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HÉR! An Exploration of Artistic Agency

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Halla Steinunn Stefánsdóttir

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Abstract:

This doctoral thesis is concerned with agency in the work of a performer, curator, and composer, and how these agencies are socio-culturally constructed. Grounded in creative practice as primary research methodology, the project builds on feedback loops between creation, analysis, and interpretation. The aim is to better understand the conventional norms that define the roles of composer and performer and, further, to explore more dynamic approaches to these agencies through the perspectives of a composer, performer, and curator active in the fields of contemporary music and sound art. The project responds to the following research questions:

- o   How can ecological-enactive and post-phenomenological perspectives on musical practice within Western classical music challenge current understandings of the roles of performer and composer?
- o   What artistic methods can be employed to provide a more robust understanding of the fluidity of these roles, to uncover their potential for artistic renewal in the creation and performance of contemporary music?

The research was designed as a series of micro-laboratories to look at agency through artistic collaboration in situations set in the concert hall, the recording studio, the virtual domain, and ecological sound art. This resulted in electroacoustic compositions, multi-channel installations, and site-specific work, including performances within a sonic hologram and with artificial intelligence. The analytical approach was built on autoethnography, and audio and video analysis through stimulated recall.

The findings outline how the technological, non-human, and human agencies of environments affect and shape processual work. The analysis highlights how co-relation between theory and practice may both serve to unpack the pre-conditioning of agency, while the artistic experimentation in the laboratories seeks to explore other agential relations. Here, the intentionality of the technologies used in the lab have unfolded new perspectives on the conventional roles of composer and performer, while enabling the development of more dynamic practices. Through a study of the author's curatorial practice, the role of a curator is understood not as defined by prescribed methods, but rather as dependent on the negotiation of the many agencies at play in artistic practice. The method development of the project has implications for the design of artistic research through the model of the laboratory. Herein, the use of audio and video technologies, particularly their application within stimulated recall methods, are integrated parts of analysis and artistic creation. The artistic research laboratory is proposed as a framework through which the potential of artistic research in music—as a vehicle for the development of new practices in professional contexts and in teaching environments—is substantiated and facilitated.

Key words: music, sound art, agency, situated actions, ecological, enactive, post-phenomenology

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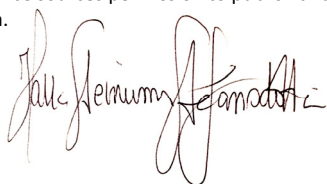
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HÉR!

An Exploration of Artistic Agency

Halla Steinunn Stefánsdóttir

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Preface

This PhD thesis is structured in two components: (1) the scholarly text with which you are now engaging, and (2) a media repository published online in the Research Catalogue (hereafter: RC) (Stefánsdóttir, 2023). The repository, whose material is referenced in the thesis, includes links to albums, audio papers, binaural demo versions of multi-channel compositions, documentation from installations, artist video, scores, and examples of stimulated recall sessions and notes from these.

The RC media repository can be accessed through this link: https://www.researchcatalogue.net/shared/5feea657ef83819a9fa55f615f8544f7

If you are reading the physical book the media repository may be located under the author's site on www.researchcatalogue.net or found in LUCRIS, the database of Lund University's research.

List of Papers

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Stefánsdóttir, H. S. (2019). He(a)r: of an ecological enactive perspective. *Seismograf, 2019*(22) DOI.ORG/10.48233/SEISMOGRAF2203

Paper II

Stefánsdóttir, H. S., & Östersjö, S. (2019). Participation and creation: towards an ecological understanding of artistic practice. *La Deleuziana, 10,* 371–385. http://www.ladeleuziana.org/wp- content/uploads/2020/01/Östersjö-Stefánsdóttir.pdf

Paper III

Stefánsdóttir, H. S. (2021). Fleshy listening and multi-entity performance: of analytical processes within artistic research. *Seismograf, 2021*(26). DOI.ORG/10.48233/SEISMOGRAF2604

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Stefánsdóttir, H. S., & Östersjö, S. (2022). Listening and Mediation: of agency and performative responsivity in ecological sound art practices. *Phenomenology & Practice, 17*(1), 116-136. https://doi.org/10.29173/pandpr29464

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Albums and recordings:

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Stefánsdóttir, H. S. (2020). *Spherical White with Diamond* [Multi-channel Audio/Map/Installation].

Stefánsdóttir, H. S. (2020). *Spherical White with Diamond/Spherical White with Diamond* [Stereo Audio/Installation].

Stefánsdóttir, H. S. (2020). *What lies beaneath/Spherical White with Diamond* [Stereo Audio/Installation].

Stefánsdóttir, H. S. (2020). *Þytur/Spherical White with Diamond* [Multi-channel Audio/Installation].

Stefánsdóttir, H. S. (2019). *strengur – from northwest, score based on a site-specific performance - 55.5299° N., 12.9341° E.* [Graphic score]. [Unpublished].

Stefánsdóttir, H. S. (2017) *I Play Northern Lights* [Multi-channel Audio].

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Field recording:

Stefánsdóttir, H. S. (2018). Field recording, unpublished audio. In D. B. Franzson *An Urban Archive as an English Garden* [Solo work/Multi-channel Audio/Installation].

Chapter 1. Introduction

> The rocks that I found for that piece are slightly uneven on the surface, so these are not perfect ovals by any means, there's a very slight irregularity on each one. When I get Lois to set one rocking on the piano strings, and it does an accel, the rock is interactive with the energy of the string. They feed each other. So the rock starts vibrating the strings, and then as the rock's energy diminishes, the strings take over and start the rock going again. (Rodgers, 2010, p. 126)

> The first phase of our investigation involved inviting our co-workers around PARC to try to use the machine for their own copying tasks, with agreement that we would make video records of their efforts. My analyses of the troubles evident in these video-taped encounters with the machine, including by pre-eminent scientists, led me to the conclusion that its obscurity was a function more of its users' unfamiliarity with this particular machine than of any lack of general technological sophistication. (Suchman, 2005, p. 386)

The viewpoints presented in these opening quotes come together in this thesis. In the first, we are met with how composer Annea Lockwood's collaboration with pianist Lois Svard—resulting in the work *Ear-Walking Woman* (1996)—was reliant on the particularities of a stone's shape set to move in a dynamic configuration with the playing of a piano string. Lockwood's reflection, aired during Tara Rodgers' interview with her for the book *Pink Noises: Women on Electronic Music and Sound* (2010) was aimed at highlighting the importance of specificity of situations, or, as phrased by Lockwood, how "particular sounds can be 'just right' with exactly the right fortuitously found tool, and you can't replicate it" (Rodgers, 2010, p. 126). Such a statement points towards the subjective intuition which informs you when the sounds produced are 'just right'; they are meaningful. An act that is situated in the moment and evolves around processes that cannot be replicated, i.e., highlights the singularity of artistic knowledge (Maharaj, 2009). As is evident in the interview, such acts cannot be separated from the tools that produce it. But tools and mediated relations that arise can be approached in various ways.

In Lockwood's case, the composition was steered by experimentation and curiosity regarding sonic phenomena. Such an outlook was present from the outset within her practice as she carved out her avant-garde career beginning in the 1960s, which came

to further peak her curiosity about sound's 'physiological effect' on human bodies (Rodgers, 2010). At the same time, she was wary of approaching instrumental writing, as she identified instrumental sounds as coming with "constrictions for all the obvious reasons" (p. 123). Similarly, her studies in electronic music, with all its mathematical emphasis and assembling of "blocks of sounds from multiple oscillators and filters and ring modulators" (p. 117), went against her ideas that what was meaningful was the 'liveness' of sound. It also informed her subsequent formulation around the question of what life in sound might constitute. It was, therefore, not until later that she arrived at the conclusion that her activity should not exclude the sound world offered by instrumental writing, which she approached through so-called extended techniques.

One of her trusted tools and methods to undertake the endeavour of unearthing our relations to sound was the recording technology, which she employed in various ways, for example to unearth what she describes as the 'rhythm of memory'—brought forth when human beings remember their lives—over to tuning into the specificities of rivers and their transitory nature through field recordings. Returning then to *Ear-Walking Woman*, Lockwood created the piece for prepared piano and 'exploratory artist'. Such a description captures the aim of the piece, or how Lockwood wished to set up a situation where she passes on to the piano player her method of engaging with tools through curious ears.

> The work is set up as an open-ended exploration, in which I have determined which 'tools' are to be used in each section, and the pianist is asked to listen closely to the sounds created by each action, and to explore further the variants which arise when s/he uses a little more pressure and change of speed, a slightly different wrist position, a different make of piano. I think of this experience as 'ear-walking', like a hiker exploring a landscape. (Lockwood, n.d.)

Ear-Walking Woman is a piece where the instrument is turned into an environment for experiential engagement through technologies and objects. Such a situation, set to afford new experiences that are not known in advance, brings to mind science's laboratory approach, wherein experiments are set in motion to gain new insights.

This brings me to the second quote at the opening, where we encounter Lucy Suchman's ethnographic undertaking, part of her PhD project in the 1980s. The research was designed to set up a situation that would provide insights into human interaction with technology and was conducted at a corporate research facility, Xerox's Palo Alto Research Center (PARC) in Silicon Valley. It is certainly a different situation than the creation of the piano piece described above. Stones, piano, and tactile listening have been replaced with another type of technology, a copy machine. But it was not 'any machine'; rather, it was the new 8200 copier, essentially industrial in design yet intended for mundane office use. The machine turned out to be a failure as office

equipment, which prompted the company's customer support to reach out to Xerox research facilities at PARC for help.

A team was set up that, according to Suchman (2005), was interested in the 'human side' of technological encounters. In fact, Suchman had been part of a group that had its focus on cognitive science, with emphasis on artificial intelligence (hereafter: AI) as well as models of human learning and problem-solving. Due to the politics at PARC, the team was not allowed to become too entangled in an already existing product. Therefore, the copy machine had to be turned into something else, i.e., a 'research object'. This led to the installing of the machine in a designated room, where researchers working at PARC would drop by to use the machine which, as described in her quote, confirmed its bewildering character.

What is notable about it, and of relevance for this present research, is that a second set of technologies was brought into the laboratory setting, to film or document the encounters. It was such a double usage of technologies, one used for the focus of the research and the other to gather material for later analysis, that enabled her research and its continued analysis. That very same film material was turned into a film, titled *The Machine Interface from the User's Point of View* shared with researchers at PARC. As such, it

> aimed at conveying the message, first, that the machine for the user was not the kind of transparent object that it was for its designers and, second, that the provision of instructions in the use of the machine did not simply eliminate the labor of sense-making on the part of the user but set up a kind of 'meta' field of action with its own prerequisites. The summary point was not that the designers had simply failed at their task in the case of the 8200, but rather that the 8200, and the 'operability problem' more generally, made visible the profound challenges of designing a usable machine. (Suchman, 2005, pp. 388–389)

Her broader analysis in relation to the 8200 and her continued research, with its anthropological approach to empirical fieldwork, later detailed in this thesis, came eventually to alter ideas about human-computer interaction (hereafter: HCI). It should therefore perhaps not come as a surprise that, later in her career, Suchman would zoom in on the ethical implications of sociotechnical systems or, more specifically, technologies of tracking, employed within modern-time drone warfare.

This PhD project is situated in the merger of those two approaches, seeking to obtain a deeper understanding of the configuration and reconfigurations between human bodies, technologies, and environments through a set of laboratory situations. Many forces may be at play, as witnessed in the following quote taken from a description of one of this thesis' micro-labs:

> The ground layer is an aeolian violin performance, recorded close to the site where the score was created. I then went into the studio (…) and began by tuning the open strings of my Hopf violin to pitches found in the aeolian recording, a scordatura-tuning strategy aimed at giving the wind a heightened agency in the improvisation.

The improvisation unfolded in relation to a score that I had created at the Klagshamn peninsula, which is a landfill site that stretches into the Öresund strait, just outside of my hometown Malmö, Sweden. Titled *strengur*, it set up a performative situation on a platform overlooking the strait. Instead of having a piano and a stone as in Lockwood's case, I set into action my old violin gut strings, the wind, ink, and architectural tracing paper.

The recording became part of an album that would also come to include live video, AI renditions, and archival recordings. I will detail the creation and its outcome later in this thesis but bring it up now to provide an example of the complexity musical creativity may take on as it unfolds over longer time periods and at varying sites. Therein, a myriad of forces come together, some of which are even not 'at hand'. It is here that we arrive at my interest to explore the 'relations' that form between human, technologies, and environments, in specific situations, but from the perspective of 'agency', an under-researched topic within the field of music research and artistic research (hereafter: AR). The 'doing' and research evolves around the singular and partial, a perspective intrinsic to art and AR. This is foregrounded in the thesis title, through the word HÉR (Icelandic for 'here') which can also be read as the homonym 'her'. The laboratories are forged through creative practice and unfold in varying situations that link to my role as performer, curator, and composer active within the fields of contemporary music and sound art.

This last point brings me back to Suchman's quote at the outset of this section, published within her paper titled *Affiliative Objects* (2005) looking at the 'social life of objects'. In her conclusions, she notes how "singularity comes not from the separateness of objects but from their ongoing, contingent connections…. [O]bjects and their positions are inseparable, subjects are always located, and subjects and objects mutually implicate each other" (394). We are here reminded of how practice "is contingent, enacted within culturally and historically specific fields of persons and things" (p. 395). This abides for the field in which this thesis situates itself, a field where tradition steers sensing, sensibilities, and relations to technologies and environments to such an extent that someone like Lockwood shied away from using notation and working with classical instruments, as well as traditional ways of working with electronics. It also prompted Rodgers to face its value system head-on through the pinknoises.com project set to promote women and gender diversity in music technology, some of which was also shared through the aforementioned book *Pink Noises*. This may serve as one example

of why this thesis devotes many of its pages to outlining the listening culture of the environments within which it operates.

By detailing historical and contemporary contingencies, I will show how listening cultures bestow more creative agency on some than others and predicate how relations 'should' unfold. Such contextual sensitivity was essential to this thesis' empirical and ethnographic undertakings. But as the laboratories were floated to critically look at the agencies and relations at play in creative work within contemporary music and sound art, they came to evoke interferences to established ideologies. My hope is that this research works as a vehicle for formulating what other possibilities there may be for sensing and making sense in our present times that ask us to enter different listening relations to our environment's many others and further formulate an understanding of what our technosocial relations may entail.

Chapter 2. Theoretical framework and research design

This doctoral project, grounded in creative practice as primary research methodology, builds on feedback loops between creation, analysis, and interpretation. Such an approach, as noted by artist-researchers Stefan Östersjö and Henrik Frisk, holds the possibility to "open up the artistic practice under scrutiny to new and unexpected areas which will guide the development of the artistic work (Frisk & Östersjö, 2013, p. 43). To gain further understanding of the hyphenated phenomena of performance, curation, and composition within the fields of contemporary music—a sub-category of Western classical music (hereafter: WCM), discussed further in chapter 3— and ecological sound art,[1] the theoretical framework was not set in stone from the beginning but gradually manifested out of need for further analytical tools to unpack such processual work.

