machinic' response is decoupled from the immediate action of the trombonist, and gains the status of an independent conversation partner and actor in the performance's network (Latour 2005). The structure operates as an autonomous sampling agent, providing the musician with unforeseeable musical elements that have the characteristic of calls rather than responses, but are closely linked to the timbral and gestural materials performed by the instrumentalist. The trombone player's movements remain the source for capturing this additional musical material but their direct correlation is no longer perceivable, neither for the instrumentalist nor the audience.

In both cases, the limitations of the ML algorithms are re-appropriated to produce an emergent quality not given by the method itself but rather by the context and linkage within which it is applied. Two areas of using real-time ML (Fiebrink 2011: 6), that is, gesture recognition and music generation, are approached by this configuration. On the level of gesture recognition and mapping, the method of breaking the direct linkage from a gesture to a sound result provides the perceptual separation that is necessary to ascribed agency. This is achieved by using parallel and differently scoped observation modes (Mozer 1994), and by establishing a relationship through a 'reflexion' to the musician's playing by selectively mirroring sound-elements.

The capability of agency and intentionality belong to cognisant human beings and not to algorithmic systems. The phenomena are too complex

and occur on too high a level of cognition to be transferrable to machines. However, in musical interactions with algorithmic systems, as perceiving humans, we will recognise (erroneously) those characteristics in the output of the machines, if they fulfil some of the low-level criteria for perceived autonomy, agency and intentionality. The dynamic relation and the ascribed agency depend on the recognition of intentionality by the other. In inter-personal relationships, the other's actions are read in order to identify intentions. "A paradigmatic 'internal' state like intention can be directly perceived in the world, whether by an agent or by an observer, in the dynamic pattern of the subject's interaction with objects and people" (Proust 2003: 316). Other states and dispositions are also recognised in the self or the other: "Intention does not seem to be the only kind of mental event or disposition to be attributed differently according to its particular target—self or other—pains, beliefs, desires, emotions also seem to allow a similar contrast between first- and third-person attribution" (Proust 2003: 316). It is revealing how interactive and generative algorithms are classified in comparison to human players and, in particular with regards to the musical space, how they occupy and operate within it (Bongers 2000; Drummond 2009). Agency in the form of control is never ascribed to the algorithm, whereas feedback, sensing and re-acting almost always is. Volition (or intentionality) on the other hand is postulated as an ideal capability, but for the algorithm can only be achieved in limited ways through pro-active behaviours, that is, by taking decisions without being prompted (Eigenfeldt et al. 2013).

Subjectivity

Subjectivity appears as a key characteristic in the mesh connecting agents and dependencies that is represented in different ways in 'Double Vortex'. We can identify the following types of subjectivity in artistic development processes and performance situations (the list is by no means exhaustive): the author's subjectivity, the performer's subjectivity, the algorithm's subjectivity, and the audience's subjectivity. Some of these are easy to relate to and are expected to form part of an artistic development process. Other aspects seem unusual and warrant a detailed explanation or definition. The most extraordinary one is the subjectivity ascribed to an algorithmic system.

Phases

In the *composition* phase the data stemming from the performer informs

or 'imprints' in a subjective manner the behavioural attributes of the algorithms. This type of subjectivity arises when the design of its structure as well as the imprinted trace of the interaction patterns are tailored to a specific artistic intent and reflect one person's singular movement patterns. In this process, the generic nature of an algorithmic method is constrained to a singular solution, one that carries essentially subjective characteristics.

In the *performance* phase the relationship between the performer and the algorithm, thanks to the autonomy and agency given to the systems, can be interpreted as an inter-subjective exchange. The performer's actions are answered in a manner which depends on events and decisions that are out of her control, and that are perceived as originating from a subject-like entity.

Compared to developmental phases in humans, this corresponds to one of the first stages in an infant's learning of interaction, that of learning primary intersubjectivity: "As early as 5 months of age the infants show preferential attentiveness to human shape and movement in such displays ... The emotional states of others are not, in primary experience, mental attributes that we have to infer. One perceives the emotion in the movement and expression of the other's body and especially the face. ... The intentionality detection allows the infant to interpret bodily movement as goal-directed intentional movement" (Gallagher 2005: 226–228). This concept can be transferred to our context, since the perception of agency occurs in persons who have all gone through this developmental phase, and are therefore capable of recognising it in a pre-cognitive manner. When the output of the algorithm is manifested with sound, the assumption is that a projection of intentionality occurs onto the agent that produces the sounds independently from (perceived) external input and control. The sonic elements form "segregated streams and objects that lead, via the subjective sensing of the subject's body motion, to impressions of movement, gesture, tensions, and release of tension" (Leman and Camurri 2006). Part of the task and intention of building an interactive generative system, is to establish the possibility to recognise or interpret its behaviour as that of the 'another'. Recognising an element in the natural environment as an agent is part of a probing approach that is based on innate ways of understanding behaviours and attributing intentionality. "The intentionality detection al-

*Detecting
Intentionality*

lows the infant to interpret bodily movement as goal-directed intentional movement” (Gallagher 2005: 226).

Autonomy

Based on aspects of human perception we can identify how an algorithmic system obtains these qualities. In order for the subjectivity of the algorithm to be perceived as such (see Section 3.3.5), several conditions need to be met. The first is that the algorithm needs a degree of *autonomy*, that is, a degree of independence from the performer. In the simplest case this could be a random generator or another mechanism that is de-coupled from the control of the musician. This autonomy is a precondition—but not the core aspect—for characterising the next higher level, that of *agency*. In order for us to perceive agency in the algorithmic system, we need to recognise that it has the ability to take decisions independently of the performer’s control and that these decisions relate to the ongoing state of affairs. If the concept of autonomy is *relational*, describing the way an algorithmic system is positioned with regard to other agents, the notion of agency encompasses autonomy but is primarily *perceptual*, representing a behaviour that elicits a judgement in an observer about the potential for action the other agent possesses. These two characteristics form the basis of *subjectivity*: they provide the attributes necessary for the perception of autonomous, willed subjects. The subjectivity of an algorithm stems from the relation it establishes to a specific human partner, it stems from its independence and orientation towards the other. Since in ‘Double Vortex’ these attributes can be identified in the algorithmic behaviour, the system could represent a *subjective algorithm*.

Intersubjectivity

Inter-subjective relationships are perceived by the performers as well as by the audience. While partaking in a performance, even between human and algorithmic actors, the listener and viewer will apply, but also observe a *joint attention* (Eilan et al. 2005), and therefore experience a twofold secondary intersubjectivity: “The defining feature of secondary intersubjectivity is that an object or event can become the focus *between* people. Objects and events can be communicated about. ... the infant’s interaction with another person begin to have a reference to the things that surround them” (Hobson 2004: 62). Even if the situation involves a non-human actor, this type of intersubjectivity can be observed, but the effect will be less pronounced because machine actors do not produce pre-reflective,

physiological reactions, their presence is perceived mainly through the results of their 'actions'. The designation 'subjective algorithm' might appear ironic, the term nonetheless describes the specific quality characterising best the algorithm's perceptual effects, allowing an encounter with the algorithmic system as a subject. The engagement shown in the generative, algorithmic characteristics of 'Double Vortex' points towards the potential for algorithmic systems to enter into a form of inter-subjective relationship.

4.3.4 Symmetries

Two circles, or two vortices, or two spheres, concentric ... slightly decentred. (Merleau-Ponty 1964: 138)

Merleau-Ponty's poetic image resonates strongly between this project, 'Double Vortex' and the following, 'Moving Music', where quite a few slightly shifted, yet almost concentric elements are tied, linked, mapped together, juxtaposed, superposed or co-performed. Merleau-Ponty may be addressing the inherent duality of seer and seen in the context of his argumentation, but for us it applies as well to the physical presence and the performative action. The Invisible might not be so much an optical or visual aspect as much as the shift from the concretely assumed and pretended work to the fluid and ever shifting, yet underlying artistic space and process: a domain that exists not solely in performance, nor in the documentation, nor exclusively in the experiences, but is an assemblage of all the elements, and which for each person takes on a different shape. The two vortices in question repeat, double up and resonate across two works, two disciplines, performers and observers (see Figure 4.10). Like Artaud's shadowy double of theatre, the plague and cruelty (Artaud 1964), movement and sound, bodies and instruments, technology and experiences form dualities and pairs that are inextricably intertwined and interdependent. The particular position taken up in these projects focuses on a discipline-crossing exploration between sound and movement.

The specific question these projects pose is about the meaning and impact of, on the one hand, performing (possibly silent) movements in music and on the other hand generating music with movement through dance actions. In the mirrored configurations of the two pieces, through

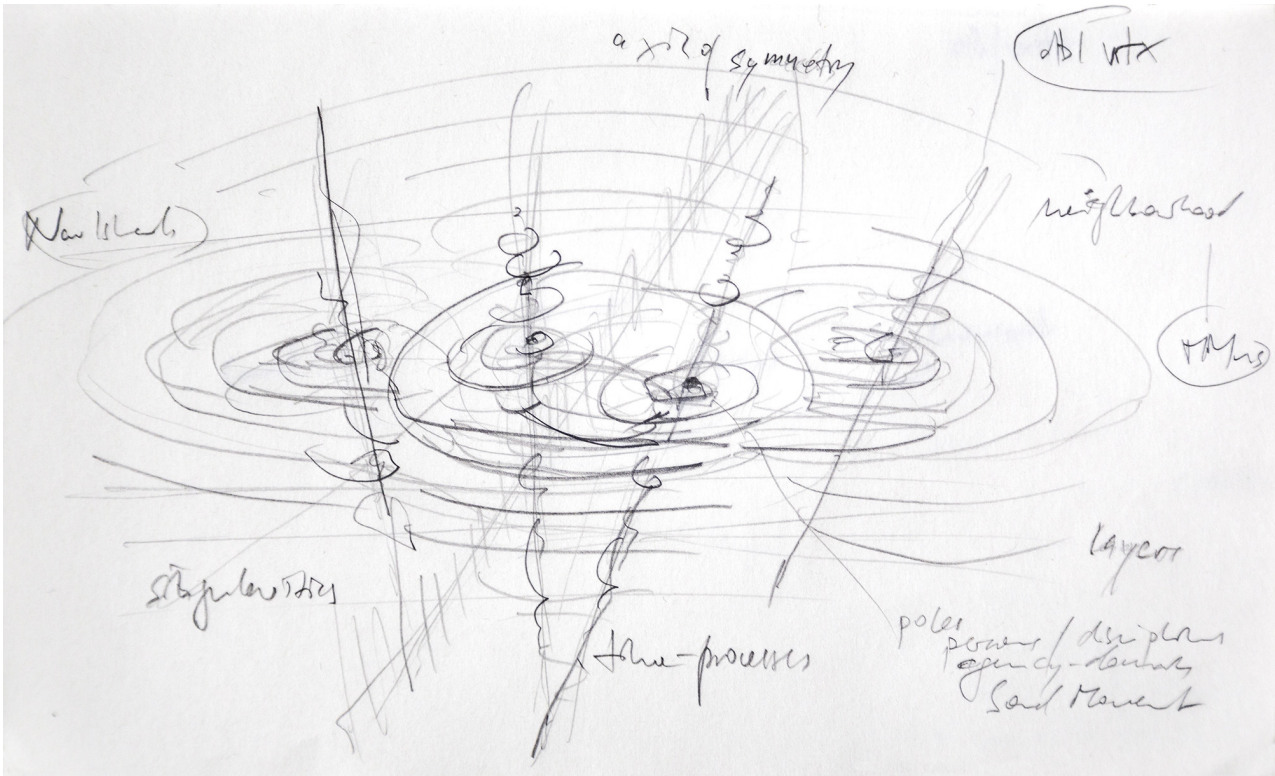


Figure 4.10: A sketch can serve as another approach to understanding elements and relationships (see Section 2.1.2).

the reciprocal dependency, a number of underlying principles of movement and sound performance become visible. Phrasing, co-phrasing, co-articulating, and the handling of time-units of these actions can now clearly be attributed to bodily dimensions, speeds and energies. By embedding the artistic development processes in a wider context of investigation, the significance of the practices of live-electronics and interactive dance shifts. Whereas in a purely artistic context composition and performance follows the demands of artistic creation and production, the development processes for the methods and the observatory activities of the larger investigation that occur in parallel have a definite impact on the works themselves. Finally, the improvisational approach used to embody the pieces every time anew is as important as the technical concept and modalities chosen. The final form and aspect of the pieces lives as much from the specific sound and movement languages that the performers create as from the juxtaposition with technology.

4.4

'Moving Music'

There is an extraordinary push-pull to wearable and ambient technologies, a dynamic of seduction and repulsion. We are seduced by the convergence of computational systems with corporeality (wearable technologies) or by unseen systems that anticipate corporeal needs (ubiquitous computing); seduced by the potential expansion of our senses, intellects, and imaginations, of how we engage with the world, how we communicate, how we remember the past and project desires into the future. Yet we are only a breath away from repulsion at the specter of the monstrous body or monstrous forces of surveillance and control lurking just behind the technologization of the body. Once the domain of research and performance converges with skin, blood, flesh, internal organs, biology, or DNA, political questions around who controls, owns, or has access to our bodies are unavoidable. (Kozel 2007: 271)



Figure 4.11: Video-still of the performance of 'Moving Music' on 25. January 2016

Video documentation is located on the Media Portfolio page for **Moving Music** <https://www.researchcatalogue.net/view/269265/272403>.

The piece for interactive dance and electronic sound 'Moving Music' is a collaboration with the dancer Angela Stoecklin. The development of the work was part of the artistic strand of the research project 'Motion Gesture Music' and took place between April 2015 and February 2016.

4.4.1 Movement-to-Sound Relationships

The framing and concept for this work are mirror-images of 'Double Vortex' insofar as the underlying question of how gesture influences the perception, affect, and impact of music is shared, but in the relationship between dancer and sound they come to exist under an inverted sign. A clear view of fundamental differences emerges, when comparing not just how the discipline of dance deals with time and movement materials, but also when considering how a dancer's movements are always-already their material, how the dynamics of movement are self-evident in the dancer's body, particularly compared to the musician's dynamics and expressions that need translating to the sound-domain to take their effect.

One of the core issues in this collaborative exploration is to learn to understand the interrelationship and dependency between a musician and a dancer, between movement and sound, through the use of electronic sound-processes that are controlled by technically sensed movements. Rather than being based on a cultural or narrative concept, the work in question serves both to investigate a specific research question as well as to bridge a systematically structured method with the open exploratory processes typically found in artist's processes. By juxtaposing, and overlaying these two positions, the aim is to shed light on principles and commonalities that are present and active, when actively shaping (expressing) and perceiving movement- and sound-phrases.

A significant challenge is that the two domains only share a limited set of fundamental characteristics and principles. Whereas dance and movement is inherently multi-dimensional, multi-modal, and based to a high degree on physiological as well as psychological human factors (Kozel 2007), technical processes in the control and production of elec-

tronic sounds are more limited and based on models of mathematical abstraction and formalisation (Xenakis 1992).

The explorations of materials for this piece run along an axis that is heavily informed by a terminological inquiry that had been done earlier in the research context,⁹ but above all by the categorisation of movements and their qualities as defined by Laban (Laban 2011). In his system, the term 'Effort' is one way of defining the central aspect that human perception is sensitive to when identifying movement qualities. Using the term in its most literal form enables a direct linkage of measured effort (that is, energy) with sound energy. In the fundamental dimension of time, the piece explores shaping or phrasing of time by linking individual limbs to sound processes. Contrary to music, in dance space in its absolute form plays an essential role. In this piece, the exploration of the relationship between this fundamental element and sound occurs through the sensing with a depth-camera of the dancer's position in the topographical space, and the basic concept of localised sound-pools that react to her presence.

The overall structure of the piece echoes that of the original version of the trombone piece, in that it has a traditional three-part form. As a working model established at the beginning of the process, the thesis, antithesis, and synthesis structure was given, but this might disappear in a future version. The advantage of this classic tripartition is the ability to clearly focus in the first two sections on single aspects, in a mode of new discovery, both for the performer and the audience. This quality or attitude functions well in terms of establishing a rapport to the piece and working principles for the audience that sees the piece for the first time. Feedback from viewers who have repeatedly seen the piece indicates, however, that the effect of this can tilt to the opposite, and become slightly annoying.

The third section finally leaves the mode of systematic separation, minimalistic focus on single gestures or actions, and obeys the laws of full performance and complete expression in the domains of movement and sound. Under the topic of 'transformation' the dancer's tasks and focus is to take the materials, forms, and interactions of the first two sections and transform them by shaping and phrasing without restraint; to explore

⁹ Please refer the terminological diagram here: <https://www.researchcatalogue.net/view/108906/108907> (URL accessed July 2016)

the dynamics and forces that have accumulate dover the time-span, and to put them into a succinct order of movement phrases and sound-'gestalts', through the electronic sound-generation 'instrument' that is at her disposition.

The compositional ideas and methods of sketching, iteration, and the compression, decompression cycle are present in this piece and complement, echo, mirror, and parallel in many ways those of its sibling, the trombone piece.

4.4.2 Mirroring

The piece 'Moving Music' (see Figure 4.11) develops from the context of a larger investigation that seeks to understand how 'Gesture' as a term or concept can be fruitfully used when working with sound, in performance of interactive, real-time generated music. This work is therefore not purely a choreographic development that needs to function as an art-work, although this criterium remains central. It is much rather an experimental setup used to investigate, with a shifted focus, the enfolding and intertwining of a multitude of questions, about instrumentality with regards to *movement*, and about agency through gesture with regards to *sound*.

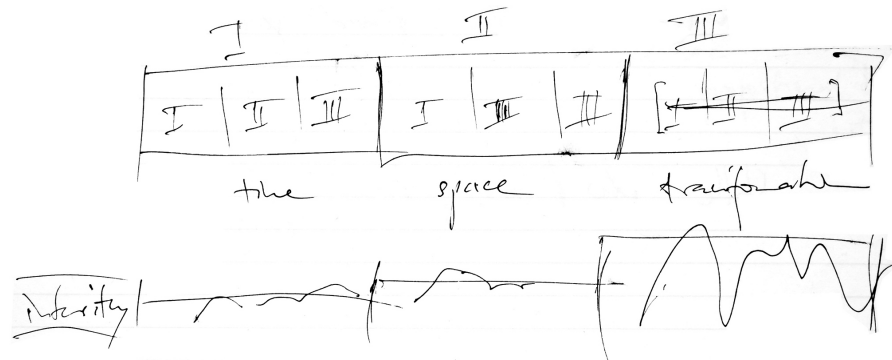


Figure 4.12: Composition sketch of the formal structure of 'Moving Music'.

4.4.3 Structure

The artistic process for developing this piece is carried out by two artists, a musician and a dancer. Contrary to traditional music or dance practices where a piece is scored or choreographed in order to become transportable, communicable, and ultimately notated, the two artists share the ex-

ploration, development, creation, and performance phases of the entire life-cycle of the piece. In the final manifestation of the process during the performance, a particular flow of influence, control, and impulses comes into existence. The role of actively taking decisions and shaping durations, dynamics, intensities, and atmospheres is continuously modified and shifts or slides. The two fundamental materials, domains, elements, and phenomena of *movement* and *sound* become central players in the web of relationships between the artists.

4.4.4 Tool Configurations

Here is a brief description of the technical setup for the piece.

The dancer is equipped with two bracelet-worn wireless motion sensors (inertial measurement units, IMUs) that capture nine degrees of freedom, that is, acceleration, rotation, and attitude in the magnetic field. From this information the absolute attitude in global space can be obtained. Simpler representations such as sum of acceleration and rotation are also extracted, since they prove to be more indicative of movement energy than the allocentric attitude angles obtained from a combination of the gravitational and magnetic field vectors. After much experimenting the use of two sensors is decided, one located on the left wrist, the other on the right ankle. The third sensor positioned on the sternum is abandoned because the data from it is too interconnected to peripheral movements, and is particularly disturbed by steps, whose energy rises through the spine. The dancer is also wearing a wireless headset microphone, which mainly provides direct and unmediated sonic output of the dancer's efforts by amplifying the breath sounds.

In order to obtain position information of the dancer in space, the stage is observed by a depth-camera located in front centre of the stage at floor level. The use of a first-generation *Kinect* camera in conjunction with a custom implementation of OpenCV algorithms allows for a low-latency contour extraction (see Figure 4.13) as well as for capturing the absolute position of the dancer's body within the field of view of the camera on stage. In this specific implementation, precision of information has to be balanced with the size of covered area, which can cover up to seven meters of depth from the front of stage (for a schematic representation of the field

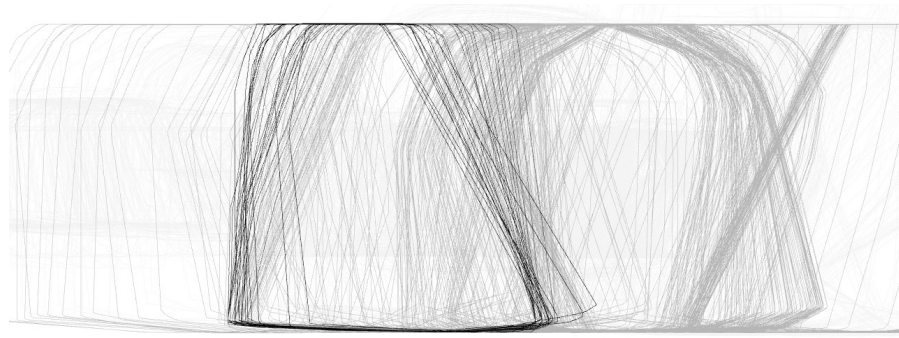


Figure 4.13: Visualising movement traces over time as extracted from the body contour analysis (approximately ten seconds of movement are depicted).

of view, see right part of Figure 4.14). The limitation of the captured zone in a camera frustum¹⁰ proves to be useful for providing the dancer with active and inactive zones, an important factor in the control of sound densities and silences.

The section of the piece investigating the use of space is implemented using a map of zones overlaid on the stage. Each zone has a radial sensitivity curve that rises from its edge to the centre. The overlap of zones generates a polyphony that is negotiated by the dancer (see spatial map in Figure 4.14). Even though this is not a novel use of camera-based tracking, it nevertheless works well for the purpose of spatially distributed sounds.

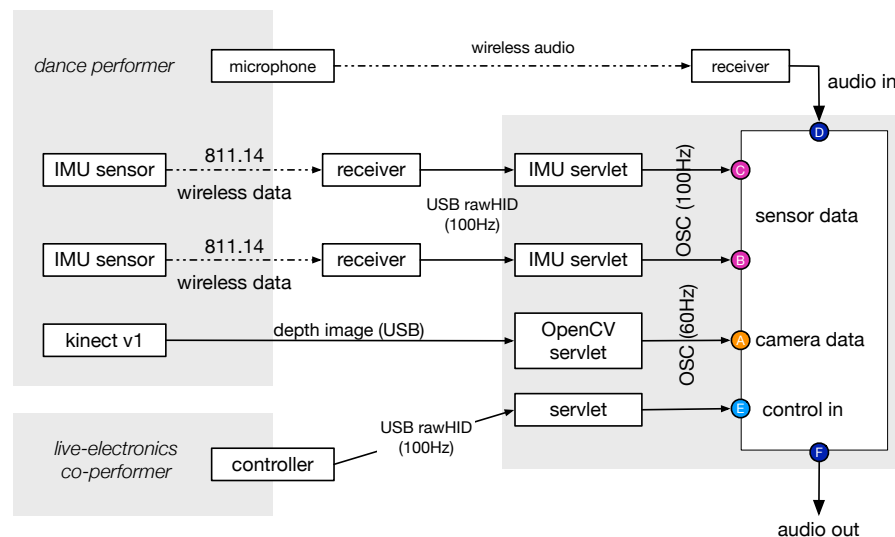


Figure 4.14: Systems overview for 'Moving Music'.

¹⁰ The truncated camera view pyramid.

As is usually the case in composition with live-electronics processes, the software development for mapping both the IUM-bracelet information and the camera position takes some time. This process is intertwined with the conceptual exploration and can therefore not be considered in isolation. The important choices about types of sensing interfaces, and in particular about the sounding processes are the result of the dialogical method of exploration through doing. In a number of rehearsals, the final structure is developed step by step, continuously validating ideas and rejecting others.

The sound processes consist of a number of very basic sample playback modules, which are controlled by both the dancer and the live-electronic musician, who is positioned in front of the stage. The selection of sound materials and character suitable for a section of the piece is done ahead of time according to aesthetic rather than formal criteria, since the goal is to create a specific atmosphere for the piece. The piece's compositional structure is reflected in the evolving pools of sound materials that blend and create the sonic texture in different ways.

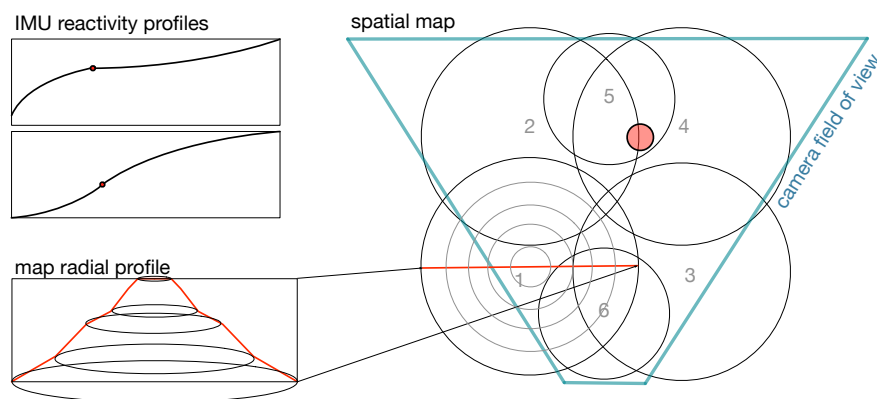


Figure 4.15: Mapping strategies for 'Moving Music'.

Contrary to its twin piece 'Double Vortex' developed in parallel with the same questions and technical premises, in this piece, the level of movement analysis is kept to a strict minimum. The mappings are barely adaptive, the main evolution concerning changing responses to movement qualities are in hand-controlled reactivity profiles, which link the measured energy of the limb movements to the 'phrasing' of the corresponding sound streams. Although the original intention was to deploy the machine

learning workbench software (Schacher et al. 2015) developed within the research project, it quickly became clear, that for the dancer to be able to integrate an experiential knowledge of how the system behaves, it is crucial not to modify the system's responses continuously. This requirement for a stable configuration and mapping, and a limited complexity of responses to the dancer's input, shows that inter-play or interaction is dependant on all involved agents (see Figure 4.16) and the complexity arises not out of the technical implementation but of the combination of all elements.

4.4.5 Cycles and Influences

In a curious one-way cycle (see Figure 4.16) the four main actors (Latour 2005) influence and depend on each other. Each one contributes characteristics that are limiting and limited at the same time. Sound, for example, is dependent on the dancer's perception to become influenced in turn by the movements. Movement is tied to the musician's ability to perceive its units in phrases, arcs, and durations, in order for him to shape the progression of sonic atmospheres. Movement form gets channeled through the narrow gaze of technical sensing, only to be re-interpreted into space-filling sonic shapes by the electronic sound processes. The richness of timbres and pulses of the sound are reduced by the dancer's ability to perceive intensities and shifting weights. This is due in part to the lack of a tight control over sound, which would merely mimics movement's basic components. The subjectivity of each artist needs channeling as central agent in the piece, in order to become part of a subjective perception by the other. The agency of the technical system lies in its power to determine and delimit the sonic space and in its capability to conclusively couple movement phrases to sonic forms. The agency of the electronic sounds lies in their reduction and detachment from narrative representation, and the fact that they afford the dancer a hybrid, mediated musicianship through their evident tie with movement.

Control of the piece is shared, and none of the agents hold all the key aspects in hand. The dancer explores the timings of the gesture-to-phrase links, or the topography of the sound map, without any influence on the exact sonic material. The musician operates on the configurations of the interactive instrument, without being the one who triggers and modulates

the actual sound outcome. The sensor-links tie inexorably together, are stable enough to be learned and performed with, yet remain without the possibility of creating a surprise. The flow of decisions, the directionality of interdependence cannot be reversed. The manner in which impulses are felt, then performed, then experienced, is set, given by the static nature of the technical configuration.

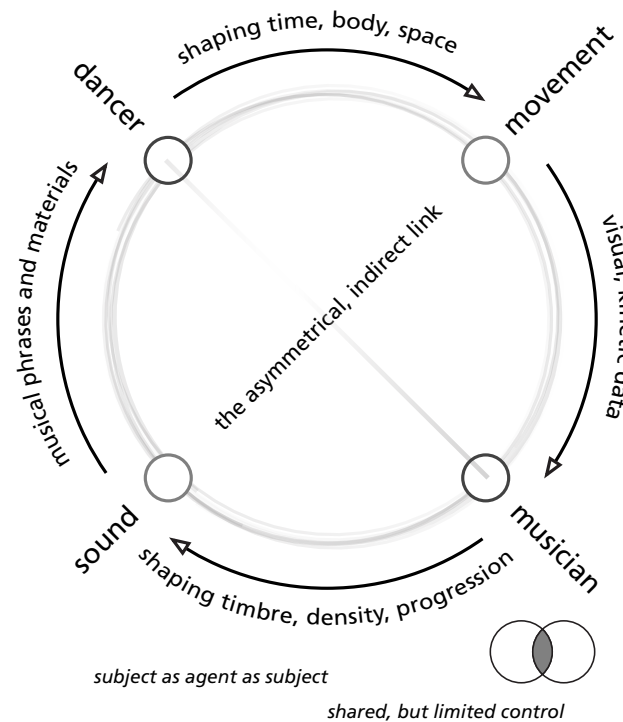


Figure 4.16: Asymmetrical linkage: the diagram shows the flow of information and the mediations active in interactive dance with electronic sound.

4.4.6 Movement Analysis

The challenge for the performer, in a non-choreographic, open-form composition, is to balance the focus from individual linking and tasks, to temporal dynamic and 'artistic', that is, complete shaping of the performance. The central issues of this type of art practice lies therefore in the shaping of the piece, the choice of dimensions to correlate technically, and in understanding the constraints, the framing, and the agreements that constitute a fully realised interactive dance performance.

Movement analysis needs contextualisation: a) with a situational context, that is, sports, rehabilitation, or a specific performing arts discipline; and derived from that with b) a signification context, that is, the relation-

ships and impacts that are extracted from movements; and once the context is defined c) a clear scope of analysis, constraining the dimensionality or extent of movement observed; including how d) the measured movement aspects are translated to perceived movement qualities; and finally how in performing arts the cultural, stylistic, and discipline domain of the movement is determined and made explicit.

This goes to show that movement analysis is a difficult problem: human perception is based on dynamic sensing and embodied resonance, which is not captured by technical sensing systems, and can only be extracted from measured data with sophisticated algorithms, if at all. Linking choreographic movement (dance) to sound shows how entwined sound and movement perception are, since the principles that underpin the effective shaping of the one domain are also effective in the other, provided a proper translation channel is established.

Artistic practice can shed light on fundamentals: using movement analysis to achieve a technological bridging allows to combine artistic intentions (expressive intent) with physiological and psychological fundamentals of movement and sound perception. The process of making pieces in this mode is a constant process of deciphering the entwinement, entanglement, and folding between the two disciplines and can only become meaningful if the multi-modal nature of an expressive, affective, artistic movement- and sound-performance is taken into account. Relating movement parameters extracted from sensing channels to sound parameters demands a reflection on the core characteristics that make movement intelligible. Without a coherent basic distinction in, of, and through musical gesture, research risks to fail to describe movement and its qualities. 'Instrumental', that is, tasks-related or non-movement guided shapes and execution is perceived by the performer with a different focus. The audience notes the difference in intentionality and as a consequence has an altered perception of the expressive quality of a performance.

4.4.7 In/Under Control

Circling back to the starting point, with all the elements laid out thus far, it should now become possible to understand the idea that "we are only a breath away from repulsion at the specter of the monstrous body

or monstrous forces of surveillance and control” (Kozel 2007) in the technologically charged, heavily mediated situation of interactive dance with live-electronic sound. The forces of control are inherently rigid and unyielding in a configuration such as the one shown here. Although frustration might result from this inter-dependence, a field opens up that creates a set of constraints and opportunities that has its roots not in narrative, representative conventions, but in the way that agency, responsibility and choices are channeled and folded into a complex weave of relationships. The entanglement that is the basis for this practice reflects social realities, fosters critical questionings and engagement, and demands a lucid position towards the ‘actual’ (Schechner 1977) body that is in play with the ‘unreal’ engine of control given by the presence of technology on stage.

4.5

'one hand clapping – dense moments'

Yato hastastato drish Tir yato drish Tistato manah

Yato manastato bhavo yato bhavastato rasah.

Where go the hands, goes the gaze; where goes the gaze, poses the mind; where there is mind, settle down the sentiments; where the sentiments rule sovereign, rasa arises.

Nandikeshvara, Abhinaya Darpana (The Mirror of Gestures)
(Schramm 1968)



Figure 4.17: 'one hand clapping' performed at 3331 Arts Chiyoda, Tokyo, on 17. December 2015.

Video documentation is located in the Media Portfolio page for **one hand clapping – dense moments**

<https://www.researchcatalogue.net/view/269265/272401>.

4.5.1 Beginnings

The projects ‘dense moments, a song cycle’ and ‘one hand clapping’ form an ongoing, long-term collaboration between the dancer Angela Stoecklin and myself as musician. They are carried out through exploratory work-sessions, mainly in artist residencies, and result in improvised music/dance performances, where the division between movements and sounds, and the disciplines of music and dance dissolve, and both performers enter into a dialogue using the body and ‘instruments’. The main intent is to better understand the other, the inner workings of improvised practice in music and dance, and above all to learn about inner states and relationships between performers in improvised open-form composition.

At the end of the summer of 2013 we come together to explore in and through practice the common interests that have already been the subject of regular discussions since their previous collaboration. In the preceding long-duration project, which led to the production of the intermedia stage piece ‘trans-form’ (see Section 4.6), our collaboration had uncovered common interests in issues of performance and performative work with the body, but did not include improvised work on an equal basis. Rather, I had focused on interaction technologies as well as projections and scenography, whereas Angela Stoecklin had developed and performed the movement elements that were appropriate to the technically constrained setting of that piece. In late 2012 and early 2013, after the conclusion of ‘trans-form’, in a few informal exchange meetings, we discuss the common interests and questions about presence and embodiment, without actually engaging in practice in a studio session. The collaboration proper begins in September 2013 with encounters in the dance-studio in preparation for a joint artist residency in New Delhi in November 2013. This leads subsequently to a series of residencies and performances in local and international locations.

*Residencies &
Intercultural
Exchanges*

In the course of these residencies, intercultural exchanges become a part of the activities and form a parallel track to the joint artistic work. These exchanges are focused on creating encounters with local performing artists, mainly from the disciplines of music and dance, and, through workshops as well as the creation of a common performance piece, in-

tend to deepen the practice and allow the accumulation of experiences in inter-cultural communication and collaboration.¹¹ To date, intercultural exchange projects have taken place in New Delhi, India, in November 2013, in La Habana, Cuba, in October 2014, and in Tokyo, Japan, in December 2015.

In each of the artist residencies abroad, besides collaborating with local artists, developing the common performance practice is at the core of the artistic work. The balance, intensity, and priority of the duo work relative to the group work is different in each city; it depends on the challenges and demands of setting up and carrying out the encounters within the local arts context. In addition to the international exchanges, we also organise a series of privately or locally funded artist residencies in Switzerland, where the focus is put exclusively on developing the common practice. These residencies include a week at 'Pantographe' in Moutier in May 2014, a week at 'Südpol' in Lucerne in February 2015, and various work-sessions in dance-studios and labs in Lucerne or Zürich throughout the year.

The original title for the performances, 'dense moments, a song cycle', referred to the idea of elaborating a series of situational episodes with different characters, which form the programme for a full evening on stage. At a junction point within the process, when the evolving project has clarified its shifting focus, we defined a new description and title. The current title for the performances 'one hand clapping' is part of a famous koan (a Zen teaching riddle), and in relation to improvised performing may be interpreted to signify that improvised dialogic work with movements, actions, and sounds potentially generate contradictory or unknowable situations. The Zen connotation of the project title is emphasised in the Japanese context in December 2015, although only for us, the Non-Japanese artists. It is important to note, however, that there is no intention to focus on spiritual or religious aspects in using this image as a project title.

What's in a Name?

4.5.2 Working Methods

The central focus of the process lies on the practice, on the actual doing: the core work is carried out by performing improvised sets that last

¹¹ Documentation about these international encounters and resulting performances can be found here: http://www.jasch.ch/sounding_bodies.html

between ten and fifty minutes. The development of this common practice, however, does not happen entirely without words around the 'doing' of improvised performance. On the contrary, each session, be it a rehearsal without audience or an actual show in front of an audience is followed by reflection and discussion. During the artist residencies, where several days of work and several consecutive performance experiences accumulate, this creates a repeating cycle of practice and articulation. This adaptive, self-reinforcing loop of attention generates an emphasis on specific themes, topics, and elements that come to the foreground and through the repeated process rise to the surface. Depending on the outer circumstances, the problems posed by a constraining working space, for example, the influence of cultural setting of a place, or the choice of materials, instruments, and objects may become a relevant issue. Even if these topics change in relation to the immediate context, the central questions and problems in the creation of work without fixed, predetermined structures persist.

Imperative

The imperative of this type of improvised work is *not* to bring into the performance predetermined structures and *not* to use agreements on form, duration, type of interaction, or mood, but to address and negotiate all these dimensions from within the improvised performance itself, in a mode of continuous exchange between the performers, the space, the situation, and the materials that are present. Working within these constraints in performance does not exclude that after a performance detailed reporting discussions and analysis using video-recordings may take place. However, maintaining the order of *doing* first, then *articulating* in words afterwards, represents an essential part of this method. The resulting cycle, in particular within artistic residencies where several sessions may follow each other—sometimes within the same day—produces an intensifying and increasingly focused awareness about specific themes and topics.

*Choice of
Instruments*

Despite the avoidance of pre-determined structures, one type of preparation that is always important for me as a musician and influences in subtle ways the outcome of improvised performance is the choice of instruments and sounding materials. Contrary to a purely dance-oriented improvised practice with bodies, mixing the disciplines opens up the field for instruments to mark the sonic sphere and to populate the physical space. Any

musician, except singers, depends on external objects, tools, and instruments to produce sound. Over the course of this project, the selection of instruments has varied; it ranges from a conventional large-bodied instrument such as the double bass, to an electric-bass played in a table-top manner, to percussion instruments such as wood-blocks and metal chimes, to mallets and sticks, knitting needles, and various other small objects. In addition, electronic sound producing and manipulating devices extend the sonic palette. Wireless microphones and small portable speakers are used to work with voice and feedback, and sensor-based controllers are used to perform with gesturally manipulated electronic sound processes.

Although all of these instruments offer sonic potentials and gestural actions for performing, there are categorical differences between them. Their characteristics differ markedly depending on whether they are conventional or not. The categories can be distinguished by the different skill demands; they impose that instruments and objects are either immediately playable or depend on extended training. They differ in the physical aspect, since they come in various sizes and numbers, and they differ in the delicacy necessary in their handling, for example the double-bass or the wood-block. Finally, the categorical distinction between a mere material or a technical object (Simondon 1958)¹² also informs the range of musical or nonmusical actions that can be carried out with these 'tools' by *both* performers.

4.5.3 Themes and Topics

The central focus in the ongoing collaborative project is an investigation into *presence* during performance, into ways how perception *modulates* that which exists between performers, into the *relationality* of and in the bodies and actions between performers, and the question how working with *inner states* affects expression. Each of us contributes their individual history in the domain of either music or dance. We are both formally trained in our disciplines, regarding technique—instrumental or corporeal—as well as composition (musical composition or choreo-

¹² Simondon gives the technical objects their own ontology. If “the technical object is a unit of becoming” (Simondon 1958: 19), then the technical musical instruments provide the musician with more than mere sound producing affordances.

graphy). Both of us have a keen interest in interdisciplinary work and share the experience of developing and managing boundary-crossing artistic projects and stage work in free-lance productions. In addition, we both share the experience of living in intercultural and internationally extended family settings.

The dialogues and discussions before and after performing, in informal or structured reflection sessions, cover a number of recurring topics and themes (see Figure 4.18). The core themes are made explicit from the beginning and reappear regularly when attempting to determine where the emphasis of a performance lies. There are, however, a number of topics that inform the project, which are not made explicit; they are part of the baggage of silent assumptions and beliefs about the mode of collaboration and the tropes and problems of improvised practices that each of us carries with themselves.

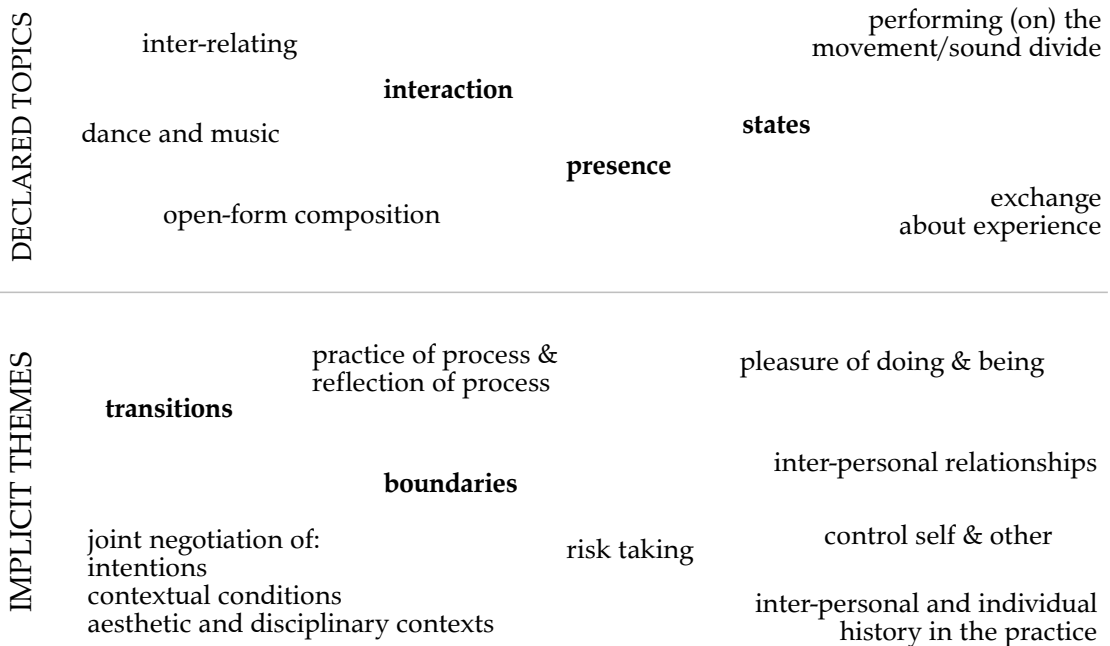


Figure 4.18: Themes and topics informing the processes of the project.

4.5.4 Declared Focus

Apart from the given fundamental themes, no explicitly narrative elements are present. The attitude of improvising is non-theatrical and quite factual. Occasional allusions emerge in the use of certain materials or the

resolving of certain situations, and occasional slippages into a situational awareness of performing for others occur, but the main attitude is that of dealing with the facts of the moment and space, not performing a play or demonstrating a skill in a theatrical setting.

An underlying, but crucial concern throughout the different project phases is to understand better what *presence* is and how it is being generated. For the audience, stage presence might be perceived through heightened tension, intensity of actions, gazes and expression of the performers. This is the traditional point of view in theatre and various traditions train these behaviours explicitly (Schechner 2012). However, in open-form improvised performance without narrative intent, pinning down which aspects generate the perception of presence is more delicate and difficult.

Presence

By posing the question about presence from the point of view of the performers, the issue and its possible perception shifts to a different register. Instead of judging the outer signs of presence from an observer's point of view, a dual perception emerges that captures our own as well as the other performer's state of presence.

At least three different domains where presence is perceived may be identified:

- The *mental* state of presence may be seen if the performer is either self-absorbed and lost in the own doing, or connected, communicative and relational. The gaze as well as synchronised actions can serve as indicators for these aspects.
- The *physical* state of presence is perceivable through the energy level, and the tonicity, or decisiveness of actions. This is not necessarily always expressed through high-intensity and powerful actions, but depends rather on an inner tension in the body that can be seen, sensed, and felt from the inside as well as from the outside.
- The *somatic or kinaesthetic* presence is an inner state that is related to self-perception and ease of integration within the given moment. For me as musician, for example, this translates in a good state to optimal instrumental reflexes or to difficulty in moving and playing fluidly in a less optimal state.

Presence, on a more general level, may be perceived of every actor, agent, or actant (Latour 2005) that is part of the performance: be they the performers, the instruments, the stage space, the walls, the floor, the acoustics, or the audience. Instruments and objects, for example, have a sonic as well as physical presence and influence the overall timing through rhythm, the filling of space with their acoustic volume, and the occupying of architectural space through distributed presence on stage (see Figure 4.19).



Figure 4.19: Video-still of ‘one hand clapping’ performed at Art Space Co-oh, Shinjuku, Tokyo, on 16. December 2015.

States

Apart from experiences of these states of presence, during an improvisation, a performer will go through many different states of attention and activity. A primary distinction can be made between active and passive attitudes. Even if these attitudes are seemingly polar opposites, a continuous shifting and sliding occurs between the two: there can even be dedicated attention given to several states at the same time. In addition, a variety of different abilities and intentional foci are tied to a performer’s state of presence and energy: the ability to build intensity, speed, and make abrupt changes; the ability to maintain an all-encompassing attention or a singular focus; to be in a state of nervous, or exuberant activity or reflective perceptivity; to be able to manage impulses for action (i.e, inhibit or react to them) that arise from the inside or arriving from the outside (i.e, the other); to be intent on listening, watching, or rather acting and building; to be generally communicative or rather selfish/self-centred. Many of these

are gradual differences and complementary abilities that can be present in parallel. How the performer's state transitions from one to the other is often as important as the question which state is in the foreground at any given time.

A primary intention of this collaborative project is to achieve an encounter between dance and music that is on an *equal footing*. Although this might seem evident, achieving a balance between the two disciplines is by no means easy. Habits and expectations push dance to the foreground, while sound or music forms the atmospheric, emotional, or rhythmic backdrop. This conventional hierarchy is not just culturally given; it also stems from the physiological and perceptual imbalance between the eye and ear, the visible and audible; sound by its nature is enveloping and fills the space, whereas a body's movement is localised, solidly present in space, and continuously captures the audience's attention. Whereas sound and music have an affective impact through listening, the dancer's body produces a corporeal resonance in the viewer. Furthermore, dancers are trained by convention to determine and guide movement after sound, and to *react* to musical elements rather than to *trigger* them. Musicians are inversely trained to listen to sound and the space in relation to sonic aspects such as consonance, texture, impulses, and rhythm, but not in relation to complex movement sequences and phrases. Being aware of the influence of reaction patterns that are active in the other's discipline is a necessary first step to be able to modulate the level of interrelation. "*The relationship between dance and music is charged by the difference between working with the body as instrument and movement as material versus using the body to operate an (external) instrument and using it to shape sound as the material*" (from notes taken after a session, 25. December 2014).

*Dance—Music
encounter*

Sharing the stage as two performing bodies builds an immediate link through basic presence. This additive presence works even if no other rapport is established. By occupying the same surfaces, spaces, and places on a stage, the bodies enter into a dialogue, whether they intend to or not. And even if each one stays within their home discipline, the physical influence affects the shaping of each other's material. In addition, because we are a man and a woman, all actions may be read in terms of the social dynamic of the couple, the battle of the sexes, and the inherent power rela-

tions between two individuals. It is important to note, however, that these topics form no explicit part of the conceptual framework of this practice.

*Inter-relating and
Interaction*

Considering that all art deals with relationships and functions with regard to a given frame of reference, the most recurring topic in developing this practice addresses the ‘in-between’ space, the relational aspect of interacting. Bill Viola’s quote may be influenced by Buddhist teachings, but it mirrors in a certain sense the importance of the ‘in-between’; it is valid for performance as well: “the real thing is under the surface ... the space between all the physical objects, ... that’s where we exist, really ... we really exist in between the empty spaces in reality” (Viola 2013: 02:42, 5:42–5:53). Improvising as two individuals, rather than alone or as a group, establishes the relational space between our bodies, our personalities, our activities, and our expressions as a *core issue* of the practice. In the development of the joint improvisation method, this challenge is addressed by distinguishing between different types of interaction relationships. Depending on how closely matched the actions are and on how closely a performer pays attention to and is guided by the materials of the other, three categories of interactions can be identified:

The first category of interaction pattern develops when a *tight link* is established (see Figure 4.19). The choice of phrasing, rhythm, types of intensities, discipline, and materials of the performers follow each other closely, sometimes in a mimetic relationship, often in a close dialogue and immediate response to each other’s actions. Often there is a close spatial proximity and direct contact between the performers; we can both be active in the same domain, either in movement or sound, using the same space or materials. This direct mode of relating with the other produces situational states that resemble social interactions. The duration of such sequences is clearly delimited, usually with a common beginning and an ending, that is initiated by one of the performers.

The second category functions through establishing a *loose parallelism* during the performances (see Figure 4.17). Here, each performer pursues their own chain of associations, flow of ideas, and intensities, but maintains an awareness and occasional synchrony with the other. Each performer might remain in their discipline and translate the other’s forms and ideas into their own materials. The differences in state, spatial position-

ing and lengths of tension arcs in the development of an idea are related to each other, but not necessarily identical. The durations of evolving idea arcs can be different. This state can originate from the overlap of other states, when one performer maintains an idea while the other transitions through several states and materials.

The third category establishes an interaction relationship that promotes an *independence* from the other. In this interaction pattern, the two strands of action get juxtaposed and each performer finds him- or herself in a different state and following a unique chain of ideas. Through the notion of contrast, this independence can produce contracting and expanding contingent relations, where brief moments of synchrony alternate with disparate states of intensity. Usually one of the performers is concentrating on the own discipline and deliberately ignoring what the other is doing. A particular tension develops from the resistance between the two performers engendered through the contrasting durations of materials, differing states of tension, through ignoring the impulses originating in the other, and by avoiding synchronous transitions. Transitioning to and from this state produces unexpected, awkward and sometimes illuminating moments. The challenge in this mode of interaction is to manage to maintain a perceptual link with the other despite keeping a strong focus on oneself.

These three relationships are based on modulating proximity, resonance, and resistance. They function as basic layers of tension and often contribute to the evolution of larger dynamic arcs that carry a dramaturgical significance for the entire performance, without being pre-determined or composed.

As stated already, the mode of work in this project is that of free, unconstrained interplay in improvised sessions. No agreements or formal plans are made beforehand, the interplay begins immediately with the first action and unfolds from there. Nevertheless, form remains one of the central concerns. Being capable of evolving the temporal structure of the entire performance in addition to negotiating the demands of the specific section, ideas, and materials is part of the skill that needs to be developed. This compositional intention contradicts the notion that in improvisation 'anything goes'. The fact that at the outset the performance has an open form, an indeterminate structure and unknown outcome does not mean

*Open Form,
Instant
Composition*

that form and structure are secondary. In many respects, the structural concepts and themes discussed above provide the foundation for specific actions that generate the form; it is 'dictated' by the doing (Bailey 1992: 111).¹³ The sense of duration, for instance, while active within a specific sequence of actions, needs to be extended towards perceiving the overall arc of tension, the necessity to achieve contrasting states, and to produce clearly delimited scenes or situations. Although in improvised performance it is not possible to reach the level of synchronisation that can be achieved in a notated work, the precision in executing transitions, the decisiveness in entering contrasting states, and generally being able to move the piece forward, produces an overall perception of the deliberate acts of creating a form. This is sometimes remarked upon by audience feedback after a performance, when the question is raised about how much of the material is pre-arranged and agreed upon; they are generally surprised to learn that this level of structure is improvised. Perhaps, on the one hand, a well executed instant composition can produce compositional forms and structures that are more effective than notated work in terms of fluidity. Poorly executed performance of open-form work, on the other hand, certainly results in a shapeless, indistinct flow of activities which satisfies nobody. Part of the risk that is inherently present in this mode of performing is to fall into the latter category, whereas achieving the former always remains the goal.

*Performing (on)
the
Movement/Sound
Divide*

The encounter between dancer and musician is based on a number of shared fundamentals. Both disciplines are time-based and performance-oriented, both carry a cultural heritage and tradition, and both are abstract non-narrative forms of dynamic expression in time. By disregarding the codified, traditional forms of melody, harmony, and rhythm in conventional forms of music, and the positions, movement patterns, and body shapes in conventional dance, a domain opens up that enables the access to underlying principles of movement and sound. In the case of

13 "Adverse criticism of free improvisation ... almost always aims at the same ... 'formlessness' ... in contemporary composition ... a great deal of ingenuity is exercised in finding something upon which the music can be 'based'. Mythos, poems, political statements, ancient rituals, painting, mathematical systems; it seems that any overall pattern must be imposed to save music from its endemic formlessness. ... Generally speaking, improvisors don't avail themselves of the many 'frameworks' on offer. They seem to prefer formlessness. More accurately, the prefer music to dictate its own form" (Bailey 1992: 111).

music this means dealing directly with sound's presence, production, and perception outside of given musical structures. Considering dance in an equally detached mode, the elements of space, the body, and movement are also approached through a more basic relationship as well. In both cases, however, the sensibility for the expressive shaping of the materials, instruments, bodies, and spaces remains the same.

While active within the shared improvised performance, each performer leverages the skills and expertise of their discipline and responds to the partner by entering into the other's domain, even if only in a limited manner. In order to break through preassigned roles and to be able to perceive as well as impart impulses on the correct level, it is necessary to understand how both disciplines work.

For me as musician, considering the domain of movement and space includes choosing a place from where to produce sound. The foray into the other discipline begins, however, when I start to move and execute actions that are not strictly necessary for playing an instrument. When I perform movements that are detached from any sound activity and are intended in response to dance, the divide between the disciplines has definitely been crossed.

Inversely, the dancer's first step into the domain of sound is intensifying the awareness on 'musicality' when moving, what she calls 'listening' to her movements or what [Sheets-Johnstone \(2003\)](#) calls the kinetic melody. Then comes an increased attention to the sounds produced by moving: breathing, stepping, sliding are a few examples. The next step occurs when the dancer takes up objects and materials, and handles them with the intent of making sound; here the attention is on the physicality in the sound producing actions. Although not necessarily reflecting any particular skills, the result of these actions resides as much in the physical as in the sonic domain. Finally, when she takes up some of the traditional or technological instruments in order to focus exclusively on sound, the boundary has been crossed completely.

Developing an understanding and the ability to read the other's intentions in their discipline becomes one of the central modes of performing together; one that is dependent on a minimal level of skill in the other discipline. These skills grow through the common focus and sensibil-

ity to phrasing and co-phrasing, or the spatial placement of movement and sounds (that get localised more easily when using smaller, crisper, object-bound sounds). Co-performing in each other's domain with disparate skill levels increases the mutual enforcement and exchange of expertise through the practice. The clearly perceived disparity in skill in the other's domain, such as for example the difference in fluidity of movement between the dancer's 'expert' body and the musicians 'everyday' body, is an aspect that is always remarked on by the audience. Deliberately evolving along the movement-sound divide proves to be a productive source of extended actions, tensions, and performance situations.

4.5.5 Implicit Focus

In the dialogue and discussions occurring throughout the project, the themes and topics mentioned so far form part of regular scrutiny and emphasis. Other, hidden topics undergird the practice without being made explicit. Throughout the project there is an unspoken, continuous mutual negotiation about aesthetic and disciplinary intent, and the contexts and conditions surrounding the work process. The give and take happens through actions and choices rather than words, and occurs as much in the practice of process as in the reflection about process, and spans larger phases than only the individual performance sessions. Connected to this issue is the question of exerting control on one-self and the other. As with any inter-personal relationship, the goals, wishes, and intentions between the two artists do not always line up. Proposing, trying out, and accepting new ideas or changes in the concept is a process that occurs regularly and always needs (re-)solving through negotiation. When reaching the boundaries within improvising, be they aesthetic, physical, emotional (namely through aggression, provocation, and challenging the other), or pragmatic, these negotiations become explicit, otherwise they run underneath the surface of the occupations during the practice.

Another recurring issue within the larger practice is dealing with the transitions between everyday states and the particular states of improvisation, as well as the transitions back from extended working periods into everyday situations. Part of the artistic process depends on managing these transitions and being able to switch rapidly from one state to the

other. In these moments, since much of the outcome of work is embedded in experiences, the tacit knowledge that has been accumulated in the practice is usually reactivated rapidly, without the need for any explicit actions. Nevertheless, every extended hiatus demands a phase of re-familiarisation with the specifics of the practice.

Considering the duration of the collaboration, it is natural that the interpersonal and individual histories evolve in the course of the project. The joint history grows and changes particularly through common activities in the encounters carried out in other countries. One of the motivations for undertaking these exchanges might be to generate unique configurations in the foreign contexts. The unknown that is contingent with the new situations points to at the topic of risk-taking by engaging with an unknowable situations within the performance as well as outside it.

Finally, the pleasure of *doing* these improvised performances and *being* in the state of play on stage needs not really to be made explicit as a topic for discussion. The connection with the essential qualities of experience produced during improvised performance provides us with enough motivation for carrying on with the project.

4.5.6 Shifting Field

By laying out the concepts, specific forms and preoccupations that inform and accompany the practice of improvised performance, a frame is established within which to ask about those qualities and values that form the core of experience. Within the larger context presented here, the core element that is subjected to scrutiny lies in the experience of the artists, a perspective that is delicate, personal, subjective, and difficult to grasp. The following observations are based on memory traces written down immediately after improvised performances (the full notes can be found in the Appendix A.1).

During the improvised performance, with a heightened state of attention and presence, different elements move into the perceptual focus. A multi-focal field becomes activated that encompasses all the perceptual elements that are present and all the elements with which an active engagement is undertaken. The field is continuously shifting since *“the attention cannot be fixed on a single focus for an extended time-span. The*

Focal Points

perceptual field is extended in different modalities at the same time, mostly in a peripheral, non-reflective way.” Even if occupied with one thing or activity, “... *the focal point may wander from space to situation, from sound-material to instrument (for a musician), from perceiving the inner affect and emotional effect to the outer; from the tension of the moment to the awareness of the overall shape of the elapsed time-span, from the perception of my corporeal position and feeling to the relationship to the others.*” Dividing up the senses in such a manner is not *per se* a problem, on the contrary, it is a necessary strategy to deal with the unforeseeable contingencies of the situation. The ‘squint-eyed’ peripheral perception may take away concentration from a single point and distribute awareness more evenly. “*The focal point is less acute, less exclusive, this gives more room to the surrounding field of elements.*” Maintaining several domains in a peripheral awareness allows to switch rapidly and engage with a newly important level almost immediately. It also allows to engage with multiple aspects in the field simultaneously, sharing the cognitive load across a wider range and “*switching which layer the focal attention is oriented towards - it’s not really a continuously shifting attention, more a jump-like shift, attaching the attention to the dominant element, the one that demands most attention*” (see Section A.1.2).

*Perceiving Self –
Extended*

The perspective of the performer represent a highly subjective position within the field of action, where different levels of self-perception coexist: “*Self-perception changes, I’m not self-aware but rather focussed on the situation and the way the elements are intertwined.*” Levels of self-perception range from an outward looking, experientially transparent ‘being-in-the-moment’, to a diffuse perceiving of one’s own bodily state, to a more abstract observational state, that may include a self-narrative (see Section 3.3.1). The basis for these perceptions is to be sensitive to active ingredients of the situation: “*[I perceive] myself, the other, taking up the space, the initial impulse.*” This grounds perception and the subsequent action in a *relational* field which is framed by intentions, affordances, and the other: “*the initiative is with the other, I wait, find the impulse, it’s a shape, the beginning of a movement, is it an action? No instrument at hand but the body, still, I act with what there is, the hands – there is, will be a lot of body, shapes,*

actions, places... always in relation ... to the other's presence, to the other's flow of energy and my own..." (see Section A.1.3).

The different types of perceptual directed-ness that are pointing inwards or outwards engender varying perceptions and therefore provoke action or movement patterns that correspond to the site of attention. An example everybody recognises from their own childhood is proprioceptively motivated swaying and spinning: "I discover the spin, I discover that by closing my eyes, I sway and that this is sufficient as an action for a while, standing still and *doing* nothing but swaying, until the urge to break out of this static situation arises – I take a few steps, everything changes, I do the same some more, it has intensified?" (see Section A.1.3)

Self-perception also extends to abstract, analogous, and image-based sensation: "*The space envelops us, gives us a 'shell', a skin to enter/play the game of inter-acting/inter-relating not with words and concrete meanings, but with more basic elements such as movement, sound, body-spaces-shapes, signs, rhythms, blocks of time, tension, receiving/giving impulses from within and without*" (see Section A.1.3). The experiences of the materiality of sound or the way that space envelops the doing are rooted in actual bodily elements. These perceptions, however, are not entirely based on imagery. Rather, they are based on resonance with known effects on corporeal equivalents, which get projected onto abstract, less immediately accessible aspects of the performance environment, as a kind of perceptual surrogate. This transfer enables a pragmatic handling of abstract environmental elements with the same perception and behaviours that are active for actual bodily experiences.

Space has different meanings during the performance. Naturally, the immediate surroundings and architectural characteristics inform and constrain the doing: "*I remember being in the space and the light coming in through the large windows, the tan cork-floor and the white walls, serene, quiet space.*" The presence of other performers, materials, props, walls, and specific features of the space create a secondary space, within which they are actively exerting attraction or repulsion forces. The spatial relationship between each element creates tension, locations, and points in space that are mirrored in time. "*Perceiving the other and what she is offering, perceiving my space and materials/instruments*" guides the attention

*Perceiving Space
and Junctions
Points*

towards the physical anchors, which in turn trigger temporal points. By “giving attention to the junction-points, [I perceive] the decision-points that demand to be expected, anticipated, realised, perceived, and acted upon.” The blending of the architectural space with the action space as well as the temporal space (that is, the durational extents), represents a tiered space that is structured and subdivided in the same manner as the inner space of attention: “There must be at least three levels of perception: my stuff, the other’s stuff, and our stuff together, all packaged as one” (see Section A.1.5).

Body, Instrument,
Figure

Corporeal presence is the foundational focus of perception for both the performer and the audience; already active before attention is diverted to materials and forms of sound and movement. Each improvised performance begins by deliberately placing the performer’s body in space, by establishing physical presence as a primary material and significance. Coloured by this precedence, all other physical elements, and in particular a human-sized object such as the double bass, inherit the perceptual focus on presence: “body, figure, object in space; the instrument can become a third body in space” (see Section A.1.1 and Figure 4.20). Playing the instrument as a source of sound immediately shifts its significance; object perception moves back to that of an instrument or tool. Even if the categorical character of the instrument determines “the difference between architectural object (a box), an unspecified object (a woodblock), and the highly cultural specific object of the instrument”, the intentional relationship determines the perception of its role and presence in the situation. This poses the question to what extent “the instrument is a body, [and how it] can ... be perceived as an ‘agent’ or ‘figure’ as opposed to an object?” And “if the [double-bass] can have its own space and presence without me playing it, [is it] integrating into my body (extended) and my space [?]” Traditional instruments, in particular those with a figure-of-eight-with-neck morphology, are immediately seen as figures, where “the contrast to the woodblock is quite striking, mainly because as an instrument, the woodblocks are relatively unspecific, whereas the double-bass is very highly specific and culturally charged” (see Section A.1.1). If the instruments and objects have an independent presence¹⁴, in relation to the human performers in a stage situ-

14 No explicit reference to object oriented ontology (Harman 1999) and speculative realism (Brassier et al. 2007) is intended here.

ation that is defined and established as space for interplay between bodies, the instruments and objects can obtain an agency and 'figure'-hood that affects performers and audience alike.



Figure 4.20: Video-still of 'one hand clapping' performed at 3331 Arts Chiyoda Tokyo, Japan on 17. December 2015.

4.5.7 Inner Space

The collaborative project 'one hand clapping – dense moments' takes a practice-centred as well as dialogical and discursive approach to experiencing the encounter between music and dance. It does so by selecting improvised performance as the format within which to experience, but also actively investigate the states of presence, the shaping of compositional or choreographic form, time, and space on stage.

Development of the common performance practice is motivated by a curiosity about the fundamental principles and states that govern improvised performance. The movement in/between the (word-less) performance mode and the articulated space of dialogue forms an essential part of the method. Through the cyclical process of doing and discussing, of experimenting, experiencing, and unfolding reflection, each artist and the project as a whole move forward. The exchange between artists, by sharing experience from two distinct disciplinary backgrounds, by sharing experiences of residencies and intercultural encounters, and by developing other

projects in parallel, indeed generates some of the deepened understanding that is sought. As the fabric of experience grows, the unreflected aspects of the practice diminish and a strengthened knowledge of the other (discipline) develops.

The non-textual, non-discursive, irretrievable states and situations that form the improvised actions expose the intrinsic qualities of the shaped time-space and the materiality of the body. Embedded within the event of each performance, they are indeterminate, excessive, and affective: indeterminate because they contain no narrative or representational intention; excessive because in their densely compressed, enfolded situations more is contained than can be apprehended and extracted; affective because their signification and logic functions more intensely on the level of kinaesthetic, pre-reflective corporeal response than cultural meaning. Nevertheless, performances in this mode are the site of (a) knowledge. Some of the encapsulated knowledge is only ever present in the contingent, multilayered, manifold, complex fabric that is made of the time-span, attention, tension, communication, and action within the performance. It is 'knowledge' or 'know-how' that is embedded *within* the practice and is *about* dynamics, shaping time, tension, bodies, sounds, and develops *with* moving, sounding, relating, listening, watching, doing. It can be brought out in several ways: by presenting performances, by teaching, even in cross-cultural contexts, as well as by engaging in a reflective dialogue, between ourselves, and above all with the audience and other practitioners. Much of the effort over the course of the project is centred around, based on, and referring to finding ways of extracting a *form of thought* from the core of the performance's *inner space*. The improvised practice within an open-form performance manifests thinking in sound and movement. The processes grouped around the practice are those of translation and transmission: to ourselves, to the audience, and to the peers. They are a representation of a non-representational activity that resists, yet depends on allusions and narrative references. Through this secondary, dialogical mode of performance, the knowledge situated in dance and music is extended, even if only for us artists.