Since the 1990s, music research has widened its perspectives and moved away from the representational theory of the mind, first through application of theories of embodied cognition. Such abandonment of the Cartesian mind-body dualism prompts a transfer away from computational and rule-based approaches (Linson & Clarke, 2017) and situates instead the human subject's sense-making in relation to the world. Sensation is therefore to be understood as the result of a physiological process, i.e., it does not "arise through the 'inactive' act of pure thought" (Barbaras, 2004, pp. 217–218). Further, Eric Clarke (2005) reminds us that "when humans and other animals perceive the world, they do so actively. Perception is essentially exploratory, seeking out sources of stimulation in order to discover more about the environment" (p. 19). In order to unpack such processes that take place 'in-the-act', AR in music has—due to its transversal nature—intersected with discursive areas such as phenomenology, ecological psychology, and enactive theories, which have provided novel perspectives on the concept of 'embodiment' (Eldridge, 2022; Hayes, 2019; Östersjö, 2020b; Penny, 2022; Tahıroğlu et al., 2020; Tullberg, 2021).

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[1] Ecological sound art springs out of environmental performance. This concept will be discussed in chapter 9.

As my work progressed and given this thesis' formulation of looking at situated actions and agency, I came through its execution to combine theoretical strands linked to 'agency', 'ecology', 'enaction', and 'post-phenomenology'. In the sections that follow, I will address these approaches and, from there, proceed to outline the dynamics of the project's overall design, as it was conducted as a series of micro-laboratories that were grounded in creative practice and first-person authority.

2.1 Agency and situated actions

Agency is a theoretical term that can take on a variety of meanings across different academic fields and cultures[2] often set to describe the ability for action and the results thereof. Contrary to social theories' emphasis on agency as a human attribute (Alaimo, 2017), many contemporary posthuman theorists define agency not as something that belongs to humans but rather as the result of co-constitution. This can, for example, be found in Bruno Latour's 'actor-network theory', where the 'actant' is "something that acts or to which activity is granted by others" (Latour, 1996, p. 373); in Donna Haraway's proposition of 'situated knowledges' (1988) that pushes at the notion of objectivity and view "from nowhere" (p. 581); and Karen Barad's 'agential realism' where "agency is not an attribute but the ongoing reconfigurings of the world" (Barad, 2007, p. 141).

I understand agency within this research project as the result of 'situated actions' through which the performer seeks to develop their practice in relation, distributed through culture, environment, and technology. Put forth by Suchman, the term 'situated action' was coined within her investigation into human-computer interaction and presented in *Plans and Situated Actions: The Problem of Human-Machine Communication* (1987). Through her work, Suchman looked at interaction between humans and copy machines at Xerox's Palo Alto Research Center, which led her to refute some of the prevailing theories of the time around AI that saw the human mind in computational terms instead of as embodied and situated. By aligning research in machine intelligence and that of social studies, she went on to show that "the detail of intent and action must be contingent on the circumstantial and interactional particulars of actual situations" (Suchman, 1987, p. 123).

As will become apparent throughout this thesis, the concept of situated actions came to inform the design of the micro-labs (made explicit in the headings of chapters 5-9)

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[2] This can for example link to review of body politics (Salleh, 2016), the workings of free will (Feldman, 2017), feeling of agency (Buhrmann & Di Paolo, 2017) or agency of non-rhuman forces (Braidotti, 2020).

at the same time that it functioned as a tool for the work's continued analysis. To further unpack agencies and analyse their dynamics of relations from within practice, I chose to complement Suchman's view with ecological-enactive theories and post-phenomenology, further detailed in the next two sections.

2.2 Ecological and enactive theories

To better understand the processual dynamics of situated actions, I turned at the outset to the concept of 'affordances'. Originally coined by James J. Gibson (1979/2014) as part of his work on the ecological theory of visual perception, he described it as follows: "The *affordances* of the environment are what it *offers* the animal, what it *provides* or *furnishes,* either for good or ill" (p. 127), (see Figure 1). Affordance hence builds on action and perception as fundamental to how a perceptual system resonates with an environment (see Figure 1), and thereby suggests a departure from an understanding of perception as the conversion of sensory input.
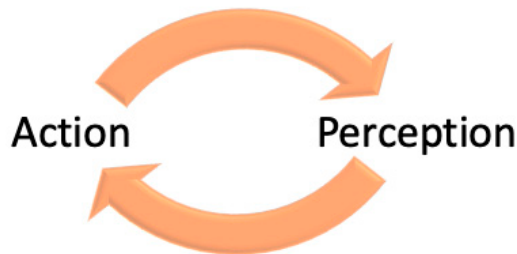
Figure 1
The continuous reciprocal loop between action and perception, as described by Gibson (1979/2014).

Gibson's theory has been criticised for implying that affordances are intrinsic to the environment. Through his critical reading of Gibson, Anthony Chemero claims that affordances, rather than understood as properties, should be seen as "relations between particular aspects of animals and particular aspects of situations" (Chemero, 2003, p. 184). In this respect, affordances are about relations between an organism's abilities and the environment in which it circulates. What happens during such loops of action and perception is nevertheless a continuous source of modification, reliant on a multiplicity of factors.

In the instance of a musical instrument, due to its complex cultural embeddedness, the affordances explored go beyond the usual 'cup affords holding, chair affords sitting' examples so often given by cognitive scientists to explain affordances. A performer's engagement with an instrument is, in fact, an act where they explore and resist the affordances of an instrument[3] (Östersjö, 2020b). This relation can in turn be modified through technological reconfigurations of the instrument, such as through amplification, or through further mediation such as headphone monitoring or signal processing. Furthermore, as performance takes place in architectural space or digital environments, affordances can similarly relate to such environments, acoustical reflections (Smalley, 2007) and choreography included. At the same time, the performer can be seen to explore and resist cultural affordances (Coessens & Östersjö, 2014) that link to repertoire, performance-practice traditions, and institutionally enforced values. Finally, affordances can also relate to intersubjective sense-making that can entail complex cultural negotiations as well as the introduction of novel socio-material affordances (Stefánsdóttir, 2020; Stefánsdóttir & Östersjö, 2022). From this, we see how affordances of the listening practices of a performer are multiple, forming on various planes simultaneously.

To further understand such skilled activity, I looked towards approaches that combine ecological theories of affordances with that of the enactive or 4E theoretical paradigm on cognition. 4E, with its emphasis on behavioural and cognitive co-constitution, sees cognitive processes as the overlapping dimensions of the embodied, embedded, enacted, and extended perspectives of human existence (Varela et al., 1991/2016). By fusing 4Es understanding with the ecological program, Erik Rietveld, Damiaan Denys, and Maarten van Westen put forth The Skilled Intentionality Framework[4] which builds on "the selective engagement with multiple affordances simultaneously" (Rietveld et al., 2018, p. 65). A response to affordances from such an understanding is formed in a 'context-sensitive' way in relation to our socio-material environment where activity is spurred on by 'concern' or 'what matters'.

Crucial to this enriched notion of affordances, and for this thesis, is its 'nested state', or "nested agent environment relations, spanning multiple scales of complexity, many of which reach far beyond what is taking place here and now" (Kiverstein & Rietveld, 2018, p. 157). The nested state, cannot be separated from the 'ecological niche' that it forms within, prompting Rietveld et al, building on Wittgenstein, to "define an

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[3] As will be traced later in this thesis such a technology, is the result of a culturally anchored craftmanship.

[4] The framework also integrates the perspectives of emotion psychology and embodied neurodynamics, albeit not the focus of this present thesis. In addition, they look towards phenomenology, a perspective which is introduced in the following section.

affordance as a relation between (a) an aspect of the (sociomaterial) environment and (b) an ability *available in a* "*form of life*" (2018, p. 45, emphasis in original). From within such a reading, a human can be seen to act upon a 'field of relevant affordances' within a 'landscape of affordances'. The contextual perspective is, however, essentially phenomenological and "describes how the affordances that a situated individual simultaneously responds to are related" (p. 65). To further analyse this, I complemented my theoretical toolbox with post-phenomenological theories, essential to understanding the complex matrix of relations that form through practice.

2.3 Phenomenology and post-phenomenology

Phenomenology engages with practical actions and our way of being in the world (Gallagher & Zahavi, 2012). Phenomenology has, however, been criticised for its emphasis on the 'human' in terms of the lived experience, prompting a bid for posthuman phenomenology (Neimanis, 2016). Such radical rethinking of knowledge as proposed by Astrida Neimanis is set to question the boundedness, autonomy, and coherence of the human as we go on to examine our entangled lived experience by the means of our "bodies—watery, fleshy, and otherwise" (p. 44). In that instance, she nods to Merleau-Ponty's understanding of embodiment as a way of going "back to the things themselves" which draws us towards "an image of nonhuman nature" in the way that "nature outside of us must be unveiled to us by the Nature that we are... We are part of some Nature, and reciprocally, it is from ourselves that living beings and even space speak to us" (p. 25).

Don Ihde's post-phenomenological stance operates along similar lines through the notion of a material hermeneutics—enhanced by technoscience—which enables novel encounters between humanities and natural science. Ihde gives the example of the discovery of Ötzi, the 5,300-year-old man discovered in the ice. Although there is no written documentation from this time, through technology, things "are given voices: pollen, grain, metal, and tooth enamel have all 'spoken' in spite of being situated in a context that itself is without proper linguistic phenomena" (Ihde, 2009, p. 72).

Within AR, phenomenology has constituted a framework for a range of approaches. For Anette Arlander (2008), it was the impetus for creative work, while in other projects, phenomenology has been a means for the analysis (Unander-Scharin, 2008) or a way to share new insights into sensory experience and bodily experience of touch (Elo, 2018). In music research, important milestones in the use of phenomenological methods include Pierre Schaeffer's classic study *Treatise on Musical Objects: An Essay across Disciplines* (Schaeffer, 1966/2017) and, in more recent years, Jonathan De

Souza's *Music at Hand* (2017). What both projects propose is that phenomenology offers methods for approaching the lived experience of music and sound as methods for phenomenological reduction developed by Schaeffer, and of phenomenological variation as found in the work of De Souza (following Edmund Husserl and Ihde).

To unpack how the performer, composer, or curator seeks to evolve their practice in relation distributed through culture, environment, and technology, I chose to look at Ihde's and Peter Paul Verbeek's (2008) theories on mediation and intentionality, as well as Suzan Kozel's (2007) proposal of the concept of 'responsivity' intended as a revision of the widely used concept of 'interactivity'. The analysis also builds on Maxine Sheets-Johnstone's (2017) phenomenological insights on movement and perception. Central to my approach of 'doing' phenomenology is the application of 'stimulated recall' methods. Originally conceived as a method for a subject to "relive an original situation" (Bloom, 1953, p. 161), stimulated recall has been used in music research since the 1980s but has come to greater prominence in the last decade. Closely related to the method of micro-phenomenology (Bojner Horwitz et al., 2018; Petitmengin, 2006), stimulated recall not only allows for integrating aspects of phenomenological understanding in analysis but may also "lead to an interaction between analysis and musical creation" (Stefánsdóttir & Östersjö, 2022).

In what follows, I will detail this research project's overall laboratory design.

2.4 The laboratory as experimental culture

AR as practice-led research, or 'doing-thinking' (Cobussen, 2021), takes performative and material forms and exists in a liminal space between art worlds and science worlds (Östersjö, 2020a). It rests in the assertation that there is knowledge in the arts, embodied by the artist and manifest in material and performative forms in artworks. The embodied knowledge of the artist is typically also 'tacit knowledge' (Polanyi, 1962/2015). To unpack the multimodal processes through which artistic knowledge is manifested, the doctoral artistic researcher trains to 'think-through practice', elaborated by Sarat Maharaj as follows.

> For method, the job is to draw a vital distinction between 'thinking through the visual' and the somewhat crimped mode of 'visual thinking'. By the latter, I mean those approaches to the visual that treat it predominantly as an 'image-lingo'—basing it on a linguistic model ostensibly with codes of grammar, syntax and related regularities. (Maharaj, 2009, p. 4)

Maharaj's statement of 'thinking through the visual' finds its parallel in music as 'thinking-through-performance' and 'thinking-through-listening' (Östersjö, 2008, 2017). It presupposes, as noted by Östersjö, that there is a 'thinking-in-music' but "additionally introduces the possibility of a translation from the artistic, *through* an understanding of art also as process, towards a translation into a verbalizable articulation of knowledge" (Östersjö, 2017, p. 90).

To think-through, as outlined by Maharaj, requires a resistance to ready-made theoretical formulas, an approach which is similarly found in science's departure from supposed objectivity and theoretical propositions in favour of situated and embodied processual knowing.[5] Hans-Jörg Rheinberger has come to describe such workings as 'experimental systems', which are not dedicated to product or discovery-led work but are rather spaces where one is "confronted with a rhizomic network of recurrent epistemic practices" (Rheinberger, 1997, p. 16). As part of the experimental system, he identifies the key concept of 'epistemic thing', i.e., material or epistemic processes that form the basis of the inquiry. Epistemic things represent vagueness and "embody what one does not know" (p. 28), an indeterminacy similarly identified by Rheinberger to exist in the arts. While such systems "do not and cannot tell their stories in advance" (p. 36), they are made possible by pre-existing technical knowledge. The scientist fluctuates between 'known-knowns' and 'unknown-unknowns' and, through this fluctuation, allows for "established tools [to] acquire new functions in the process of their production" (p. 32). As will become apparent, AR labs, also conducted through a method of indeterminacy, exist by no means on the premises of the experimental systems of science nor their epistemic practices.

Around the time of my appointment at Lund University (hereafter: LU), the lab approach was an established part of its AR culture. This manifested to wider audience through initiatives held at LU's Inter Arts Center (hereafter: IAC)[6], such as the *Interference* events organised by Stefan Östersjö in 2010-19. *Interference* took as its impetus a design created by Maharaj for an event titled *Knowledge Lab*, curated for Haus Der Kulturen Der Welt in Berlin in 2005.

> The Lab is about plunging in, getting under the skin of things to see how they tick from the inside. The atmosphere is of intimacy, immediacy, and involvement—not clinical aloofness. We are not standing by watching the presentations as 'spectacle'. It's a

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[5] As Latour and Woolgar showed in their ground-breaking work *Laboratory Life: The construction of scientific facts* (1986), research conducted in the scientific lab is a social construct. Through research on one of the teams that received the Nobel prize in 1977 they came to show that words such as 'logic' and 'deduction' are terms used for the ways in which the construction of a fact takes place, showing that a realist or positivist stance in science is smoke and mirrors.