4.6

'trans-form'

This process extends the sense of perception of the three elements. It plunges physically and psychologically across the boundaries of space. The arena of the stage is a white, illuminated 'black square' à la Malevich—a symbol of the endless void. It projects the primal fear of the elementary fight, which nowadays prevents us from approaching the conflict because of the lost capability for learning the primary elements. ... There is simultaneously an inner and outer tension. The steps of the body, the metamorphosis of lights and the multiple arrays of sound converge for a moment. ... The transformation is successful. The piece has a structured dynamic and provides the feeling of an endless prolongation of the critique and self-criticism of the physical as well as psychological limits of forms. (Leichtfried 2012: my translation)¹⁵



Figure 4.21: A moment in the performance of 'trans-form', Theater der Künste, Zürich, Switzerland, 2. February 2012.

¹⁵ The full text of the poetic review of the piece can be found online (in German): <http://www.kulturkritik.ch/2012/trans-form-interdisziplinare-performance/>

Video documentation is located in the Media Portfolio: **trans-form** <https://www.researchcatalogue.net/view/269265/272404>.

The project ‘trans-form’ was a transdisciplinary collaboration between Angela Stoecklin, dancer, Marie-Cécile Reber, musician, and myself in the role of the media artist. The project evolved through three phases and lasted from late 2007 until March 2012. Beginning with sketches and a long experimentation phase, the project ultimately resulted in a full-length ‘intermedia’ stage piece shown in three Swiss cities.

4.6.1 Conceptual Framework

The term ‘transdisciplinary’ is used deliberately for this work, because—even if based on the disciplines of dance, electronic music, and projections connected through interaction technologies—the format of the piece creates a constellation that surpasses the disciplines, and becomes its own form.

Over the course of the project, a topical core emerges, that focusses on the development of interaction models. The central idea for the project is to make *movement audible* and *music visible*, mainly by linking the two through sensing technologies.

Topics

The prevalent underlying concern the themes of the body and technology (Ihde 2002), power, violence, dependency and control in relationships and encounters. This addresses questions about freedom and dependency, about structure and limitation, about direct and indirect reference, about interlacing and digitalisation of communication. Every interpersonal encounter includes a component which is informed by power and dependency (Canetti 1960; Foucault 1982). This can take on the form of physical or mental violence, but also becomes visible in the use of control. Actions and their immediate consequences form the basis of these relationship schemata.

The subtle patterns and forms of these relations occur in the traditional art-forms as well, in particular on stage. In this context, hidden dependencies or evident consequences of actions become visible: the artists experience them in the collaboration processes, and the audience perceives and understands them through their personal, everyday field of associations, yet possibly classify them differently in an artistically defined space.

Hence, in this work, the polarities and oppositions inherent to interpersonal relationships become exposed in the interaction between the disciplines of dance, music, and digital images and projections. The presence of technology used to shape dynamics and expression in the media content, and the use of sensors as a link, that is, as a technical bridge between the performer and the media, reinforces and exacerbates this polarity. The in/ter/dependencies and the dichotomy in the combination between human being and technology reflects in a subtle way contemporary society which is saturated with digital media.

Within this topical context the dance-performer explores both the roles of agent and victim, and embodies both position's gestures, attitudes, and actions. She looks for the artistic form and the physical expression of the use of power and the reaction to it: on the one hand, it shows the desire to use power and the process of falling under its spell, on the other hand it makes evident the struggle against power and, in the fighting—prevailing or being defeated—shows the changing states of the subject, the performer. As the central figure expressing such emotions she can embody the inner themes of the piece and make these associations accessible to the audience. Thus, to the public, the performer serves as an identification figure and takes on the role of a mediator.

The performer

At the core, the relationship between performer and sound, image, and stage elements is established through a technical link. For example, loudness and intensity of sounds are linked via sensors to the intensity of movement, which generates a gestural form of music. Alternately, the dynamics of a sound affects the movement in an image or the intensities of lights. The shape of the body that is captured by image-analysis influences the extension of light and creates a halo around the performer. The use of sensors limits the performer's expressive range thus influencing directly the intensity and dynamics of a scene.

In the domain of scenography, the piece explores how spaces emerge through the use of light and imagery, and how movement within these space alters perception. Can an implied space influence the sense of the stage-space, and to what kind of movement patterns does this sensation lead the performer? The contrast between real physical boundary of a performance space and of a projected, drawn architecture as an open

The space

stage-concept enables a game with perception and offers an expanded space with which the performer can enter into a dialogue. The performer acts and reacts amidst these spaces. She relates to sound and image and finds herself in a sphere of tension where she is either actor or reactor. The movement language evolves in accordance with the dynamics of the dependency-situation of a sequence and is developed from that.

The use of light, sound, and imagery has an impact on the audience: the visibility of the stage space changes depending on the amount of light, the sound dynamics can reach both extremes from the inaudible to the unbearable, and the abstract imagery has the potential to flood perception with high density or speed. With video projectors and moveable mirrors as only light sources, floor areas, spatial zones, pathways on the floor and walls of the stage are being drawn and implied. The projection of and on the moving body leaves luminous trails and dynamically alters these spaces. Video with abstract graphical contents serves as coloured, structured, and textured light. Photographic or filmic imagery is being used fragmentarily in the form of live-image.

Sound-spaces and spatially placed sounds provide each scene with a distinct identity. The sounds of the electronic music contrast or complement the abstract visual elements and the organic character of the movement. In addition, the role of sound is to provide atmospheres (Böhme 1995: 101), and enveloping textures and colours that define or extend the performer's specific situation and emotive state in a scene.

The final form of the piece reflects the exploratory processes of dealing with sound, image, light, and live-performance and is always centred around the figure in movement within the stage space.

4.6.2 Sketching

The first phase of project deals mainly with sketching and collecting experiences of the primary possibilities of movement-to-sound links. During this phase, in a mode that is typical of artistic investigation- and development processes, the potential of motion analysis and the mapping of movement to electronic music through video tracking is explored. In this context 'mapping' refers to the specific task of connecting, in software, data from one process to the parameters of another process. Here, the motion

information captured using a camera is converted into control information for sound synthesis processes. On a more fundamental level, however, the basic concept of mapping between domains (Fauconnier 1997) underpins these processes and forms a central element of the task of the artists, both technically and creatively.

Starting from more or less clearly defined and preconceived ideas about how a relationship between dance and music could work, short interactive sketches, or models are developed, which demonstrate some possible connections between movements and sound processes. When attempting to implement these models, however, it becomes evident that some of the original ideas have to be adapted, transformed, or, in some cases, even abandoned. One reason for having to change the models in a sometimes drastic manner is the lack, as a group, of prior experiences of working with the given combination of disciplines and with the chosen technical means. But more importantly, the points of view concerning materials, processes, and methods, as well as space and movement, are in crucial ways different for musicians and dancers. This can be seen, for instance, in the way a dancer's movements and a musicians' performance gestures obey different laws (Godøy and Leman 2010).

To begin with, two basic interaction models are explored in the sketches. The first relationship between movement and sound is established through a basic spatial mapping. The traversal by the dancer of horizontal or vertical thresholds—imaginary lines running through space and corresponding to actual lines in the camera image—is mapped to the triggering of sound events. This generates what the dancer calls 'walk-around' situations, where movement is reduced to its purely 'locomotive' aspect. The second relationship is more subtle and deals with the expressive qualities of the movements. For this, the quantity of motion of the body is measured in the camera image; the value accumulated over time is then applied to the increase and decrease of elements in the sound and to the control of the beginnings and endings of musical sequences. The first relationship turns out to be more gratifying for the composer, since it helps to synchronise movement with sound events on a larger timescale. The second relationship corresponded more closely with how the dancer conceives her movement materials. With this link she is better able to modulate sound

aspects by modifying the intensities and the effort in the performance of her material rather than the movement material itself.

The first phase concludes at the end of April 2008 with a brief public performance of sketches.

4.6.3 Exploration

The second phase of the project aims at a more systematic experimentation about linking and translation of movement to sound and vice-versa. Because the models of interaction investigated up to that point are quite basic, it becomes clear that more experience is needed to build a rich enough vocabulary for the kind of artistic work envisioned. The goal is to build a repertoire of interaction models, through a systematic process, that extends incrementally the complexity of the music, the movement-sound relationship, and the overall language.

In this phase, the experimentation is carried out in work sessions that take place every few months, last for a day or two, with a focus on testing some specific questions, methods, or interaction models. Between these sessions, new mapping strategies are developed, refined, or implemented technically in collaboration between the composer and media artist. In other sessions, the focus is on movement capture and related technical issues, with a focus on finding the appropriate scalings, ranges, and extremes of the values produced through image analysis of movement (see Figure 4.22). These sessions are less goal-oriented and more focused on learning, as much as possible, about the individual methods necessary for working with dance and sensor-linked electronic music. An investigation topic might be, for example, how to map various spatial positions to sample playback, how to map points on the body silhouette to specific parameters of the electronic sound synthesis algorithms, or how to correlate motion intensity and energy to equivalent perceptual attributes in the music processes.

After about a year of experimental sessions using image analysis as the means of linking movement and electronic sound, a different type of sensor is introduced. A wireless bracelet equipped with motion sensors now provides data directly from the dancer's body. The sensors on the bracelet measure acceleration and rotation in three dimensions and the

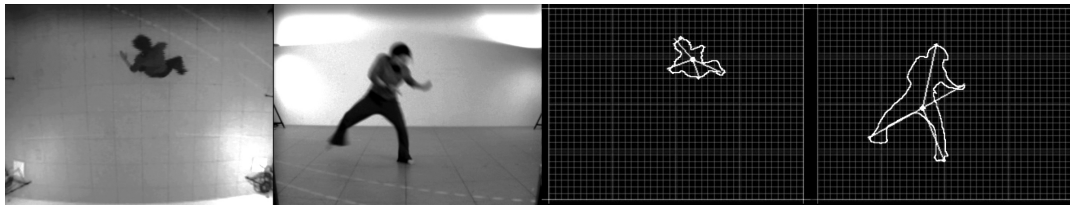


Figure 4.22: A dual-camera view with corresponding visualisation of the image analysis that extracts four cardinal points from the body's silhouette (October 2009).

data is wirelessly transmitted from the stage. Because of its low profile, flexibility and lightness shape, the bracelet is convenient for the dancer to wear on either the wrists or ankles. It is easily removed, replaced, or positioned differently, which is a considerable advantage during both rehearsals and actual performances. With this new type of sensor, it is possible to get closer to the expressive movement qualities related to effort and intensity of movement than through the spatial, kinematic perspective afforded by the cameras.

4.6.4 Transformation

After two years of experimental sessions, the project reaches a point where these findings need to be applied to an artistic development process for an actual stage piece. In the middle of 2010 a theme and strategy for a full piece is formulated and application for funding and the search for venues for showing this work gets under way. By the fall of 2011 the necessary resources and venues are assembled and at last the rehearsal process for the final work can begin. The theme defined for the piece addresses the interdependence and power relationships in our technological society, expressed as tensions and changes in hierarchy between the different media, between the body and technology, and visible between the artists and in their dependency on technology.

The third phase begins with a rehearsal process that is based on a different premise than before. Instead of looking at interaction patterns, the investigation turns to scenarios of interdependence. The models are based on real-life situations and on basic behaviours and emotions that form our everyday interpersonal exchanges. Using the interaction models from the previously elaborated collection as a starting point, basic emotions and affects are explored, such as anger and aggression, harmony and

tenderness, or behaviours such as playfulness (Russell 1980) or flight. The ability to work with emotional polarities forms the basis for establishing atmospheres and building scene ideas with different dramatic tensions. Furthermore, descriptive terms such as 'flowing,' 'poetic,' 'sweet,' 'harsh,' 'threatening,' 'nervous,' and 'excited' come into play and contribute the basic building blocks for the assembly of scenes.

The third pole

Up to this point, the duality of sound and movement provides the guiding principle of the process. At the beginning of the third phase, the constellation of media elements is extended by adding one new dimension. In order to extend my role in the piece, the decision is taken to bring in projections and the work on space, thus modifying the stage and addressing the visual domain. The intention is to transform the balance between movement, sound, and their perception by elaborating a method of graphical work with a spatial quality. Apart from adding a new scenographic dimension to the piece, this also changes my relationship with the composer and dancer, and puts me on an equal creative level with the two artistic partners.

Dramaturgy?

Throughout the development and rehearsal process, the topical and idiomatic aspects (that is, discipline- and style-related aspects) of the scenes remain a key concern. The music, dance, and now the projections are closely interconnected and each domain takes the lead in its assigned sequences. The scenes are ordered in a sequence that makes sense dramaturgically. This means taking into consideration not only the interaction models and interdependences between the media in the individual scenes but to find out which scenarios complement each other. In order to construct the final form, decisions are taken about which scenes need to stand by themselves, which scenes can be repeated, and which ones can form 'brackets' around larger sections of the piece. Without formal training in this type of development and sensibility, and without a background in theatrical forms, this poses a considerable challenge. Through trial and error, a satisfying form is found that is guided by more than just contingencies, and that reflects the main theme in the best possible manner.

Projections

Other challenges arise in the development of technical solutions for the dynamic projections. The transformation of the spaces is effected using video projectors as the only light sources and as the sole means of defining

the stage set. To alter the points of view on the stage and alter the spatial configuration during the piece, a number of different viewing perspectives are envisioned and methods for redefining the space with the projections are devised. For this purpose, the space is subdivided by several hanging screens, which are unrolled or lowered in the course of the piece. To adjust the projections to these screens and to enable varying lateral projections onto the floor and walls of the stage space, three video projectors are mounted on rotating stands with moving mirrors. A fourth projector is mounted on the ceiling pointing straight down, thus creating on the floor a well-defined rectangular zone within the larger stage area.

Finally, after little more than twenty days of rehearsals, the stage piece is completed. It consists of seventeen scenes and lasts roughly fifty-five minutes. In February and March 2012 'trans-form' is premiered and performed seven times in the three Swiss cities of Zürich, Basel, and Luzern.

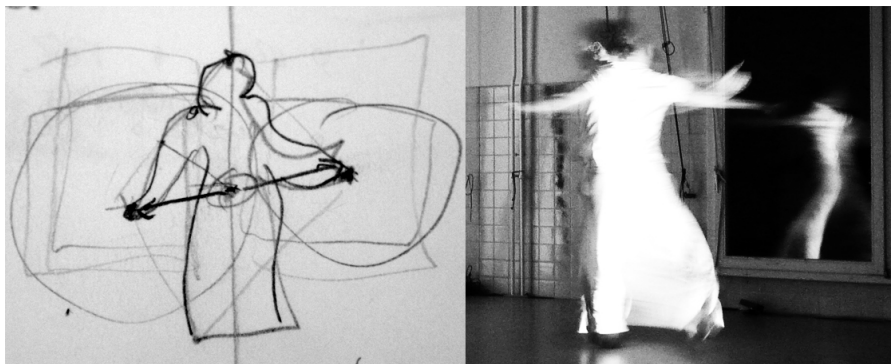


Figure 4.23: A sketched movement in the body space and its realisation in the final piece. The sketch on the left dates from September 2009 while the photograph on the right dates from February 2012.

4.6.5 Traces

Any artistic process, even one for a time-based, process-driven art form such as the transdisciplinary performance piece described here, leaves behind various traces. Evidently, for a performance the primary traces are experiences. They occur in different intensities for the artists and the audience. In the case of 'trans-form', the unique form, space, and atmosphere, and the dense and abstract character of the piece leaves behind a definite impression on the public (see the opening quote from the review).

For any performing artist, the documentation of a performance—be it

*Documents,
Sketches*

in the form of an audio or video recording, photography, or printed text—represents the single most tangible form that survives the ephemeral moments onstage. The lived experiences of the investigations and experiments of the project remain in memory and constitute a substrate for further work. In the prolonged development process for *trans-form* this also occurs across the different working phases. However, since memory is an unreliable and fluid element of our cognition, material elements of personal documentation, such as notes and sketches represent a necessary form of scaffolding for the reconstruction of past experiences and insights. As an illustration of this principle, it is interesting to observe how from the original sketches that originated during the experimentation phases of our process, some key elements made it into the final realisation. Figure 4.23 shows a movement idea, in the form of a graphical sketch of the body-centric space, and its reappearance in the photographic traces of the finished piece. The idea is transformed, but it remains visible as the realised form of an intuition or idea that was originally captured by the sketch. This is an example of the evolution of ideas during the project, especially considering that a span of almost three years elapsed between the two images.

Memories and documentation, not just of the experiences gathered during the experimental phases, but also of the reflection processes occurring during or in between the sessions, form an essential part of the strata accumulated during the artistic process. These reflections and insights need to be actively preserved as well, to be accessible during subsequent development processes. However, systematic note taking and documentation can only partially fulfil the need to preserve traces of developments.

Stability

Maintaining a stable constellation of materials and technological means is another condition. This enables the reuse of models and ideas without having to re-explore and redefine the experiment each time an element is changed. The persistence of experimental configurations is a crucial element to be maintained throughout an artistic process. However, it puts a high demand on establishing proper methods and maintaining good control over the materials. Artistic development processes have a tendency to drift continuously from one established certainty to the next new, exciting, yet uncertain constellation of things. Fortunately, when working with tech-

nologies, another type of persistence can be established through technical means. Much like scores for traditional music, technical configurations tend to coalesce into increasingly solid forms. Within their implementations are inscribed other types of traces, those of the processes and methods that were explored technically, and which are expressed, for example, in the code language of the software used.

Even though the project encompassed different work phases with varying intensities and foci, I believe that 'trans-forms as a whole can serve as a useful case for reflection about artistic experimentation and the generation of insight and understanding through these processes. Many of the results of the project, particularly in terms of gained knowledge, will remain encapsulated within the skills, methods, and familiarity with the materials that were located within the practice and the forms that constituted the piece. Those elements of the exploratory processes and artistic developments that could be brought forward as propositional knowledge are located in a domain where modes of interaction and interdependence are not only described as connectionist mappings (Gärdenfors 2004) but also represent underlying mechanisms of perception and social interaction. The arc of evolution that took the project from a state of basic interaction ideas with a limited scope to a fully realised artistic work traces the life cycle of a typical artistic endeavour, with all its pitfalls, fits and starts. The diversity and complexity of the models, topics, and concepts that 'trans-form' touched on, developed, and engaged in for the final work provide fertile ground for reflections on artistic experimentation, investigation, and experience.

An Exemplar?

'sonozones'

Places gather things in their midst. [...] What is kept in place primarily are experiencing bodies [...] places also keep such unbodylike entities as thoughts and memories. [...] Its power consists in gathering these lives and things, each with its own space and time, into one arena of common engagement. (Casey 1996: 24)



Figure 4.24: Listening in Mülheim an der Ruhr, summer 2013.

Video documentation project is located in the Media Portfolio for **sonozones**
<https://www.researchcatalogue.net/viewwith269265/272416>.

The project 'sonozones' originated within the context of a larger initiative by the Institute for Contemporary Arts Research of the Zurich University of the Arts, IFCAR. The multi-year regional arts initiative 'Urbane Künste Ruhr' invited IFCAR and in particular its research initiative 'Public

City' to set up a research lab in the German town of Mülheim an der Ruhr. In the context of this lab, four separate teams from different artistic disciplines such as fine arts, media arts, or performing arts carried out artistic initiatives. The project 'sonozones' is located within and motivated by the perspectives of sound arts and music.

4.7.1 Entering the Place

During the summer of 2013 I travelled to Mülheim on five different occasions in order to carry out the project with the three artistic partners Cathy van Eck, Kirsten Reese and Trond Lossius. Instead of setting up a group process where the collaborations and interactions would occur within the entire group, I chose to engage in pairs. The three perspectives, which are present in this project as three independent strands, cover the themes of performative listening with a focus on directed or focused listening, the work with installative augmentation of urban spaces by interventions with small speakers, and the exploration and experience of the "place-ness" through field-recording. Between the four artists, a dialogue was constituted, which was converging and yet exposing the many fugue-points that are present in the perspectives of each artist. In addition, the network of sound-artists served as a primary (micro-)society and a sort of 'proto-public' for each other.

The project's principal aim was to collect traces and artefacts of the artistic processes to permit an investigation into key-elements of the public and personal dimension of listening, sounding, and the various elements that constitute the practices brought together by the group. Being guided by a number of questions set out at the beginning, the project developed its own dynamic. An important question concerning the decisions about methods was how to approach social and urban dimensions with the methods, materials, and aesthetics of sound-arts. While the main focus was on the effect of sound and listening and the phenomenal foundation of sound-works based on an aesthetic experience, it was nevertheless crucial to decipher the role that the environment plays in a process of creation. During the course of the project it became apparent that the central issue of this project was how an art form that builds on abstract non-narrative and non-propositional materials and forms could create an

impact in the lived world and social environment. In an approach that attempted to tackle this, the overarching goal of the 'sonozones' idea was to experiment and explore the social dimensions of and through sound art practice.

In the three pair-wise collaborative processes that were developed, however, the focus was put onto only one set of questions, pertaining to the artist's individual practice and addressed through their own methods. In each group, the role of myself as the project leader was primarily an accompanying one, assisting with the specific activities, but also observing, questioning, and maintaining an appropriate level of dialogue and reflection, through entering into a structured dialogue, which circled often times around the core questions, the individual methods and findings. Although the original ideas were brought in first by myself, it was imperative to maintain the integrity of each artist. The method and processes during the work-sessions, as well as the manner in which the dialogue and reflection got framed was repeated as much as possible, in order to be able to compare and juxtapose the individual processes. The steps used in working were loosely following a kind of 'protocol' which outlines the serial character of the entire project. The method of going through analogous processes with the three partners and collect similar traces and materials was intended to generate a fourth perspective that might serve to answer some underlying questions about sound art in public space.

Compositional work on the one hand, deals with building structures using sounds, usually of instrumental origin, that are assembled into temporal, pitch, harmony and timbral systems. When this music is brought outside of the traditional venues of transmission, that are the concert hall, the club or even the every-day use of musical materials diffused in public spaces, it obtains a different meaning. That significance is related less to the cultural categories of musical style or genre, and through this to a specific stratum of society, rather it becomes an almost subversive element, that uses musical sounds to shift one aspect of a place and may give it a different atmosphere.

Sound art on the other hand, since it has its origins in the domain of fine-arts, treats sound as raw material and contextualises it more closely with the place of its existence or occurrence. Bigger importance is given to

*Music versus
Sound-Art*

establishing relationships within the environment or to constructing new meanings through juxtaposing place and sound, presentation form and the time given to contemplating work. Depending on the cultural context, 'sound art', 'Lydkunst', 'Klangkunst', or 'arte sonoro' denote different ways of approaching the spatial, sculptural, material, structural and ultimately also social embedding of sound practices. 'Klangkunst' in the German context generally means installation-works using sounds as evolving elements in sculptural, spatial arrangements, mostly in art-spaces, whereas sound art in the anglo-saxon context identifies a number of different practices that range from field-recording, collage- and concrete sound compositions, all the way to performed noise- and sound-based stage pieces.

Considering the continuum of these different practices, the three approaches represented by the project artists span compositional and performative aspects from music and as well as installation and intervention-based concepts that are located within sound art. Even if the act of listening in the domains of music and sound-art involves an inward focus and state of awareness, the habitual ways of doing so differ considerably. The concert-hall experience is based on a type of attention that enables concentration whereas sound art pieces in public spaces have to be negotiated in competition with all the senses and the concurrently present different sonic layers.

4.7.2 An Additional Point of View

From the outset, the 'sonozones' project was declared as an investigation into sound art that was aimed at generating new experiences and insights through practical and exploratory processes, rather than working directly towards an artistic output. In addition to the three artistic practices, a fourth position emerged throughout the interaction of me, the project lead, interacting with the project members through reflections, perceptions, conversations, and participation in their processes. This fourth strand had its own methods and occupations, one of which was to generate media content, but also to identify and reinforce recurring themes and bring them to the foreground. Of course the role of project leader and organiser also led me to a perspective that was a blend of assistant, critic, responded, interviewer, instigator, producer, and co-conspirator.

A number of questions emerged in the weeks in Mülheim, which were directly related to the individual practices, but in many ways surpassed the range of the individual methods. The following materials are notes stemming from my journal and as such do not convey full-blown discussions of research questions; they rather represent a rough and unsorted collection of elements assembled in an associative manner, enabling the dialogue with the artists during the discussions on site. Here, they are ordered thematically.

- sound – tackling the phenomenon in urban contexts.

What are the typical sound elements in urban contexts, characteristic sound-marks and predominant sound-events are all man-made. How does the urban environment influence the sound dispersal, our perception of spaces and of social interactions.

- listening – the activity, setting the focus, who is listening?

Listening is functional, but almost exclusively so, in particular in everyday situations. There is almost no place for focussing on the acoustic properties of the place, or perceiving sonic elements that have a different meaning, socially or architecturally, or even poetically.

- auditory horizon – urban contexts have significant deficits compared to vision.

The predominance of traffic noise or dense human activities reduces the reach of the acoustically perceptible. The auditory horizon (Ihde 1976)¹⁶ is severely limited compared to the visual one (see Section 3.1.3). Finding places where the inverse is true is an interesting task. Architectural features, such as buildings and bridges influence directly how the sonic scene is constrained, reflected and charged. In open squares or on top of a high bridge, the distance that can be heard is naturally further, than in a street-scape that is enclosed between buildings. It is not only the

¹⁶ “But at the horizon one may note the giving, the e-venting, the point at which “there is given” into what is present. Nowhere is this more descriptive than in the experience of listening. The sounds “are given”, they come unbidden into presence, and humankind, in listening, is let in on this e-venting. Listening “lets be”, lets come into presence the unbidden giving of sound. In listening humankind belongs within the event. And as a presence, the sound is that which endures, which is brought to pass, the sound whiles away in the temporal presenting that is essential to it. [...] Presence is situated within its horizons, and at the extremes of horizontal limits can be discerned the “coming-into-being” out of the open and absent giving (Ereignis) and the region (Gegnet) that is “beyond” presence. [...] Silence is a dimension of the horizon” (Ihde 1976: 109).

line of sight (sic!) or direct sound that determines the horizon, but also the reverberation and reflections that can mask direct, yet fainter sounds that are farther away.

- intervention – how can this have a social impact.

Interventions can be performative or acoustical. In both cases the visual impact is greater than the acoustic one, simply because presence of objects or performers in the public space is perceived primarily visually. These visual cues can help to grab the attention or have a deictic function, they point towards listening and sound. Social impact can be observed in the interactions with members of the public, could be seen in journalistic output. This would indicate that a wider impact is possible, but ultimately it only acts on the experiential level of individuals that come into contact with the interventions and investigative actions.

- social situations – questioning the validity of sound art.

The question about social interaction or situations where sounding or listening can be communicated is the core of the project. Being agents in the public space, interaction occur automatically, and it's relevant to say that these interactions are always charged with questioning the socially acceptable and the meaning of the activity in general. Sound art practices can span a wide range of activities, many of the them concerned with private listening or explorations.

- artistic exploration – generating artistic experience from research questions as a viable method.

In this project some of the core issues are located less with each artistic practice but in general rather with the question of meaning of artistic interventions, be they passively observational or actively intervening.

- experiences – how to communicate them as the central, yet intangible result of the activities.

Finding a shape, which can convey some core elements of the artist's experiences during the exploratory process is part of the communication effort of the fourth layer as well as the of each individual form. Since some of the core elements of listening cannot be described in textual form and some of the situations in the social fabric of the urban environment are equally hard to put into words, a media-rich, associative fabric of relations might better serve as form to communicate project results.

This collection exemplifies the exploratory and experimental methodology that was used across the entire project. By conceptually probing in these different thematic directions, the concrete activities were tied to or developed in a loosely contextualised manner. By not setting explicit questions as a starting point, but rather extending the field through these thematic avenues, the iterative and process-oriented approach across the three practices served to discover connections and common threads that would serve to guide the exploration.

4.7.3 The Protocol

The following materials are notes taken my journal and outline a framework that served to unify the three practices along common and repeated actions and methods.

From the notes, 21. June

The protocol serves to structure the time spent on site or in between the project weeks. Some of the elements are for myself and should be part of my private daily time and routine. Some elements should be daily routines to be executed with every partner. A detailed log will be collect here trying to make a collection of experiences, artefacts and times/dates with observations possible. Negotiate with each partner which blocks will be filled how, or omitted.

Cyclical repeated activities:

- *Explore*: sound, place, methods
- *Transform*: recordings, situations, actions
- *Reflect*: in thought, in dialogue, in writing
- *Document*: Inside/Outside

Contextualise:

- *People*
- *Places*
- *Writings*

The main modes of action could be categorised as such:

- *Observe* – *Explore*: exploration of site, place, space, urban context, landmarks, basic sources of sounding: geophonic, biophonic and anthroponic (Krause 2013: 39, 64, 155)

- *Engage* – with each other is the first social level, with locals, by being there and acting, by talking or intervening with the people and the sound of the place is the second level.
- *Convey* – Experience. When an element or idea becomes clear, develop method of conveying it. Or does the conceptual work or the fact that it's a development process not demand an actual intervention?

4.7.4 Open or Closed

This project was set up in an investigative mode in the context of a larger art-as-research context. Therefore the importance of exposing practice as research might be recast and viewed from the inverted perspective. In what way can an investigation into artistic processes be called practice, if the normal qualifiers for an artistic work are missing? These qualifiers determine for example if an action or process is goal- and result-oriented in a pragmatic way or if an aesthetic or poetic choice, and an artistic intention is the principal driving force.

In the case of the 'sonozones' constellation we all felt that even though there wasn't the usual target point to motivate the building and development of the artistic processes, in certain ways, the work was more open-ended and heading into more unknown territories than if there had been a classic show or performance as the ending point. There was in every collaborative pair a moment when a delicate balance had to be found. This was at the beginning of each process, when it became apparent that the processes would not lead to a recognisable and familiar end form, and that making plans and defining methods for addressing the concerns that were outlined by the questions in the concept, there would be a danger of missing the crucial unknown experiences and new discoveries. There was a pendulum move from the following the idea of social interaction by the project leader and the concern about the individual practice of each artist. Even though in discussions during the various phases of each pair's work these different levels of concept might come to the foreground, most of the time, during the actual experimentations, explorations, transformations, interventions, and performance situations in the public places, the core practice was in focus.

The questions that framed the project in the beginning at times became quite peripheral to the concerns discovered to be much more pressing during the processes. In one of the processes, in an unforeseen turn, the need to work towards a finished piece became pressing. This was in the pair with the field-recording methods. However, the unforeseen benefit of dedicating a good part of that project's time to gathering the materials for a finished piece, was that a very coherent a repeated manner of working was established, that led to a type of experience not anticipated. As Trond writes, doing long-duration recordings with video of a site or place permitted us to enter into a mode of perceiving the place, which in every-day life would be inaccessible. The meditative and deep involvement with being in a specific place and listening and watching it without stirring and making any noise proved to be one of the recurring intense experiences. Interestingly this occurred for all three work-groups. Whereas the field-recording with the surround microphone and camera imposed a silent attention for time span of up to half an hour, and the observation of the effects of the small installations by Kirsten on the dynamic of a place and the behaviours of passers-by created a heightened attention and awareness, so the experience of walking for more than twenty minutes up the busy high-street with an clearly visible card-board cone had the same effect.

4.7.5 Thoughts and Observations

In the 'Extended Ears' track by Cathy van Eck, the investigation occurred on three levels. On the first level, we dealt with materials and process research by building horns, assembling technology and programming a smartphone app. On the second level, the task was to test and evaluate each model and find its limits and determine the actual perceptual effects versus the planned or imagined effects. Finally, the third level covered the performative application of (two out of three) models as a social and shared experience and as a signifying activity in public space. From these investigations and actions a number of insights or facts can be formulated. The acoustics of our perceptual apparatus can only be altered up to a point before changing the experience completely: the experience of focused listening may be emphasised through external means, but the ideal is that it 'just works' with open ears. It becomes clear from these tests that

documenting the actual listening experience is impossible, the technical means alter the perception and the level of differentiation that our auditory system affords cannot be simulated. When examining the social interaction and social impact of this practice, it is evident that the main effect is through the performative intervention, by signalling to the public the action of listening, or through sharing the experience in providing the means for having the same perception, for example by handing our listening devices to passers-by and interested audiences. Yet, even in these social situations the actual listening experience stays personal.

The entire investigation was linked to the specificities of the Mülheim context by being tuned to the characteristic sound elements given. The predominant sound-marks and their balance specifically influenced the transformations programmed for the virtual model, but also the manner of applying the mechanical one in the pedestrian zone of Mülheim.