[6] For further information on IAC see https://www.iac.lu.se/about/

'thinking and doing' mode. We join in, participate, eventually begin to watch ourselves watching. A self-reflexive awareness surfaces building up towards attentive understanding. A sense of analytical observation and critical scrutiny is teased out from probing the processes of making. It gets elaborated in the thick of the performative experience—from within its sticky non-discursive spread—rather than in terms of some 'off-the-shelf' theoretical programme. (Maharaj, 2005, p. 1)

It is not for this project to evaluate the outcome of the *Interference* events and to which extent they functioned as a door-opening into a lab or how/when they became catalyst for the floating of new micro-labs (for further reading, see Östersjö, 2020a) but rather to use this manifesto as a departure to look at what 'floating' and 'doing' an artistic research laboratory may entail. This will be done by juxtaposing it with my own micro-labs as well as the work of other artist-researchers.

To start with research infrastructure, or what Rheinberger (1997) describes as the 'experimental conditions' and 'technical objects', it is fair to say that laboratory-like resources available to artist-researchers vary, as do the needs of any particular artistic project. Through my research period, I benefitted from LUs' Faculty of Fine and Performing Arts' main infrastructure for experimentation and practice-led research at IAC, which included sound studios, video editing rooms, and a space for the development of virtual-reality projects alongside performance and exhibition spaces.[7] Together with the expertise of the people employed there, this hub was essential to various parts of my projects. The labs' web of locations stretched to other studios or laboratories, namely Center for Art and Media (hereafter: ZKM) in Karlsruhe (DE) and Greenhouse Studios in Reykjavík (IS). The web also extended to sites that fall outside of such models, including the Northern Lights Hall in Harpa Concert and Conference Centre, Reykjavík (IS); the Crosby Library and coastal areas of National Trust Formby (UK); the Botanical Garden in Lund (SE); the Godsbanen venue in Århus (DK); the Klagshamn peninsula in Malmö (SE); the Härnäset isthmus in the Bohuslän region on the west coast of Sweden; and the city centre of Malmö (SE). There was also a myriad of digitally driven collaborations conducted with participants based in their own personalised workspaces in Ghana, Iceland, USA, and Sweden. Given the works' situatedness in the artworld of contemporary music and sound art, many of these engagements linked to festivals and productions that are detailed throughout this book.

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[7] In certain instances, or in relation to larger events such as Malmö Gallery Night or LU's Future Week, IAC was able to contribute funding to the printing of photographic scores or fees for performers from outside of the University. Prior to my appointment, doctoral researchers in Sweden participated parallel in a National Research School, which came with allotted funding for projects. At the time of my appointment, that program had ceased to exist making all collaborative endeavours outside of the Academy reliant on outside funding.

The above mapping is to show that the artist-research laboratory is not restricted to a singular physical laboratory. Indeed, the artistic laboratory needs in each case to be reinvented, a laboratory reliant on specific situated actions. As such, the artist-research laboratory is more often than not situated in the liminal space between art worlds and science worlds (Becker, 1982; Östersjö, 2020a). But in practice-led research, laboratories may be floated without the usual end aim of public presentation of artwork. In some cases, the lab may even be designed to destabilise practices radically. Such an example is found in the long-term project of Ben Spatz and their colleagues, presented in the book *Making a Laboratory* (Spatz, 2020). Through a method titled 'Dynamic Configurations with Transversal Video' (hereafter: DCTV) grounded in experimental theatre and post-Grotowskian ensemble tradition, they came to critically explore the agency of practitioner, director, and videographer but through an approach which

> abandons the most fundamental principle of contemporary performing arts, namely the performance of an artistic "work" before a live audience. It replaces this with something that is formally and technologically closer to cinema, although on closer inspection it is also unlike any existing approach to filmmaking. In fact, DCTV is a blueprint for a new type of audiovisual embodied laboratory. (p. 21, emphasis in original)

By seeking to look at knowledge formation outside of what the art world dictates, a space opens to challenge existing parameters. Spatz (2020) argues that the technologies of such an experimental system allows for new perspectives on thinking and knowledge.

> For decades, it has been argued that cinema and video constitute their own modes of thought. Yet the "thinker" of this thought has always been behind the camera, as director/videographer/editor, separated by the lens from the structurally vulnerable, yet epistemically privileged, racialized and gendered role of the performer or practitioner. DCTV is above all a proposal for a kind of videographic thinking in which the body that is traced audiovisually is understood as enacting primary thought. (2020, p. 182)

One of the micro-labs of my PhD project similarly explored knowledge production without immediately contributing to an art world. The lab in question, *Tapeshavet* (see chapter 9), was carried out as part of research funded by the Swedish Research Council, titled *Composition at the limits of the conceptual. A shrinking emptiness—meaning, chaos, and entropy* (2015-19) led by Anders Hultqvist and Gunnar D. Hansson at the University of Gothenburg. This lab was grounded in an approach where the roles of field recording, performance, and curatorial thinking were alternated through a site-respondent method[8] and it was agreed that no single participant had individual

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[8] As will be detailed in section 9.2.1. the complexity of such an endeavour was magnified by choosing the book *Tapeshavet* (Hansson, 2017) as catalyst for the performances.

ownership over the material produced. Such an approach resonates with the DCTV method, although from the stances of aurality and the intentionality of the field recording.

Another example that holds a kinship with the DCTV method is found in the *He(a)r* project (see Chapter 7), which included a studio session with Angela Rawlings. By dynamically sharing the roles of performer and curator we came to engage 'differently' within the studio environment, resulting in a performance which questions what constitutes a 'field recording'. The recording-studio environment entered what Rheinberger (1997) calls an 'operational redefinition'. A similar intermedial positioning is to be found in the *strengur* album project (see chapter 10), where participants alternated between the roles of composer and performer.

But what sets the activity within the various situated actions, apart from normal practice, and makes it a site of rigorous investigation in an epistemic thing? For this, I chose to engage Spatz's analysis, which he builds on Barad's concept of the 'agential cut'. Put forth in relation to research within quantum physics and its dynamics of relations and agential intra-actions, Barad notes that "(w)hat constitutes the object of observation and what constitutes the agencies of observation are determinable only on the condition that the measurement apparatus is specified. The apparatus enacts a cut delineating the object from the agencies of observation" (Barad, 2007 in Spatz, 2020, p. 27). But, as Spatz reminds us, "(w)hat makes something a measuring device in the first place is a whole ensemble of social and technical conditions that constitute an experimental system" (p. 27). In addition, Spatz claims that to produce a laboratory space, requires two cuts. The single cut of Barad prevents in fact the retrieval of meaningful data, for it entails that the definition of the experiment would equal its results.

> In each of the experimental systems described by Rheinberger and Barad, there are actually two cuts, two distinct ways or moments in which the technical interacts with and defines the epistemic. These two cuts are not separated by time or space, but by knowledge. (p. 28, emphasis in original)

This leads him to claim that Barad's cut is essentially a 'gap', which is brought forth by two cuts, one on each side. It is within the gap that the experiment unfolds, and out of such experimental conditions and the measurement, phenomena emerge. Through his continued theorising, and by swapping the quantitative term of measurement for tracing or archival inscription, Spatz arrives at the result that "(an) experiment becomes a laboratory when both cuts are traced or inscribed archivally, so that those not present can have mediated access to both 'what was done' (the opening cut) and 'what happened' (the closing cut)" (p. 33). Through this, they come up with the following definition of investigations.

Experimentality is any kind of "trying out" (opening cut) coupled with observation (closing cut). *Laboratoriality*, or inscriptive experimentality, requires that both the "trying out" and the observation be archivally traced. (This makes the question of what constitutes an adequate tracing an essential part of experimental design). Finally, *technoscientific laboratoriality* pertains where the closing cut is not only archival but also quantitative, as in measurement. (p. 33)[9]

The micro-labs of this doctoral project followed the pattern identified as laboratoriality. Due to its material nature and archival tracing, where "the closing laboratorial cut needs to be implemented transversally across that practice" (Spatz, 2020, p. 108), laboratoriality starts to push at what constitutes 'the work'.

In the instance of the nine mono-channel installation *Fjärilarna steg upp* (*The butterflies ascended*), the installation was merely the final stage of a long process. Earlier stages included the *Tapeshavet* activations, studio collaboration and performances, performative reading, score creation, composition of miniature works that were included in a large scale staged concert performance and later published, and the editing of a hörspiel (meaning: radio play or audio play). Midway analysis was made public in a book chapter and formed the basis of continued composition, attunement within a greenhouse alongside acts of 'sensorial photography' (see section 5.2.5), and creation of an audio paper. This accounts for a few of the events which can all be argued to count as my *Tapeshavet* project.

It is not merely in the upending of what entails a work that we see the impact of laboratoriality; we can also see how it gives way to the integration of analysis within dramaturgical and compositional formats. Looking towards prior examples of AR, *Inside/Outside* (2015) presents an interesting case. The work is an installation and performance for three choreographed musicians based on a concept by Nguyễn Thanh Thủy, choreographed by Maria Fahlin with music created by The Six Tones and Matt Wright. The use of stimulated recall was a technologically mediated factor that allowed for added reflexivity in the final design of the installation. In its live performance and video-projection version shot by Maria Norrman, the installation incorporated analytical observations by inviting the visitor to listen to a track that mixes musical fragments as well as autoethnographic narration related to the tension between traditional Vietnamese culture and globalised society.

While *Inside/Outside* exhibited the socio-political conditions facing a traditional Vietnamese performer in the art world of contemporary TV shows (Nguyen, 2019), my work *He(a)r* offered the creation of a lab set to 'sound out' music's situated and mediated nature. The process led to a composition anchored within the hörspiel

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[9] Through this we see why artistic embodied reflection cannot qualify as research, an argument that will be further unpacked in chapter 5.

tradition mixed with sound diffusion techniques, resulting in a quadrophonic work which balances between dramaturgical and ethnographic contextualisation, interwoven with vocal improvisations over glacial geopoetics. In a later audio paper titled *He(a)r: Of an Ecological Enactive Perspective* (Stefánsdóttir, 2019), I incorporated archival material (documentation of the studio work) with the piece itself, blurring the line between the original composition and the composition of an audio paper.

As a merger of dramaturgical, performative, and compositional approaches and archival tracing, the format of the audio paper has been explored in the last few years. As an academic format, it was first presented by musicologists Sanne Krogh Groth and Kristine Samson in a manifesto published in 2016 in the Danish musicology journal *Seismograf*, which accompanied their first collection of audio papers. They traced its ties to the 20th-century avant-garde aesthetics found in radio art, drama, literature, and poetry, which assembled diverse voices while continuously "open[ing] towards an integration of dramaturgical complexities that not only functions as a representational and performative tool, but also integrates the overall academic argument in the presentation itself" (Groth & Samson, 2016). During my research at LU, I attended seminars and an international symposium instigated by Groth and Östersjö set to further develop the format. This process and later work resulted in two peer-reviewed audio papers (Stefánsdóttir, 2019, 2021), both cited in this publication and linked to in the RC exposition, which followed the call of adhering to academic standards of knowledge production while at the same time building on artistic methods. Both papers drew on archival material linked to experimentation as well as observation found within my micro-labs.

We are here again facing the potential of experimental systems and their aural, oral, or audiovisual thinking. As stated by Spatz (2020),

> If scholarly institutions of knowledge are founded on particular relations with archives, rather than specifically on the medium of writing—by which I mean all forms of numerical, textual, and musical notation—then the advent of audiovisual research stands to radically transform the university and perhaps knowledge itself. At issue here is not only the forms that research can be understood to take, but also who can be recognized as conducting research and what can be counted as knowledge. (pp. 35–36)

Here we see the ethical-political potential of thinking-through-arts' mediated processes within experimental systems, and to which I hope this thesis may contribute, in our precarious times when people grapple with what making sound entails in present and future conditions, both within scholarly as well as artistic milieus.

Chapter 3. Agency in the field

3.1. Western Classical Music's many agencies

A sociologically driven analysis of art and cultural production affirms that creativity is distributed and social (Born, 2005). Viewed from such a perspective, works of art are not the product of 'individual makers'; rather, they are the result of a complex network of multiple agents, many of which do not work hands-on with artistic practices. This prompted Howard Becker to coin the concept of 'art worlds', put forth in his book with the same name. Becker specified 'art worlds' as configurations of the many agents that encompass "all the people whose activities are necessary to the production of the characteristic works which that world (...) define as art" (1982, p. 34). The processual nature of cooperation can, according to Becker, be split into levels of 'origination', 'execution', 'distribution', and 'reception', all of which are reliant on funding as well as institutional support. Becker further observes how, in these processes, positive reactions hold the power to produce further funding and support for renewed cycles of creation.

Within WCM, such cooperative levels may include performers, composers, curators (understood as artistic directors or similar), instrument makers, audiences, LP manufacturers, software developers, labels, managers, publishers, theorists, critiques, producers, festival organisers, broadcasting services, libraries, composers, performers, librettists, technicians and concert venues over to audio streaming enterprises, recording engineers, publishers, recording producers, printers and media services. Following Becker, extra-musical activity of various bodies in charge of moving of instruments, cleaning of venues, or ticket sales should also be included. Such cooperative levels produce a myriad of material tools, many of which are only made possible by global and material interconnections—trade and mining included. Indeed, the collective action of art worlds stretches far and wide in its geo-cultural outreach.

The focus of the present project is, however, not steered towards analysing institutional or extra-musical levels of art worlds but is rather set to look at agency within situated actions as they unfold within levels of originations and execution, all of which include intersubjective meaning-making. It is important to remember that "(p)eople who cooperate to produce a work of art usually do not decide things afresh. Instead, they rely on earlier agreements (…) that have become part of the conventional

way of doing things in that art" (Becker, 1982, p. 29). A similar point is made by Born, pointing to how ""prior" identities (…) come to be embodied dynamically in musical cultures, which then also *form* the reproduction of those identities" (Born, 2000, p. 32, emphasis in original). Music seen from such a perspective is then not only the means for emergent identities but is "equally at times a medium for marking and reinforcing the boundaries of existing sociocultural categories and groups" (p. 32). This is what Becker refers to as inertia which is a central factor in art worlds (Becker, 1982), while noting how the reluctance to novelty and change is largely embodied by the agencies of institutions and artistic conventions.

With this in mind, let us revisit the idea of the creator within the field of WCM, typically either a performer or composer. Through cooperation in an art world, such an individual enters a web of connections, where pre-existing conventions regulate the lengths of albums, liner notes, concert programming, prestigious employment or commissions, number of performers, instrumentation, rehearsals, and recording setups. This has established a value system that both controls and excludes agencies, where even programming works by contemporary female composers may be seen as an act of resistance. Young professionals may feel deprived of creative agency. Any attempt at infusing concerts with new approaches may result in only reaffirming the systems against which it tries to push. Recordings may be used for regulation. Platforms for creative development are almost non-existent and performers are to serve works of composers. In what follows, I will embark on unpacking such realities from varying perspectives, starting with performer agency.