The aesthetic subject in sound is defined by this fact of interaction with the auditory world. He is placed in the midst of its materiality, complicit with its production. The sounds of his footsteps are part of the auditory city he produces in his movements through it. His subject position is different from the viewing self, whose body is at a distance from the seen. The listener is entwined with the heard. His sense of the world and of himself is constituted in this bond. (Voegelin 2010: 5)

For the track called 'Augmenting Urban Sounds' with Kirsten Reese, the activities were divided into three main categories. The exploration and collection of the sonic characteristics of the place were followed by a phase of transformation and composition that provided the materials used to re-intervene in the places and modulate in subtle ways the sonic spaces given. Typically, the process started from this premise, but we couldn't foresee where this would lead. The serial character of the work process and the typical cyclical experimental setting shared many traits with 'scientific' experimental studies (on behaviour, perception, and so on). The results are not as tangible as in a finished artistic work, but the experiences can be put into words. The choice of method of intervention had direct and indirect social impacts. A direct result was when passers-by noticed the added sonic elements (although often they first noticed the speakers and cables,

rather than the sounds), a few reactions came from this type of interaction, such as the encounter with the art-historian who would come back to experience more of our work. The indirect interaction had to do with our presence in the public place allowing us to enter into normal conversations and contact by simply being there as agents. The main insight of this project might be the notion of thresholds. Sound augmentation of public places through interventions with small sounds needs to pass the threshold of habitual perceptual filtering by the public. Different places or situations have different domains where this threshold is situated. On another level, the presence of power-relations in public places became evident, something which is always present but is rarely addressed in sound art. By intruding into the public space with these interventions, problems arise with authority, ownership, and hegemony. Issues of permissions and boundaries need to be addressed, because members of the public might perceive these artistic actions potentially as threatening. Public space in German towns is highly regulated and protected.

In a more general sense noise amplifies social relations and tracks the struggle for identity and space within the tight architectural and demographic organization of a city. In this sense, noise is a social signifier: determining unseen boundaries and waging invisible wars. A comprehensive noise map ... reveal[s] social relations on its fault lines of taste and tolerance. (Voegelin 2010: 45)

Listening through recording, using recording technology as a focussing device, and approaching the sense of space and place generated by sound and listening were the main themes of Trond Lossius' track 'Losing myself in the world'. Taking the concepts from from situationist 'Dérive' (Debord 2006) as an exploratory method, we added the microphone in order to closely listen to a place. The goal was to get a sense of 'place' and 'non-place' (Augé 1995), with the recordings capturing sonic elements with their spatial acoustic characteristics. During the ten days spent in Mülheim we laid a network of visits across the town, attempting to collect as many different characters as possible. The shared listening experience between Trond and I was occasionally extended when other people curious enough to inquire, were offered the headphones to listen through the microphone,

as if looking through a telescope or the view-finder of a camera. In the process of recording and documenting the exploratory process, a form of field-recording piece that includes video was discovered, with the clearly defined goal of showing it in an upcoming exhibition situation in a cinema-hall in Norway.

It is the body listening that is at the core of the aesthetic autonomy of sound ... and gives it speech. The listening body is a solitary subject who practices rather than assumes the work. (Voegelin 2010: 74)

Although this sub-project ended in a properly finished piece, at the outset many of the processes were undefined. The investigation extended to more than just the recording activity. In many ways the experience of spending up to twenty or thirty minutes in total silence without moving generated an condensed type of being, listening and awareness of the kind that only the performing musician might find on stage. The meditative and deep involvement with being in a specific place and listening and watching without stirring and making any noise proved to be one of the recurring and intense experiences. In addition, through the sharing of these experiences, an intense process of dialogue between Trond and myself emerged that helped to clarify the direction and intentions of working in this way. In the public place, again, the act of recording has a signalling function. Many people asked if we were measuring noise-levels, and since I was filming in parallel to the audio recordings, they often thought we were a film crew. The social moment of sharing the listening with the public occurred, even if rarely; kids and young people being the most open to try it.

The insights about space and place are multi-layered and complex. One aspect that came up time and again was the question of the auditory horizon (Ihde 1976), in particular in the combination with the visual field-of-view of the video recording and the fact that we were using a surround microphone capable of capturing all around our listening position. Although generally the auditory horizon was much closer than the visual one, mainly because of traffic noise blocking out fainter and further removed sounds, in some quiet places, the inverse was the case. In these quiet urban spots, the ear would not only be capable of perceiving things all around simultaneously, but it would also pick up sonic events from much further afield than

the eye could. This is particularly true for sound-marks such as church-bells and sirens, but it also happened with the screaming of a flock of geese flying across the river. We believe that this juxtaposition between the visual and the auditory horizons is perceivable in the screening format we chose, where the images contain less information than the sounds. A final discovery about the relation of field-recording and a specific place such as Mülheim was that audio recordings tend to easily lose their site-specificity and therefore the intrinsic link to the place of their capture. Only if specific sound-icons are present can a place be recognised by listening alone. The photographic or 'videographic' trace helps to anchor a recording to an *actual* place and memory, rather than an internally imagined one.

Experience is compounded of feeling and thought. Human feeling is not a succession of discrete sensations; rather memory and anticipation are able to wield sensory impacts into a shifting stream of experience so that we may speak of a life of feeling as we do of a life of thought. It is a common tendency to regard feeling and thought as opposed, the one registering subjective states, the other reporting on objective reality. In fact, they lie near the two ends of an experiential continuum, and both are ways of knowing. (Tuan 1977: 10)

4.7.6 Questions and Insights

When trying to put the insights gained through the 'sonozones' processes into words, the primary element which remains and should be communicated, is the experience of the places of Mülheim by the artist through extended presence in attentive listening states. This insight is deeply informed by practices and processes carried out by the four artists and in particular through an intense presence on site, building up a foundation of impressions, concrete experiences of the town, and of sensorial, sensuous, and personal moments. Only through this active engagement, the experiential gain accumulates and permits the construction of a web of relationships on all the layers of the practice.

Even if this statement seems too subjective and not universally communicable, it nonetheless shows precisely that the primary level of effect on artistic awareness and the processes of sound art practices is situated in the domain of personal experience. Through the project this experience

can and was communicated, though. This occurred on site by sharing the practice with others or indirectly by exposing ourselves to the perception by others through our activities in the public places.

In this sense, some of the questions formulated at the beginning of the project became condensed into one important underlying inquiry. Thus the issue was how an art-form that builds on non-narrative and non-propositional materials, forms, and practices such as sound and listening can create an impact in the lived world and in a social environment.

Social engagement through presence with sound art practice in the urban environment proved to be an interesting, albeit tricky topic. Not so much with the idea of creating an impact in the lived world, but rather because we didn't intend to actively manipulate or engineer social situations. By being visible agents in the urban environment, for example by operating with a large microphone and a camera, by manipulating small speakers in marginal or so-called non-places or by 'performing' a listening walk using large cones, the public was clearly perceiving us through our activity as artists. This 'signalling' effect was a deliberate choice and was aimed at establishing bridges to members the public. Whether the public's questioning of this would lead to an active engagement was often times dependent on the circumstances and on the type of person encountering us. There were a few short encounters, for example with children with their natural curiosity who would engage immediately in questioning and would try to understand what we were doing. Adults would do so in a more reserved way and usually provide their interpretation as question: are you measuring the noise levels, are you a TV camera-crew filming, are you documenting the empty stores on the high street? Those were some of the questions put to us. An interesting question was asked by a teenager, when watching Cathy van Eck walking with a listening cone: What is she listening to? Our attempts at answering these questions and at explaining our methods and goals would lead to conversations and, in the case of one person, motivated her to join us in a common experience on a listening walk and a subsequent long discussion. These communicative moments were enabled by our being active in the public sphere in a particular manner, something which would not have occurred had we gone out to simply interview people.

Another critical aspect that reflected on our activities in the public sphere were the places where we encountered limits of the permitted activities with sound art. In one particular instance, the hegemonic subdivisions of public spaces became absolutely clear, when security personnel prevented us from recording or diffusing sound on the public transport platform adjacent to the shopping mall, which forms a principal passageway from high-street to the neighbourhood behind the station. In another instance, on the downtown tram-stop, we were asked to point the camera away from the waiting passengers, making evident the monopoly on surveillance or observation exerted by the public transport company.

In closing, a final phase of this project needs to be mentioned. It covers the communication after the fact of the experiences collected in Mülheim during the summer of 2013, the compilation of the materials presented in this format, the recollection, combing through the traces and artefacts, and the writing of accounts and the reflections. All of these activities allow us to close the circle from idea to insight, but also permit to widen the audience and let others engage with the sound art practices by way of the assemblage of elements presented here.

5

Philosophers agree in making a deep distinction between two ways of knowing a thing. The first implies going all around it, the second entering into it. The first depends on the viewpoint chosen and the symbols employed, while the second is taken from no viewpoint and rests on no symbol. Of the first kind of knowledge we shall say that it stops at the relative; of the second that, wherever possible, it attains the absolute.

(Bergson 1903: 186)

Interpretation

5.1

Positioning

The following chapter takes all accumulated materials, and attempts in a movement across both theory and practice to address some of the central questions of the project. The intention is not to formulate a definitive statement about the topic, for this the scope is much too wide. Rather, by moving across and through the assembled topics, processes and artefacts, and by doing this in an attitude that resembles the improvised negotiation of a complex open score for a piece, the process of reading the field gets “enacted and performed” (Noë 2016, personal communication).

The quote by Bergson at the top of this chapter points towards a divide between knowing and thinking, experience and symbolic representation. At first glance it seems to merely address the practice/theory divide, but upon closer inspection it also delineates the space between the two poles. In the idealistic reduction that wants us to think that there are only two distinct states, as Bergson seems to pretend as well, we forget that within the processes and the various moments that make up a process, these states may co-exist. In the methods and the phases of arts projects, through the developments, rehearsals, and performances that form part of the practice discussed here, a pendular movement is occurring that reaches both viewpoints, the outside and the inside, that of the absolute experience and

that of symbol bearing observational analysis. To go inside the *thing* is the mode of the artist. To go around it, that of the spectator and thinker. An artist/researcher takes on both perspectives, moves through and attains a position that blends the domains (Fauconnier and Turner 2003b).

For the improvising performer, the *thing* is a multi-layered, highly folded and complex compound of conditions that only manifests itself during performance. After the performance, memory and media traces form the substrate for thinking and knowing. Here, then, a viewpoint is reached that is subjective, singular, and biased. Although the artist is rejoining the audience on the everyday level of thinking, reflecting, and communicating, the basis of knowing remains different, divided into the two ways that Bergson stipulates.

In the case of the present cultural practice, ‘knowing the thing’ seems an ambitious and unobtainable goal. Perhaps, for the non-philosophising artists who like to, or rather, need to think about their practice, the type of knowledge gained from ‘no viewpoint’ inside the thing bears witness to the perceptual imprints, affects (Russell 1980), impulses, and the experience of the contingent chains of states, rather than propositions and narrations *about* a performance. This is a ‘tacit’ (Polanyi 1967) kind of knowing that emerges from and resides enfolded within the doing, in the ‘absolute’ mode that knows no secondary ‘viewpoint’.

5.1.1 Questions and Goals

The main goal of this project is to achieve a differential view about physical performing with sound and instruments through the lenses of the body, the instrument, and the performer’s perception and awareness.

The central questions addressed by this project are: What happens in the musician’s inner space when performing with instruments and technology (and in contrast, without technology with the body only)? How does the physical presence and the conscious involvement of the body inform performing with digital (technological) instruments? What are the processes and methods of my artistic practice and how are they expressed in my artistic work, and inform experiences, insights, and understanding for myself as well as the audience?

The main perspective from which these concerns are addressed is from the position of the performer on stage: I am looking ‘out’ at the unfolding performance, at the participating audience, at the stage situation, at the wider practices and its processes, and ultimately at the world. By bringing together concepts and ideas from philosophy and psychology, a set of ‘lenses’ is assembled through which to scrutinise this artistic practice. The central theme is illuminated by moving along specific axes or vectors in the field opened by these topics. The interpretation is based both on the collected textual materials and the media artefacts that form the complementary layer of documentation presented in the [Media Portfolio](#).

5.1.2 Qualitative Approach

We are no longer in the era of positivist, objectively verifiable research outcomes, at least in significant areas of the arts and humanities. Understandings of knowledge have shifted from positivist to subjective perspectives. This is a different cultural moment that draws on a subjective understanding of knowledge. (Vincs 2007: 99)

Although the framework laid out in this section may appear to uphold a structuralist and positivist position, I am aware of its limitations and inadequacies for understanding many of the crucial aspects in this practice. Nevertheless, I believe that an organised movement across the field of investigation can yield useful insights, even if only as a secondary assemblage of elements upon which to base reflection. In this sense, the framing theories are used with the intent to provide conceptual anchors, rather than absolute statements. The anchors help to guide the investigative movements, they provide us with (strange) tools with which to approach the practice (Noë 2015).

Before engaging in the detailed treatment of the core questions and their interpretation, it is good to step back and make certain that the playing field is well established and understood. In order to have a sound foundation to build upon, procedures from social sciences are borrowed, which help to narrow down the issues. The chosen model originates from Grounded Theory and proposes four types of activities that cover the entire process. The sequence of these actions is: *“to seek data, describe observed*

events, answer fundamental questions about what is happening, then develop theoretical categories to understand it" (Charmaz 2006: 25, my emphasis). The preceding two chapters (3, 4) cover the first two phases of the model. What remains to be done in order to achieve some of the desired understanding is to carry out the tasks of the third and fourth phases.

5.1.3 Axes and Trajectories

The third phase of the qualitative model delineates the context, the actors, the processes, and aspects that are describing the involvement of the actors. It demarcates the playing field and provides a frame for carrying out the inquiry. In addition, the main direction of the investigation is defined by identifying the conditions, actions, and interactions, as well as the consequences of the entire subject. Through this axial perspective the process is addressed longitudinally, with a particular focus on process.¹

After working through the set of fundamental questions about the topic (see Section A.3.1), and referring to the initial descriptions of the projects in Chapter 4, an intermediate step needs to be applied. Although the method that inspires this process starts from different premises regarding the base materials and the generation of categories, its step-wise procedures fit well with this analysis. Grounded Theory seeks to generate through the act of coding about collected materials, namely the structured interviews, field notes, recordings, a.o., new categories that originate from the language and terms used within the material itself. The method of coding consists in attaching keywords to incidents, statements, and observations. From the collected keywords, new categories are derived that delineate the topic in an unforeseen manner. In the present case, although the materials contain textual traces with language elements (see Sections A.1, A.2), the main body of material that is usable for investigation resides in the video archive. Due to the lack of explicit language in this material, collecting of immediate verbal traces is deferred from the moment of directly observing the performance and needs to be done while observing the secondary traces. In addition, due to the fact that as author I was directly involved in each of those events as a performer, the notion of generating new

¹ On the topic of process, see for example:
<http://www.irisgarrelfs.com/reflections-on-process-in-sound>

codes or keywords by watching the videos cannot work properly. Even if focused coding or analysis is possible,² in order to approach the analysis of the materials, other sources for generating categories and codes need to be found. In the present case, they will be derived from the framing theoretical fields. Nevertheless, from a methodical point of view, the chosen processes and their outcomes benefit from the same “concentrated, active involvement” with the materials, where ‘acting upon the data’ potentially makes “new threads for analysis become apparent” (Charmaz 2006: 59).

5.1.4 An Operative Framework

The strategy I develop here for the interpretation of the practice is based on the idea of tracing paths through all the materials from the artistic modules that are laid out throughout Chapter 4 and in the online [Media Portfolio](#). Since a differential view is the goal, the main mode of proceeding is through comparative observations that uncover relevant traits and distinctions across the different practice modules. The framework for tracing lines of interpretation through the modules consists of three complementary operations, each of which exposes different strata and junctions between the artistic projects (see Figure 5.1).

Following the metaphor of the millefeuille³ (see also Section A.1.2), the operations approach the multilayered ‘thing’ that resides the artistic practice in three different ways, attempting to gain clarity without making a mess of it.

The first operation is the *intersection*, which is the act of uncovering the overlap between categories within one or across several projects. The comparison is carried out using selected criteria from the key aspects and is done between two to four modules.

Intersection

The second operation is the *dissection*, which is the act of taking apart a body of work into its individual parts, that is, main categories. The comparison is carried out for one module in particular; the action consists of cataloguing and enumerating the key aspects.

Dissection

The third operation is the *transection*, which is the act of cutting across

Transection

² “Focused coding means using the most significant and/or frequent early codes to sift through large amounts of data. One goal is to determine the adequacy of those codes” (Charmaz 2006: 59).

³ A pastry slice consisting of three thin layers of puff pastry filled with vanilla custard and topped with a sugar glazing.

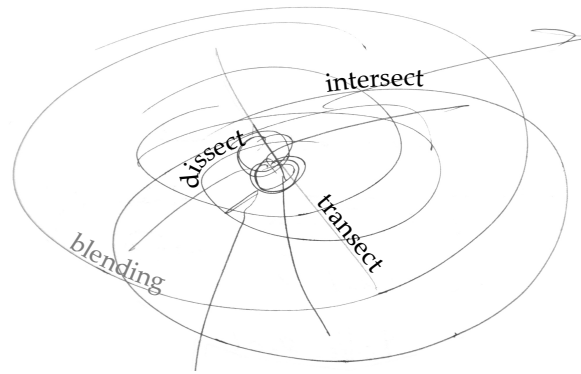


Figure 5.1: The operations framework, bringing together three methods for cutting across the manifold of performance and blending the insights.

modules along the same categorical line. The criteria are retrieved from the collection of topical lenses and the comparisons are carried out across all projects.

Blending

The final operation consists of *Blending*, which are the acts of establishing overarching categories across two or more modules. This is the synthesis part, where it is necessary to carry out the fusion of categories in order to synthesise insights. Here, in particular, both the inner and outer perspectives need to be taken into account.

5.1.5 Topical Lenses

Key aspects that are extracted from the knowledge fields can be regarded as devices or lenses through which to look at the practice. Inversely, the artistic modules can be considered as exemplars or use-cases for investigating certain ideas and theoretical perspectives. Either way, a complex matrix of interrelations is established, which is rich in connections and potentially deep in significance, provided the constituent parts are well understood.

For this purpose, the collection of keywords in Table 5.1 brings together core aspects from the six theory fields. There is no linear or hierarchical relation intended between the different fields, they should rather be considered in pairs (see also Figure 3.1), which group together the philosophical, the psychological, and the cultural fields. Similarly, the artistic modules may be grouped, albeit differently, around a central hub. A first group is formed by the pieces that are 'subjecting' performers to sensing technology (the top four of Table 5.3); the projects that are emphasising open-

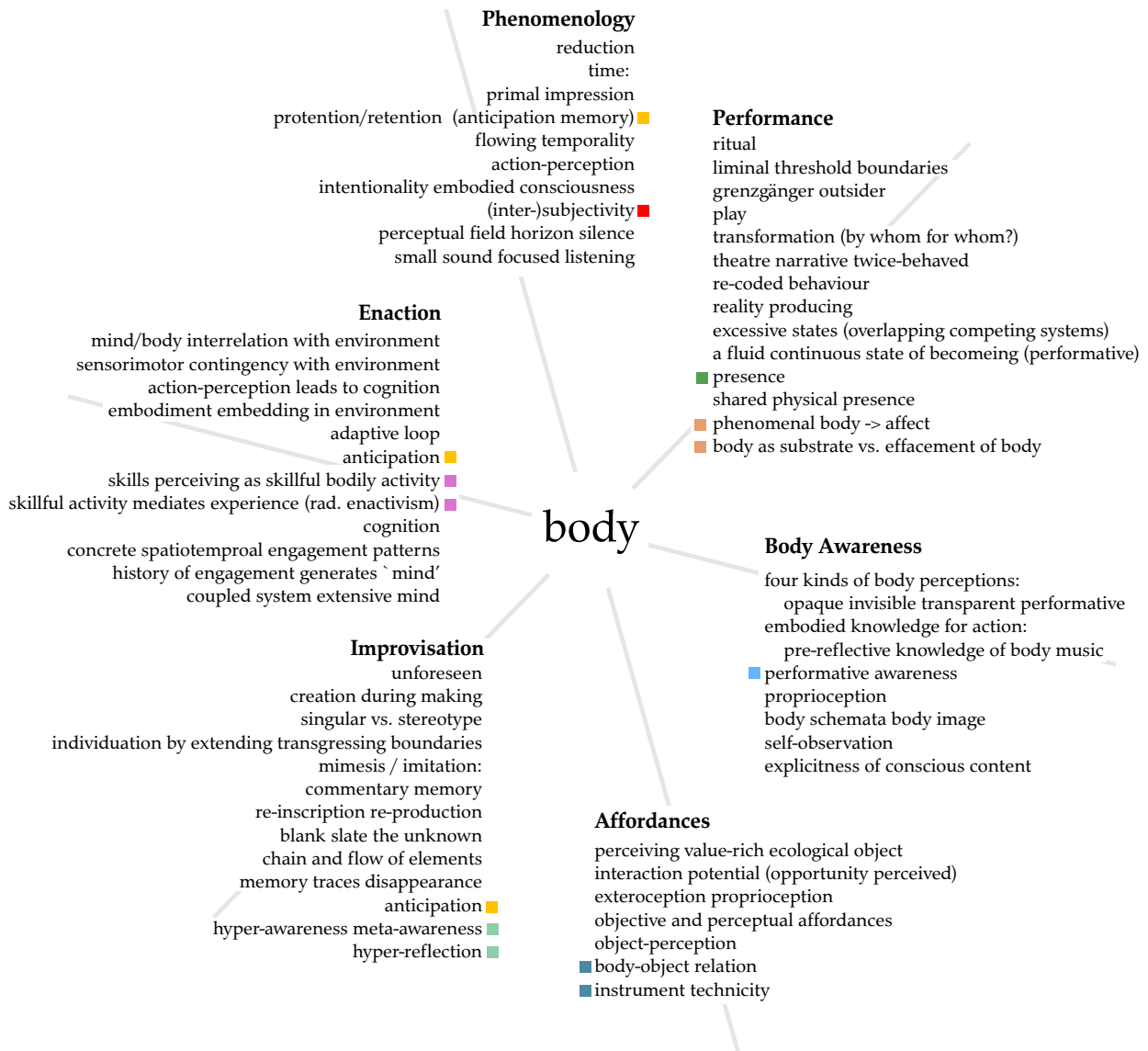


Table 5.1: Key aspects collected from each of the framing theory fields.

form, exploratory improvisation form another group (centre connected to the lower right of Table 5.3), while the projects that emphasise focused listening form the last group (centre connected to lower left of Table 5.3). With the many inter- and cross-correlations that may be traced between the projects, the potential for grouping keeps expanding. However, at a certain degree of complexity the grouping no longer provides any useful distinctions.

Keeping in view the affinities between modules is a useful criterium to reduce or clarify questions in comparative operations. Nevertheless, in order to understand on a more detailed level the signification of each of the

aspects and elements, a strategy needs to be devised to operate on this collection of keywords.

Matrix

A first, straightforward analytical approach to understanding the artistic projects is to intersect each of the modules with key aspects from the framing theoretical fields. In this way, either the main theoretical strands running through a project become visible, or the way the different artistic propositions connect to single aspects from theory. The juxtaposition of key aspects from the six knowledge fields with the six artistic practice modules yields the tabular format or matrix (see Table 5.2).

Taking this theory/practice matrix as a starting point, a number of different trajectories may be traced through the accumulated elements. Each of these paths follows a thematic line. Take for example, in table 5.2, the fifth row labeled 'Enaction' running across the six artistic projects. First it is necessary to bring back to mind what 'Enaction' entails: It can be defined as the creation of cognition through sensorimotor embedding in the environment. Second it is important to remember what characterises the different projects, be it the type of performance on stage or in the urban context, the relation between sensing technology and the corporeal performing, and the role of body and instrument in generating the sounding outcome of the work. A trajectory through the 'Enaction' row could examine for example the presence of the keyword 'skill' and 'skillful activity' and its importance (order) for each project. A cursory view already shows that the stage pieces with instruments and organised structures all exhibit this key characteristic, whereas the open-form exploratory projects, be it in improvised interventions or exploratory listening do not have a large reliance on this factor.

When reading the two-dimensional arrangement in Table 5.2, a bias or emphasis becomes apparent that has to do with the choice of placement on the grid. Since reading is done in consecutive linear movements across the field, certain connections gain prominence compared to others. Note how the theory domains are ordered from bottom to top, a choice that emphasises the actions on stage rather than the fundamental underlying principles described by Philosophy and Psychology. Depending on which theory domain is now connected to which artistic module, neighbourhood relationships and connections can be detected.

	new islands	Double Vortex	Moving Music	one hand clapping	trans-form	sonozones
Improvisation	hyper-awareness/ hyper-reflection individuation transgression re-inscription chain & flow	anticipation re-production memory mimesis	anticipation re-inscription hyper-awareness the unknown	unforeseen creation in making individuation transgressing bound. memory disappearance	re-inscription re-production mimesis memory	creation in making unfossen blank slate hyper-reflection
Performance	ritual liminal presence phenomenal body re-coded behaviour excessive state	re-coded behaviour presence shared phys. pres. play phenomenal body	re-coded behaviour presence shared phys. pres. play phenomenal body	fluid continous becoming presence liminal reality producing phenomenal body	ritual liminal re-coded behaviour presence excessive states phenomenal body	transformation grenzgänger play body as substrate presence liminal boundaries
Affordances	interaction potential exteroception/ proprioception body-object rel. instrument techn.	body-object rel. interaction potential perceiving value-rich ecological object exteroception/ proprioception	interaction potential exteroception/ proprioception instrument techn.	objective/perceptual affordances exteroception/ proprioception body-object relation	interaction potential object perception instrument tech. exteroception/ proprioception	perceiving value-rich ecological object object perception body-object relation instrument techn.
Body Awareness	4 kinds body percept. prereflec knowledge performative awaren. self-observation proprioception body schemata	embodied knowledge performative awaren. proprioception body schemata	embodied knowledge performative awaren. proprioception body schemata	4 kinds body percept. prereflec knowledge performative awaren. self-observation proprioception body schemata	4 kinds body percept. body schema/ body image performative awaren.	performative awaren. self-observation proprioception
Enaction	skillful activity mediates experience sensorimotor cont. embodiment/ embedding in envir. history of engagemnt.	skill perceiving action/perception skillful activity mediates experience spatiotemporal eng. coupled system/ extensive mind	sensorimotor cont. skillful activity mediates experience action/perception spatiotemporal eng. coupled system/ extensive mind	adaptive loop anticipation embedding in envir. spatiotemp. pattern coupled system/ extensive mind	skill perceiving action/perception spatiotemp. pattern coupled system/ extensive mind	mind/body rel. in environment action-perception spatiotemp. pattern history of engag./ gen. mind
Phenomenology	action-perception intentionality/ embodied consc. subjectivity silence focused listening	time/ anticipation action-perception perceptual field inter-subjectivity	inter-subjectivity action-perception perceptual field anticipation memory	time flowing temp. inter-subjectivity intentionality/ embodied consc. action-perception reduction	intentionality/ embodied consc. inter-subjectivity	(inter-)subjectivity perceptual field horizon silence focused listening time
		■ inter-subjectivity ■ performative awareness ■ anticipation/memory	■ hyper-awareness/hyper-reflection ■ presence ■ phenomenal body, body as substrate	■ skill, skillful activity ■ body-object relation, instrument technicity		

Table 5.2: The Theory/Practice Matrix: The theory perspectives intersect with the practice modules along the topical keywords. Keywords are listed in order of importance. Eight common keywords are selected and marked across all practice modules.

Although an exploration of topical neighbourhoods is part of the method, doing this on the entire grid for all topics generates a large number of combinations. Unless a systematic, exhaustive permutation of all connections is established, explored, and analysed, the investigated relationships remain fragmentary and contingent.

By following a different ordering principle, such as in Table 5.3, the search-paths connect other aspects across the different clusters. Here, the

Exploding the Matrix



Table 5.3: Alternate view on the theory/practice relationships, organised in project clusters. Abbreviations (clockwise): IM = Improvisation, P = Performance, A = Affordances, BA = Body Awareness, EN = Enaction, PH = Phenomenology.

connecting movements are less constrained by linear arrangements; connections form first within one cluster before jumping to the neighbour. The fact that the same categories are not contiguous across all clusters necessarily leads to jumps and discontinuous movements that disrupt the

topical flow, but may also inspire unexpected connections. When arranging and organising the two dimensions with the keywords in this manner, the amount of possible connections grows exponentially. Considering that each artistic module contains other dimensions, for example several performances along a long-term timeline, it becomes evident that the possible permutations grow to a staggering number.

This poses the question to which extent such an analysis could possibly be carried out. The necessity for an exhaustive analysis can only be argued for in a data-centric, empirical field, where the criteria of objectivity, reproducibility, and generalisation of knowledge are the strict norm. In the present situation, where neither the source-materials—the artistic processes and experiences—nor the conceptual tools—the philosophical, psychological, and cultural categories—nor the methodical operations are objective, such an analysis is unjustified. Instead, an open and interpretative approach needs to be chosen. This is attempted in the following sections.

5.2

Examinations

The model for interpretation comprises three examination operations that are to be carried out using both the key aspects developed through building the topical lenses as well as the media traces collected in the Media Portfolio. Ideally, the detailed analysis would be simultaneous with or immediately follow the direct experience of a live performance of each of the artistic modules. Since this is impractical, even for myself as the main performing artist, let alone for the reader who has no opportunity to partake in the (sometimes) unique performance occasions, the process is carried out on a collection of videos covering all the projects. As with all reflective activity, it must be based on the traces and remains of the primary art object, in a mode of ‘archaeology’ of the contemporary past (Buchli and Lucas 2002; Graves-Brown 2000), or even better an ‘inquiry’ into a disappeared present. In this case, for me as author, personal memories complement the captured media and are brought together in a mix of perspectives

that is more auto-ethnographical and subjective than empirical, methodical and objective.

The fourth and final phase of the qualitative process asks to “develop theoretical categories” in order to generate an understanding about the investigated subject (Charmaz 2006: 25). This is where I must diverge from the model.

In preparation for the detailed investigation of the materials with the framework of operations, a thorough search and categorisation process to obtain a selection of keywords was carried out (see Section 5.1.5). This results in the identification of a limited number of key topics that appear across all artistic modules.⁴ By a process of reading and selection of specific topics across the entire theory/practice matrix, with the three operations in mind, a reduced selection and categorisations of topics is established. After having collected and ordered keywords, codes and categories from the theoretical framework rather than the materials themselves and in order to “determine the adequacy of those codes” (Charmaz 2006: 59), another round of detailed observation is needed. Thus the categories from Section 5.1.5 form the basis for detailed observation processes.

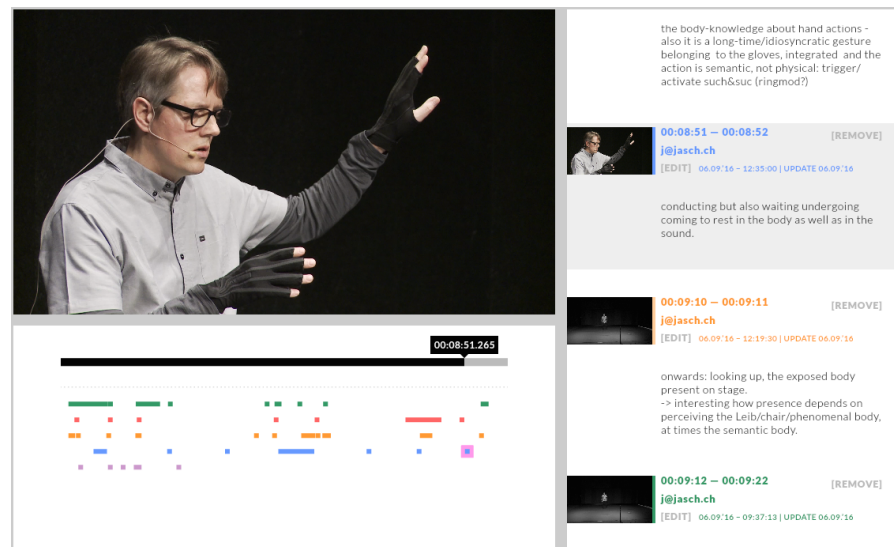


Figure 5.2: Screenshot of the video-annotation tool ‘pm2go’ from the Motionbank project, depicting the video, the timeline, and the topical annotation tracks for ‘new islands’ (Video 1a).

⁴ They are organised by the colours which are applied to all the Tables (5.1, 5.2, 5.3). In case the version of text is black-and-white, the three coloured tables can be found in PDF-format in the Media Portfolio: <https://www.researchcatalogue.net/view/269265/269266>.

Ideally, coding the performances, i.e, identifying and ascribing key-aspects to parts and sections, would be carried out live during the performance by an observer (Alaoui et al. 2015; Kirsh 2010). In this project, by necessity, the investigation about the keywords and categories is carried out on the collected videos. The process is done with a software tool for video-annotation that originates from the context of dance-research (see Figure 5.2)⁵. This facilitates to some extent the identification and collection of those points and sections in time where a relevant action concerning a specific key category can be seen. Since the annotation-tool is built for working on one video at the time, the comparison process across several performances and projects remains a manual process, where several videos are open at the same time, and key aspects are observed in parallel.

Note: The extensive work process covering the contextual questions, as well as the detailed observations with the three operations of intersection, dissection, and transection are located in Appendix A.3 and on interactive pages in the Media Portfolio:

Intersection: <https://www.researchcatalogue.net/view/269265/300181>

Dissection: <https://www.researchcatalogue.net/view/269265/300352>

Transection: <https://www.researchcatalogue.net/view/269265/300369>

The following sections gather the outcomes and insights of these processes.