3.1.1 Performer agency

Musical creativity within WCM has, for a long time, been closely tied to the concept of 'Werktreue', inherent to the 'work concept' which, according to Lydia Goehr's (1992) analysis, emerged around 1800. The latter caused a shift in the conception of music from a temporal artform towards an emphasis on the score as a fixed representation of the composer's intentions. Today, the field is still shaped by an outlook that began to manifest in the 19th century, where the isolated genius (i.e. composer) took centre stage. Such an understanding, as I will further detail in the next section, became cemented in the 20th century through the construction of a Western canon. According to this view, the primary approach demanded from listener and performer alike is to relate to the score by an expression of Werktreue, preferably through an 'Urtext'. This entailed a socio-cultural shift of focus in musical listening, gearing the act of listening towards attention to structural features, predominantly drawn from the visual and symbolic representation in the score, as argued by David Clarke (2011).

The longitudinal effect of how such an ontological reproduction has come to last for around two centuries depends "on the construction of institutional and economic foundations, authority and legitimacy, and charismatic figures" (Born, 2005, p. 15). In post-industrial capitalism (Thrift, 2005; Tsing, 2015) in which the art world of WCM is largely situated, such forces are typically understood as 'stakeholders' (Leech-Wilkinson, 2020), which range from academic institutions and symphony orchestras to concert arrangers, critics, and the recording industry. The effect of the above-outlined order—where performers are made subservient to works and composers according to the regulative power of Werktreue, while recording technology is used to serve socio-cultural aims—has been described by Daniel Leech-Wilkinson as the 'policing of bodies' (Leech-Wilkinson, 2020). This again has been shown to contribute to the ill health of individuals through 'music performance anxiety', a condition believed to be "part of a complex system of interactions between performance values and perfectionism" (Skoogh & Frisk, 2019, p. 1).

Although the birth of modernist music rested quite firmly in the hands of radio-broadcasting institutions, in the present day, the institutions of WCM have failed to promote new music and tune into what making music in our post-colonial and digital time entails (Bhagwati, 2020). This has been reflected in numerous statistical surveys (see section 3.1.4). This failure has rendered WCM irrelevant within contemporary art platforms (Lebrecht, 1997). Funding is shrinking, as are the possibility of tenured positions (Bennett, 2009; Orning, 2019). Freelancers (some of whom used to belong to orchestras that have now been shut down) are struggling to renew themselves in our digital age. At the same time, educational practitioners are facing the demand of renewal as their students are destined for portfolio careers in a market characterised by over-recruitment (Orning, 2017).

But from within the many musical subcultures, we witness attempts at formulation, through practice, at what music can be, or become, in our times. In the instance of performance of existing compositions, a variety of actors have tackled this challenge head-on through radical experimentation that challenges established performance practice. One example is Mine Doğantan-Dack's experimentation with the score of a solo work by Sergei Rachmaninoff, where she removed all performance indications. The fact that it still worked as a persuasive piece of classical music in performance is, according to Doğantan-Dack, "sufficient to reveal the 'untruth' of the traditional discourse that stipulates a one-to-one correspondence between notated symbols and their performance interpretation and expression" (Doğantan-Dack, 2015, para. 12).

Similarly, Paulo de Assis claims that if we are to liberate performance and practice "from those conventional images that imprison them" (2018, p. 26), we need to move beyond its regulative function, outlined by Goehr, towards replacing the work (noun) with work (verb). Through such a take, the interpreter becomes an 'operator' who

'problematises' musical works (de Assis, 2018). What such a proposal may entail can be found in the work of Lucia D'Errico. Through her doctoral project, she formulated the aim to not detach the performance from written music, but rather the performance 'of' (D'Errico, 2018). This was done to

> treat it as an independent kind of 'writing': one that does not try to reproduce, to represent, or to mirror anything, but that instead creates its own rules according to the materials and modalities in and through which it takes place, constructing its own world. (p. 15)

This resulted in the project *Aberrant Decodings* (2017), which she performed with dancer Marlene Monteiro Freitas and through which D'Errico employed guitars, laptop, and digital images to radically dismantle familiar performance practices of such works. Despite the radicality of the project, D'Errico forges it to make peace with the idea of performer as interpreter.

Meanwhile, within the field of contemporary music, we see other approaches that are designed to go beyond conventional conditions.

> Breaking with purely notation-based instrumental concert music in various ways, current practices in contemporary music often align the acts of composing and performing. Even though the impact of the 'sonic' and 'performative' turns on contemporary instrumental music has been small and delayed, nevertheless boundaries of agency, sociality, subjectivity and embodiment have to some extent been pushed, and conventional expectations and practices are regularly expanded and dismantled. (Hodkinson, 2017b, para. 1)

Some of these approaches appear on the 'grid' through titles such as composer-performer and performer-curator while others are categorised under the banner of sound art, be it through performative interventions with space or an enhancement of the non-cochlear in sonic situations.[10] Another direction is taken by performers and composers alike who engage in intercultural collaborations that can be seen as 'transculturation' (Östersjö, 2020a). Within transculturation, the point of departure may not be the actual challenging of the division of composer and performer, irrelevant to cultures that are positioned outside of western musical culture. Rather, intercultural experimentation provides a different set of scenarios in which the hegemony of western music is perhaps rather bypassed than challenged, through varying cross-disciplinary

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[10] The move towards 'sonic practices', as a counter action to serialism, emerged already in the period after WWII, through works of John Cage, Pierre Schaeffer a.o. However, as Kim Seth-Cohen (2009) argues, the movement has been decisively outward (away from systems) in the gallery arts while in the sonic arts "the movement has tended to be inward, a conservative retrenchment focused on materials and concerns considered essential to music and/or sound." (p. 261)

and conceptual approaches. This can, for example, be found in the work of Berlin-based Ensemble Extrakte, which unites performers from wide musical backgrounds, as well as the Swedish/Vietnamese ensemble The Six Tones, which has led to a long list of works including large-scale collaborative and cross-disciplinary projects such as *Arrival Cities Hanoi* (2014-15) and *Inside/Outside* (2012).

Such examples of the redistribution of agency, detailed above, as well as its multiplication through staging directives, multi-media, or audience participation can be seen as acts that depart from the centre—i.e., acts of resistance to hegemonic cultural systems. They may be seen as falling into two categories: (1) those still invested in grappling with the work concept yet doing so by carving out artistic methods that allow for more autonomy for the performer, and (2) those that include the agency of a musical score, or skip it, in a different performance ecology wherein other agencies may come to have a large impact in shaping the musical event. But for both camps, apart from underlining that there is always a body involved in musical activity, the work forges a practice in relation to tools, i.e., non-human agencies, some of which I will detail in the following two sections.

3.1.2 Instrument agency

Musical instruments, as noted by Philip Alperson, are usually seen to be "discrete, self-subsisting devices or material objects held or manipulated by the performer to produce musical sounds" (2008, pp. 38–39). But on closer inspection, it may be hard to say where an instrument starts and ends. A guitarist's nails may be considered part of the instrument, or the shape of a wind-instrument player's mouth, as they are "critically tied to the sound of the instrument" (Alperson, 2008, p. 40). Similarly, an instrument may not always be the result of an extended craftmanship—as seen in vocal practices, the usage of the body for drumming, or the found objects often employed within improvisations or traditional music. Through Alperson's extended unpacking of instrumentality, it is possible to observe how numerous actants, ranging from composers to sound technicians and listeners, may use things 'musically'. Hence, "a musical instrument is better understood as an amalgam of material object, the performer's body, and bodily dispositions as habituated by the developments of various musically related skills" (p. 46).

Building on Alperson, Deniz Peters (2016) notes how instrumentality may be distributed. Such "combining of intentionalities, as well as the reaching of stretches of joint intentionality or states of group consciousness, are not only extraordinary achievements, but also a question of a choice made for a particular aesthetic position" (p. 76). Peters identifies the possibility of 'instrumental intersubjectivity'—for instance, in the case of the creation of shared sonic gestures set to increase their interdependence.

As such, "(a)n ongoing passage will then sound as if it were created by a single being—while in fact being created by a *compound* being, via a balancing of individual and group consciousness" (p. 77, emphasis in original). Similarly, instrumentality may be extended through environmental as well as algorithmic agency. The entrance of environmental agency in assemblages as "another contributor" (p. 77) requires suitable instrumental design. The algorithmic agency embraces "playing media, circuits, algorithmically driven instruments and, more generally, media-instruments whenever they are capable of autonomic variation and of (at least a small level of) interaction" (p. 77). Such extended instrumentality stretches beyond the 'composer's instruments' as identified in Alperson's analysis, suggesting an expanded understanding of the intentionality in these non-human agents.

If understood as artefacts, music technologies can encompass a wide number of things, ranging from microphones, acoustic and digital instruments, tape machines, notation systems, radios, and turntables over to smartphones, computers, streaming services, spatialisation software, multi-channel speaker setups, and telematic technologies. The creation of each technology should be seen as culturally anchored and may come about through skilled craftmanship. These technologies are carriers of values that are imbued by utilitarianism. One historical example can be found in changes to architecture and orchestra size in the late 18th and 19th centuries, which called for modifications in instruments. In the case of the violin, this manifested through the lengthening of its neck by angling it backwards, which led to greater string tension, set to produce a bigger sound (Lindeman, 2011).

Another more recent case is the inbuilt colonising effect of digital workstations' tuning systems (Faber, 2021). A tuning system is a collection of pitches from which scales and modes are derived; they can alter between cultures. But within most electronic music technologies, as highlighted by Khyam Allami (2019), the user is not only met with the Western tuning system of equal temperament. They also face a configuration that prohibits the user to go beyond the 'fixed relationships' between sounds within Western composition and approach music-making along the lines of various cultures where "the tuning systems are ratio-based" and "the focus is on the relativity of notes to the tonic (root note) and (…) to each other" (Allami, 2019, Microtonality Misunderstood section, para. 2).

As noted by Sally-Jane Norman, such challenges relating to work with digital prosthetics need to be deposited within a wider context. Biases that may limit differences and constrain expressive potential "are often attributable to the standardisation quest that facilitates communication and uptake of techniques. They may also be attributable to more or less conscious ideological choices" (Norman, 2018, p. 213). At the same time, various human-computer interfaces are typically created to enable and enhance agency (Mareis 2014, as cited in Schindler & Hinrichsen, 2017, p.

100). Similarly, today's networked approaches question where the instrumental agency is located (Alarcón Díaz et al. 2019; Ek et al., 2021) and what forces contribute to such a performance (Rawlings et al., 2020). As such, musical technologies may very well provide a means to further explicate the possibilities of our digitised environments. At the same time, this may contribute to re-articulating art's role in society, or its possibility of "(d)eveloping affordances to cope with increasingly technologized nature-culture" (Norman, 2018, p. 216).

Through her theorisation of instrumental agency, Norman points out how the cultural embeddedness of instruments can make them appear "as assets representing institutional and/or individual status" (Norman, 2013, p. 276). This manifests, for example, in the "frozen agency" of a Stradivarius, that is "treasured for its 17th century craftmanship, which in turn is imbricated with certain type of virtuoso musicianship" (p. 276). Such mastery is the results of "(d)efiance of normative affordances and patterns of use" (p. 282). On the other end of the spectrum, we find defiance and resistance that may "manifest as the disruption or hijacking of instruments and/or their familiar uses, in contexts where human and non-human actors are equal contributors" (p. 282). The redistribution may also lead to commonplace objects such as colanders, feathers, nails, and stones being ascribed "instrumental" status, be it within contemporary compositions, experimental improvisation, or sound art. Riding the wave of the call for a feminist review of technology (Barad, 1998; Haraway, 1988; Wajcman, 2004) yet through the method of techno-alienation (Cuboniks, 2018), another approach is found in Anna Troisi's performance *OB-scene*, wherein she performed a live sonification of biological data with a medical vaginal probe. According to Troisi, this performance enabled "the audience to experience the sensorial assemblage as a space for communal experience with political implications" (Troisi, 2019, p. 2).

Returning to the ideal of mastery prevalent within the WCM tradition, such relations are forged through a performer's play with an instrument's affordances and built up through thousands of practicing hours. As such, the practice falls under Ihde's (1990) modality of 'embodiment' through which the instrumentality of an object is not explicitly noticed by the user[11] and considered as an extension of the body. As instruments transfer along the analogue-digital continuum, they become a "mediation,

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[11] A common approach to looking at the mediation between a musician and her instrument has been to define it as an extension or even prosthesis of the body, similar to the blind man's stick (Merleau-Ponty, 1945/2012). Through my research, I have deliberately refrained from such word usage, prompted in part by witnessing my grandfather's blindness, so different from my own sensing abilities. Similarly, Joel Michael Reynolds (2017) has termed it as a misconstrued definition and that such approach of embodiment through incorporation of a tool is problematic for the non-normative "as it omits the social dimensions of disabled experiences, misconstrues the radicality of blindness as a world creating disability, and operates via an able-bodied simulation that conflates object annexation or extension with incorporation" (p. 421).

in which the player gradually loses touch with the site of sound production" (De Souza, 2017, p. 31). This is, again, tied to digital instruments often functioning as both scores and instruments for performance, as explained by Ihde. By using an acoustic instrument to perform music from a score and aligning with compositional techniques and performance practice the relationship shifts towards the hermeneutic, the hermeneutic being a situation where the instrument becomes a technology that enables cognitive processes of musical interpretation/reading.

Within the WCM tradition, the performer fluctuates between the embodied and the hermeneutic through music-making, which explains in part why, despite the much used and favoured description of embodiment or incorporation in relation to instruments in performance, a performer rarely finds herself in a state of remaining long within the state of embodiment, as defined by Ihde (1990). In certain instances, compositions can even go against mastery or an instrument's specificity, denying the performer the incorporation. What any performer learns is that the embodied extension comes to shape and alters one's body as the years wear on, although it can of course take different form between players as bodies differ. Instrument groups are also dissimilar in corporeal feel caused by difference in design. The violin and bow are, for example, held by the performer, whereas a pianist is sitting at the instrument fluctuating between touch and removal from the instrument. Nor does a pianist need to breathe into their instrument like a wind player to produce sound. Instruments, within groups, can also vary greatly, and in the case of the baroque violin, different pitches can even produce an immense alteration to the feeling of touch, as higher pitches produce increased tension on the strings.