5.2.1 Blending

Blending is a process of establishing overarching categories across two or more projects and theoretical perspectives. Even if I am following a qualitative model in a loose manner (see Section 5.1.2), the process of “developing theoretical categories” still represents a “concentrated, active involvement” that potentially makes “new threads for analysis become apparent” (Charmaz 2006: 59). The array of projects and knowledge perspectives assembled here follows an inherent logic and is based on ‘a priori’ choices, thus a compatibility and complementarity is given that enables determining key aspects. For this doctoral project in particular, this means that after the wide arc of moving through theoretical and practical fields, as well as the detailed investigation attempting to identify key aspects in perform-

⁵ The software is available online (URL accessed 09/2016): <http://motionbank.org/en/event/pm2go-easy-use-video-annotation-tool>

ance traces, the funnelling down into synthesising statements is now possible.

The idea of *bridging* across topics can be interpreted as selecting a lens that covers a gap between categories. The six theoretical fields assembled as framing knowledge in this project's method have clear gaps between them, since their scopes and perspectives are different, even within pairs that share their basic domain. In the comparative operations carried out thus far, the categorical distinction between the fields is, if not ignored, then at least not emphasised. Fusing the key aspects to include definitions and vocabulary from several framing theories provides a mechanism for bridging.

The idea of *blending* between perspectives is less straightforward to understand and apply, but looking at it from the viewpoint of the cognitive sciences can provide the necessary background. In the cognitive sciences, the basic operation of conceptual blending is recognised as “useful for memory and manipulation of otherwise diffuse ranges of meaning. ... The essence of the operation is to construct a partial match between two input mental spaces, to project selectively from those inputs into a novel ‘blended’ mental space, which then dynamically develops emergent structure” (Fauconnier and Turner 2003a).⁶

In the concrete application presented here, determining the input spaces, how they overlap, and what they blend into should help to clarify the synthesising reflection that is the intended outcome of the final sections. For that reason, instead of working through single artistic modules and key-aspects once again, higher-level topics serve to simultaneously bridge and blend across all projects and theoretical perspectives. Contrary to pure grounded theory approaches, which begin without prior concepts, and derive the categorisations from the collected traces and materials, in this investigation a bias is produced by choices made at the outset and the focus present in the collection of topics. Paring the categories down to eight, by observing their relevance to the practice modules, further nar-

⁶ The entire process in its abbreviated form is described in the following manner by Fauconnier and Turner (2003b: 44): “setting up mental spaces, matching across spaces, projecting selectively to a blend, locating shared structures, projecting backwards to inputs, recruiting new structures to the inputs or the blend, and running various operations in the blend itself.”

rows the perspective. As can be seen in the intermediate summaries collected throughout the intersection, dissection, and transection operations (see Section A.3), the similarities and divergences balance each other out. Over all, the perspectives allow making valid statements for each of the projects, even the one not taking place in the canonical frame of the stage but in the streets.

In this project, the input spaces are the performance pieces and the practice of improvising with bodies, instruments and technology. The frame or generic space that serves as a conceptual scaffold is constituted on the one hand of the cultural norms of performing arts in music and dance. The domain with which a crossed mapping of features occurs is on the other hand that of philosophical and psychological perspectives provided by Phenomenology and Enaction. The blended space that arises from this enables us to understand performance art as a domain where phenomenological and enactive principles form the foundation and where as a result, the emergent element is an understanding of how the body with its constitutive power is at the origin of all sub-personal, pre-reflective as well as subjective and intentional *perception and expression* that occurs when performing.

5.2.2 Emerging Themes

In an overarching view across all materials and comparative observations several recurring themes stand out. They concern some of the fundamental elements of a performing arts practice with body and sound. The particular choice to focus on the embodied and inner states of performers and audience is reflected by them. In the wider context, they form persistent nodes in the network of forces, affects, and effects that inform this specific type of performing.

The aspect of *time*, timing, temporal arcs, and the three-fold nature of the present moment, occur again and again. The observations on memory, anticipation, but also presence and subjectivity all hinge on the elastic, contingent, subjectively experienced nature of time-perception; of time as central element in modulating tension, intention, intensity, and form (in

the musical sense) (Johnson 2007)⁷. In several places, the temporal boundaries of actions or larger sequences, but also of single phrases, expose the underlying bodily and awareness state of the performer. The accumulation of dynamic compounds of movement, bodily kinetic melodies, spatial paths, simple or complex actions, with or without instruments, all generate temporal units of expression that function like building blocks or ‘objects’ in constructing the chains that make up the performances.

The aspect of *presence*, of increased intensity and subjectivity is another core element that is active across all projects. A surprising fact after observing the various videos of differently formatted pieces is how much the presence fluctuates, and how, if paid close attention to, it becomes a ‘material’ that is worked with during performance. In none of the artistic modules and numerous performances collected in the documentation the presence is weak or doubtful; rather, as a basis for acting in a performative mode, when engaging with the given performance, all artists raise their presence to an appropriate level for the context. Presence is not always an explicit part of the performer’s occupation, but it always informs the affective, and effective impact of work on the audience and co-performing artists.

Thus, the *inner state* of awareness and attention of a performer, and the outer effect or affective impact of performance actions need not be identical. Or, to state an acting principle, the actors do not have to live the emotion they are trying to evoke in the spectator (Schechner 2012: 12). In the same manner, the performer’s attention and awareness can be simultaneously directed at concrete tasks and actions, at technical issues relating to the instrument, at the intended work, and the interaction patterns with other performers/artists. This multifocal and multilayered awareness is typical of situations with high levels of perceptual and skill demands, of a critical dependency on being present and acting in the ‘actual’ moment,

⁷ “the patterns of process and flow of our felt experience, such as the buildup of tension and its release, the sense of drifting, the energetic pursuit of a goal, the anxious anticipation of some coming event, and the starting and stopping of a process. ... The meaning of music is precisely this kind of embodied meaning. Music does not typically re-present anything, even though there may occasionally be a few representative elements in a particular musical work. Music’s function is, instead, presentation and enactment of felt experience” (Johnson 2007: 238).

and of the timing of impulses that bind actions together, as a key rhythmical quality, in a coherent chain of expression.

In each of the practice modules the physical presence of the artist(s) is essential. The person's presence is grounded by their *bodily* presence: the body and the subject (person) are fusing or fused to be an entity that is embedded in the stage situation. The multiple domains and tiers on which the body is active and has agency form a nucleus for performance work: the body with its multiple states and dimensions and its foundational role for engendering cognition and mind forms a rich and thick substrate to build upon, to perceive and to perform with. Some of the dimensions reside in the phenomenal body, in the body as material, and in the semantic body that is signalling cultural dimensions. On stage, further bodies appear, and enter into relation with the performer's physicality: it may be other artists, the audience, instruments or sound.

5.2.3 Unexpected Insights

When immersing oneself into observations with the aim of comparative analysis, the unexpected or difficult to classify events and observations obtain a special status, provided they are not ignored and discarded. Therefore, after looking at the unifying aspects, it is important to acknowledge that not every aspect of every project can be merged, bridged, or blended. In each project there are unique aspects belonging to the specifics of the artistic idea being realised. On the one hand they show the limits of the mental model and on the other hand trigger further curiosity about the reasons and origins of these effects.

The most unexpected insight arising from the observations is the notion of *sound as an invisible body*. The action of each performance in a sense operates, moves, pushes against, and experiences the resistance of the invisible body of sound (Szendy 2002: 155). Due to the central occupation with actions aimed at sounding, in some cases the invisible and fleeting materiality of sound solidifies into a bodily-like quality, which forms a resistance and asks for corporeal engagement by the performer. The sound producing, modulating, and situating actions all address some physical, kinetic, dynamic elements in space. With instrumental sound production this relationship is explicit. However, with sensor-connected, gestural

sound actions that use invisible electronic, digital as well as acoustical processes, the sound itself seems to obtain a body or form a skin around the performer. The relationships and resonances connecting all of the different types of bodies that are present in performance exist in the interstitial space between them. Similar to the Japanese concept of the negative space of ‘*maa*’ (Cox 2013: 46, Toop 2004: 40)⁸, these spaces might be where the true presence of performing resides.

Time's Materiality

It is interesting to realise through viewing all the artistic processes in parallel, that for the performers *time is a material*. In addition, time can also be regarded as a splintered surface, through the cracks of which the underlying inner and outer states of the artists and the audience shine. Time's elasticity and ‘chiasmic’, crossing-over nature—which in the present simultaneously points forwards and backwards, in ‘protention’ and retention (see Section 3.1.1) and through memory and anticipation—is experienced vividly in the compressed, heightened awareness state of performing. At the same time, it is also moulded through the performers' actions, their use of rhythm, timing, and dynamic arcs. The ability to speed time up, to slow it down, to make one forget the flow of time or acutely aware of the duration of an activity, adds a specific quality to (performing) arts. The cracks in the surface of time appear at the junction points, in the breaks in flow and dynamic shapes, but also when extended dynamic arcs end, allowing attention to settle and dwell in a resting point's natural centre of gravity in the state of release between the phases of tensions. These moments favour the predisposition of attention to return from action to agent, from dynamic flow to static state, from fleeting expression to solid physicality. In these shifts, inner states are laid bare while their heightened intensity keeps resonating into the calm of the arc's resting point, thus momentarily exposing the underlying inner and outer states from their usual concealment. More things happen at the junction-points, where space and attention is freed, revealing new potential that is the consequence of what went before. British writer and musician David Toop (2016: 26) thinks that “the generative points in any performance may be so slight as to be inaudible—a pause, a

⁸ The term ‘negative space’ is not meant as a value judgement, the term stems from graphic arts and architecture and denotes the space that gets cut out by objects, the empty space in between objects, subjects or shapes. It shows not just the absence but also expresses its own shape or form.

shift in atmosphere, an unintended noise, an unvoiced through picked up through implication or body language.” This touches upon the big and impossible to answer question about the origin of the ‘new idea’ and shows that, in improvised performance at least, it emerges from the contingency of the numerous superposed chains of actions, the cracks in the surface of time, and the junctions and nodes in the fabric of the work.

The importance of subjectivity, personality, presence, agency, and intentionality in creating the *relational quality of performance* can not be underestimated. A performance’s actions remain private, detached, and opaque if the artists’ subjectivity and their unique position as agent and source of the intentional directedness can not be perceived and is not made accessible. The moment a gaze or bodily gesture is pointed at the others, the actions concerns them. Without establishing this concern between performers and the audience, the affective as well as the semantic and cultural impact of the artistic work gets severely limited if not entirely removed. Particularly in open-form, in-the-moment determined forms of gestural, musical (or dance) performance, the intersubjective rapport is the central element, more than the musical forms and contents that are generated through and within them. Solo work must bridge the gap to the audience with increased intersubjectivity whereas work between several performers first creates a micro-society between them—inheriting the dynamics of communication, roles and behaviours that are active in the society at large—before establishing intersubjective links with the public. As viewer/perceiver the co-performing empathic link connects primarily to the performers’ attention, in an attempt to understand the goals and intentions of their actions. Even if a reduced listening—as a reduction and detachment from origin and significance—is possible through a exclusive concentration on the auditory phenomenon, by partaking in a performance, the intersubjective rapport between the present ‘bodies’, that is, subjects and persons, keeps exerting its influence on the moment in a subliminal way. At the same time, the fact of bodily presence and heightened states of attention can also detach the performers from their subjectivity. The individual’s personality and character fade and get replaced by a generic, sub-personal presence and agency. In this instance, the relationships between the performer, other performers, and the audience is less about

*Performance's
Relationality*

that person's individual contribution, and more about their basic presence in the relational field.

5.3

Mediations

At the point of convergence of all the materials and thoughts accumulated thus far, a few large questions and many small doubts, ideas, and hints remain to be touched upon. Not all of them can be addressed, and as is the case in any experiential as well as reflective process, they change continuously, shifting in and out of focus, gaining and losing importance and relevance over time. The process-bound nature of this inquiry as well as that of performance and artistic development in general, enables momentary connections between numerous concepts from philosophy and psychology of the body and my artistic practice that resides primarily in live performance.

In the context of the inquiry into the role of the body within this practice, the relationships established through the practice and their crucial importance in grounding the activities stand out. By their nature the relations are not static, well defined, and clearly delimited, we are rather dealing with a diffuse field of dynamic and shifting transformations that form an integral part of the processes. In the manifold of stage situations and performance interactions, the relational translations occur in the in-between spaces separating bodies, subjects, materials, phenomena, and their perceptions. These relationships are modulated, altered and charged by the way the different elements encounter each other. In most cases, a translation is necessary for adapting the states and principles from one domain to the other. All of these translation processes and shifts mediate experience, modulate expressive and affective agency, and alter meanings and significance of artistic work. The practice of bodily performing with sound that is the topic here involves numerous layers of translations and mediations.

The most *immediate* or *un-mediated* type of a performer's presence resides in the body and gets generated through physical presence. But is the body's physical presence truly 'immediate', without any interspersed

agencies? And can the musician's body be perceived and understood without considering the role of the instrument and sound?

5.3.1 Interposed Instruments

It is almost impossible to avoid ontological questions when working with bodies and technologies. This has something to do with the material tension fundamental to the research experimentation: bodies can feel very organic when juxtaposed with ephemeral software and inorganic machinery. Ontological questions are questions into the being of something: a person or a digital creature. What is it? How does it exist? (Kozel 2011: 217)

For a musician, the instrument exists between body and sound, and always functions as conduit and mediator between intention and expression. This 'organum' (Szendy 2002: 126), in some instances even the vocal tract, interjects transformations between the subject's intentions and the sounding result. As with any tool, the instrument takes up the place of the performer's own physical capabilities, and extends them; the technicality of instruments is therefore no different from that of any tool (Simondon 1958). The instrument mediates the musician's corporeal actions, and enables the listener to recognise in the perceived sound—through knowledge of the sonic and timbral signature of the instrument and sound production physics in general—the goals and intentions expressed by the musician (Craenen 2014: 105).⁹

Musicians

With the advent of the digital technology in sound processing and instrument building, a new category of translation develops, a categorical difference between digital sound processing tools and conventional musical instruments. No longer residing solely in the physical domain of solid body physics and acoustics, these mathematically modelled processes and their metaphorical access layers, that is, the digital musical instruments, generate a relationality and presence that is fractured and mediated through

⁹ "In sound's presence, we recognise not only the contact between the performing body and the instrument, but also the sound intentions with which the music-making body makes his or her instrument resound. ... It is because of the intentional nature of the contacts between the performing body and the instrument that the morphology and the mechanics of the instrument can become a determining factor in the identity of the music-making body" (Craenen 2014: 105).

several layers of technical, conceptual and symbolic (language and code) construction. At the same time, the digital instruments provide the musician with extended affordances and enable an altered agency, generating through “technical mediation of the body schema ... [through its] body-environment coupling ... a ‘*body-in-code*’ ... a body submitted to *and constituted by* an unavoidable and empowering technical deterritorialisation—a body whose embodiment is realised, *and can only be realised*, in conjunction with technics” (Hansen 2006: 20, original emphasis). Sensor-linked, gesture-based musical actions, in particular with wearable and therefore almost ‘transparent’ interfaces (see 4.2 and 4.4), exacerbate these mediation effects by the lack of visible physical constraints that usually inform an instrumental action. It is not enough that the sound’s origins and transformation’s processes are concealed in a black box of symbolic computation processes, the perceivable sense and directedness of object- (or instrument-) manipulation disappear as well. All that remains are movement patterns which might or might not be motivated and related to producing the sounds that can be heard. The ontological question mentioned above by Kozel (2011) is relevant precisely because the presence of the instrument has changed beyond recognition and risks sweeping the performer away with it. But with time and practising the opposition between the two states of ‘person or digital creature’ disappears; performers as well as audiences get accustomed to seeing and understanding this relationship, and the disappearance of a physical link bothers less and less as digital interactions (Serres 2012) begin to permeate all layers of existence in our society. “A reversible relationship between digital and physical becomes clear: the dynamics of initiating and responding, folding and permeating, and a relinquishing of ... control shape the improvisation” (Kozel 2007: 217).

Dancers

In contrast, for dancers, movement, space, the body’s materiality, and its potential shapes in a dynamic flow are more *immediate*. Nevertheless, translations are at work here as well, be it when considering the body as a material, when developing semantic relationship to movement through choreography, by the historical relationship with style, and through the prior experiences that reside in a dancer’s movement skills and body techniques. In contemporary forms of dance and movement performance, the

body often functions as medium and material as well as a signifier of sociality. It transforms the relation to itself and alters its own status (Agamben 2000).¹⁰ The directness of the dancer's actions does not detach or remove the layers of signification and projection from the body. Therefore, perhaps, the dancer's presence is only marginally more immediate than that of the musician with the instrument.

5.3.2 Sound's Presence

The physical transmission of sound is a process of mediation that happens by the transmission of energy as a pressure wave travelling through a medium, be it air, water, metal, or wood. If the production process of sound can be observed with the visual and tactile senses, for example in a vibrating string or drum-skin, the reception mechanism remains hidden in the ear. The action of the musician's body on the instrument produces the wave-phenomenon of sound and through it manages to literally 'touch' the listener from a distance (Nussbaum 2007: 53) in (Craenen 2014: 99). The tactile senses in the body are capable of capturing this vibration information, as does the ear. However, in the same way as with light (Ingold 2000: 243) or colour perception (Varela et al. 1991: 160), the sound-waves cannot be perceived 'per se', rather, the auditory apparatus produces first a spectral stimulus that is then presented to cognition as a sounding event with several dimensions: pitch, duration, loudness, and localisation (Craenen 2014: 26). On a higher level, the tactile presence of sound in the physiological and auditory domain produces perceptions of events, not sounds, of the source mechanisms and the sound producing actions: they are always embedded within a multimodal sensory experience of the environment (Gaver 1993: 6). As a consequence, in musical performance, sound originates from the musician's body and instrument, gets detached from them and permeates the space surrounding both the performer and perceiver. So even when maintaining the unity of mind, body, and environment proposed by the enactive approach, the circulating, loopy influences between these entities involve transformation in states. We can therefore summar-

¹⁰ "If dance is gesture, it is so, rather, because it is nothing more than the endurance and the exhibition of the media character of corporal movements. The gesture is the exhibition of a mediality: it is the process of making a means visible as such. It allows the emergence of the being-in-a-medium of human beings and thus it opens the ethical dimension for them" (Agamben 2000: 57).

ise the mediation chain as going from intention, to body and action, to instrument, to sound and environment, to tactile and auditory pre-reflective perception, and finally to the consciously perceived event. The interesting question is what happens when elements of this chain are omitted, lose their physicality, or are transformed by different means.

In this situation, the body's actions remain in the physical domain but actual sound producing objects (instruments) may have vanished from sight. As we've seen when watching empty-handed gestural action with sounds (see 4.2.2, A.3.4, 5.2.3), through the sensor-link with wearable technology, the performer's actions relate to an abstracted physical entity, kept in mind by the performer and sub-consciously perceived and filled in by the listener. Sound reaches the listener, touches them, and produces a physical sensation that in the natural world can only originate from a body.¹¹ The ecological, multi-sensory process of perception complements the missing or shifted elements, in order to re-establish the coherence it needs to generate a complete sensory event or object. As we know from optical or auditory illusions, this process sometimes goes awry and produces strange artefacts (Ingold 2000: 246). The impression of sound's presence doesn't fall into the category of an illusion proper, but is not tangible or measurable. From a subjective experiential point of view, the idea of ascribing to the sound its own body is not completely wrong. As a musical performer, I have experienced the impression while playing that sound covers my body like a skin or shell, that it weaves a cocoon around me, or that it penetrates me physically. This is an experience which reinforces the notion of the tactile presence of sound.

The fact that we ascribe to sound an independent existence, agency, and specific properties points to its entwined fundamental nature in relation to our embedding in the world. A contradiction exists between the fleeting nature of sound and the perceived 'materiality' of sound as an object, the soft and the hard (Serres 2011: 133). The ascribed 'object' nature of sound relates to the fact that sound is not primarily a category from physics but one of perception (Ingold 2007)¹² and that for the musician, who is by ne-

11 With the exception of wind and thunder, there are no sounds in the physical world that do not have a solid body at their origin.

12 "Sound in my view, is neither mental nor material, but a phenomenon of *experience*—that is, of our immersion in, and commingling with, the world in which we find ourselves. Such

cessity handling instruments and processes, sound as the result gets folded into the musical action as a concrete ‘thing’: “the player exists within the sound, is sustained and protected by the persistence and physical actuality of those sounds, their presence as material ‘belonging’ to their creator” (Toop 2016: 8).

5.3.3 Mediating and Mediated Body

If the body itself functions as a mediating entity, then between which domains? Without reintroducing the body-mind divide and the subject-object duality (Varela et al. 1991: 28)¹³, we can nonetheless consider the body as the surface or the interface presented to the other in a social situation. The body’s property as site of ecological embedding in the environment also applies to the interpersonal domain, making not just basic cognition dependent on adaptive feedback mechanisms but also the ability of interpersonal interaction with social signification: the interweaving of body, cognition, and environment provides the necessary basis for interpersonal exchange. “Perception, agency, and the construction of notions of selfhood and otherness emerge as my body opens to bodies of others ... I am seen like objects in the world are seen, I see the objects in the world at the same time that I see my body and other bodies” (Kozel 2007: 239). Through the legibility of the body, inner states and intentions become visible to the others (a topic known as ‘theory of mind’ (Gallagher and Frith 2003)); interactions in physical space take place through the body’s definite boundaries and materiality, in particular on stage; through the laws of physics and the body’s physiological capabilities, actions and reactions are enabled and constrained. The body’s complexity in terms of physical, mental, and social capabilities establishes and structures its link to external objects and tools. Through the body’s ‘fluidity’ in adaptation (Serres 2002: 82) and the enactive embrace of the functional extension used for performing actions, the technical and the physiological dimensions mirror

immersion ... is an existential precondition for the isolation both of minds to perceive and and of things in the world to be perceived. To put it another way, sound is simply another way of saying ‘I can hear’ ” (Ingold 2007).

13 “Body and mind can be brought together. We can develop habits in which body and mind are fully coordinated. The result is a mastery that is not only known to the individual mediator himself but that is visible to others—we easily recognize by its precision and grace the gesture that is animated by full awareness. We typically associate such mindfulness with the actions of an expert such as an athlete or musician” (Varela et al. 1991: 28).

each other: “technologies work to expand the body’s motile, tactile, and visual interface with the environment; to do so, they call upon—and ultimately refunctionalize—the body’s role as an ‘invariant’ ” (Hansen 2006: 26). The body mediates, filters, and structures the relationship to the environment and is the fundamental carrier of presence and interaction, without ever reducing its own state to that of an object (De Preester 2007: 352).¹⁴ It does so through different modalities and natural phenomena; in the case of musical action through producing sound. There is an inherent contradiction in how the expectations, stereotypes, practices, cultural norms, and codes present in the performance practice mediate both for performer and public the perception of the body as a pure phenomenon. “I am seen like objects in the world are seen, I see the objects in the world at the same time that I see my body and other bodies. As Merleau-Ponty says, ‘My body is at once phenomenal body and objective body’ ” (Merleau-Ponty 1964: 136) in (Kozel 2007: 239). Merging the multiple effects and views extends the effects of mediations to a wider context.

5.3.4 In a Wider Frame

Through the relational nature of any arts practice, the inter-subjective relationship is mediated in and by numerous other dimensions as well. They can be seen in the manner in which the environmental conditions inform the actual performance in the preparatory, exploratory working stages, and right before or after the moment on stage. This includes aesthetic choices by the artists—selecting materials, partners, thematic frames as well as the conditions under which the practice can be carried out. Mediations are therefore an effect of the contingencies of the stage space as well: the architectural conditions, acoustics, illuminations, the position of the audience, the shape, size and surface of the stage. Even more importantly, the interpersonal relationship is mediated by the cultural norms attached to performing arts practices. The shared frame enables performing for others in the first place, setting up boundaries and constraints as well as opening up spaces of action that are sanctioned by convention. Considering

14 “In performance, the body abruptly and explicitly comes into visibility and resists forms of objectification that may put it to rest, to clarity and obviousness. The body becomes maniacally charged, in the sense that it enacts, fears, fantasies, beliefs and so on, and in the sense that it confronts and makes us suffer as soon as we have to turn to its bold presence” (De Preester 2007: 352).

the practice from the perspectives of ritual and social drama exposes the depth of entwining with the cultural sphere (Denzin 2014: 53)¹⁵ as well as the ethical and moral dimension of engaging the other with the situated presence of *the body* on stage: “Performances must always return to the lived body. The body’s dramaturgical presence is a ‘site and pretext for ... debates about representation and gender about history and postmodern culture’ ” (Birringer 1991: 203) in (Denzin 2014: 54).

5.3.5 Uncertainty

In (improvised) performance, uncertainty is a state of acknowledging the cracks in the lacquer that always threaten to disrupt the moment. Even as the author, composer, and creator, when in the space of the performance, and aside from the preparations and the cultural matrix we carry within us (Derrida 1982), we are faced with the unknown. To acknowledge the unknown, letting it take up the space and dominate the moment for a while takes courage. The risk-taking, the willingness to let doubt take up space during the performance is not something normally sought or intended. At the same time, any improvising performer can only be certain of one thing: it is their presence with a body, perhaps with an instrument, their ideas, energy, and the willingness to undergo and ride out whatever happens which constitute the performance in the first place. If the intent is to create situations rather than pieces, to explore states rather than materials, to get lost instead of clinging to the known, and not to have to reassure oneself and everybody present that everything is under control, then the exposed state of uncertainty can generate surprises, unexpected events, and extra-ordinary experiences, but also traumata; usually all of these are present simultaneously to varying degrees. There is a continuous tension (Serres 2011: 82) between control and uncertainty, between the assertion of expertise, demonstration of skill, and reproduction of successful behaviours and materials, and an honest curiosity, a truly exploratory attitude and full engagement with the contingencies of the moment.

15 “Within and through their performances, persons are moral beings, already present in the world, ahead of themselves, occupied and preoccupied, ..., with everyday doings and emotional practices. ... [and] gravitate[s] to these narratively structured, liminal, existential spaces in the culture. ... In these sites, ongoing social dramas occur. They are storied events, narratives that rearrange chronology into multiple and differing forms of meaningful experience (Turner 1986: 35). They are epiphanies” (Denzin 2014: 53).

Ideally, permitting the state of uncertainty to exist means shedding some of the persona and mask of habitual social interaction (Bourdieu 2005), and through an engagement in a type of play where identity is not conferred by status (or at least a little less), but by engagement, adaptability, and the capability to relate and foster relationships, to expose aspects of the core of one's personality. For this to occur it is necessary to evade or remove the pressures and expectations of performing well and the need of demonstrating the value of one's art. To get to the core of the things, certainty is an obstacle, expertise is a distraction, and skills and accumulated patterns blind one from perceiving the present state completely. But unbiased, unformed, non-referential situations do not exist: the question is rather how the weight of the given can be shifted in order to let the minor practice slip past the imposed presence of the dominating need for safety and success.

Giving space to uncertainty produces a minor, 'lowercase' kind of performing, where the primary goal is not the show and entertainment, not proposing the certainty of a finished work, composition, or song with a definite form. Rather, it is about digging into the moment and attempting to uncover the relationships and the potentials that are embedded and active in the configuration. Conviction potentially balances out doubt and uncertainty, but does not eliminate them. As performer, we may simultaneously experience fear, apprehension, humiliation (Toop 2016: 72), recklessness, carelessness, unconsciousness, or joy, and at the same time enter into a deliberate engagement, despite the uncertainty, with the intention of exploring the performance in a mode of pure curiosity.

We must recognize that ethics requires us to risk ourselves precisely at moments of unknowingness, when what forms us diverges from what lies before us, when our willingness to become undone in relation to others constitutes our chance of becoming human. To be undone by another is a primary necessity, an anguish, to be sure, but also a chance—to be addressed, claimed, bound to what is not me, but also to be moved, to be prompted to act, to address myself elsewhere, and so to vacate the self-sufficient 'I' as a kind of possession. If we speak and try to give an account from this place, we will not be

irresponsible, or, if we are, we will surely be forgiven. (Butler 2005: 136)

5.4

Closing

The initial curiosity about the bodily states and inner processes of the musician performing with technology on stage provided a springboard to investigating philosophical, psychological, corporeal, social and cultural dimensions, which underpin this and all performing modes of art making and performing in life in general. In a way, the path that is traced through the topics of this thesis is conventional and follows a tried and tested organisation. The structure goes from method to theory to practice and analysis, in a mode of referencing and contextualising that acknowledges the importance of both the academic and the artistic contexts. If the language and arguments in this thesis follow well established scholarly norms, this is a consequence of the intention to harness elements from these neighbouring fields for increasing the understanding of my artistic practice. For this reason, the approach to the artistic practices is conducted not in the medium of the art itself but through the secondary means of text and media. These choices and their implementation situate this thesis more in the scholarly field rather than the artistic one.

However, the choice of perspective from within my own artistic practice and the exclusive focus on my own works contradicts some of the basic principles of ‘proper’ scientific and scholarly rigour. Instead of taking up a position that is at a distance from the subject investigated, I zoom into my practice to a level of detail that makes the pretence of ‘objectivity’ untenable. By taking up this position I am able to tap into first-hand experience through memory and reflection, and to understand long-term processes by having lived them myself. The juxtaposition of methods, theories and concepts with an artistic practice creates a blended space that produces emergent elements. Instead of aiming at generalising statements, by blending the subjective and singular perspective of my practice with foundational principles rooted in the body, perception and presence, a

*Non-Standard
Perspective*

specific position is created that sits between the given zones of theory and practice. The hope is that, even though an exclusive focus on the personal practice is chosen, the forms, processes, and methods used in this investigation can be applied to other artists' work. The writings collected here represent a hybrid stance that is situated between artistic research, where the processes and manifestations of working on artistic practice create a new body of work, an ethnographic approach that works with collected artefacts that combine into a field of relations encapsulating a (limited) number of meanings and significations, and an analytical approach that attempts to systematise and subdivide the topics and perspectives in order to extract specific insights.

The model of analysis and interpretation deployed in these pages is experimental, at least for myself. It is interesting to observe how in the course of this process my perspective shifts and how the struggle with the method draws out insights that are informed by the experience of carrying out the method itself, as much as by the experience of the actual practice. In my opinion, this validates the claim that practice produces insights, and that by going through different modes of researching artistic practice becomes intertwined and cross-contaminated with theory. For example, comparing video-captures of various performance across the years with the memories and written traces can show that change and consistency don't exclude each other. Then again, within the larger constellation of this project, the persistent part might be the performing practice, and the fluid and evolving part might be the reflective movement that changes through developing and experimenting with different methods.

Shifted Position

By bringing together my practice with theoretical foundations, as well as analysing and interpreting artistic projects through theoretical lenses, my position as artist as well as researcher has shifted. This change is noticeable first in the verbal domain through the increase in differentiation in language and better understanding of the scholarly context. But it is also noticeable in the body while performing. The bodily awareness and performance elements that I become aware of have shifted as a consequence of prolonged observations and reflections. The loop between the presence on stage and the spaces of thinking—similar to the enactive and autopoietic entwinement that is postulated to be at the origin of mind—creates distor-

tions, cracks, and tilted perspective that can only be explained by the intertwining of both activities. As an artist-researcher my emphasis is sliding from form to experience: I am less interested in experimenting with forms of artistic research and more in researching hidden and difficult to name corporeal and cognitive states. As a musician my focus is moving from craft to experience: I am less interested in instruments, techniques, technology, and styles, and more attentive to listening, the agency of sound, and the experience of singular performance situations on stage.

The contrasting states of being bodily present on stage during performance and mentally performing in the space of reflection and thinking through writing sometimes balance each other out, but always necessitate each other. There is no reflection without performing, no performing without awareness about the reflection during performing. Both states are characterised by the exploratory attitude: the difference lies with the attention that is given to different elements. The combination produces a shared space, which is active at least in the hermeneutic moment of the synthetic method. On the one hand, the analytical point of view favours the broad view over the deep, since the deep can only be believably carried out in the core domain of artistic practice. The performance moment, on the other hand, favours a narrower focus, since during performance there is no time to deal with far-reaching outside connections and layered significations.

Have I answered the question I set out to solve at the beginning? I do not think that a single answer is possible, interesting or even relevant. I believe that by arraying theoretical concepts, scientific understanding, philosophical connections together with my various artistic practices, and by juxtaposing, intersecting and meshing them together in a parallel and enmeshed manner, a field of signification is created rather than a single definitive statement made. By moving through this field with specific concerns, temporary places of understanding emerge from which insights might be extracted and articulated, and perhaps associations and impulses received for further artistic work.

Could this thesis have been structured differently? Even if the sequence and structure of the elements put together in this format are the result of deliberate and carefully calibrated choices, the contingencies, conditions,

Open Questions

and constraints active during the process inform the current result as much as an (uncertain) mastery of the different matters. The process that leads to the present result shares fundamental principles with improvised performance. Even though it takes place across much longer time-spans, the decisions and choices for or against certain positions and materials are reactions to impulses that come from the environment within which this project is carried out. In this situation, it is impossible to have control over encounters with scholarly positions, the conditions for making artistic work, and the timing of the appearance, in parallel, of ideas and practices, opportunities and demands. That is why this text in its present form is the result of a continuous performing and improvising across words, concepts, ideas, situations, presences, bodies, and sounds.

5.5

Water Puddle

On a hot summer day this year I was waiting for my flight home at a southern European airport. I was sitting in the main hall that leads to the gates, between the food stalls and the duty free store, sitting down in a seat in a typical row of chairs that are neither too comfortable nor too clean. The hall was bustling with the activity of many people departing on flights to some islands or back to the continent. My flight was delayed by a late incoming aircraft (it always is) and I was looking around bored and impatient.

A few seats away, across an aisle, sat a mother with her child and a stroller; they were waiting as well. The mother was reading a book on a device and the child, a little girl of perhaps one and a half years of age, was playing on the ground, sitting at her mother's feet. It was a hot day, outside the terminal the sun was blazing in a fierce southern heat. Noticing that the girl was thirsty, the mother pulled out a standard-brand water bottle from a bag on the stroller, a half-litre, transparent, PET-plastic one that she probably purchased at the food-stall nearby.

Absentmindedly the mother unscrewed the cap and handed the bottle to the girl, who was visibly capable of handling a full bottle as she drank from it without a spill. The girl then set the bottle down between her legs while holding it with both hands even though it seemed too big for her to handle.

Her mother, still absentminded, put the cap back on the bottle and continued reading. At that point the toddler, instead of screwing the cap on tightly, squeezed the bottle, obviously enjoying the flexibility of the transparent material, the feeling of her full hands grasping the shifting, crackling plastic and the way the bottle regained its shape. She did this quite a few times, intrigued and fascinated by the material and the colour, without noticing the water oozing out of the bottle.

In this instant, her mother realised what was happening, took the bottle, screwed the cap on tightly and put it away. She picked up the toddler and stood her on her feet; only then did the extent of the damage become visible. Underneath the girl's nappy a large puddle of water had formed.

The flustered mother dug into the bag on the stroller to find some tissues and then began mopping up the flood. The little girl saw this as an invit-

ation: instead of getting out of the way of the mother's clean-up effort, she delightedly stamped into the water-puddle and watched the water splatter. After two or three turns, the mother caught the girl and sat her quite sternly in the stroller, out of the way, allowing her to finish the cleanup.

After a little while the father showed up, and was designated the task of keeping his daughter entertained until their flight boarded.

This everyday occurrence, that all parents certainly recognise, encapsulates many of the elements that motivate me to invest myself into the investigation of performance experiences on stage. The toddler, at this stage in her development, is in a state of perception and experimentation, engagement, learning, wonder, and amazement, which has not yet been restricted by the many constraints from culture, social context, and assertion of personality; at most a little bit by education. She is able to explore and perceive with wonder how things are, without any concern for the consequences. For me, her utter absorption into the doing, into what the thing at hand affords, into the sensorial novelty of the material, the object, and the physicality of the action demonstrates curiosity in a pure form. She is playfully engaging with the unexpected. From the delight of squeezing the bottle to the surprise at the appearance of a puddle, which prompts her to make a splash, she produces experiences in a chain of events that are of her doing, but at the same time are unintentional.

Watching this episode unfold, I recognise the curiosity, the wonder about how things are, the reaction to the unexpected, and the joy of engaging physically with the world. To a limited degree I experience the same sensations during my time on stage, and become aware of it every time I step off the stage after an improvised performance without agreed or strictly organised tasks and structures. I certainly do not feel the same unmitigated joy of discovery anymore at the appearance of unexpected, new situations, such as the puddle of water on that hot day. Layers of contingencies are in the way, which I might manage to ignore consciously, but that will always taint, contaminate, and guide the actions, perceptions, and feelings that emerge during a performance. Nevertheless, I think that the same curiosity and playfulness that the toddler owns and inhabits so fully, still exists for me and still drives me as an artist, performer, and researcher.

A

Appendix

A.1

‘one hand clapping’, Notes from the Practice

The following texts are notes collected during the collaborative project ‘one hand clapping’, usually immediately after a practice performance, in a mode of reflection and resonance. They are ordered chronologically.

A.1.1 Notes on Body, Instrument, Figure

After a practising session

(see discussion in Section [4.5.6](#))

Body, figure, object in space—the instrument can become a third body in space; the difference between architectural object (a box), an unspecified object (a wood block), and the highly cultural specific object of the instrument. If the instrument is a body, can it be perceived as an ‘agent’ or ‘figure’ as opposed to an object? And can the instrument have its own space and presence without me playing it, thus integrating into my (extended) body and my space? The contrast to the woodblocks is quite striking, mainly because as an instrument the woodblocks are relatively unspecific, whereas the double-bass is highly specific and culturally charged.

The discussion touched (again) onto two essential question in our collaboration: the role of each one and his/her discipline and how these

boundaries can/should be transgressed and perhaps even eliminated; how our presence in the physical space is charged as two bodies, figures, and persons with a meaning attached to our actions and gestures. Question: what is the signification of figure, person, body? How can it be read and where do we want to take it?

(personal notes, 26. December 2013)

A.1.2 Conversation Notes

In conversation with Angela Stoecklin

(see discussion in Section 4.5.6)

There are clear multi-focal attention- and awareness-states during performance. The difference between everyday communication in a conversation and the dialogue on stage while improvising is evident. In normal conversation the attention, apart from the content and topic of the conversation, on the other's face, gaze, and body-language. The flow of conversation and the content of the talk is at the centre of the attention, the entire bodily situation, posture, body-signals do not come to the foreground, then stay at the periphery, influencing the feeling of the situation.

During an improvisation performance the attention cannot be fixed on a single focus for an extended time-span. The perceptual field is extended in different modalities at the same time, mostly in peripheral, non-reflective ways. The multiplicities of domains are crossed, the focal point may wander from space to situation, from sound-material to instrument (for a musician), from perceiving the inner affect and emotional effect (maybe not consciously emotional but more the feeling of texture of relationships), to the outer effort, from the tension of the moment to the awareness of the overall shape of the elapsed time-span, from the perception of my corporeal position to feeling to the relationship to the other.

“While I'm moving, focussing on an musical action such as using woodblocks to create a sonic structure, I perceive the space and the position of the other at the periphery, in the wider field.”

“The focal point is less acute, less exclusive; this gives more room to the surrounding field of elements.”

“I perceive everything as if through half-closed eyes” (Angela Stoecklin).

We are in the 'millefeuille'¹ of the performance situation (see Section 5.1.4). We are switching which layer the focal attention is oriented towards; it is not really a continuously shifting attention, more a jump-like switch, attaching the attention to the dominant element, to the one that demands most attention. Question: why and how do these elements 'demand attention'? (By elements are meant perceptual contents but also action contents, that is, materials, forms and structures of the domain, sound or movement activities, or a blend thereof.)

The perceptions cover physical phenomena, from the corporeal, proprioceptive presence of the body, the object-related tactile instrument handling, perceiving the sounds of the scene, to the spatial perception of the space, the place on stage, the spatial relationship to the other and the audience. They also cover inner perception, the resonance of the heard and seen, the memory of elapsed actions, affects, impressions, the proactive (forward-looking), cognitive, possibly intuitive, search for the next action-impulse in the flow of association, the a-tension (perhaps a kind of passive attentiveness), in order to react to crucial changes in the outer situations or inner sensations.

Rupture points in tension perception serve as impulses to change, to alter the chain of actions, to change course in the navigation of this 'multiple' action-perception-interaction-creation state (multiplicities, fragments, multiple simultaneous presences).

In an actual performance with an audience, the social meanings are overlaid (or underpin) the 'actual' performance. The social signification and dimensions that wrap the stage-situation act as a disturbance by altering the meanings of situations, in particular when seen from the audience, but they also distract (pull attention away from, demand attention or simply charge differently) the performer in a subtle, subliminal way (German: "unterschwellig") from the (pre-)occupations with the central topics and tasks.

(personal notes, 13. January 2015)

¹ A pastry slice consisting of three thin layers of puff pastry filled with vanilla custard and topped with a sugar glazing.

A.1.3 Free-flowing Reflection

(see discussion in Section 4.5.6)

Reflections: unstructured, free-flowing thoughts, captured immediately after a practise session

looking for the place, the moment, what do I perceive?

myself, the other, taking up the space, the initial impulse

let the entry fill out the room—and wait...

the initiative is with the other, I wait, find the impulse, it's a shape, the beginning of a movement, is it an action? no instrument at hand but the body, still, I act with what there is, the hands—there is, will be, a lot of body, shapes, actions, places... always in relation (is it always ?) to the other's presence, to the other's flow of energy and my own...

My attention is always inwards, wordless, not telling myself the how, but sometimes wandering from inside, from the immediate now and the imperative of the sound, the space, the body, the materials, the situation between us... wandering outside, softening, not containing all there is but only a narrower place, only part of the now. Missing the fullness of the sound, missing the instrument, I'm thrown back to the interplay, together we are creating a counterpoint, a sew-saw, a two-piece form, two bodies moving, listening, sounding, and also holding the flow of time, of form, of rhythm in our hands, voices, eyes. I see the other, look at her almost never directly, but I'm always aware of where she is, hear her movement even when my eyes are closed and I don't lose myself—or lose myself in the moment only in the sense as I surrender completely to the piece, sometimes fight back not to let go everything, and of course, always in the background, perceive how control is still there.

Is this a contradiction? Or a complementary state at two levels where the openness for the next moment, the listening, watching, and perceiving of the flow of situations is a state of control and 'abandon'?

Self-perception changes, I'm *not* self-aware but rather focussed on the situation and the way the elements are intertwined, at how I juggle the presence, physical, sonic, intellectual (through formal decisions and pre-analytical perceptions), the materials, the bodies, the space, the moment (time-space) we entered.

I know it's limited, but is it really? Maybe it's a parallel state that we slide into when we decide that now is the time (without audience it's less strict, but no less compelling, if we want to make it count).

I discover the spin, I discover that by closing my eyes, I sway and that this is sufficient as an action for a while, standing still and *doing* nothing but swaying, until the urge to break out of this static situation arises—I take a few steps, everything changes, I do the same some more, has it intensified?

Struggle with the materials, the urge to do more, have more sound, a bigger impact, a bigger dynamic range in sound, the body takes over, replaces some of that. I'm aware (but not completely consciously with a self-narrative) that I give or take space, occupy it, find places, shift places in relation to the other; we are building this structure made of actions across time in a space...

The space envelops us, gives us a 'shell', a skin to enter/play the game of inter-acting/inter-relating not with words and concrete meanings, but with more basic elements such as movement, sound, body-spaces-shapes, signs, rhythms, blocks of time, tension, receiving/giving impulses from within and without. It is a social game, where all that is at stake is art, not explicit human exchange or social situation, not signifying elements and behaviours that have an impact in the everyday world, but rather make sense and provide meaning only in the limited and unrestricted sense of an art-form and a performance—the defined space for play, exploration, experience.

(personal notes, 2. January 2015)

A.1.4 Response

Angela Stoecklin responding

Reading ...“reflection” ... I become aware of how much I am being read during an improvisation... It feels as if so far while improvising my focus has mainly been on myself or the other as doer, as manipulator, and sender of information and less on the fact that at the same time all of this is being received. I wonder what changes if I try to shift my awareness towards that...?

(personal, written communication, 18. January 2015)

A.1.5 Perceiving

Studio Andanzas, Zürich

(see discussion in Section 4.5.6)

Two solos leading into one long session, bringing with us elements of all the talks and things that went before.

What did I perceive while doing?

I remember being in the space and the light coming in through the large windows, the tan cork floor and the white walls: a serene, quiet space. While going into the improvisation, I realised that my energy-level was good, but not particularly high. This certainly influenced the dynamics. Despite this I felt present, not distracted. Perceiving the other and what she is offering, perceiving my space and materials/instruments, but above all giving attention to the junction-points, the decision-points that demand to be expected, anticipated, realised, perceived, and *acted* upon. Being and Acting, Perceiving and Doing, exploring the little stories that open up in each configuration or constellation for myself and between myself and the other. I'm not zooming out or getting lost in the doing but I rather enjoy being dedicated to each new theme, story, situation, or scene. I am between the overall 'being here' and accepting everything as a gift or a given to be played with and to explore in an active shaping, but also passive living of the flow of things that come together. There must be at least three levels of perception: my stuff, the other's stuff, and our stuff together, all packaged as one.

architectural offers

increasingly crystallising

öffnen von Leerräumen (opening of empty spaces)

Bezugnahmen (building of rapports)

personal notes, 12. September 2015

A.2**'sonozones', Excerpts from the Journal**

The following texts are excerpts from the journal collected during the 'sonozones' project as part of the protocol and show some of the aspects of the project reflected immediately after work phases on site, at a distance in preparation, or as a resonance after travelling home.

A.2.1 Structuring Thoughts, 3. July 2013

In hindsight, the week in Mülheim was the first real test for my concept on sound art in urban context. The most important aspect seems to crystallise in the question how to establish the social situations and how to interact with the population (the public).

The main issue seems to be the balance between an artistic investigation taking place in Mülheim and an artistic research situation concerned with the broader context of the project. Perhaps, my role in this setup is not only to serve as an observer and idea-giver, or even as a dialogue partner with each artist, but to enter into the topic myself with an attitude and a clear idea that links to the urban and social situation. So perhaps I have to organise, engineer, or envision and somehow develop social interactive situations for the three artists in the group? Does this have to occur in the process-weeks themselves, or does it take place in the final symposium? Who is the audience (the eternal question...)? Of course, each one of the three processes generates situations of social interactions by chance or coincidences.

- In Trond's case, the act of doing field-recordings in the urban context generates curiosity and people ask what this is about. There is the opportunity to engage them in the process: that is, by handing them the headphones and letting them listen to or through the headphones. Question: How can this be systematised? Where would this make most sense in terms of social interaction? (Downtown Mülheim, or inside the 'Centro' Shopping Mall in Oberhausen?)

- For Cathy’s ‘extended ears’, the obvious interaction is the performative aspect of her being in the public space with the visible setup. Could this be offered to the audience actively? Create an event?
- In Kirsten’s idea, the question is how the results of her research process can be transformed into a sonic interventions, that will influence the public space. Where would this be placed and is this also an event or a hidden, added layer, that is not demonstratively shown (Neuhaus 1994)?

Transformations:

- Trond: present field recordings in an extreme situation.
- Cathy: provide an experience of the process to the audience.
- Kirsten: transform materials collected on site into sonic interventions.

A.2.2 With Kirsten Reese, 26. July 2013

Conversation over Breakfast

Topics: the role of documentation, but also of reflection occurring when program texts need to be written. Kirsten talks about the moment in the process when a crucial element becomes apparent that wasn’t planned. She calls this so-called ‘aha-moment’ an aesthetic experience or moment. I immediately make the link with the epistemic thing and what I call the epistemic moment. Discussion ensues about the nature of insight and knowledge (Wissen und Erkenntnis), we both agree that these occur in a different, sometimes poetic manner, rather than through objective words. This is a conversation that brings back and combines all the elements that have been discussed throughout the week: sharing the thoughts about artistic processes as investigation, going beyond material research, and into the domain of actual generation of new insights and experience.

...

We decide to go back to the seat on the edge of the square in front of the mall and equip a chair with a pair of speakers at ear height. With the aid of tape and section of plastic hoop we manage to mount two speakers a bit like a headrest. After several tries with different materials we find the right shape. A young man who happens to be relaxing under a tree nearby comes asking what we are doing and I immediately draw him into a conversation, invite him to listen, I play to him different sounds and ask him about his opinion. His references, the ones he gives, are mostly musical or

of situations with sound. It is interesting that the passers-by, in this case the young man, but also a bar-keeper from a nearby bar tend to put a clear label onto the situation: the barkeeper, for example, says: "ah yes, it's surround sound", very down-to-earth, pragmatic assignment. The young man never explicitly asks about the purpose of our doing, and I never tell him. Again, two layers of experience: ours and theirs. Kirsten and I also take turns to sit and listen, trying out the different materials. This configuration, for the first time, creates a sound-zone that is stronger than environment. At the very end, when we're ready to pack up, F. K. rides by on her bicycle and agrees to sit down for a minute and listen. She says she likes it, but unfortunately there's not enough time for a conversation. To be continued...

A.2.3 With Trond Lossius, 15. August 2013

Again, one of the most striking elements of the work process was the fact that we managed to get into the deep, almost meditative state of listening and attention while doing these 20-30 minute long recordings. Even if the apparent goal was the capture on film and audio of these situations, the actual effect was that it generated a primary experience for ourselves, of which recordings provide a memory, an echo. For the other viewers it will perhaps be inherently perceivable how the invisible authors had the original experience in real-time or real-life in these places, which the mediated form transports to another place in the future. An important part of this process is that we are doing this as a team of two, who are in constant dialogue and are able to articulate the impressions and possibly the key-elements of experience right after the recording took place. This creates a reflective layer that often is only present in temporally shifted forms and only for the individual artist during the process, if at all.

I've had similar experiences in collaboration situations for stage, where it is necessary to communicate constantly during the process in order to be able to bring the work forward. In terms of process for the 'sonozones' project, this pair clearly produces a focused goal-oriented production process, rather than a very open and experimental search or research attitude. This has to do with the focus on field-recording, with the fact that the work done is aimed at a goal, but also with the more conventional field-recording method used.

Overall, the strongest insight today is about the extreme slowing down and relativisation of everyday concerns, when we take half an hour to just be quiet and listen and wait in an absolutely banal or everyday place without anything special occurring. The focus and emphasis shifts dramatically, we become more sensible or sensitive to small or insignificant occurrences. Trond remarks on the changing inner state while recording: “You lose the why and the how of how you came to the place and the what and the inner state become important.” The art-work re-situated in its original place can draw on the tacit, intrinsic elements that constitute an experience. Instead of being a closed off work or piece, it relates directly to the surroundings and enables the re-living of past and present simultaneously. In the evening, during a discussion with Trond on the train platform, while waiting, we find that there is an: “emphasis on slowness, a reduction (paucity) of visual content and density of aural domain, the audio takes precedence. This is reduced listening, not in the ‘Schaefferian’ sense, but rather reducing density until left with few enough elements or layers that it is possible to engage with the rich inner textures of them. ... Places such as backstreets, backyards, distant din of the city, the quiet, and forgotten pockets and oases of the city, this is suburban quality.” We realise that the elements and places we interact with almost always have to do with transport vectors, pathways, and motion patterns in the urban texture.

A.2.4 With Cathy van Eck, 26. August 2013

I had the feeling that in our project we worked on the method and the materials, but not so much on the space and the connection to Mülheim. We agreed that we’d need to experiment with the three methods of extended ears. ... The looks from passersby and people in vehicles showed clearly that being active with these contraptions is also a ‘performative action’ and creates a clear signal and a strong curiosity. ... One finding was that using one cone only provides a better differential hearing. My impression was that the overall perception is less disturbed and that the single ear with the cone functions better like an acoustic telescope. ... From there we walked along the footbridge leading to the power station. On the half-way point of the footbridge, where it makes an angle and creates a platform overlooking the river and the marshes along the river island, we stopped

again. Here the acoustic environment, or acoustic horizon is wide enough, far enough from traffic that low-level, filigree sound elements become audible. The most dominant sonic elements at that spot are the airplanes taking off from the nearby Düsseldorf airport. This is something that several people we talked to asked us (the young woman during the recording with Trond in the street next to the train viaduct and the old lady on the bus stop while filming trams), particularly when they thought that we were carrying out noise-measurements. The place provides an acoustic horizon that is far enough away so that small events can be heard.

To me it seems that the type of intervention (Cathy's walk with cones) is more of a performance and less of an experiment than the work we did with Kirsten, even though the exploratory phases with the cones, going to different places, was more akin to an experiment. I wonder if the two other avenues with physical cones are useful, or whether it would be better to have an extended ears sound-walk with the app and with open ears for comparison. ...

*With Cathy van
Eck, 27. August
2013*

In the afternoon we had arranged for a guest to come join us for a last walk, where we would combine two modalities. ... Thus the situation changed again, with two active persons and an accompanying one who is not very visible. The first part of the walk was with one cone each, ...

*With Cathy van
Eck, 28. August
2013*

The feedback was positive and she said it had opened her ears and permitted her to have a new experience. Her main questions about the project concerned its meaning or intention. After explaining to her what I consider artistic-research to be, I also emphasised the issue of the validity of sound-arts practices in a social-urban context. The most appropriate answer for me was to speak about the fact that interventions and providing experiences can touch people, even if not the masses, but at least those that are open enough, or curious enough to engage with us in the streets.

Examinations

The following pages cover the practice modules through extensive detailed descriptive observations. Sections 5.2.1 and 5.3 collect the outcomes. The following three parts can also be found as interactive pages in the Media Portfolio:

Intersection: <https://www.researchcatalogue.net/view/269265/300181>

Dissection: <https://www.researchcatalogue.net/view/269265/300352>

Transection: <https://www.researchcatalogue.net/view/269265/300369>

The model for interpretation comprises three examination operations that are to be carried out using both the key aspects developed through building the topical lenses and the media traces collected in the Media Portfolio.

A.3.1 Contextual Questions

The following section covers a catalogue of ‘fundamental questions about what is happening’ (Charmaz and Mitchell 2001: 163):

- What is the setting of the action? When and how does the action take place?
- What is going on? What is the overall activity being studied, the relatively long-term behaviour about which participants organise themselves? What specific acts comprise this activity?
- What is the distribution of participants over space and time in these locales?
- How are actors [research participants] organised? What organisations effect, oversee, regulate, or promote this activity? How are members stratified? Who is ostensibly in charge? Does being in charge vary by activity? How is membership achieved and maintained?
- What do actors pay attention to? What is important, preoccupying, critical?
- What do they pointedly ignore that other persons might pay attention to?
- What symbols do actors invoke to understand their worlds, the participants and processes within them, and the objects and events they en-

counter? What names do they attach to objects, events, persons, roles, settings, equipment?

- What practices, skills, stratagems, methods of operation do actors employ?
- Which theories, motives, excuses, justifications or other explanation do actors use in accounting for their participations? How do they explain to each other, not to outside investigators, what they do and why they do it? What goals do actors seek? When, from their perspective, is an act well or poorly done? How do they judge action—by what standards, developed and applied by whom?

Setting

The artistic modules addressed in this thesis are situated in the context of a free-lance artistic practice that builds on improvised play in music, performance, and dance, as well as sound-focused interventions in urban environments. The stage practice is prepared in studios, labs, and rehearsal spaces and performed on dedicated stages. The exploratory sound-art processes are carried out in the public sphere in an urban environment and nature. Audiences for this practice, in the Central-European context at least, have an affinity for contemporary and performing arts, as well as a taste for experimental forms within these fields.

Overall Activity

In the stage pieces, one to three performers take the stage and perform movement-based sound works that may use technical interfaces to control digital sound (and image) processes, or an array of conventional instruments, objects, and materials. In the public sphere, the intervening artists use simple materials and devices to explore listening and sound's effect on the urban fabric, or deploy refined recording technologies in order to capture the sonic environment. The activities are carried out in projects, which last between a few month to several years. An emphasis is put on processes in these developments, where the individual performances or interventions merely represent intermediate steps in long-term trajectories. The project cycles include exploratory artistic developments that are complemented with discursive and dialogical examinations of the themes and topics.

*Distribution over
Space and Time*

The artists form a loose network of acquaintance, grouped around myself; I m located in Lucerne and Zurich. One set of collaborative, multi-year, long-term projects is carried out in partnership with dancer Angela

Stoecklin, who is based in Zurich. In these collaborations, the core activity takes place in Zurich, as well as through artist residencies and travels abroad. The shorter, two-year mixed-method and artistic research projects are located in Zurich. Trombone player Beat Unternährer is based in Lucerne, and is a long time musical partner of myself. The artists involved in the three-month public sound-art project belong to the extended circle. Cathy van Eck is based in Zurich and is connected to Berlin, through her contact with Kirsten Reese is established, who lives and works in Berlin and is embedded in the German sound-art context. The connection with Norwegian sound-artist Trond Lossius is through joint interests in spatial audio and includes a keen focus on artistic work with these techniques and listening as such.

For an overview of the temporal relationship between the artistic modules, refer to the timeline in Figure 4.2.

The solo performance piece ‘new islands’ is a self-organised artistic endeavour; this project is developed as opportunities for performance develop. The long-term collaboration around improvised dance/music performance ‘one hand clapping’ is a self-organised, free-lance activity, which receives funding from the Swiss Arts Council, Pro Helvetia on a case by case basis. Based on a regularly scheduled monthly meetings, both artists share the load of organisation of the activities. The mixed method, artistic research strand which contains ‘Double Vortex’ and ‘Moving Music’, was part of the MGM research project which was funded by the Swiss National Science Foundation (see Section 2.2.1, and located at the Institute for Computer Music and Sound Technology ICST of the Zurich University of the Arts. In this project, I develop, guide and decide all framing issues, while the artistic content itself is developed in close communication and dialog with the two performers. The sound-art project in the public sphere ‘sonozones’ is embedded with a larger research context as well, and is situated and framed by decisions taken at the institutional level by the organising Institute for Contemporary Arts Research IFCAR of the Zurich University of the Arts, and the project ‘Urbane Künste Ruhr’. All the artistic modules are centred around me and I am in charge; the modules represent self-contained projects and the involved artist don’t change over their course.

The artists taking part in the projects all share a degree of attention to

*Organisation and
Hierarchy*

Attention

the quality, integrity, and coherence in performance, as well as the consistency and focus in exploratory sound work. The challenge in each of the projects lies in maintaining the central idea alive and keeping it growing across long time-spans. Being aware of the context and engaging with it in an appropriate manner is always a critical point, in particular when taking European improvised performance practices to Non-European countries. In these intercultural encounters, the intention is to avoid post-colonial attitudes and to manage encounters that occur on par with the collaborating artists.

Disregard

The shared artistic goals of the projects lets the artists ignore, within the space of each artistic process, some of the social norms of behaviour and cultural codes or tropes that are active in less experimental fields of similar performing arts disciplines. This disregard concerns conventional stage behaviour, rather than the boundaries of accepted behaviour in the interpersonal domain. The space of performance, in its 'as if' state and playful definition enables the performers to transgress habits, inhibitions, and inner resistances. Not all of this is made explicit, and the type of freedoms allowed within the practices constitutes itself another system of codes and constraints.

Symbols, Names

Each artist has their own value system. The common aesthetic orientation and agreement may be considered as a shared belief system; it becomes visible in some of the dogmatic aspects when improvising in non-idiomatic ways (see Section 3.6.2). Citation of stylistic stereotypes or tropes, for example, is avoided at all cost. Within the artistic processes, the agreements and forms that are developed instead of scores and notations form their own naming system. They are contingent with the practice and techniques and inform and bias the dialogue about the processes.

*Practices, Skills,
Stratagems*

Within the artistic practice, skills and strategies play a central role for developing work. They form part of the craft of each artist and need to be made explicit. The central skill shared by all involved persons is the ability to negotiate an unknown and ill defined situation and immediately contribute actively to its shaping. This is based on a shared background in improvised performing, the experience of being on stage, and the willingness to follow the game with an attitude of playful openness that tolerates less-than-perfect presentations or even failure. The central strategy used for de-

veloping work is to set up a frame with few guiding ideas, then immediately engage with it in performance and improvised play, before evaluating and analysing it, or even devising and planning elements for the next step. In the diverse projects, different degrees of fixedness are used, depending on where the focus is put. Regardless of these decisions, agreements, and aids in the (re-)production, each development process contains the repeating cycle in which the collection of experience precedes analysis and determination of elements.

The main motivation is the same for all the artists that are engaged in these projects: We are curious to carry out a specific artistic work in order to learn about and experience the processes of discovery and experimentation that needs to happen for the project to succeed. Driven by specific personal needs and interests, each artist carries out a part of their own artistic investigation, which converges with a given project's main topic. The internal dialogue between artists revolves around issues of interaction and interpersonal communication, and also takes a critical view on the contexts within which projects are carried out and presented. The criterium for judging the success of a process is therefore related to the level of integration that is reached between the scope and intent of a process and the actual performed outcome, rather than the number of performances and the amount of public acclaim obtained. The standards by which this is judged is part of a larger practice within a field, discipline, or scene, and forms part of the baggage and background of each artist.

Apart from the financial remuneration—mostly sparse in the free-lance activities, more appropriate in institutional contexts—the main reward for all the artists is being able to carry out in these artistic investigations artistic processes that go deeper than the usual production-oriented short-term projects. Having the luxury of time to work on an idea and its development over extended periods of time is valued and appreciated, and as reward provides the addition of singular artistic projects to the portfolio of each artist.

*Motives, Goals,
Quality Criteria*

Rewards

A.3.2 Detailed Observations

Since the videos are an integral part of the following comparisons, the six different Media Portfolio webpages should be opened in parallel in a browser, ready to be viewed while reading the following sections. The videos are numbered according to the artistic module (1–6) and are labelled alphabetically within each project:

new islands: <https://www.researchcatalogue.net/view/269265/272400>

- **Video 1a:** new islands, 25/01/2016, Zurich University of the Arts
- **Video 1b:** new islands, 15/05/2014, Troubleyn Theatre, Antwerp
- **Video 1c:** new islands, 17/11/2013, Bandra Base, Mumbai, India
- **Video 1d:** the possibility of an island, 25/07/2012, Darmstadt

Double Vortex: <https://www.researchcatalogue.net/view/269265/272402>

- **Video 2a:** Double Vortex II, 25/01/2016, Zurich University of the Arts
- **Video 2b:** Double Vortex II, 03/09/2015, Zurich University of the Arts
- **Video 2c:** Double Vortex, 26/01/2015, Zurich University of the Arts

Moving Music: <https://www.researchcatalogue.net/view/269265/272403>

- **Video 3a:** 25/01/2016, Zurich University of the Arts
- **Video 3b:** 03/09/2015, Zurich University of the Arts

one hand clapping – dense moments:

<https://www.researchcatalogue.net/view/269265/272401>

- **Video 4a:** one hand clapping, 16/12/2015, Art Space Co-oh, Tokyo
- **Video 4b:** one hand clapping, 17/12/2015, 3331 Arts Chiyoda, Tokyo
- **Video 4c:** one hand clapping, 25/10/2014, La Habana, Cuba
- **Video 4d:** dense moments, 09/05/2014, Pantographe, Moutier
- **Video 4e:** dense moments, 23/03/2014, Atelier Hermann, Hochdorf

trans-form: <https://www.researchcatalogue.net/view/269265/272405>

- **Video 5a:** trans-form, 04/02/2012, Theater der Künste, Zurich
- **Photos 5b:** trans-form, 02–03/2012, Zurich, Basel, Luzern

sonozones: <https://www.researchcatalogue.net/view/269265/272416>

- **Video 6a:** Extended Ears, 08/2013, Mülheim a.d. Ruhr, Germany
- **Video 6b:** Augmenting Urban Sounds, 08/2013, Mülheim a.d. Ruhr, DE
- **Video 6c:** Loosing Myself in the World, 07/2013, Mülheim a.d. Ruhr, DE
- **Video 6d:** The Fourth Strand, 07/2013, Mülheim a.d. Ruhr, Germany

A.3.3 Intersection

Intersecting is the act of uncovering an overlap between categories within a project or across projects. The following topics are overlapping strongly within the projects:

- Anticipation–Memory (protection/retention), Memory/Traces/Disappearance; in the following projects: ‘Double Vortex’, ‘Moving Music’, ‘trans-form’.
- Hyper-Awareness/Meta-Awareness, Hyper-reflection; in the following projects: ‘new islands’, ‘Moving Music’, ‘sonozones’.

For details on the topic of *Anticipation* refer to Sections 3.2.1 and 3.6.4.

The key topics of anticipation and memory appear in three domains: in *Phenomenology* and *Enaction*, anticipation and memory form the basis of time perception, along the protection–retention axis around the ‘specious’ present (Varela 1999), and the enacting of experience and acquired skills (Hutto and Myin 2013). In *Improvisation*, memory has two scopes, within a single performance and across the practice and the culture at large. From the first mark set into the space of an improvisation, memory is attached and anticipation derived. Depending on the perspective, seen either from the performer’s or the public’s vantage point, they function differently. The former experiences memory in terms of resonance and recognition, and anticipation in the sensing of the arrival of junction points, and impulse generation for upcoming actions. For the audience, memory serves to tie together in loose connections the chain of events, and build through repetition, either in immediately repeated actions or reappearance across several sections, a sense of coherence. Anticipation in improvisation occurs mainly on the pre-reflective, non-verbal level of the impulse. For the performer, this can be a ‘giving in to the impulse’, whereas for the audience the same effect permits the anticipation of an upcoming impulse for new actions. The following example sequences are collected from the viewpoint of the spectator (specifically of the videos), however, since I carry this out as the main artistic stake-holder as well as the person doing this investigation, the selection process is biased by first-hand memories of each performance.

Each of the three pieces shows *anticipation* moments and their effect on

*Situating
Anticipation and
Memory*

Anticipation

perception.