Another instrumental category, where the extension can be deemed to shift towards incorporation, is presented through digital instruments that are designed to be worn and gesture-controlled. One such example is the "strophonion", created in 2010 by Alex Nowitz (2019), which includes buttons for altering functionality but also sensors that measure movements of hands and arms. The 'mi.mu' gloves are another example, created by a design team in collaboration with Imogen Heap. They are fitted with sensors that allow the 'wearer' to sculpt electronic sound with their hands and manipulate effects with fingers (Heap, n.d.). A step further towards a bio-instrumental design is presented in the 'Myo' bio-electrical interface, created by Atau Tanaka building on physiological biosensing technology. Through his performance, usage has centred on placing the interface on his forearms, thus turning his body into a musical instrument (Tanaka, 2012). Shifting focus to the subjective formation that takes place through performing an instrument, David Gorton and Östersjö describe a performer's 'voice' as being constituted through the interplay between the affordances of an instrument, one's habits, and the natural body. But as is made explicit previously in

this section, the "interaction between performer and instrument is interwoven with the specific musical culture in which they are situated" (2019, p. 41)(see Figure 2).
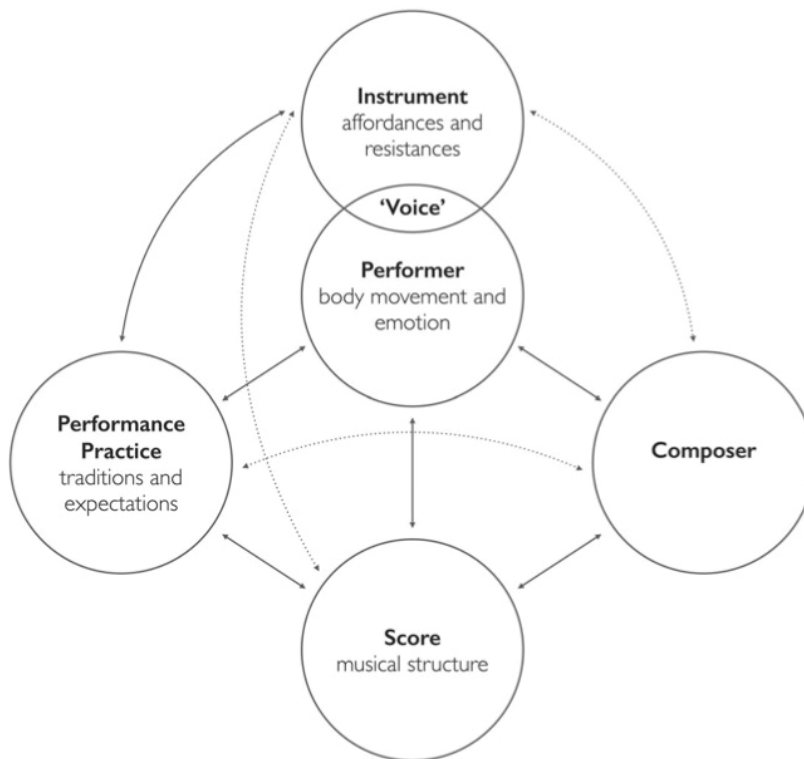
Figure 2
Chart of subjectivity formation from the perspective of the performer (Gorton & Östersjö, 2016, p. 584).

What is not explicit in this chart, as it was created in relation to the creation of a solo work for an acoustic instrument, is that additional technologies (speakers and microphones, as well as digital controls) may take the role of either instrument or score in the formation of voice. Such configurations of different technologies can, in return, produce new relations within the performance space and result in a shift of the boundaries between instrument and musical structure (Kanga, 2020). The technologies that enable such a play are therefore the focus of the following section.

3.1.3 The agencies of recording technology, speakers, and amplification

Music-making within WCM is inextricably intertwined with recording technology. Initially made possible through the invention of the phonograph in 1877 by the inventor and businessman Thomas Edison, it was designed as a technology of business

communication. That it came to serve other purposes was not merely due to institutional or power-inscribed actions. As Jonathan Sterne explains, it was "at least as much about the changing home and working lives of the middle class as (…) about corporate planning and experimentation" (2003, p. 197). This move of the technology into popularity, as observed by Lisa Gitelman, forced composers and musical publications, who had shown little interest in it, to address the phonograph's role as a 'self-playing' musical instrument (Gitelman, 2006).

As time passed, and in accordance with how use often becomes entangled up with ideas about 'how' to use, recording technologies and their products became co-opted by WCM's policing tendencies, as a tool for regulation. Consequently, a recording is weighed in terms of whether it serves the Werktreue ideal. The flawlessness of recordings, made possible by multiple takes and editing, can also be seen to contribute to the music-performance anxiety of its practitioners who feel like their live performances need to imitate albums (Leech-Wilkinson, 2020). An added conundrum, identified by Leech-Wilkinson, is presented through the fact that performances are not allowed to imitate historical recordings. The order is that the present state of interpretation—virtuosity included—is the best state. This may seem ironic, for an historical review of recording only goes to show that "performance style is actually constantly changing" (2020, ch. 3).

Such development can be explained by Ihde's (2007) concept of 'multistable variation', which forms through human-technology interrelations that can lead to "suggestions for trajectories or further and different developments" (p. 16). They are subject to sociocultural and political forces; hence, the trajectories are "partially determined" (Ihde, 2001, p. 106). Therefore, to understand why a performer's use of microphones has been given so little attention within WCM's education, we may look towards the prevailing institutional outlook which is invested in a distinction between the act of reproduction and instruments, an outlook which, as Sterne (2007) points out, is found even within academic circles. Add to this the selective promotion of certain repertoire within education, compositional teaching invested in notated composition, mixed with the prevailing misunderstanding that most students will be employed within symphony orchestras whose live performances are amplified only in rare cases, and it becomes easy to understand why most students of WCM may never embark on the amplification of instruments in relation to performance events. Rather, students who are interested in this aspect of music-making need to launch their own investigative projects to gain further insights into microphones' possibilities in relation to their instruments, both in terms of recording and concert situations as well as loudspeaker usage.

This happens despite performers, composers, and engineers outside and inside of WCM having long since come to bridge the gap between music-making and

reproduction. This led to the studio environment becoming a site for the origination of musical works, and transformation of the concert hall into an acousmatic environment of a forest of speakers. At the same time, as noted by Cathy van Eck, almost no literature has been devoted to compositional practices related to microphones and loudspeakers. Rather, "the scope of these books is mostly on the design of the electrical signal itself, the origin of the sound or its aesthetic implications" (van Eck, 2017, pp. 6–7). This prompted her to launch an AR project, which later developed into the book *Between Air and Electricity. Microphones and Loudspeakers as Musical Instruments* (2017). Through an analysis of interaction with such entities, she arrived at categories that can both work as tools for unpacking compositions but also as impetus for new works. Therein, the basic categories of 'movement', 'material', and 'space' were derived from van Eck's own work with acoustic feedback. This, in return, led her to formulate subcategories pertaining to various usages of microphones and loudspeakers and to pinpoint the categories of 'moving loudspeakers', 'new instruments through amplification', and 'acoustic feedback through objects'.[12]

An important aspect introduced by Eck is the difficulty that can manifest when the process is invested in a composition for these technologies as composition for musical instruments. The resistance presents itself due to the simple fact that "microphones and loudspeakers seldom behave exactly as conventional musical instruments" (van Eck, 2017, p. 147).

> They can be used in a way similar to musical instruments and therefore *interact* directly with performers. At the same time, they can also *reproduce* a sound that is associated with another act of sound creation, and they can *support* another musical instrument or *generate* sounds that are not related to any physical sound source at all. It is exactly this combination that makes microphones and loudspeakers unique in the field of music. To find compositional strategies specific to microphones and loudspeakers, one should therefore not search for their potential to act like musical instruments, but for combinations of different approaches. (p. 147, emphasis in original)

Microphones and loudspeakers can thus, according to Eck, be viewed as devices that are not reliant upon technical specifications, but rather "as devices to undertake a certain process" (p. 285). Such an observation is essential to this research project, where the processual work included varying mediated processes while speakers and microphones served varying roles enabling new insights and affecting the overall process of creation. Some of these projects took place within environments that are imbued by historical, spatial practices. It is to this component that I devote the last section on agency within WCM before proceeding to look at agency within music research.

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[12] Due to scarcity of such works, she was however hesitant whether it should be its own category.

3.1.4 The agency of space

In this section, space is to be understood as what Otto Friedrich Bollnow described as 'experienced space', i.e., space that relates to architecture, humans, and environment (Bollnow, 1963). The human space, as Wasana de Silva outlines through her reading of Bollnow, "is demarcated by humans, their actions, objects and symbols, therefore human space is a three-dimensional void filled with meanings, things and performance" (de Silva, 2007, p. 41). Such an anthropological space is triangulated by Bollnow into relations between individual, social, and hierarchical systems. A variety of such formations has been brought up through examples in the previous sections pertaining to the educational space and the recording space. Another example, which has surfaced through the topic of repertoire and performance values, is WCM's quintessential social event—the concert, a situation where

> the institutional framework, and the organizational apparatus and its processes and routines, as well as the institutional character, the habitus created by the institution, the architecture, the organizational culture, and the social structure created by those present, cannot be thought of separately. (Tröndle, 2020, p. 24)

What is today referred to as a 'classical concert' came about in the time of social change through 19th-century secularisation and industrialisation. A form of music-making emerged which is strongly tied up with bourgeois notions of cultural-value identification. Through this social change, music became more of a commodity and less of a practice shared by musicians and audience, an autonomous musical art form to be enjoyed in specially designed halls, removed from its prior ceremonial or liturgical role. However, Elena Ungeheuer presents a compelling argument that the liturgical tradition, instead of vanishing, was embedded into the concert format.

> One could say there are high priests (the interpreters) and eyewitnesses (the composers). There may be a sacred text (music) that is dealt with, which finds an authentic exegesis through the priests. There may be behavioral asymmetries between the 'giving' stage and the 'receiving' audience, who is or is not allowed to say or do anything except sitting and listening. On the part of the concertgoers, there is a dress code, there is the feeling of sublimity and grandeur in relation to what they get from the stage, there is the appropriate behavior 'afterward,' (sic.) when, as though one wants to comment on the quality of the sermon, the performance of the star on stage is assessed collectively. (Ungeheuer, 2020, p. 52)

Similarly, Christopher Small, through his analysis of the symphony orchestra's concert format put forth in the book *Musicking: The Meanings of Performing and Listening* (1998), aired his unease about social relationships in concert halls. As such, he found

that "there is a dissonance between the meanings—the relationships—that are generated by the works that are being performed and those that are generated by the performance events" (p. 16). According to Small, through its rituals, the concert tradition diminishes possibilities for participation, and thereby also the possibility of engaging in what he describes as 'musicking'. Rather, through ritual performance events designed for celebration of certain identities, we are left with a "one-way system of communication, running from composer to individual listener through the medium of the performer" (p. 6).

This brings me back to Born's (2005) point about the construction of power and reproduction of dominant Western music ontologies, a state which many participants within contemporary music have attempted to dismantle in recent years. Such questioning of the roles of and hierarchies between performers, composers, the public, and institutions can be argued in part to ride the wave of recent data surveys (Bertolani & Santacesaria, 2020; Föreningen Svenska Tonsättare & KVAST, 2019; Fure, 2016; Schelle, 2018). These surveys outline how curators within music at large can both historically and in present times fail to promote the depth and breadth of musicking, or its possibilities of "circulation of sounds, culture, histories and ideas" (Lewis, 2020, p. 18). At the same time, quick fixes may have negative repercussions, as outlined by Juliana Hodkinson at the event Curating Diversity in Europe—Decolonizing Contemporary Music, organised by the Akademie der Kunste in Berlin.

> European curators are typically occupied with questions of how to expand programs, how to embrace and include more and more non-European perspectives or even inner European perspectives, such as gender and so on, a concern which is in itself a friendly form of colonialism, and which takes place on a terrain full of pitfalls such as tokenism, exoticism, and appropriation. (Hodkinson, 2020)

Similarly, Thorbjørn Tønder Hansen, former artistic director of the Ultima festival in Norway, aired the question whether curators have a role in the future of music-making. What such an approach may entail can be found in the testimony of Pauline Hogstrand from the Danish ensemble Damkapellet.

> We ended up deciding that we would just share all the tasks between us. Everybody just had to trust that the different tasks were done by the right persons and in a way that was good for the group. The fact that we all were responsible for producing the festival really affected the group dynamics when we were performing. We were are all just throwing ourselves out there, but doing it fully together, knowing we had each other's backs. (Jakobsson, 2021, p. 118)

Curation within WCM may be seen as an act of organising, selecting works, steering processes, and presenting. Therein, various forces can affect such outcomes. Artistic boards of symphony orchestras and the recording industry may have a say in matters. In addition, conductors and soloists have a history of promoting certain repertoire and deciding concert programs. The same goes for teachers and educational institutions who uphold certain norms and values through choice of repertoire, how education in composition and musical digital technologies is structured,[13] how students are trained to act in concerts, and how evaluative criteria is selected for examinations. All of this produces the next generation that follows similar trajectories in terms of spatial relations.[14]

The stifling of 'the circulation of ideas', as highlighted by George Lewis, can be explained by using feminist intersectional theory, which proposes that masculine norms and power are deeply institutionalised, even to the extent of making gender invisible (Magnusdottir & Kronsell, 2015). To a certain extent, this explains the longevity of the impasse of the 'quality vs. quantity' discussion when it comes to the number of female composers programmed. In an interview with Hodkinson, Born spelled out how such a spatial culture is rooted.

> Predicate 1: there is actually a surfeit of talent out there—much more than has ever been recognized by the standard channels of commissioning, performances and so on. Predicate 2: at the same time, we see a large amount of relatively unsuccessful work (often composed by men, given gender imbalances) being awarded commissions and performances. Predicate 3: ergo, any claim that there's a perfect match between current commissioning strategies and quality is itself problematic and unscrutinised. Predicate 4: so if it's the case that there's always a surfeit of talent, of those whose work is promising and who merit, on quality grounds, commissions and performances, then it's in the fine tuning of judgements of who will be given those opportunities that arguments for equality and diversity can come in. (Hodkinson, 2017a)

A similar perspective was aired by curator and composer Sandeep Bhagwati in a keynote held at the above-mentioned event in Berlin.

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[13] For further reading on the lack of participation and inclusion of women within digital art music, see Born & Devine (2015).

[14] This being written, another agency linked to curation has emerged within WCM in recent years, which is that of performer-curators. It finds its parallel in art's 'artist-curator', an agency that can be traced back to New York artist-led initiatives in the 1960s, through which artists sought to create opportunities for themselves outside of the established gallery system (Tate, n.d.). For further reading on performer-curators, see Amaral (2020).

To me many music seasons and festivals rather read as if someone had been sleeping on the job. In today's information galaxy, decolonization and gender-awareness to me are moral or political arguments only on a meta-level—first and foremost, they are failures of research—and a lack of the ability to listen with your ears awake. (Bhagwati, 2020, II section, para. 6)

The ability to 'listen with your ears awake' is indeed a form of thinking-through-listening and is dependent on an awareness of how conventions may diminish the responsivity of those who listen. As discussed above, the institutional power that is exerted through integrated values and norms produces a politics of listening that gives the curators of WCM the agency to simply ignore or silence other/different reverberations and frequencies. This attitude, as I will detail below, is not merely symptomatic of the field but is also echoed in music research.

3.2. Agency and music research

Agency has enjoyed little attention when it comes to research on performance within WCM. This may seem puzzling, given music's many material and intersubjective entanglements (Laws, 2019) and the fact that most musicians in today's art world are destined for a portfolio career (Bennett, 2009) demanding them to formulate their identities and roles. Music differs from other performing arts in its resistance to considering matter related to subjectivity and embodiment "in and through performance" (Laws, 2019, p. 16).

The reason behind this can be traced, in part, to research on WCM having historically, and even within contemporary practice-led approaches, shied away from a focus on subjectivity, agency, and identity—steering instead towards style and interpretation. This leads one's thoughts towards the chicken and the egg, i.e., what came first: the field's preference for music as reproduction of written text; the impact of the recording industry through which music shifted from being an event to being a commodity subject to regulation of perfection as outlined in previous sections; or musicology's philological interest in music as text (Cook, 2003). Either way, and as commented by Catherine Laws (2019), discursive fields such as musicology and psychology were, up until the 1980s, geared towards research invested in WCM's work concept. From then on, musicology caught up with critical theory's philosophical approach to subjectivity and identity. A shift in focus can be detected, mainly in terms of "how the musical 'text' might construct particular subject positions, whether normative (white, Western, male, and heterosexual) or otherwise" (2019, p. 14). At the same time, research on music has, in recent years, expanded towards a sociological study

of music in relation to audience and music consumers, as seen in the work of Tia DeNora (2003) and Antoine Hennion (2008).

Even within music research, or the musico-technoscience multidisciplinary form of research, science and engineering were brought in "to 'serve' what are assumed to be the pre-existing, autonomous creative 'visions' or 'needs' of composers and musicians" (Born, 2021, p. 39). Such a mode, as observed by Born, "embodies and buttresses the longstanding idealist model of the musical work in which the composer-as-hero is assumed to be the sole repository of creative genius and to require support—the input of scientists and engineers—conducive to its unsullied expression" (pp. 39–40). At the same time, it holds the danger of music becoming entangled in industrial and commercial webs of innovation "motivated by goals of boosting economic growth" (Barry & Born 2013, in Born, 2021, p.41)

In AR and music research more widely, recent years have seen attempts to counteract stylistic inertia. In what follows, I will discuss a few central initiatives within AR.

3.2.1 Recent developments within artistic research

At LU, the first doctoral theses defended within the field of music sought to provide a further understanding of the agencies at play in human-computer interactions (Frisk, 2008) as well as collaborations between performers and composers (Östersjö, 2008). In his thesis titled *SHUT UP'N PLAY! Negotiating the Musical Work,* Östersjö employed the concept of affordances to look at the agencies of composer, performer, instrument, score and electronics, which led to a critique of the concept of authenticity and prompted him to propose a framework of 'analytical interpretation' and 'thinking-through practice' (Östersjö, 2008). The project did much to reveal the distributed nature of collaboration between composer and performer and is considered one of the more influential publications on the subject. Meanwhile, through his thesis titled *Improvisation, Computers, and Interaction: Rethinking Human-Computer Interaction Through Music*, Frisk employed the artistic method of improvisation to expand the common paradigm of direct human computer 'manipulation'. This resulted in an understanding encapsulated in his concepts of 'interaction-as-control' and 'interaction-as-difference' (Frisk, 2008).

In 2013, a thesis dedicated to further unearthing the agency of microphones and loudspeakers in musical creation was defended by van Eck from the docARTES doctoral program in Leiden. The work addressed a gap in publication, as most literature had, up to then, focused on the technical properties of these tools. Her work later became the basis for her book *Between Air and Electricity. Microphones and Loudspeakers as Musical Instruments* (2017), cited earlier in this chapter.

In 2019, two doctoral theses—one by flutist Marina Pereira Cyrino, the other by percussionist Jennifer Torrence—were published about performance agency, pushing at governing institutional narratives and frameworks for collaboration. Torrence's thesis from the Norwegian Academy of Music was titled *Percussion Theatre: A Body in Between* (2019), and explored the concept of co-creation in collaboration with composers, prompting her to formulate the idea of 'performer as deviser'. Originating in strategies used in theatre and live arts, such an approach entails that "there is no object such as a score with which a performer interfaces, but rather the critical interaction occurs between the performer and another artistic *subject*" (Torrence, 2019, From executing to co-creating section, emphasis in original). The thesis, like other projects that experiment with the work concept, raised questions around authorship which, in Torrence's case, brought forth a situation that justified renegotiations around authorial credit and mechanical rights.

At the University of Gothenburg, Cyrino presented in *An Inexplicable Hunger: flutist)body(flute (dis)encounters* (2019) a method of artistic encounters set to 'de-anaesthetise' the forces of creating. Her project pushed at the dominant characteristics of WCM, presented through what Cyrino describes as fragmented specialisation or specialised fragmentation. This led her to instigate a series of collaborations that included choreographed, extramusical, and theatrical elements.

In 2019, Nguyễn Thanh Thủy defended her thesis at LU. Titled *The Choreography of Gender in Traditional Vietnamese Music* (Nguyen, 2019), the project looked at the socialisation of the performative body. By employing gestural analysis, Nguyễn looked at what it could reveal regarding gender conventions and, similarly, how music created through the choreographic structuring of movement might question gender conventions in musical performance. Through her research, Nguyễn contributed to what has often been pinpointed as a weak link in Judith Butler's theory of performativity—its lack of the inclusion of perspectives of embodiment.

In 2022, Heloisa Amaral defended her thesis in the docARTES doctoral program in Leiden. Titled *Mediating from Within: Metaxical amplification as an alternative sonic environment for classical music performance* (2022), the thesis engaged with an under-theorised agency within WCM—the becoming curator. Through analysis of concert traditions and her artistic projects, she formed an artistic method of 'metaxical amplification' which amplified environmental sounds within the concert setting, thereby challenging the silent backdrop that informs performances and the reception of WCM.

What this selection of doctoral projects underlines is the social construct of music that forms through many mediated and material engagements. At the same time, they can all be deemed to be of an experimental design—even intending to radically alter agencies. Here, we are reminded of how experimental culture, as outlined in chapter 2,

does not demand foreseeable outcomes but, rather, creates a difference in terms of thoughts and practices (de Assis, 2018). This aligns with Frisk and Östersjö's (2013) statement that there is a need to approach artistic research from an experimental perspective, not as a stylistic measure but as a quality in the artistic aims.[15] This enables an enhancement of one's own 'understanding', bound to bring new ways of 'doing' and thus new 'knowledge'. It also shows that there need not be a conflict between the radical approaches of arts practice and academia. Such a strategy "can amplify the developmental aspects of experimental artistic projects and make possible more extensive explorations of a certain field" (p. 58). Based on this, it is possible to claim that AR on agency is not designed to petrify agency, but rather explore what agencies are at play, and what their possibilities of relations and formations are.

It should therefore come as no surprise that the notion of experimental systems (Rheinberger, 1997; Spatz, 2020) lays the ground for how AR conducted at the Orpheus Institute in Belgium has critically engaged with performance practice. An early representation of the role of experimentation in the formation of AR at the Orpheus Institute can be found in *Anthology on Artistic Experimentation in Music* (2014), edited by Darla Crispin and Bob Gilmore with contributions from a wide spectrum of practitioners. Importantly, this publication led to the formation of a series of research clusters at the Institute in which artistic experimentation was a central methodological approach. Through MusicExperiment21, a project supported by the European Research Council (2013-18), the researchers united to challenge the orthodox performance practices of WCM in order to explore and reveal the epistemic possibilities of performance. Some of its undertakings have been outlined earlier in this chapter, as exemplified by D'Errico's experimentation which resulted in a PhD thesis titled *Powers of Divergence* (2018), as well as de Assis' book *The Logic of Experimentation: Rethinking Music Performance through Artistic Research* (2018).

The research cluster *Performance, Subjectivity and Experimentation*, headed by Laws between 2014-18, explored processes where musical materials were developed and/or practised through four subprojects. All projects forefronted the performer, shedding light on similarities and differences in regard to instruments, repertoire, working processes as well as context. This was presented, in part, in the publications *Voices, Bodies, Practices: Performing Musical Subjectivities* (Laws et al., 2019) and *Performance, Subjectivity, and Experimentation* (Laws, 2020).

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[15] As Frisk and Östersjö point out in that same article a similar claim is made by Mika Hannula. "Since artistic research has been accepted and established as credible research within art education and art institutions, we have to keep its possibilities open and move towards a vision of artistic research which is self-critical and self-reflexive. Put differently, we must have the courage to be anarchistic and experimental." (Hannula in Frisk & Östersjö, 2013)

While all aforementioned projects have provided different critical perspectives on the institutionally-formed divide between the agencies of composer, performer, and even sound engineer, very little change can be observed in the art worlds of classical contemporary music. As concluded by Clarke et. al (2017), "[c]ollaborative creative projects (…) may do little to shift or break those boundaries in any dramatic manner; but in more implicit and procedural ways they help to carry forward the long process of dismantling the still persistent myth of the autonomous-genius composer and his or her helpful and accommodating interpreter-performer" (p. 134). As such, AR still has much to explore when it comes to work that expands beyond the traditional boundaries of composition, performative interpretation, and improvisation.

Chapter 4. Aims and research questions

This thesis' relevance is underpinned by the urgencies spelled out in the previous chapter: how the inertia of WCM conditions practices, limits the possibility for actions, and results in an anthropomorphic stance towards agency. It builds on a conviction that the research field must systematically address power structures and agential relations through experimental approaches. While AR has seen several projects address this challenge (de Assis, 2018; Laws, 2020; Laws et al., 2019) there still exists a knowledge gap when it comes to the formation of agency within the field. As I detailed in the prior chapter, this is particularly felt when it comes to how a single individual may embrace several different agencies in interdisciplinary practices. The embodied artistic experience of such interdisciplinarity is, in this thesis, also studied through processes of becoming-curator—a currently under-theorised agency—which can take on varying forms within situations and manifests, for example, in the fluidity between the performative and the compositional.

The aim is to better understand the conventional norms that define the roles of composer and performer and further, to explore more dynamic approaches to these agencies, through the perspectives of composer, performer and curator, active in the fields of contemporary music and sound art.

This PhD project addresses the above-outlined knowledge gap through a series of micro-labs, which were designed to look at such work through the perspective of situated actions. At the same time, thanks to the experimental conditions afforded by the doctoral position in combination with the experimental systems in which I was operating, the initial phase of research resulted in an expansion—working from the positioning of performer and curator in the field of contemporary music, extending to the role of composer and the field of sound art. Like in many AR projects, the research questions manifested as the critical work unfolded in relation to practice.

- o How can ecological-enactive and post-phenomenological perspectives on musical practice within WCM challenge current understandings of the roles of performer and composer?

o What artistic methods can be employed to provide a more robust understanding of the fluidity of these roles, to uncover their potential for artistic renewal in the creation and performance of contemporary music?

Chapter 5. Methods

5.1 Methods for analysis

One of the challenges when embarking on analysis in artistic research is to enter the grammarless zone and avoid being made to exist on the premises of epistemologies that might prevent one from going from 'knowing that' to 'knowing how'. As observed by Maharaj,

> [f]or method, the job is to draw a vital distinction between "thinking through the visual" and the somewhat crimped mode of "visual thinking". By the latter, I mean those approaches to the visual that treat it predominantly as an "image-lingo"—basing it on a linguistic model ostensibly with codes of grammar, syntax and related regularities. (Maharaj, 2009, p. 4, emphasis in original)

Maharaj's statement of thinking through the visual finds its parallel in music as 'thinking-through-performance' and 'thinking-through-listening' (Östersjö, 2008). It presupposes, as Östersjö elaborates, that there is a 'thinking-in-music' but "additionally introduces the possibility of a translation from the artistic, *through* an understanding of art also as process, towards a translation into a verbalisable articulation of knowledge" (Östersjö, 2017, p. 90, emphasis in original). Doğantan-Dack notes that "the method should allow room for the situatedness and the subjectivity of the artist-researcher's claims to knowledge, and validate the assertion of his or her artistic value judgements" (2012, p. 40).

At the same time, such a technique of analysis and interpretation helps the artist-researcher to go beyond the mode of inbuilt artistic reflection. This is elaborated by Crispin through her review of reflection as a research tool. By juxtaposing critical reflection and autoethnography, she arrives at the claim that one of the main differences between artistic reflection and critical reflexivity lies in the rigour of its execution, i.e., how, through a disciplinary approach, an analysis takes form. Importantly, if "done well, and with regard to tested practices, it stands up to what we might call 'scientific' scrutiny'" (Crispin, 2021, p. 72). This is demonstrated by Doğantan-Dack from the standpoint of live performance.

> [L]ive music performance cannot involve any reflective component by the performer in the way we understand it to be a crucial aspect of any research activity: as a defining feature of research, reflection always offers the researcher the possibility to change, improve, transform, expand and rework his or her ideas and manner of presentation *before* the research outcome is made publicly available. This possibility is simply not present for the performer during the making of a live public performance in our contemporary culture. (Doğantan-Dack, 2012, p. 39, emphasis in original)

From this perspective, methods for analysis can be seen as a way of making sense of what one has, which can encompass data in many material guises, as well as in situated embodied tacit processes, such as described above, that need to be unpacked. During such an act, the artist-researcher needs to refrain from 'methodolatry' (Janesick, 1994) that can prevent one from going from the descriptive level into the realm of 'how' and 'why' and even entangle the research in telling of the past, or of other fields. Such an analytical agenda is set to avoid betraying music's performative knowledge production by transferring it to the interpretation of other fields. At the same time, the very nature of artistic research demands of the artist turned artist-researcher to develop a hybrid toolbox for analysis.[16]

Within this thesis I have developed a toolbox that draws on 'autoethnography' and 'stimulated recall'. The act of qualitative 'coding', both outside and inside coding software, also served as a valuable tool to create a crack in the data and the processes involved. In some cases, analytical methods as 'engagements' unfolded even as method for sensorial encounter. It is there that we see how practices can become convoluted, so that an analytical method can take on the form of artistic method and vice versa. I detail this later in the chapter as I delve into the methods of 'stimulated recall', 'photography', and the many approaches of curatorial agency.

The application of analytical methods prompted, in return, thoughts regarding what can be captured, shared, or translated. How can I convey the tactile and the atmospheric? The sound diffusion in a greenhouse? A violin's sound travelling through a sonic hologram? The voice of the other? This goes to show why data collection can be a challenge but also explains the interest within AR to experiment with different methods of analysis, as well as formats that go beyond the dominant textual ways of representing research. I have come to grapple with this both through my hybrid methodological toolbox as well as by publishing, in part, in the RC which contains a

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[16] This again explains why artistic research, just as other practice-led research, is rarely driven by hypothetico-deductive models but rather by inductive reasoning and lets knowledge spring from the data analysis. It is however possible to give the research a focus, and in that instance highlight contextual sensitivity i.e., that 'hyphenated' phenomena "take on variety of meaning in different context" (Silverman, 2000, p. 37)

variety of artistic production and research data. Another format is the audio paper, which is referenced in this thesis (Stefánsdóttir, 2019, 2021) and which enables the research to stay within the sonic domain and materially combine artistic and analytical methods.

In what follows, I will outline my analytical methods and their applications.