- In ‘Double Vortex’, anticipation occurs in relation to the previously built tension. In [Video 2a](#) at 04:54, after the initial sounding movement to the edge of the rotation field, there is anticipation for a release that happens with a fast swinging motion and a noise burst. In [Video 2b](#) at 11:18, the physical swinging impulses generate through their tension an anticipation of further movements. In [Video 2c](#) at 03:10, after a silent section and stop, the timing of the following action can be anticipated.
- In ‘Moving Music’, anticipation is tied to phrase durations, spatial placements and gaze, and the impulse for a new movement after a stop. In [Video 3a](#), between 01:55 and 02:15, the phrase durations and rest points generate a sense of tension and build an anticipation for the next impulse. In [Video 3a](#) at 06:50, the gaze guides and builds tension through body-sound links that generate temporal anticipation about the beginning of the next phrase. In [Video 3a](#), between 10:19 and 10:42, in the rest position on the floor, through sparse sound reactions expectation builds and generates an anticipation of a coming rise of dynamics and gestural fullness, which finally occurs from 11:00 onwards.
- In ‘trans-form’, anticipation is influenced by the scenographic use of lights and its relationship to the body. In [Video 5a](#) at 04:14, the intervals of sound impulses and the restrained movements of the dancer build tension that results in short term anticipation of the next movement impulse. In [Video 5a](#), between 09:42 and 10:39, the strongly tied rhythmical link between sound and image generates an anticipatory tension for changes in posture, rather than movements. In [Video 5a](#), between 11:24 and 12:50, the entry of the body into the playing field makes the body-silhouettes appear in the projections and thus brightens up the entire scene. This establishes an anticipatory tension with a release and immediate denial, building further anticipation. In [Video 5a](#), in its final sequence from 13:15 until 14:25, the kinaesthetic empathy with the body caught in the light and the increase in tension generates the anticipation of a break-off moment, the duration and timing of which, as a release, has a natural feel, which is a direct effect of the arising anticipation.

For details on the topic of *Memory* refer to Sections 3.2.3, 3.3.4, and 3.4.

When considering the same pieces under the aspect of *memory*, similar relationships become visible.

Memory

- In ‘Double Vortex’, memory occurs in relation to prior established actions and inter-relationships between sound and movement. In [Video 2a](#), from 12:21 to 12:30, the swinging of the trombone into the feedback field of the speaker evokes the memory of a similar action at 07:00. In this instance, the sound is generated differently but the overall impression is similar. In [Video 2b](#), the action at 11:16 triggers the memory of similar, silent, non-sounding actions at 03:34 and 05:04. In [Video 2c](#), between 02:31 and 03:10, and again later at 03:45 to 04:21, a kinaesthetic memory resonates in the slow, silent, diagonal movement, it is the sonic and corporeal memory of the preceding intense playing of sustained and powerful sounds; this carries over into the tense silence, building up until the stop at 03:10, where the next sound is anticipated. The electronic system’s function as a memory machine also becomes apparent; in [Video 2a](#) at 13:25, in the left-over sound, and in [Video 2c](#) from 08:43 to 08:56, where the trombone player is only moving and not producing any sound directly, only through triggering Machine Learning patterns.
- In ‘Moving Music’, the effect of memory is generated by explicit repetitions and the exploratory attitude of the dancer, and in the reappearance of movement and sound materials across the longer arc of the piece. In [Video 3a](#), from 00:31 to 00:43, repetition is prevalent, triggering a short-term recognition. The repeated element of arm-movement returns from 01:14 to 01:30, as well as at 03:28, with an altered meaning. The placement of the body on the floor, visible in [Video 3a](#) at 09:15, triggers memories of sound-place links that were evoked at 04:45 already. Finally, reappearance of the beginning phrases trigger memories, when in [Video 3a](#), at 13:37, the steps and arm-movements from the first section return in a much denser accumulation of sounds and movements.
- In order to find the effects of memory in ‘trans-form’, it is important to keep in mind the role of projected shapes and lights, and the submission of the body to the scenographic situations. In [Video 5a](#), from 02:02

until 02:16, and again from 08:31 to 09:12, the scene depends on visual memory and the memory of the body's continuous presence in the field. The lights as well as the speed and dynamics of movement put the visual perception of the body under stress, in particular through the rapidly changing patterns and contrast between light and dark. Perception of the body is fragmentary and short-term memory is crucial to experiencing the scene as a whole. In [Video 5a](#), from 06:00 to 06:45, the repetition of the play of shadows and size changes generates visual after-images and kinaesthetic memory effects, which are contributing to the expressive impact of the scene.

Summary

Both anticipation and memory play across time and are related to temporal elements of performed actions or phrases. The rest-states around the phrase arcs clearly show points of anticipation, since these are form-building moments in the evolution of each performance. The subdivisions into units that are effected by these points help to store in memory and to later recall units with similar content, dynamics, or phrasing. The feeling of anticipation is active on smaller time-scales as well. On a basic level, anticipation acts on perceiving a movement's energy-curve and is related to articulation and co-articulation of movement segments ([Godøy et al. 2010](#)). In this narrower band and lower level of cognition, memory is more central for the performer than for the audience. The kinaesthetic trace of a prior movement generates a corporeal (or sonic) memory that can become part of later impulses for similar actions, which are triggered on a pre-reflective level.

For details on the topics of *Hyper-Awareness* and *Hyper-Reflection* refer to Sections [2.2.4](#) and [3.6.5](#).

*Situating
Awareness and
Reflection*

The topic of hyper-awareness ([Leigh Foster 2003](#)) and hyper-reflection ([Kozel 2007](#)) is effective in the domain of improvisation. In *Improvisation*, awareness plays a central role, as is the case in any performance, where the performer as well as the audience enter into a concentrated state of attention. Hyper-awareness for the performer means having a particularly focused and at the same time multilayered perception of the situation. For the audience, this can only be perceived indirectly, for example in the body's tension, the performer's facial expression and gaze, and in the tension and reactivity that the performer displays. However, there is no clear

marker or indicator for this state, as will become evident through the following observations. Hyper-reflection denotes the state of simultaneous performing and generating of reflective insights. These examples are again viewed from the standpoint of the spectator of the videos. The selection of the specific sequences depends on reported inner states as well as interpretations about awareness-states derived from watching the performer's behaviour and expressions.

Each of the pieces uncovers aspects of *hyper-awareness* in the performers and in isolated instances makes the issue of *hyper-reflection* visible.

*Hyper-Awareness
and
Hyper-Reflection*

- In 'new islands', the basic attitude is one of balancing between listening and doing. From the start, the exposed situation generates in the musician a heightened awareness of the specific state of performing. In [Video 1a](#) at 04:05, the transition from doing into perceiving is visible, in the state of listening to the resonance and expecting the systems evolution in a state of focused awareness. In [Video 1a](#) at 06:45, the arrival of a new layer of sound (the traffic noise) brings a shift in awareness from the own actions to the added sonic layers, necessitating the negotiation of both layers, and thus increasing the hyper-awareness. In [Video 1b](#), between 02:40 and 02:48, the balance between listening and acting shows the hyper-awareness of the performer. In [Video 1b](#) at 05:10, we see minimal actions and a concentrated waiting for the rise of tension through reduced events. In [Video 1c](#) at 01:15, how the gaze moves outwards, then inwards, signals a shift in awareness, a fluctuation in the compression of the inner state experienced by the performer. In [Video 1d](#) from 12:15 to 12:44, the breathing actions are generating presence and make visible the increase in awareness and tension.
- In 'Double Vortex', the main source for tension is an emphasis on the corporeal presence of the performer and the task to perform movements, in addition to specific playing techniques on the trombone. The different versions of the piece exhibit significant differences in those moments that function according to this principle. The changes are evolutionary; the three versions span an entire year and two distinct working cycles. In [Video 2a](#), from 00:17 to 03:49, the entire opening section consists of an extremely slow rotation movement—the instruction is 'as

slow as possible’—that is accompanied by a light swaying or leaning tension. The task in itself generates a significantly increased self-awareness of the body, the situation, the movements, and time. In [Video 2a](#) from 10:46 to 11:50, as in the previous section, the slow and silent diagonal movement shows a focus by the performer on spatial perception and, in the transition at 11:14, an awareness of dynamics and motion. In [Video 2a](#) at 13:25, the ending stance and holding of tension puts the focus on awareness and perception, in this case of the resonating ending sound. In [Video 2b](#), between 07:22 and 08:00, the postural and positional clarity shows focused awareness. In [Video 2c](#), the silent movements from 01:12 to 01:37, from 02:32 to 03:10, and from 03:46 to 04:22, demonstrate through the slow movements in response to sound activity that tension and release as well as slowing down increases awareness when shifting the focus. In [Video 2c](#), the sequences from 04:40 to 08:06 show a blending of sound and body actions that put a focus on the body and an increased burden on the performer, who negotiates the multiple layers with the aid of increased concentration, focus, and awareness.

- In ‘Moving Music’, the rapid decelerations and changes of intensity demonstrate hyper-awareness and control by the performer. What is not visible, but should be kept in mind, is the presence of second performer off-stage who manipulates sound-characteristics and reaction patterns of the electronic system. The dancer is not only negotiating the interaction with a responsive digital sound system but also with the decisions and intentions of another person. In [Video 3a](#) at 00:40, the resting point and gaze indicate a deliberate awareness and control over temporal and dynamic durations. At 08:59 as well as 10:22, the transitions away from the rest-state and into a new position on the floor, also visible at 12:22, shows deliberate awareness and shaping of stops, starts, and the beginning and ending of dynamic arcs. These observations indicate a mastery of a type of awareness that occurs on a meta-level, above the immediate task, and concerns the shaping of time and durations over the span of the entire piece. In general, increased awareness and focus of the dancer become most evident to the audience during the slowing-down moments.
- In ‘trans-form’, the situational constraints, which are the result of the scenographic use of lights and demarkation of space through projec-

tions, generate a different type of context within which to perceive hyper-awareness. Again, there are two additional performers present at the edge of the stage, who influence the media of sound and light/image. In [Video 5a](#), from 00:18 to 01:29, the dancer is negotiating a narrow strip of light. The conscious engagement and the deliberate movement into and out of the light shows control over the situation by the dancer; the manner in which the movements are made rhythmical and engage the space show an awareness beyond the body that is encompassing the visual and spatial aspects of the situation. In [Video 5a](#), from 04:43 to 05:54, the scenographic situation is subjecting the body to an oppressively structured space imposed by the lights. The awareness of the delicate balance between movements by the body and the lights increases the focus and generates a heightened awareness of the situation both for the performer(s) and public.

- In ‘sonozones’, both performative and contemplative states exist. In each of the documented situations, the presence of the camera generates a kind of performance moment with an abstract public. Distinguishing the awareness level and the moments of hyper-reflection in these situations is challenging. In [Video 6a](#), from 00:16 onwards, the slow, deliberate pace and the demonstrative activity of listening through a cone while walking up the street indicates focused awareness. In [Video 6a](#) at 2:15, stopping to listen signals interest and awareness. In [Video 6a](#) at 03:08, the expectation and searching movements indicate concentrated, dedicated attention. Throughout this performative intervention in the urban space, self-consciousness about the unusual action forms part of the perceptual field. After these intervention activities, a heightened state of awareness for the type of focused listening emerges without the use of cones. The unfiltered but primed change in the state of perception points to hyper-awareness as well as a performative reflection during the doing. In [Video 6b](#), around 00:31, the listening posture indicates concentration, but not necessarily an awareness of a performative intervention, yet. In [Video 6b](#), from 01:18 to 01:25, the attitude changes and a subtle aspect of performative awareness and hyper-awareness becomes readable in the posture of the artist. In [Video 6d](#), from 00:06 to 00:20, clear attention is given to listening by the sound-artist. An awareness of the

situation and a heightened focus is perceivable in the attitude and body-language.

Summary

The experience of hyper-awareness or hyper-reflection is private and difficult to discern from a video. To perceive from an outside viewpoint the telling elements of hyper-reflection, that is, the presence of thinking as well as perception, is difficult. In an actual performance, subtle bodily cues are perceived and kinaesthetic resonances emerge that do not exist when watching a video. Nevertheless, through signals in posture and seeing the control of overarching aspects by the performer, the presence of an awareness on a heightened level can be deduced. All the performances, including the interventions in the public domain, exhibit a concentrated state of presence and awareness that is noticeably. From the inside perspective in the flow of performing, these hyper- or meta-states emerge, fluctuate and are perceived. To go back after the fact to identify these moments from a video, however, is difficult, unless an effort is undertaken to capture traces of this state immediately after the performance.

A.3.4 Dissection

Dissection is the act of taking apart a body of work into the individual parts, that is, its main categories. For this operation, due to space constraints, only the project ‘new islands’ is addressed; on the one hand because it contains most of the shared keywords, and on the other hand because as a solo-piece every aspect can be covered by myself, without recourse to the other performer’s insights and experiences. This detailed observation is carried out entirely on the performance documented in [Video 1a](#).²

For details on the topics of *Hyper-Awareness* and *Hyper-Reflection* refer to Section 3.6.5.

*Hyper-Awareness
and
Hyper-Reflection*

The performance of ‘new islands’ is characterised by a concentrated, deliberate, and attentive state and relatively slow pace. The elements that come together appear slowly; through the entrance of the performer and the appearance of sonic materials, an environment unfolds for the audience that puts the focus on listening, watching, and perceiving. For the

² An alternate version with high quality audio and video can be found here: <https://vimeo.com/179174535/c6da86f50e> URL accessed 12. October 2016.

performer, additional domains are active, be it the instrumental interactions or the sound-amplification. At 01:00, the first vocal action demonstrates the performer's musical agency, as well as an intensified presence. In the video-close-ups, the gaze and facial expression show a focused state. From these cues can be deduced from the outside the state of heightened awareness that the performer finds himself in. The musical action placed at 01:36, silencing the ambient sound layer and uttering sibilant vocal elements, shows a shift in focus and attitude from that of a person ambling through the sonic environment to that of a musician deliberately shaping a piece. If the intentionality and ownership of control was unclear up to here, these doubts disappear and it becomes possible to understand the role and relationship of the performer with the environment. As recalled from an inside perspective, during this sequence, the tension, attention, and awareness build up that are necessary to determine the right moment for musical action. This awareness exists on multiple levels, compressed, simultaneously pointing outwards and inwards. It encompasses the position in space, the posture and tension in the body, the instrumental affordances, the state of the technical system, and the unfolding of the piece. At 04:02, a negotiation with the contingent elements of the performance can be observed. Several actions are necessary to stop the resonating sound of acoustic feedback and to bring the instrument to respond directly to small vocal inputs. Similarly, at 05:39, the waves of crescendo of pulsating sound and the interspersing of small vocal fragments is performed in a tense, delicate balance that demands an elevated level of awareness from the performer. Awareness is visibly directed at different aspects of the body-sound-instrument compound. From 07:50 to 08:10, a shift from a state of listening and controlling to a mode of moving and actively shaping is visible. The performer's awareness moves to the fuller dynamics of movement and sound phrases, which are shaped with several sonic elements at the same time. The 'choreographic' appearance of this section shows a changed role, from that of a musician merely handling sounds to that of the movement performer who engages bodily with the different materials.

Recalled from memory, the hyper-reflective aspects for me as the performer mainly concerned the inner dialogue about the larger arc of the piece, the negotiation with the sonic difficulties in the acoustic space, the

re-memorising of aesthetic intentions, and the reflex behaviours to avoid. Reflection probably didn't reach the meta-level that considers practice in general or concepts such as embodiment and perception. In the semi-open, yet composed configuration of this piece, the main preoccupations were with the immediate situation, challenges, and tasks at hand.

For details on the topic of *Presence* refer to Section 3.5.4.

Presence

The intensity of the performer's presence is fluctuating throughout the piece. Beginning with an attitude of the everyday casual walk, the presence evolves to a focused relational gaze; through this it becomes visible that presence is shaped intentionally. The situation at 00:20, for example, shows how a decisive impulse moves the performer to turn towards the audience and, through the gaze, become completely aware and present; the same effect is visible at 01:38, where the viewer is touched, concerned by the gaze in a potentially empathic and kinaesthetic way. At 01:00, the first audible breath combined with a movement of the hand to the mouth changes perception of agency through the sound, influencing the perception of presence. Where before there was only presence in the sense of 'being there' as a figure, at this junction, presence changes to being in the focal point as an actor, agent, decider, and being the one in charge who actively guides the progression of the piece. At 01:40, the presence changes through my decision to begin the engagement with the technical system. The presence shifts to a semantic and musical, rather than performative (or even theatrical) mode. The opposite effect can be detected at 04:14, where concentration on tiny vocal sounds brings the body's presence back to the foreground. A different kind of presence appears at 04:38: by walking to different positions on stage and through the pointing actions (perhaps pointing to small elements in the sonic field?) as well as the emphasis on breath, the focus is put on the body's presence as flesh rather than person. The purely gestural actions without sounding results, which can be discerned between 05:16 and 05:33, shift the focus from listening to watching. The musician's presence disappears and in its place, the figure may be interpreted as that of a mime, conductor, or martial arts practitioner, where the body's role is different. This type of figurative presence is broken immediately by a musical action at 05:35, the performer's role reverts to that

of a musician. The sequence from 05:00 until 05:55 shows how the figure's presence receives a significance when pointing or shaping space. This is visible in the spatial gestures between 07:52 and 08:08, where it seems as if forces were exerted onto the body or the body was exerting forces in the space. The nature of the forces on and through the body hints at the invisible presence of a material that is being worked on. "Who is he conducting?" might be a question asked here. The final posture at 09:10, looking up, exposes the body as present on stage, and the person as present in a different domain. It is interesting to note how presence depends on perceiving the phenomenal body, the flesh/chair/Leib, but at times on perceiving the semantic body/corps/Körper, in different roles and significations. This realisation leads directly to the next section.

For details on the topic of the *Phenomenal Body* refer to Section 3.5.4.

Looking for purely physical aspects of performing brings to light a few situations that are not purely musical but rather relate to dynamics and the shaping of tension of the entire piece. The bodily impulse that can be witnessed at 02:20, after a suspended moment, is a corporeal act. This impulse is not a signal but rather an engagement with the incarnate material of the body and is used to generate a physical momentum that shapes the tension arc of the piece. Similarly, at 03:36, the contorting movements expose how the body is attempting to resolve tension, not through musical actions but through performative means. At 04:46, the performer seems to be approaching the invisible body of the sound-processes and engaging, with a gesture in space, with an imagined object of sound. The act of 'touching', or better yet of tentatively groping, culminates in a large gesture at 05:18 that catches the sound's body (still imaginary) and holds it, only to finally push it back with a decisive gesture. This direct corporeal relation of gesture to space and imagined objects is oriented towards a physicality that may only exist in the imagination but has an effect on the body's expressive potential and affective power. The physicality of the body becomes visible again in the transition in sound that is engaged and triggered by a build-up of tension and a gesture of release, as if the process had been set in motion with a push, and could now be let running its own course. In the sequence at 07:48, with the ring-modulated sounds, the swing of the arms

Phenomenal Body

has a physical, corporeal effect on the entire body, but there is no clear signification visible except for the physical momentum and movement that is being generated. These movements appear rather ‘dancerly’ than musical; these sequences produce a shift in state where the body space is extended (in the ‘kinesphere’ (Laban 2011)) to include extended dimensions by means of the extended arms. The entire ending sequence from 08:51 onwards moves from a conducting to a resting state, in an attitude of waiting or undergoing; the body finally carries its weight and comes to rest.

For details on the topics of *Body-Object Relationships* and *Instrumental Technicity* refer to Section 3.4.2.

*Body-Object
Relation –
Instrumental
Technicity*

In ‘new islands’, the relationship between body and instrument is particularly ambiguous. The instrument can be understood to include all the technical elements put into place to capture, manipulate, and process sounds (see Section 4.2.1 for more technical details). The worn nature of both microphone and sensor-gloves makes a clear separation difficult, not just physically, between instrument and body part. One of the design goals of the gloves was precisely to produce the merging of the body’s with instrument’s action space. In the observed performance, at 00:23, through the hand postures and groping actions the gloves become visible for the first time as an instrument. Barely a minute later, at 01:02, the microphone becomes active and can be perceived as a part of the instrument. The short, decisive actions with the outstretched hand that are seen between 01:19 and 01:22, result in muting the sound-track, demonstrating the instrumental link between the gesture and the sound. A little bit later, at 01:36, gesturing and voice generate the impression of conducting and speaking. In this situation, the body becomes the instrument or the material of the action, but not the sound. In contrast, the control gestures at 01:40 emphasise the hand’s role as instruments, or as carriers of instruments, albeit in an ambiguous role. The microphone emphasises the voice as an instrument, but through amplification of tiny sounds the question arises whether the microphone is part of the instrument or part of the body. The wireless elements hug the body and enter into a ‘symbiosis’ with it, merging body parts with the technical interface. This fusion renders the instrument-body compound transparent, both in terms of intentionality and actions, as is visible at 02:20. The instrumental actions

with this interface remain ambiguous: they represent symbolic as well as metaphorical relationships to (abstract digital) sound processes, as can be seen at 02:23 and at 05:00, where the gesture is read as a signal rather than an instrumental action. The technicity of the instrument, which is visible in the close-ups at 08:52, does not necessarily proclaim a cyborg relationship (Haraway 1987), nor does it generate a monstrous body (Kozel 2007: 271) (see Section 4.4), but rather makes transparent the hand gesture's role as movement and control actions. The proportion of purely movement-related actions in the entire piece is relatively small. This is mainly due to the fact that it is not possible to take off the instrument and carry out unencumbered gestures. At the same time, the presence of the link through the body-hugging sensors is what motivates the repertoire of movements and gestures in the first place. A sequence such as the one between 08:19 and 08:50 would never be performed if the corporeal link with the sound didn't exist.

For details on the topic of *Performative Awareness* refer to Section 3.3.1.

Walking to the front of the stage to face the audience, from 00:18 to 00:24, the pre-reflective body-awareness of the performer is readable, if only in the change of posture from casual walking to an erect position with the gaze directed at the audience. In the voice actions that follow at 01:02, the action of 'tasting' the sibilants, accompanied by holding the hand in front of the mouth, reflects on the one hand the body-embedded capabilities of speech and hand actions that are below the level of cognition. The content of speech, on the other hand, can be perceived as intentional and consciously focused ('so, so, so' in Japanese for 'good', or 'well'). The distinction between pre-reflective and sub-personal, and conscious, intended actions becomes visible in the control gesture of making the fist. The hand-action itself belongs in the domain of pre-reflective capabilities, a motor pattern to be triggered. From the point of view of the performer's awareness, it produces a strong corporeal impact that combines self-perception with transparent body perception. The fist-gesture has an iconic significance for the musical system as much as for the audience. For the performer, using an iconic gesture makes the body becomes transparent, contrary to other arm gestures that are used for continuous modulation and require bodily awareness and adaptation in relation to the sound. At 05:34, we see a vir-

*Performative
Awareness*

tuoso gesture in combination with vocal action. The shaping and control is pre-reflective, only the intent to carry it out and onwards is intentional and conscious. The shape and timing of the gesture and the utterances depend on pre-reflective corporeal capabilities that can be made aware but may not be consciously controlled. In the section from 07:20 until 08:20, it is interesting to observe the feet, rather than the arm and head movements or the musical actions. The balancing and weight distributions on the feet reflect the body's tension and are subject to the extended postures, thus making visible how, apart from arm movements, the entire body is involved in shaping the performance. In a detailed view, at 08:44, a control gesture of the left hand can be observed: the thumb is pressing against a sensor that is mounted on the glove and positioned on the side of the hand. We see an unnatural, previously learned instrumental action that is idiosyncratic but whose execution demonstrates expertise and a level of integration, which shows its pre-reflective nature in the detailed execution. The conscious content of the instrumental action in this case is to activate the ring modulator, not to press with the thumb on the sensor located on the side of the hand.

For details on the topics of *Skillful Activity* and *Sensorimotor Skill* refer to Sections 3.2.1 and 3.2.3.

Skillful Activity
Mediates
Experience

An exploratory attitude pervades the performance and a strange kind of sensorimotor link exists between body, posture, gesture, instrument, and environment. The motor and sensor engagement is done with the knowledge about the possibilities of materials, processes, and expectations about the results of certain actions, as well as the adaptations of behaviour as a consequence of the exploratory interaction mode. Between 00:10 until 01:02, this attitude prevails: it is evident that the performer is placed within a sonic environment which is not the result of his immediate actions. The interactions seem to produce some effects on the sonic environment (changing the balance of layers), but the performer is himself listening and reacting, while moving about the stage space. At 02:22, an impulse can be felt and a decision is executed through a full body gesture, which shows knowledge of the consequences of the action in the flow of the moment. Within the larger gesture, a musical action is embedded that is skilfully carried out through quick grasping movements with the hands,

synchronised with a vocal impulse. Together these elements generate a new sonic layer within the sound processes. The level of sensorimotor integration of this embedded action can be judged by the fluency and ease of execution in several domains: in the corporeal sphere of instrument affordance, in the gestural domain of coarticulation within a larger movement sequence, as an instrumental control action combined with a vocal action, and in the musical and sonic domain as an intention of the musician. Other moments in this performance exhibit this level of integration. The best example may be observed between 05:33 and 05:38: the short phrase shows the negotiation of several layers of contingency. Beginning with a back-pocket action to activate the microphone, the flowing bi-manual gesture captures and modulates sounds in two streams, which originate from a synchronised vocal action. The entire sequence produces a peak in sound intensity, which is rapidly brought down again, producing a short window of increased dynamics. The capability to generate and control compositional elements in this manner bears witness to the level of integration between the handling of the contingent musical flow and the physical, instrumental, and the sonic affordances that are in play. A similar integration is visible from 06:02 to 06:20, when specific musical actions are carefully placed within the sonic context. In the resonating and pulsating soundscape, minimal vocal impulses are fed into beating left-right panned sound delays. This is done with short efficient hand gestures. Anticipating a change, additional sound processes are applied with a longer gesture and finally lead to the change in soundscape with the arrival of new material (the noise of a truck passing in the rain provides a classic crescendo/decrescendo wave). The environment that is engaged by this combination of elements resides in the sonic sphere; the body-voice-interface-gesture-processing compound is applied in a seamless manner. The domain of action is the invisible sonic domain, as with any musical action, its content is detached from the physical stage space. The action domain that generates and modulates the sounds, however, is physical, visible, and kinaesthetically perceivable, by the performer as well as the audience. The importance of space on the bodily expression is visible in the sequence between 07:52 and 08:21: the sensor affordance enable the movements in the different directions of the 'kinésphère' (Alaoui 2013: 50) to have different effects. A

different order of sensorimotor skill is exhibited in the gestures of reaching, twisting, and turning. These skills belong to the general motility and articulation of our bodies, and is leveraged to achieve a specific gestural and sonic result. Overall, the perceptual experience of the performer is tied to the skilful integration and negotiation of materials, the body, and instrumental affordances as well as the situational, musical, and spatial conditions that develop on stage. This is transmitted to the audience who experiences the piece by co-performing on a sub-personal level many of the actions and reactions of the performer.

For details on the topic of *Inter/Subjectivity* refer to Section 3.1.2.

Inter/Subjectivity

By stepping on stage, at 00:10, the artist as subject becomes immediately present and intersubjectivity is generated in relation to the audience. In addition, the appearing soundscape creates a sonic situation, an environment within which the subject is now located. The actions of the performer, even if low-key, show an engagement with the environment, thus asserting a subjective position. At 01:02, a position facing forward is taken up and the voice is used for the first time. “Who is he talking to?” we might ask, making of this abstract communication an increased intersubjective moment. From 01:38 until 02:10, the vocal action is more communicative and becomes musical, which changes the signification of the action and the role of the performer. This is emphasised again at 02:20, when the performer steps to the front, facing and looking directly at the audience. The act of stepping out of the environment into a direct relation with the audience shows the change in intersubjective rapport, which is repeated at 04:38, with the addition of an almost intelligible, whispered ‘listen’, a communicative statement uttered with the intent of engaging intersubjectively with the audience. A new type of relation appears at 04:41 with a walk to a place on stage and a pointing gesture towards an undefined entity. These gestural actions, such as the ones at 05:45, appear as a kind of intersubjective communication, but with the question who the involved subjects are. By looking up into the dark, at 09:12, an imaginary situation and the subjective placement of the performer in this environment is posited for the last time. These actions all carry significance, unexplained, and point to the central question about subjectivity in this type of performance.

A.3.5 Transection

Transecting is the act of cutting *across* projects along the same categorical axis. After the comparative operations carried out between or within single artistic practice modules up to here, in this transection, each key-aspect is used to draw a swift line across all six artistic modules. In the following sections, the intention is to find in each artistic module clear traces or moments that connect to a single keyword, instead of identifying in each module as many hints as possible. This produces a narrowed-down chain of six instances for each of the five keywords and should make comparisons across all modules feasible.

For details on the topics of *Body-Object Relationships* and *Instrumental Technicity* refer to Section 3.4.2.

The first key-aspect focuses on the relationship between body and instrument, or in more abstract terms, between body and objects and the object's technicity. The issue is how the nature of the instrument, tool, or object influences the bodily disposition and the movement language that is derived from it.

Body-Object Relation/Instrumental Technicity

- In 'new islands', in [Video 1b](#) between 03:44 and 03:47, the combination of woodblocks and the wireless headset microphone generate a low-tech versus high-tech tension, that is exacerbated by the use of sensor gloves. In [Video 1d](#) at 03:05, the use of a hand-held sensor-bearing instrument creates a direct link between handling of the object, movement, and the resulting sound. The fact that the instrument is unknown, but evidently technical, increases the tension between physicality and instrument.
- In 'one hand clapping', the same applies in [Video 4a](#) between 08:35 and 09:08. Again, the hand-held sensor staff motivates movements, but does not disclose itself immediately to the viewer, except through the sounds that are the consequences of the instrumental gestures and actions. In [Video 4b](#) at 11:25, the use of objects and materials as instruments grounds the musical actions in the physical domain. In [Video 4d](#) at 21:46, the double-bass changes its role from musical instrument to object, which is used as a prop for a situational moment, enabling the perception of the juxtaposition between the performer's body with the instrument's body.

- In ‘Double Vortex’, in [Video 2a](#) between 06:49 and 07:03, the swinging of the instrument and the corresponding body movements produce air-sounds across the microphone and acoustic feedback with the loud-speaker. At 10:13, the action of bending over with the trombone passing underneath the body and pointing towards the back without producing any sound generates an inverted hierarchy between body and instrument.
- In ‘trans-form’, in [Video 5a](#) between 08:20 and 09:13, we see a process of drawing onto the body that uses traces captured from the body itself. The spatial, visual, and movement domains are caught inside the algorithm’s expressive scope; this limits and puts the body into a submissive relationship with the technology that is generating the projection.
- In ‘sonozones’, in [Video 6a](#) between 01:40 and 02:21, the cone functions as a listening instrument and influences the way that the position and posture of the performer evolve in the action. In [Video 6b](#) between 01:07 and 01:22, the speakers and the sound they produce generate an installation, intervention, and a stage for performance. In [Video 6d](#), from the beginning until 00:47, the microphone and headphones serve as instrument or tool for auditory perception of the scene. The artist is seen listening through the microphone, and after the shift in camera perspective, the microphone is shown by itself. Here the recording devices create the document and at the same time generate the focusing environment that enables deep listening in the first place.
- In ‘Moving Music’, in [Video 3a](#) between 00:51 and 01:02, and again between 10:47 and 11:05, the bracelet can be perceived as instrument, whereas the spatially sensing camera can only be perceived through the consequences of its usage in sound. The performer is clearly influenced by the sonic feedback that the focused movements generate in the field produced by the two sensors.

Summary

The influence of instruments, materials, and technical tools is perceivable in all projects. They form and inform, through their use as sound-generating or modulating devices, the performer’s physical space for action, sometimes constraining it, sometimes opening up forms and possibilities that would otherwise be illogical. The agency of the instruments can be seen in the corporeal domain of the artists’ actions and heard in the sonic domain of the music that is being generated by it. A range of techni-

city of the objects and instruments opens up in these projects. The palette of instruments goes from primary woodblocks and metal materials, to conventional high quality instruments such as the double bass or the trombone, to technical devices such as cameras and microphones, to unknown hybrids and sensor-based instruments that might even be invisible. In all cases, they are chosen with a specific usage in mind, be it through an aesthetic or a practical choice. And in all cases, the instruments or objects fundamentally determine the artistic activity and the sounding outcome.

For details on the topic of the *Phenomenal Body* refer to Section 3.5.4.

From the perspective of the phenomenal body and the body as substrate for subjectivity, the issue to be investigated is the visibility and presence of the body proper, before or underneath the actions, intentions, and subjectivities that are projected. In this regard, only the performer perspective can be taken into account, since from the spectator's viewpoint the performer's body is always already seen as object and as carrier of the artists subjectivity.

*Phenomenal
Body/Body as
Substrate*

- In 'new islands', in [Video 1a](#) between 07:53 and 08:05, we see a gestural sequence that appears to be working on the invisible body of the sound with a clear engagement and feedback through the phenomenal, the transparent, as well as the performative body.
- In 'Double Vortex', in [Video 2a](#) between 10:01 and 10:20, there is a silent movement with the body, bending under and to the back, where heavy breathing makes the body sway with tension. The phenomenal body becomes central and contains the resonance of the sounding actions, as well as the tension of the entire piece. The body is the source and target of the performer's concentration and his focus is directed at the space and timing, rather than the sound.
- In 'Moving Music', in [Video 3a](#) between 10:16 and 10:18, the dancer is crouched on the ground in a position of tension. Here, the phenomenal body is in possession of all key elements, because action and sound are suspended. The corporeality changes its quality in the moment and the focus is absorbed by the body in this role. Furthermore, the dancer's agency and personality is momentarily suspended.