5.1.1 Analytical autoethnography

Since its appearance in the 1970s, autoethnography has become a popular form of qualitative research employed within fields ranging from the social sciences and psychology to music (Bartleet & Ellis, 2009; Buckley, 2015; Clarke, 2005). As a research method, it draws on "personal experience ('auto') to describe and interpret ('graphy') cultural texts, experiences, beliefs, and practices ('ethno')" (Adams et al., 2017, para. 1). Autoethnography is thus "ethnographical and autobiographical at the same time" (Chang, 2007, p. 207), holding the power to connect "the personal to the cultural, social, and political" (Bartleet & Ellis, 2009, p. 7).

The method has developed in two different directions—namely, what Leon Anderson refers to as the 'evocative' and the 'analytical' (2006). The former seeks to document personal experience and employs a style that is set to evoke an emotional response within the reader, while the latter situates itself more beyond a self-experience. This is conducted through an analytical approach set to "point to a broad set of data-transcending practices that are directed toward theoretical development, refinement, and extension" (Anderson, 2006, p. 387).[17]

Within AR, a combination of the two has often been employed, and even made explicit in the output through different narrative styles (Aszodi, 2018; Doğantan-Dack, 2012; Östersjö & Nguyen, 2016; Skoogh & Frisk, 2019). What these projects unanimously depict is that being an artist entails being socially embedded, and that the process of creation is exposed to a variety of forces. These projects also refrain from confusing artistic reflection with that of analytical reflection, a key issue when it comes to discussion linked to the viability of AR. The difference between those two is articulated by Crispin through her aforementioned review of the pitfalls of reflection as a research tool; "(w)e strive to hear things not 'on our own terms' but 'in our own selves'; the terms on which we hear things must be more inclusive and communicable or the reflection becomes too myopic to function as research" (2021, p. 74).

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[17] I am aware of the critique of Anderson's proposal, such as presented in Norman K. Denzin's article *Analytic Autoethnography, or Déjà Vu all Over Again* (2006) where he points out the lack of review of the evocative and analytical debate and sees Anderson's method as a return to the Chicago School and its interactionist approach.

This research project aligns with the five key features that Anderson claims analytic autoethnography should include: "(1) complete member researcher (CMR) status, (2) analytic reflexivity, (3) narrative visibility of the researcher's self, (4) dialogue with informants beyond the self, and (5) commitment to theoretical analysis" (2006, p. 378). Through its design of looking at situated actions from within practice, I embraced the ethnographic and the autobiographical from the outset. This aligns with another analytically-oriented definition of autoethnography found in Heeuwon Chang's statement that it should be "ethnographical in its methodological orientation, cultural in its interpretive orientation, and autobiographical in its content orientation" (Chang, 2007, p. 208). In fact, critical reflexivity on the various listening traditions of WCM, became instrumental when setting up the micro-labs.[18] Through the research, I came to gain further insights on the topic, the outcome of which is displayed in the opening sections of chapters 6-9 where I situate my practice in relation to listening traditions.

Another ethnographic activity conducted at the outset of my research, although not part of the output of this thesis, entailed unpacking some of the socio-political aspects of music-making in my native country Iceland. In hindsight, this approach proved to cathartic and strengthened my agency as curator. Here, it should be noted that many performers hold in awareness the complexity of their situatedness, affected by outside forces that define an aesthetic preference within a field as well as the infrastructure available for their work.[19] The 'embeddedness' can never be shed[20] but, in my case, such heightened awareness laid the ground for future paths. Looking in the rear-view mirror, I can also see how the act of unpacking this aspect of my work was, in part, inspired by the work of my doctoral colleague Nguyễn whose research, published in 2019, looked at the socialisation of the performer's body within the field of traditional Vietnamese music (see Nguyen, 2019). Many of the strands located within such contextualisation later came to inform my discussions with Angela Rawlings as we collaborated on the quadrophonic work *He(a)r*. Therein we see how such an autoethnographical approach has strong ties to curatorial activity, set to be further unpacked in the last section of artistic methods.

All of the above aligns with Chang's statement that "autobiographical writing cannot come without a methical process of ethnography and its focus on cultural understanding" (2007, p. 212). However, "it does not mean that writing can begin only when analysis/interpretation is completed" (p. 212). Therein, a variety of techniques can be used by autoethnographers to "facilitate their recalling, organize

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[18] An exemption is the *Tapeshavet* project, which I was invited into as a participant. It, however, aligned with prior work, set to explore agency within ecological sound art.

[19] Some of its strands later became topics of discussions with Rawlings during the creation of *He(a)r* (see chapter 7).

[20] As I note in section 2.2, musicians have the possibility to work with or against cultural affordances.

memories, and compose field texts as data" (p. 201). For an artist-researcher, live performance presents specific challenges to such note-taking, while a recording session in a studio, or ecological sound art, may offer the possibility for a performer to take notes within the recording situation. Despite that, I chose to embrace, through the bulk of this research project, the position of 'non-rigorous noting' during performance events and in their wake. This decision came to me, in part, after initial attempts of diary-like log-writing where I had the tendency to lean towards commentary that served no purpose other than adding to text written 'over and under' the processes.

The strategy also linked to the demanding parameters of practice-led research. Once on site, it may suffice to keep track of the technology used for documentation alongside engaging in complex mediation processes. This strategy was therefore an holistic reaction to the workload that comes with being an 'insider' researcher. In its last stages, during tests with Davíð Brynjar Franzson's work *violin fragments* (see chapter 9), I experimented with verbal note-taking by uttering my curatorial thoughts out loud while documenting with audio and video. This was, however, only made possible by the nature of the case study, as I was working alone and doing sound tests that allowed for loops of activity and passivity. My compositional activity, on the other hand, allowed for note-taking as documentation of processes.

Photography was another form of data collection that served both as artistic material and note-taking. Through an approach of close-up shooting and exclusion of human-subjects, it functioned as a method of remembering various processes and entities on site, together with the role of atmosphere. That very same material, as I note in section 5.2.6, could become incorporated in further compositional process. This aligns with Sarah Pink's claim that a photograph has not one meaning; rather, through its reappropriation and diverse usage contexts, a photograph's diversity of meanings becomes fundamental to subsequent analysis (2013). Similarly, audio and video data served as both documentation of processes as well as artist material. The material often served to tackle a challenge presented to many researchers: how to present the voice of the Other. In addition to documented conversations through audio and video during meetings and hands-on working sessions, I also traced working processes through e-mail exchanges.

To further mine the material, I opted to employ the methods of coding and stimulated recall, presented in the following sections.

5.1.2 Qualitative coding

Qualitative coding is an approach used across fields that "requires us to stop and ask analytical questions of the data we have gathered" (Charmaz, 2006, p. 42). The analysis is often seen to be either data-driven or concept-driven (Gibbs, 2007). In the latter, the codes "may come from the research literature, previous studies, topics in the interview

schedule, hunches you have about what is going on, and so on" (p. 44). On the other hand, the data-driven coding is often referred to as open coding, i.e., a process where you start with no codes—an approach set to not "impose an interpretation based on pre-existing theory" (p. 46).

The data can be rich and, as in this research project, can encompass a vast amount of material, ranging from video and audio recordings to documents, e-mail, compositional sketches, photographs, and compositions. Whether conceptual or data-driven, the coding often follows a pattern of 'first cycle' coding, succeeded by a more focused revision during a 'second cycle'. From there, one continues to identify key issues or refined themes and, in certain instances, such as within grounded theory,[21] the analysis continues onto theory-building (Saldaña, 2013). This is reflected in Christopher Hahn's analytical chart (see Figure 3).
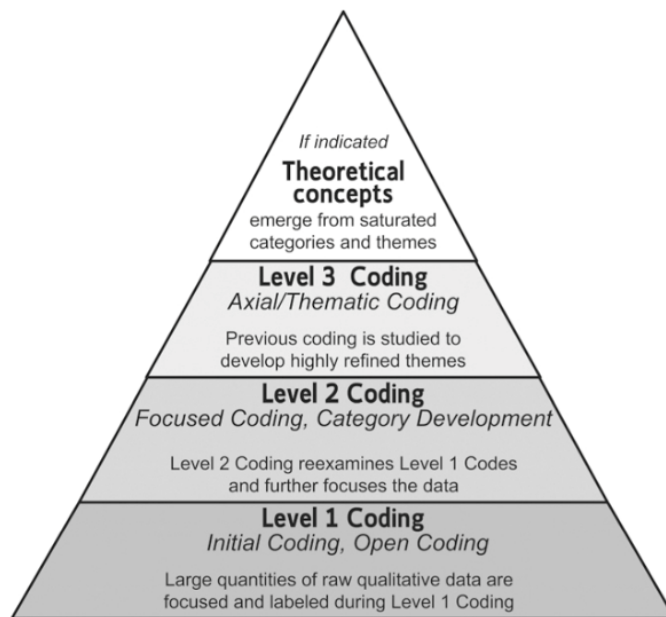
Figure 3
Hahn's chart for analysis of qualitative data (2008, p. 9).

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[21] According to Charmaz and Bryant, "[g]rounded theory is a method of qualitative inquiry in which researchers develop inductive theoretical analyses from their collected data and subsequently gather further data to check these analyses. The purpose of grounded theory is theory construction, rather than description or application of existing theories" (2011, p. 292). This method of thinking about and conceptualising data originates in the work of Barney Glaser and Anselm Strauss on dying hospital patients. The result was the book *Awareness of Dying* (1965) which contributed to the legitimisation of qualitative methods.

Analytical memo-taking[22] is an intrinsic part of coding, an open-ended approach set to further conceptualise the process. According to Johnny Saldaña, one rule of thumb is that "whenever *anything* related to and significant about the coding or analysis of the data comes to mind, stop whatever you are doing and write a memo about it immediately" (2013, p. 42, emphasis in original). Through his reading of Adele E. Clarke, Saldaña outlines how Clarke's attempt to push grounded theory around the postmodern turn—away from positivism towards that of interpretation—prompted her to propose that, for visual/materials analysis, coding should not even be the starting point. Rather, critical interpretation and memo-writing are essential at the outset but also needs to be further analysed through coding. (Clarke, 2005, as cited in Saldaña, 2013).

From the above, one can see that the phases of such an interpretative act can vary between case studies and are dependent on a variety of factors, such as the academic field itself—"the researcher's academic discipline, ontological and epistemological orientations, theoretical and conceptual frameworks" (Saldaña, 2013, p. 4). Within AR in music, coding has been used in various ways: to categorise gestures (Visi et al., 2020), map emotional response within performance (Skoogh, 2021), and as a tool in intercultural collaboration (Östersjö, 2020b). Within this research project, the first coding attempts, linked to the *Raindamage* album project, proved to be futile. In hindsight, the chosen coding material proved to be too limited as it represented only a fraction of a larger mediated process of album-making. It was therefore not until much later, where I had refined some of my analytical terms in connection to other studies, that I was able to revisit the analysis for a meaningful engagement.

My second coding attempt came with the *Tapeshavet* project (see chapter 9), where I embarked on coding of the video and audio documentation of field work. At the outset, I used what Saldaña (2013) describes as "Eclectic Coding", conducted in a coding software that allows for memo annotation.

> Eclectic Coding differs from First Cycle Exploratory Methods and Initial Coding (a grounded theory method), in that the latter usually codes *and* tentatively categorizes data in detailed line-by-line analysis with preliminary attention to the categories' properties and dimensions. Eclectic Coding does not necessarily follow these recommended parameters. It is intended as a 'first draft' or First Cycle of coding with multiple methods, followed by a 'revised draft' or Second Cycle coding with a more purposeful and select number of methods. (Saldaña, 2013, p. 193, emphasis in original)

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[22] In his book *The Coding Manual for Qualitative Researchers* (2013), Saldaña makes a distinction between field notes and analytical memos. The field notes "may contain valuable comments and insights that address the recommended categories for analytic memo reflection" (p. 42).

During the Eclectic Coding, I found myself arriving at mixed results. I could see that my coding, up until then, was invested in inherited, or institutionally loaded, values. I therefore turned things around and decided to approach the analysis from a conceptual stance. This led to the formulation of 'multi-entity performance' (see section 9.2.2), which helped me explicate the work.

5.1.3 Stimulated recall

The analytical method of stimulated recall has been used in music research since the 1980s but has come to greater prominence in the past decade. It is afforded by the recording technology, which is a transformative factor in artistic practice, as well as for musicians engaged in research on their own practices. Closely related to micro-phenomenology (Bojner Horwitz et al., 2018; Petitmengin, 2006), it helps the research group to "better understand experiences from a first-person perspective and facilitates access to our reflective mind" (Bojner Horwitz et al., 2018, p. 3). As stated in a paper I co-authored with Östersjö on phenomenology and practice,

> [t]he issue of the lack of a one-to-one relation between verbal discourse and music is a constant challenge in all forms of music research and constitutes both an inherent difficulty and a possibility in the use of stimulated recall, since the method allows for much of the analysis to stay within the domain of sound. (Stefánsdóttir & Östersjö, 2022, pp. 218–219)

This challenge is by no means limited to music or the arts, but manifests in various other research fields ranging from architecture and urban studies to sociology, health and medicine, anthropology, and human geography.

Within music, such analysis builds on so-called 'embodied' perspectives which encompass body movement and gestures, acknowledging that the 'living through', as conceptualised by Vermersch (1999), is not always accessible to our conscious mind and, therefore, can be hard to express in words (Bojner Horwitz et al., 2018). Within stimulated recall, the initial lived experience is transformed through phenomenological reduction into an object for reflection and meta-reflection. This, in turn, constitutes other instances of living through (Vermersch, 1999). Contrary to how it was originally conceived as a method for a subject to "relive an original situation" (Bloom, 1953, p. 161) through the act of repeated listening, stimulated recall is a more convoluted practice which one can approach through the perspectives afforded by post-phenomenology (see section 2.2). Herein, the method of stimulated recall proved essential when unpacking the mediated processes that took place within this thesis' micro-labs, in order to gain new understandings of the intentionality of technologies.

When designed as intersubjective inquiry, stimulated recall "provides means for a deepened understanding of the performative nature of musical subjectivity, and how these are also technologically mediated" (Stefánsdóttir & Östersjö, 2022, p. 132).

5.2. Artistic methods

In what follows, I will detail some of the artistic methods employed within this research project. They have served varying purposes, ranging from employment of well-known methods such as field recording and spatialisation to monitored or micro-sonic listening in relation to recordings and recorded material. Other methods may seem less familiar, such as stimulated recall, alongside the employment of sensorial photography, or the phenomenological variation and attunement[23] inherent to curatorial ways of working. However, these are essential to my work, set to provide new insights, heighten awareness, and drive various processes. Others are more speculative, such as found in the activation method. Importantly, I choose to start out by a section on technique, which does refer to skill rather than method. My conceptualisation around the role of technique, which entails a destabilisation of institutional and prevailing understanding as conducted within my curatorial agency, continues to feed into my work and is therefore included in this chapter.