- In ‘one hand clapping’, in [Video 4a](#) between 00:55 and 01:05, the performers move underneath the lights, in an attitude of opening exploration. The action of putting an outstretched hand under the light exposes a relation with the body that is explicit and aimed at experiencing a corporeal phenomenon, through looking and feeling.
- In ‘trans-form’, in [Video 5a](#) between 13:07 and 14:26, the phenomenal body shows up in the dancer’s body that is caught in a shrinking beam of light. The amplified sound of intense breathing generates a strong sense of the body’s presence and constrained state, and puts an emphasis on the primary body relationship in this situation.
- In ‘sonozones’, in [Video 6a](#) between 03:02 and 03:13, of all four videos of the project, the situation of the artist walking along a street with a listening cone is the one closest to making the body come to the foreground. But here, as with the three others, the action of perceiving and immersing oneself in the environment prevents the phenomenal body from becoming central.

Summary

With the exception of the project where the performative is located in the public domain in the street, it is always in moments of suspension of activity that the body as such comes to the foreground and can be perceived as phenomenal body. The crouching, waiting position, the null-point between two musical or movement arcs, the detachment from focusing on the action allows paying attention to the body itself. The type of works assembled here exhibit a considerable amount of different constellations and situations, where the body’s presence is freed from the demands of actions. In these moments, the body manages to appear as the phenomenal body with its own presence and significance, which goes beyond the artistic creation at hand and shows it in a primary state.

For details on the topic of *Performative Awareness* refer to Section [3.3.1](#).

*Performative
Awareness*

The performative awareness occurs below the threshold of perception in a pre-cognitive awareness of one’s own corporeal presence. Transparent body awareness expresses itself only indirectly as a foundational condition of perceiving the ‘world’. The question is how the transparent and performative body-awareness types can be seen in performance, how they

differ from plain bodily presence, and what the markers of performative awareness may be.

- In ‘new islands’, in [Video 1b](#) between 05:54 and 06:00, the performer, in the midst of the performance, visibly pulls back from the action, in order to give attention to the tension in the body, before moving to the next musical idea. The impulses to move are bodily rather than musical and influence the voice as well as the weight and the tension of the body.
- In ‘Double Vortex’, in [Video 2a](#) between 00:19 and 03:55, the entire opening sequence is about body awareness and a focus on body presence, tension, and control. This attitude serves to put the body into a performative state as well as into the focal centre of attention.
- In ‘Moving Music’, in [Video 3a](#) at 12:21, the dancer reaches a stopping point, and explores a physical position, in bodily tension and shows an explicit occupation with the body. In open-form practices, in particular improvised dance, the contingent situations that are not choreographed in advance have the potential to bring the focus onto the transparent or performative body-awareness. In this case, body awareness is performative because the situation and position emerge from the flow of the action, and together with anatomical characteristics, the body’s attitude is produced by situational as well as physical constraints.
- In ‘one hand clapping’, in [Video 4a](#) between 10:59 and 11:13, we see a duo situation where both bodies become the primary material for a topographical or geometrical situation. A strong physical and corporeal presence is felt through the stillness of the bodies as objects on stage.
- In ‘trans-form’, in [Video 5a](#) between 02:23 and 03:03, the dancer’s body is present in the light-field and underneath the projected moving lines. It becomes therefore, from the beginning, not just a subjective presence, but also a projection surface. This is an engagement with the stage as a performative body, a transparent body for the dancer, but also as the element that generates the significance of the entire scene. In this configuration the perception of personhood or subjective self is pushed to the background until the next willed action shifts this relation again.
- In ‘sonozones’, in [Video 6a](#) at 01:21, the figure of the performing body is juxtaposed with a pedestrian, whose path the performer is crossing.

This situation is intersubjective as well as performative and shows the difference in awareness between the two people in that situation.

Summary

In each of these cases, the inner focus of the performer is seen in a difference in state. The mastery of transitioning into and out of this state is perceivable, and indicates a pre-reflective, sub-personal embeddedness in the act of performing that does not depend on instrumental or bodily skills, but rather on removing focus from action and letting body-patterns emerge that are not willed. Considering this, I remember that “explicit consciousness of and attention to the outside world would hide the pre-reflective experience of the “performative body” ... in between “body invisibility” and “body opacity”, [this is] characterized by a pre-reflective experience of the “performative body” (Legrand 2007: 502).

For details on the topic of *Inter/Subjectivity* refer to Section 3.1.2.

Inter/Subjectivity

The key-aspects of subjectivity and inter-subjectivity form one of the fundamental states in performance. What are these states and how do they fluctuate? Inter-subjectivity can be claimed for performer–audience relations, but also between performers. What determines inter-subjective relations, how and why do they fluctuate?

- In ‘new islands’, in [Video 1a](#) at 01:38, a change of attitude is visible. The performer is addressing the audience with a whispered ‘listen’, which creates a stronger intersubjectivity, a contrast to the attitude of indecisive wandering around is central during the first minute of the piece. The change in attitude goes from passive exploration to an active subjectivity, from incidental to deliberate presence, which, as a subjective state, increases with the first musical action at 01:02.
- In ‘Double Vortex’, in [Video 2a](#) at 03:58, the first sound action creates an impression of subjectivity, perhaps because agency is directed at making sound and thus fulfils the expectation of seeing a trombone-player on stage. Intersubjectivity with the audience or the other musician is less visible, but a direct rapport is established with the loudspeaker, as if the loudspeaker (and the electronic sound processing emanating from it) was its own figure and subject (see Section 4.3.3).
- In ‘Moving Music’, in [Video 3a](#) from 0:10 onwards, from the moment of stepping onstage and facing the audience, the performer generates the

strong impression of a subject. From then on, the viewer follows her as the agent in the piece, always attributing to her intentionality and decisions. Intersubjectivity is thus present, also in the relationship to the other musician at the edge of the stage, but it is not modulated in a noticeable way, until the very end, when the performer is turning away in a very definite manner, thus rupturing the bond.

- In ‘one hand clapping’, in [Video 4a](#) from 00:22 onwards, after the initial stillness, both performers become active and are perceived as acting subjects. Intersubjectivity between the two artists fluctuates, depending on the state of interaction or the relationality they choose to perform (see Section 4.5.4). The focus on the intersubjective link is not distributed symmetrically between the two, the role of leader, follower, or the balanced state of equal and independent interaction fluctuates considerably throughout the piece.
- In ‘trans-form’, in [Video 5a](#) between 09:20 and 10:42, the performer caught in the game of lights becomes a subject submitted to a situation, which exposes its relation to the machine-like music and image processes. These processes have an agency that create an intersubjective feel of tension and conflict between body and media. This configuration generates a strong contrast between the amplified breathing noise, the slow and tense body movements, the mechanical rhythms and abrupt changes in lights. The two types of agency are juxtaposed in a broken intersubjectivity.
- In ‘sonozones’, in [Video 6a](#), the entire sequence is about representing a subjective experience of listening. An intersubjectivity emerges from the situation in the urban public sphere, where the performative intervention has a signalling function and thus becomes highly communicative. In [Video 6b](#) at 00:35, we follow the hand-held camera moving into the entryway and uncovering the situation. This produces the sensation of an authorship behind the camera as well as in front. The artist that is visible in the frame in a listening position also marks the perceiver of this sonic intervention in this semi-public space. In [Video 6d](#) from 00:08 onwards, subjectivity can be ascribed to the listening artist who is present in the frame of the video. After the camera move that changes perspect-

ive, this impression shifts towards the unseen author located behind the camera.

Summary

In the performance-based modules, the 'subjective' is an underlying state that emerges as soon as performers step on stage. Nevertheless, the intensity of subjectivity is modulated, depending on the perception of agency and intentionality of actions, and the relationship to the immediate situation. This is where subjectivity becomes intersubjective, located in the rapport to the 'other', be it performer, audience, space, sound, or instrument. In the performative interventions in the public sphere, subjectivity originates from the same basic state. The difference is that inward and outward attention create two different perceptions when seen from outside. Intersubjectivity, in these cases, depends largely on the relationship established with the environment and the others that are present within it. Acting in the public domain through intervention, be it sounding or listening, establishes a relation to passers-by that demonstrates the shifted or intensified presence of the artists.

For details on the topic of *Presence* refer to Section 3.5.4.

Presence

The intensity and the subjective impression of presence is not always the same across the artistic modules, but forms one of the basic states of performance. How does that state change and what characteristics distinguish between stage presence and performative presence, also in the urban public sphere?

- In 'new islands', in [Video 1a](#) between 05:44 and 05:56, after an active shaping section, a stop and holding of position increases the focus on presence; the pointing gestures and the front facing attitude declare an intentionally intensified presence.
- In 'Double Vortex', in [Video 2a](#) between 07:34 and 07:51, the swinging of the instrument and intensity of the action produces a presence that is not primarily subjective but simply given by the physical energy of the performer.
- In 'Moving Music', in [Video 3a](#) between 04:34 and 04:42, the focused, concentrated attitude of placement and preparation for the next action generates an impression of presence that is more intense than during the sequences with a high level of activity.

- In ‘one hand clapping’, in [Video 4a](#) from 02:26 onwards, the close interaction and synchronisation of actions creates an increased sense of presence, which is possibly increased by the close relationality of the movements between the two performers.
- In ‘trans-form’, in [Video 5a](#) between 06:46 and 08:16, the interrelation with the stage setting and light’s behaviours creates the impression of tension, attention, and therefore presence. The decisiveness and relationality within the situation and the game of hide and seek increases the notion of physical presence as well as performative presence.
- In ‘sonozones’, in each of the three videos, the artists are present and paying attention, creating attention, and thus generating a heightened performative and formative presence. The situational configuration sets each artist into a deliberate relationship with the environment, which can be seen by others, thus emphasising the physical presence of the agents.

Most of the time, the perception of presence is implicit and given by the mere physical attendance in the same space of performer and audience. The conscious modulation of presence is part of the act of performing and thus informs the performative presence, the affective and effective impact that the physicality of the artist has on the perceiver. The two complementary perspectives result in different experiences: the performer’s perception of presence depends on awareness of body, intensity, and agency as well as on creating and maintaining an intersubjective link, whereas the audience’s perception can be of the performer’s corporeal and personal presence, which generates the perceived subjectivity, but not necessarily a perception of performativity. A distinction can be made between perception of performative awareness and perception of presence: the former is an inner perception in relation to the own body and its physical presence, whereas the latter concerns outward effects and is in relation to presence in front of an audience.

Summary

A.4

Publications

This section lists the articles published in the course of the doctoral trajectory between 2012 and 2017, provides parts of their abstracts (in italics), and where relevant, indicates their contribution to this thesis. When available, the publications can be downloaded from: <http://www.jasch.ch/writings.html>

A.4.1 As First Author

Schacher, Jan C. (2017/2018) Motor Imagery in Perception and Performance of Sound and Music. In Mark Grimshaw, Mads Walther-Hansen, and Martin Knakkegaard, editors, *Oxford Handbook on Sound and Imagination*. Oxford, UK: Oxford University Press, forthcoming.

Sound perception operates on numerous levels, from providing evolutionary survival cues, to carrying core elements of interpersonal exchanges, to enabling culturally encoded Music appreciation. The manner in which elements of primary, low-level 'enactive' sound perception and listening form the central aspects that constitute the field of musical perception are the topic of this book-chapter. The central element used for making sense of acoustic information and for interpreting sounds is the body with its indivisible being-in-the-world, its capacity for action, and its role as substrate for all cognitive processes. This situates the reflection between the poles of sound and music, between the states of active and passive perception, and performance of sound and music.

This book-chapter investigates motor imagery in relation to listening and musical instruments. With this perspective, it informs much of the writing in the later parts of the thesis. Parts of this chapter contribute to Section 3.4.

Schacher, Jan C. and Patrick Neff (2017). Moving Through the Double Vortex: Exploring Corporeality In and Through Performance Creation. *Journal for Artistic Research*, 0(12), Spring.

The two pieces 'Double Vortex' for trombone, movement and live-electronics and 'Moving Music' for interactive dance and electronic sounds represent experimental devices for exploring the relationships between musical actions and movement, sound and space, and between instrumental and embodied performance modes. Embedded within a larger research context, the work on the two pieces is carried out with a focus on artistic creation, and in parallel becomes the object for observation, trace interpretation, and analysis from the perspective of art as research. The articles thematises the methods of auto-ethnographical collection and analysis, as well as the making of maps, diagrams, and assemblages, and questions the scope of this secondary discursive format. In a movement that goes from media trace to text to sketch, from descriptive to contextual to associative juxtaposition, the article speculates about, rather than claims to generate, insights and understanding on corporeality in technologically mediated music and dance performances.

Parts of this article contribute to the Sections [2.1](#), [4.3](#), and [4.4](#).

Schacher, Jan C. (2017). A Flowing Manifold – The Body Performing Open-Form Electronic Music. In Catherine Laws, editor, *Body of Evidence*. Leuven: Leuven University Press, forthcoming.

This book-chapter addresses the central topic of presence on stage, in the context of improvised open-form music performance. Taking the body as central element, the stage, the instrument, the open-form practice, and improvisation are addressed, before approaching the topic of body awareness from both the phenomenological and the enactive positions.

This chapter synthesises concepts and points of view on the body from previous articles and parts of it are integrated into Sections [3.3](#) and [3.4](#).

Schacher, Jan C. (2017). Trans-Form: Sketches, Experiments, and Concepts in Artistic Creation. In Kathleen Coessens, editor, *Experimental Encounters in Music and Beyond*. Leuven: Leuven University Press, forthcoming.

This article develops the topics of sketching, the elaboration of concepts, the processes of investigation and experimentation, as well as the development and transformation of ideas and concepts. With the aid of narrating and reflecting on the evolution of the artistic project 'trans-form', the validity of experimental methods as an artistic research practice is investigated.

Parts of this article provide the basis for Section [2.2.3](#) on artistic research and Section [4.6](#) about the project 'trans-form'.

Schacher, Jan C. and Angela Stoecklin (2016). Sounding Bodies – Moving Sounds: Encounters in Improvised Play across Discip-

lines and Cultures. *Arts and Humanities in Higher Education*, Special Digital Issue Reflective Conservatoire 15(3–4), July–October 2016. <http://www.artsandhumanities.org/journal/ahhe-special-issue-june-2016/>

URL accessed October 2016.

Music and dance share a performative space and can bridge cultures as well as practices. This article explores how the two domains intertwine and may cross boundaries. An interdisciplinary project between music and dance in open improvised form is extended to intercultural exchange in transmission and collaboration. The specific gains and the problems encountered in this constellation form the basis for a reflection on how performance practices and activities are lived through encounters.

Fragments and ideas from this article can be found in Section 4.5.

Schacher, Jan C. (2016). Gestural Performance of Electronic Music — A “NIME” Practice as Research. *Leonardo*, 49(1):84–85, February 2016.

The practice of gestural electronic music performance provides a valid context for artistic or practice-based investigations in the field of NIME. The use of digital musical instruments and concepts for the expressive performance lead to questions of perception, by the musician and by the audience, of movements and actions, body and instrument, and of their affordances.

The perspective of this article is prototypical for the topics of this thesis, the reflections and juxtapositions of this short article are reflected in these pages.

Schacher, Jan C. (2016). Moving Music: Exploring Movement-to-Sound Relationships. In *Proceedings of the 3rd International Symposium on Movement and Computing (MOCO'16)*, pp. 19:1–19:8, New York, NY: ACM.

This article explores the strategies necessary in interactive dance work to successfully link movement to sound processes. A categorisation helps to elucidate those elements and characteristics that can be applied and looks at how they are perceived by the audience. The asymmetry that arises when using technical links to generate sound in interactive dance poses the question of dependency and exposes limits and challenges of using technology in this performing arts practice.

This article forms the basis for Section 4.4.

Schacher, Jan C. and Daniel Bisig (2016). Face to Face — Performers and Algorithms in Mutual Dependency. In *Proceedings of the International Conference on Live-Interfaces ICLL*, pp. 80–89, Brighton, UK, June 2016.

This article explores modes of interaction or ‘interfacing’ between dancers, musicians and algorithms, and the ways in which inter-dependence and co-performance between human and machine performers arises. By comparing the interaction relationships and ‘interfaces’ of the example works, fundamental differences of the algorithmic systems become visible, and a better understanding of the impact and effect of algorithmic systems in real-life performance can be gained.

The topic is central to the artistic project ‘Double Vortex’ (see Section 4.3) and parts of this article form the basis for Section 4.3.3.

Schacher, Jan C. and Patrick Neff (2016). Skill Development and Stabilisation of Expertise for Electronic Music Performance. In Richard Kronland-Martinet et al., editor, *Music, Mind, and Embodiment*, CMMR 2016, LNCS 9617, pp. 111-131. Cham, Switzerland: Springer International Publishing. DOI: 10.1007/978-3-319-46282-0_7.

The key questions in this article centre around the affective, embodied but also neurological aspects of skill development processes in musical practice and training. The types of awareness on a corporeal level and the neural processes that occur within the musician and the listener-viewer are investigated. The insights arising from blending the two complementary perspectives in this context can be productive both for artistic practice as well as systematic research in music.

Parts of this article are integrated in Section 3.4.

Schacher, Jan C., Daniel Bisig, and Patrick Neff (2016). Exploring Gesturality in Music Performance. In *Proceedings of the 13th Sound and Music Computing Conference (SMC 2016)*, pp. 407–414, Hamburg, Germany, August 31. — September 3. 2016.

Perception of gesturality in music performance is a multi-modal phenomenon and is carried by the differentiation of salient features in movement as well as sound. In a mix of quantitative and qualitative methods we collect sound and motion data, Laban effort qualifiers, and in a survey with selected participants, subjective ratings and categorisations. This article shows the development of analysis methods for multimodal movement data originating from music performance. The mainly quantitative methods are aimed at evaluating the usefulness of mathematical models for automatically extracting salient features that indicate affective components of the music performance movements.

Apart from addressing fundamental questions about methodology related to bodily aspects, this article covers empirical and technical methods that are deliberately left out of this thesis.

Schacher, Jan C. (2015). Konzertieren. In Jens Badura, Selma Dubach, Anke Haarmann, Dieter Mersch, Anton Rey, Christoph Schenker, and Germán Toro Pérez, editors, *Künstlerische Forschung, Ein Handbuch*, pp. 177-180. Zurich/Berlin: Diaphanes.

This article is my contribution to the German language handbook on artistic research developed and elaborated between 2011 and 2014 in a workgroup on 'Diskurstopographie Künstlerische Forschung' at the Zurich University of the Arts. The article looks at the format of the concert and the activity of performing a concert, from a historical as well as a performance-theory perspective. Some of the ideas of this short article can be found developed further in the Sections [3.5](#) and [3.6](#).

Schacher, Jan C. (2015). Sonozones Mülheim. In Jürgen Krusche, editor, *Labor Mülheim*, pp. 142-146. Berlin: Jovis.

This is a book-chapter about the artistic research project 'sonozones' from 2013, offering a synopsis of the project and a short introduction. This chapter was derived from the article published in the Journal of Artistic Research in 2014.

Schacher, Jan C., Hanna Järveläinen, Christian Strinning, and Patrick Neff (2015). Movement Perception in Music Performance - A Mixed Methods Investigation. In *Proceedings of the International Conference on Sound and Music Computing, SMC'15*, pp. 185-192, Maynooth, Ireland, 2015.

This article describes the development of a mixed methods approach that tries to tackle questions about musical gesture by blending quantitative and qualitative methods with observations and interpretations. Basing the core questions on terms and concepts obtained through a wide survey of literature on musical gesture and movement analysis, the iterative, cyclical advance and extension of a series of experiments is shown, and preliminary conclusions drawn from data and information collected in a pilot study. The resulting interpretation points to significant affective impact of movement in music.

Parts of this article are incorporated into Sections [2.2.1](#).

Schacher, Jan C. (2015). Music Means Movement - Musings on Methods of Movement Analysis in Music. In *Proceedings of the 2nd International Workshop on Movement and Computing (MOCO'15)*, pp. 132-139, Vancouver, Canada, August 14–15 2015.

This article addresses the intersection of technical, analytical, and artistic approaches to perceiving and measuring musical movement. The point of view taken is situated between the development and application of technological tools, the design and running of exploratory experiments, and the musical performance moment, where perception of the body and its movements constitutes an integral part of the experience. With the proposed multi-perspective methodology, ways and means are sketched out that address the inherent multiplicity of domains involved in music performance and perception.

This article investigates movement analysis, providing the foundation for techniques applied in the artistic works discussed in Sections 4.3 and 4.4.

Schacher, Jan C. and Patrick Neff. The Fluid and the Crystalline – Processes of the Music Performing and Perceiving Body. In *Proceedings of the 11th International Symposium on Computer Music Multidisciplinary Research (CMMR)*, pp. 333–349, Plymouth, UK, 16–19 June 2015.

This article explores skill development and the stabilisation of expertise through practise, and the corporeal as well as the neural mechanisms at work in music performance and perception. The types of awareness on a corporeal level and the neural processes that occur within the musician and the listener-viewer are investigated. The aim is to show that ‘enactive’, embodied concepts merely provide a different perspective of the same complex matter as what the cognitive neurosciences propose.

This collaboratively written article takes the perspectives of enaction, neuroscience, and artistic research, and attempts to bridge them and thus cover the background of all theory and practice sections of this thesis. Fragments of this article may be found in Section 4.2.

Schacher, Jan C., Chikashi Miyama, and Daniel Bisig (2015). Gestural Electronic Music Using Machine Learning as Generative Device. In *Proceedings of the International Conference on New Interfaces for Musical Expression (NIME'15)*, pp. 347–350, Baton Rouge, LA, May 31–June 3 2015.

When performing with gestural devices in combination with machine learning techniques, a mode of high-level interaction can be achieved. This investigation looks at how machine learning algorithms fit generative purposes and what independent behaviours they enable. The goal is not classification but reaction from the system in an interactive and autonomous manner leveraging existing machine learning algorithms as generative devices.

This article discusses advanced techniques for computer-human-interaction. Parts of this article appear in Section 4.3.2.

Schacher, Jan C., Cathy van Eck, Kirsten Reese, and Trond Lossius (2014). sonozones - Sound Art Investigations in Public Places. *Journal for Artistic Research*, 0(6). <https://www.researchcatalogue.net/view/48986/65823> URL accessed October 2016.

The sonozones project investigates sound art practices in public places through personal and public acts of listening and sounding. Four sound art practitioners collaboratively explore ideas and concepts that question the significance and impact of listening and sounding in public places and suburban and urban spaces. The project collects traces and artefacts of the artistic processes as a basis for investigations into key elements of the individual and social dimensions of sound art. A continuous dialogue and the collection of verbal reflections frame these activities.

Parts of this article appear in Section 4.7.

Schacher, Jan C. (2014). Investigating Gestural Electronic Music. In University of London Goldsmiths, editor, *Proceedings of the Practice-Based Research Workshop at NIME'14*, London, UK, June 30–July 03 2014. http://www.creativityandcognition.com/NIMEWorkshop/?page_id=17 URL accessed October 2016

The practice of gestural electronic music performance provides the background for an artistic, practice-based investigation. To this end, the material and conceptual conditions for the development of performance pieces using gestural actions need to be explored. Digital musical instruments and concepts for the expressive use of their affordances lead to questions of the perception, by the musician and by the audience, of movements and actions, body and instrument. This article looks at the practice of performing with digital instruments from a perspective of artistic research.

Parts of this article appear as background information on gestural performance in Sections 2.3.2 and 4.2.2.

Schacher, Jan C. and Daniel Bisig (2014). Watch This! Expressive Movement in Electronic Music Performance. In *Proceedings of the International Workshop on Movement and Computing (MoCo)*, June 16-17, pp. 106-111, Paris, France: IRCAM, Centre Pompidou.

This article investigates how bodily awareness relates to instrumental action, how movement is perceived and what role it plays in music performance with technology. The problematic relationship between paradigms of control and the notion of 'inter-action' in the technically mediated art-form of electronic music is revealed. This exposes the need for a unified high-level descriptive system for expressive movements or gestures in music and dance performance.

This article covers the broad topics of Sections 3.3 and 3.4 and serves as conceptual backdrop for discussions held in Section 4.3.

Schacher, Jan C. (2014). Corporeality, Actions, and Perceptions in Gestural Performance of Digital Music. In *Proceedings of the Joint International Computer Music and Sound and Music Computing Conference (ICMC|SMC)*, pp. 629-636, Athens, Greece.

This article investigates elements and concepts from physiology, the cognitive sciences with an 'enactive' and phenomenological perspective, and from the point of view of an artistic performance practice. In a broad arc the investigation covers instrumental and perceptual affordances, the physical senses of the body, different levels of awareness, corporeal states and modes of awareness, the senses of agency and intentionality, and the sense of movement inherent to music.

Parts of this article appear in reworked form in Sections 3.3 and 3.4.

Schacher, Jan C. (2014), Philippe Kocher, and Daniel Bisig. The Map and the Flock – Emergence in Mapping with Swarm Algorithms. *Computer Music Journal*, 38(3):49-63.

This article attempts a classification of fundamental mapping relationships that can be established with the help of swarm simulations. By regarding flocks as systems of abstract entities, a number of models arise that deal with the reassignment of perceptual and semantic qualities to the simulated entities. How the emergent behaviour of flocks can be mapped conceptually and evoke natural phenomena shows how mapping relationships can be made less predictable and more organic.

This article is a background reflection on fundamental topics in electronic music composition which inform the compositional processes in all the practice modules presented here.

Schacher, Jan C. (2013). An Exercise in Freedom – Researching Bodily Performance in Electronic Music. *L'Esmuc Digital*, 0(21), October 2013, Barcelona, Spain. http://www.esmuc.cat/esmuc_digital/Esmuc-digital/Revistes/Numero-21-octubre-2013/Espai-de-recerca ULR accessed October 2016.

This article addresses questions of artistic research and my doctoral research project about musical gestures with electronic instruments. For the first time the topics of agency and intentionality as well as body awareness are formulated, something which is treated in greater detail in Section 3.3.

Schacher, Jan C. (2013). The Quarterstaff, a Gestural Sensor Instrument. In *Proceedings of the Conference on New Interfaces for Musical Expression (NIME 2013)*, pp. 535-540, Daejeon & Seoul, Korea Republic, 2013.

This article describes the development of a gestural sensor instrument called the Quarterstaff. A musical practice for this type of instrument is shown by discussing the methods used in the exploration of the gestural potential of the interface and the strategies deployed for the development of mappings and compositions. This instrument is featured in several performances of 'new islands' in Section 4.2 and the discussion between hand-held versus empty handed performance in Section 4.2.1.

Schacher, Jan C. (2013). Hybrid Musicianship: Teaching Gestural Interaction with Traditional and Digital Instruments. In *Proceedings of the Conference on New Interfaces for Musical Expression (NIME 2013)*, pp. 55-59, Daejeon & Seoul, Korea Republic.

This article documents a class at the 2012 Darmstadt Ferienkurse für Neue Musik, which taught gestural interaction and juxtaposed traditional instrumental skills with digital musical instrument concepts. In order to show the principles and reflections that informed the choices made in developing this syllabus, fundamental elements of an instrument-body relationship and the perceptual import of sensory-motor integration are investigated.

Schacher, Jan C. (2012). The Body in Electronic Music Performance. In *Proceedings of the International Sound and Music Computing Conference SMC*, pp. 194-200, Copenhagen, Denmark.

This text discusses the notions of physical presence, perception and 'gestural' actions as an important element of performance practice in electronic music. The meaning of the term 'gesture' in music and dance as well as skills associated with the performance of electronic instruments are shown and approaches for composing and performing electronic music and embodiment as a quality and category in electronic music performance are exposed.

This first large article on the core topic of my doctoral project informed a number of subsequent publications and indirectly permeates the entire thesis.

A.4.2 As Second Author

Milosevic, Bojan and Jan C. Schacher (2015). The Immersive Lab: An Interactive Audio–Visual Space for Artistic Exploration. In *Proceedings of Korean Electro–Acoustic Music Society’s 2015 Annual Conference (KEAMSAC2015)*, pp. 35-40, Seoul, Korea, 2.–3. October 2015.

The Immersive Lab is an artistic and technological research project of the Institute of Computer Music and Sound Technology at the Zurich University of the Arts. Participating artists create works for a media space, which integrates panoramic video, surround audio with full touch interaction. The main challenge for the artists is to find ways of translating touch into interaction models for their audio visual ideas. At the end of the process, works are presented to the public in the form of interactive audio visual compositions.

This article exposes additional aspects of my artistic and technological practices that address bodily interaction, perception and social, as well as artistic collaborations.

Schiesser, Sébastien and Jan C. Schacher (2012). SABRe: Affordances, Realizations and Perspectives. In *Proceedings of the International Computer Music Conference ICMC 2012*, pp. 408-412, Ljubljana, Slovenia.

This article describes the affordances and concepts for performing with a sensor augmented bass-clarinete.

Relating to my practice with hybrid instruments, the notion of embodiment and the fusion of the body-image with the instrument are addressed, and the idea of the augmented instrument or digital musical instrument and its artistic practice are discussed.

Schiesser, Sébastien and Jan C. Schacher (2012). SABRe: The Augmented Bass Clarinet. In *Proceedings of the Conference on New Interfaces for Musical Expression NIME’12*, pp. 109-112, Ann Arbor, MI, 2012.

This article describes the concepts and developments of a sensor augmented bass-clarinete.

In the context of this project, some reflections concerning performance with technological instruments are reflected here.

Media Portfolio

This section lists the contents of the media portfolio that forms an online repository of videos, pictures, and documents, and is an integral part of this thesis. The portfolio is located here:

<https://www.researchcatalogue.net/view/269265/269266>.

Videos and Photos:

'new islands':

- 1a *new islands*, 25/01/2016, Zurich University of the Arts, Zurich, Switzerland
- 1b *new islands*, 15/05/2014, Troubleyn Theatre, Antwerp, Belgium
- 1c *new islands*, 17/11/2013 Bandra Base, Mumbai, India
- 1d *the possibility of an island*, 25/07/2012, Club 603qm, 46. Internationale Ferienkurse für Neue Musik, Darmstadt, Germany
- 1e *new islands*, 09/11/2015, The Dark Precursor: International Conference on Deleuze and Artistic Research (DARE 2015), Gent, Belgium
- 1f *new islands*, *The "Manifold" of Performing Gestural Electronic Music*, 09/11/2015, The Dark Precursor: International Conference on Deleuze and Artistic Research (DARE 2015), Gent, Belgium
- 1g *new islands*, 26/01/2015, Zurich University of the Arts, Zurich, Switzerland
- 1h *the possibility of an island*, 09/11/2012, Sound Reasons Festival, New Delhi, India – *elements – traces – elements/intentions*
- 1i *the possibility of an island*, 29/03/2012, Generator #28, Club Mehrspur, Zurich, Switzerland
- 1k *trace*, 11/05/2011, Embodiment – Experiment, ORCiM Seminar, York University, York, UK

'Double Vortex':

- 2a *Double Vortex II*, 25/01/2016, Zurich University of the Arts, Zurich, Switzerland
- 2b *Double Vortex*, 03/09/2015, Zurich University of the Arts, Zurich, Switzerland

2c *Double Vortex*, 26/01/2015, Zurich University of the Arts, Zurich, Switzerland

‘Moving Music’:

3a *Moving Music*, 25/01/2016, Zurich University of the Arts, Zurich, Switzerland

3b *Moving Music*, 03/09/2015, intermediate showing, Zurich University of the Arts, Zurich, Switzerland

‘one hand clapping — dense moments’:

4a *one hand clapping*, 16/12/201, Art Space Co-oh, Tokyo, Japan

4b *one hand clapping*, 17/12/201, 3331 Arts Chiyoda, Tokyo, Japan

4c *one hand clapping*, 25/10/2014, Teatro del Museo Nacional de Bellas Artes, La Habana, Cuba

4d *dense moments*, 09/05/2014, Pantographe, Moutier, Switzerland

4e *dense moments*, 23/03/2014, Kunstraum Hermann, Hochdorf, Switzerland

‘trans-form’:

5a *trans-form*, 04/02/2012, Theater der Künste, Zurich, Switzerland

5b *trans-form*, picture series, February/March 2012, Zurich & Basel, Switzerland

‘sonozones’:

6a *Extended Ears*, Cathy van Eck, 08/2013, Mülheim a.d. Ruhr, Germany

6b *Augmenting Urban Sounds*, Kirsten Reese, 08/2013, Mülheim a.d. Ruhr, Germany

6c *Loosing myself in the world*, Trond Lossius, 07/2013, Mülheim a.d. Ruhr, Germany

6d *The Fourth Strand*, Jan Schacher, 07/2013, Mülheim a.d. Ruhr, Germany

Documents:

- [PDF of Table 5.1](#); Key aspects collected from each of the framing theory fields (in colour).
- [PDF of Table 5.2](#); The theory/practice matrix (in colour).
- [PDF of Table 5.3](#); Alternate views on the theory/practice relationships (multipage in colour).

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