5.2.1 Technique as dynamics of relations

The heading of this section serves as a thought provocation, for what 'technique' is not situated and relational? The fact remains that technique has been one of the main concepts of WCM when it comes to promoting "depersonalized technical musical knowledge or detached aesthetic appraisals", a process "where pre-given information and techniques are transferred to otherwise anonymous students through standardized procedures" (van der Schyff et al., 2016, p. 94). It is, as noted in the previous chapter, the tool and product of what Leech-Wilkinson (2020) has described as policing of performance, upheld by various stakeholders of WCM—teachers, institutions, agents,

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[23] The concept of attunement has been employed within posthuman studies in a variety of ways, namely to understand the mediation "between the human faculties of imagination and understanding" (Brigstocke & Noorani, 2016, p. 1) but also as attunement to environment or to fathom spatiotemporal scales—including lost futures and haunted presents—and "as a form of embodied relationality and interconnectedness that capacitates individual empathy and grounds the possibility of coproduction" (p. 1). As such, attunement is not tied to any Romantic holism; instead, it "involves orientations to difference, dissonance, and suspension" (p. 3).

the recording industry, critics, and consumers. Such a culture dictates that a performer aligns with certain norms; deviation from these will earn critique. As noted earlier, this is tied up with the reading that ideas, in relation to the work concept, came to define a performance practice where the performer was to adhere to the score by an expression of Werktreue (Goehr, 1992). Similarly, recording technology was co-opted as a tool of regulation (Leech-Wilkinson, 2020).

Such development, where technical skills serve certain repertoire and behaviour as an "internalisation of norms as values" (Leech-Wilkinson, 2020, ch.10), prompted Schaeffer to raise the following question: "Among so many volumes dedicated to instrumental or compositional techniques, can we find even a few articles on the art of hearing and the analysis of what is heard?" (Schaeffer in Chion, 1983/2009, p. 36) This suggests a systemised transfer that "risks losing sight of the qualities that vitally differentiate art in its heuristic, gratuitous freedom from the applied remit of design" (Norman, 2013, p. 282). Such reduction opens to the mistake of seeing technical knowledge as an end in itself and gives little weight to the intersubjective and mediated possibilities of music-making. These codes of conduct are entangled with cultural ideologies that can be uninviting and discriminating. This is reflected in the promotion of an historical view that favours men, be it within WCM, electronic music, or sound art (Eckhardt & De Graeve, 2017; Rodgers, 2010; Sadie & Samuel, 1995), and a stance which even excludes women from the history of music technological invention (Rodgers, 2010). Amongst the repercussions is that the practice of sound reproduction and technological forms that are "culturally coded as female or maternal have been systematically devalued or controlled" (p. 12).

But if we refer to the etymology of 'technique', we are met with a different picture; technique was never intended to become an instrument of governance. Introduced into English from the French 18th-century word, 'technique' can be traced to the Greek 'tekhnikos', meaning 'pertaining to art', and 'tékhnē', referring to art and skill or craft in work (Online Etymology Dictionary, n.d.-b). According to Martin Heidegger's understanding, "(t)ekhne is the name not only for the activities and skills of the craftsman, but also for the arts of the mind and fine arts. Techne belongs to bringing-forth, to poiesis; it is something poietic" (1977/2009, p. 13). Additionally, in the time up until Plato, it was linked to the word 'episteme'; both words referred to knowing in the widest sense. It meant "to be entirely at home in something, to understand, to be expert in it. Such knowing provides an opening up. As an opening up it is a revealing" (1977, p. 13). According to Dylan van der Schyff, Andrea Schiavio, and David J. Elliott who build on Heidegger's reading of the word, technical knowledge should rather be seen "as serving the wider existential project associated with human flourishing" (van der Schyff et al., 2016, p. 88).

By critically thinking about the concept, I modulate technique towards a more multi-faceted understanding, i.e., a multimodal doing conducted in relation to technologies and culture. This resistance produces the possibility that, through such 'doing', "new relational fields are forming, and with them, new modes of existence" (Manning, 2015, p. 55). If seen as skill and as defined by Tim Ingold (2018), technique is not a mere 'habit' but reliant on one's sensitivity to the actions, accompanied by heightened awareness and permeated by reflexive thinking in the act.

5.2.2 Activation

Central to this project's experimental approach is the method of 'activation'. This has led to works that fall within 'The Activation Series' (*I play Northern Lights* and the *Tapeshavet activations*) where activation "represents a performer's active engagement with space (…) and in so doing, explor[es] whether new aspects of the environment's structure can be revealed" (Stefánsdóttir & Östersjö, 2019, p. 377). The methodological focus in the activation series is not to explore activation as a feature of artistic practice, but rather to provide experiential materials which may guide a further understanding of non-human agencies at play in a certain situation. This approach has further flourished within other site-respondent work that falls within this thesis.

5.2.3 Field recording

Field recordings are central to many forms of site-related practices. Made possible by the invention of the phonograph by Thomas Edison in 1877, it initially developed as a representational approach to capture the sounds of our so-called natural environments. It was also used as a tool within ethnography and anthropology as found in the work of Frances Theresa Densmore, as well as in ethnomusicology as first seen in the work of John Lomax, which he began through documenting the songs of African-American male prisoners (Wright, 2022). Its effect as a colonising tool, and the early recordists' illusion around the transparency of their role, is further addressed in chapter 8. Today, field recording is conceptualised as relative to the recordist, where values and techniques, shaped over time, affect the outcome of the sonic material produced.

Within music, such a material approach has been used across genre, with some early experimentation found in Schaeffer's musique concrète, which combined raw field recordings with various technological mediations. The act of field recording was also at the heart of the development of the field of acoustic ecology, which has been on the rise since the late 1960s—a study of the sonic relationship between living beings and their environment. It is sometimes referred to as ecoacoustics or soundscape studies. The latter term was coined by R. Murray Schafer who, along with his colleagues within

the World Soundscape Project (WSP), conducted some of the initial work (see section 8.1.2). Parallel to this, members of the experimental music scene in the 1960s were engaged in sonic and spatial exploration that extended over to critical review of the physiology of sound in relation to the body, such as in the work of composer and performer Pauline Oliveros. Another composer who made such dynamics of relations a cornerstone in some of her work is Lockwood, whose work was brought up in the Introduction. An example of her approach is found in the *River Archive*, looking at how the sound of moving water affects the human being. The impetus behind *River Archive* stemmed from Lockwood's thought that "it seemed to me if we were putting all this sound out there, we should at least know what it was doing for people, and to people" (Rodgers, 2010, p. 117).

During my years as radio producer at The National Broadcasting Service of Iceland, I engaged in field recording as a way to gather atmospheric material for radio features. Some initial attempts at sound art involved field recordings conducted within my home, capturing both voices of family members as well as the sounds produced by the battering of inclement weather. At the outset of my research, I decided to further develop field recording as a skill and make it part of my toolbox. The field recordings were initially formulated to be carried out with the aim to:

- o heighten awareness of listening and the affordances of sounding objects;
- o become material in collaborations or open conversations in collaborative work;
- o and be a tool to conceptualise projects linked to ecology.

As my research progressed, I started engaging in performative activations in various environments (see previous section). In addition, I started to bring my field-recording equipment into institutional environments. In the recording studio, I employed field recording techniques and technologies in relation to various objects for activations, but also to enhance microscopic sounds, usually only audible to me, in the intimate listening space of solo violin performance. A similar intention, outside institutional space, was the aim to catch microscopic sounds and activations through a DIY practice recording with DPA 4060s microphones. Such aesthetic preference, as will be further unpacked in chapter 9, links to my accumulated experience of performing a Hopf violin from the 1780s in baroque setup, and the particular tactility of such music performance practice.

As will be detailed in the following sections, these technologies allow for "reduced listening" (Schaeffer, 1966/2017) and repeated playback, which I came to explore through the methods of micro-sonic listening and stimulated recall.

5.2.4 Micro-sonic listening

The term "micro-sonic listening" was put forth by Östersjö in his book *Listening to the Other* (2020b) and builds on the transformative power of listening afforded by technologies, or "listening to sound that has been captured by microphones and is transmitted through loudspeakers (and especially when monitoring over the headphones)" (p. 45).[24] As is elaborated by Östersjö, this type of listening can be seen to align with Barry Truax' category of 'listening in search', which he put forth in relation to his categorisation of listening in a natural environment (Truax, 1984). However, micro-sonic listening also has aspects of 'reduced listening', which falls within Schaeffer's theorisation of the modalities of listening in relation to technology (Schaeffer, 1966/2017). Contrary to what one might think, the reduction can entail an ecological perspective, as detailed by Schaeffer. "The experiment in concrete music reveals within the ear, and with almost no relation to the musical ear, a sound eye, sensitive to the form and color of sounds, and also, as there are two ears as well as two eyes, to the three-dimensionality of these sounds" (Schaeffer, 2012, as cited in Östersjö, 2020b, p. 45).

Micro-sonic listening can be seen as essential to all micro-laboratories of this thesis, ranging from studio recordings, performances on site within ecological sound art, and electroacoustic composition. It also serves as a vehicle for intersubjective meaning-making and a tool for curatorial attunement (see section 5.2.8). Within *An Urban Archive as an English Garden* by Franzson, micro-sonic listening was used to explore material and affective dynamics but also as an act that established openness between the participants in their collaborative processes and prompted discussions surrounding technologies' intentionality. All of this came to later affect the process of notation, furthering system-coding and performative intentions. In *The butterflies ascended*, it was essential to onsite activations, as it brought forth a performance space in the studio and was also used for attunement to the site of installation. Finally, micro-sonic listening became a driving force in the work's compositional phase.

5.2.5 Stimulated recall as artistic method

As detailed in the section on analytical methods, stimulated recall may also serve as an artistic method. Like the analytical approach, it builds on the perspective of 'living

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[24] This listening focus, or usage of recording technology in a manner that resembles that of a stethoscope or microscope, finds its ideological echo, according to Östersjö, in 19th-century England's interest in what John M. Picker (2003) defines as 'close listening'. Such focus is embedded in "recognition of ambient sound as ubiquitous and inescapable and its endowment with new material and figurative meanings" (Picker, 2003, p. 6). It coincided with an interest in the visual through the invention of photography and scientific optic research.

through' (Vermersch, 1999) and the experiences' transformations through phenomenological reduction. Unlike its analytical counterpart, stimulated recall may not always evolve around engaging with documentation material, set to capture the moment of performance or site-specific engagement. Rather, it may include playback of media to lay the ground for the unfolding of phenomenological variations essential to artistic creation. Such was the case of onsite sound-testing within *The butterflies ascended*, but also during moments of intersubjective work in the studio. At times, stimulated recall evolved around engagement with material that worked also as material for documentation. This was the case with sensorial photography, to be explained in the next section. Lastly, stimulated recall may entail analysis becoming an integrated part of the artistic creation, such as found in an analysis of the *Tapeshavet* activations, which then paved the way for the creation of the work *The butterflies ascended.*

5.2.6 Photography

Throughout this project, I have familiarised myself with photography as an artistic method. Onsite, the process be seen as a way of attuning to multiple entities, as I use the technology for close-up shooting and the exclusion of human-subjects. Herein, my usage of the camera springs out of an approach found also within my favoured DIY setup of field recording (for more on this aesthetic preference, see section 5.2.2 and chapter 9). This attunement, as also mentioned in the section on analytical methods, worked as a method of note-taking on site, showing how a sensorial ethnography (Pink, 2015) can hover at the intersection of analytical and artistic methods. Just like the tape recorder has a different intentionality to sound than a human (Ihde, 1990), the camera brings out elements that open up to new ways of 'living through', both on and away from site.

As with micro-sonic listening and its possibility of repeated listening, the photographs invite a convoluted practice where affordances are fluid, depending on perspective within the laboratory. In the work process of *The butterflies ascended*, the photographs were used for curatorial attunement, but also as material in a performance score, where the photograph was seen to work as sensorial technology that captured and conveyed an atmosphere from work onsite. Photographs were also used to facilitate intersubjective meaning-making within that work as I asked the vocal artists to share photographic material with me, which I later used as a score for improvisation. Through such an approach, the photographs became a method to establish openness and trust through material exchange.

5.2.7 Spatialisation

As part of this research project, I have employed the method of 'spatialisation' through multi-channel usage. Within the history of music, early initiatives[25] can be found in Schaeffer and Pierre Henry's *Symphonie pour un homme seul* (1951) where the speaker setup was designed to counteract frontal positioning. Instead, four speakers—placed right and left, behind the audience and above—were laid out. It is also here that we encounter performative intentions that have been characteristic of acousmatic music, for the system was run from onstage enabling a situation where the performer controlled "the spatial intensity and the localisation of the sounds" (Teruggi, 2007, p. 218). Other notable early initiatives are Karlheinz Stockhausen's five-channel *Gesang der Jünglinge* (1955-56), the octophonic tape compositions of the Music for Magnetic Tape Project (1952-54),[26] and the Philips Pavilion at World EXPO 1958. The designers of the pavilion, set to display electronic technology, were Le Corbusier and Iannis Xenakis; commissions included Edgar Varèse's *Poème électronique* (1958) which made use of the pavilion's inbuilt speaker system dotted across the interior walls (formore on this work, see section 6.1.4).

The development of new spatialisation technologies, as outlined by Gascia Ouzounian (2015), created "a new vocabulary of space in relation to musical forms and processes" whose poetics

> were firmly grounded within Euclidean and Cartesian models of space, concerned with such elements as: the location of sound objects within three-dimensional space; the movement of sound along sound routes (…); the segmentation of (absolute) space for the purposes of serialisation; and the idea of time-space as an empty container wherein sounds can develop. (Ouzounian, 2015, p. 76)

This prompted a counter-action of critical space-practices that promoted sound as a spatial experience, where even the visitor was considered a co-constituent. Central to such a shift were the 1960s Fluxus event scores and the shamanic or ritual performances of Joseph Beuys and Terry Fox. The field of acoustic ecology that emerged around the same time came through their treatment of the sonic to embrace traditional forms of concert representation, through which 'soundscapes' were introduced.

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[25] In this instance, I choose to limit my overview to spatialisation conducted with the help of loudspeakers. The history of 'spatialisation' within music can, however, be traced further back, such as in the music of Palestrina and Tallis and the polychoral style at St. Mark's in Venice, afforded by its architectural style.

[26] The project was funded by Paul Williams and included the work of John Cage, Earle Brown, David Tudor, Morton Feldman, and Christian Wolff.

In line with recent years' review of some of the original strategies of the soundscape-ists (see sections 8.2.2 and 9.1.2), the very notion of what spatiality entails has also come into question, begging its practitioners to reconsider the usage of the word 'soundscape' (Hogg, 2013b; Ingold, 2011) and how it proposes a slicing up of environmental experiences. Such a reaction, grounded in an embodied perspective to both the initial act of field recording as well as its sharing to audience, is formulated as follows by Bennett Hogg.

> The issue is not spatiality but participation, not directionality but involvement, and it is addressed by resisting the split between subject and object, culture, and nature. One could make a perfect recording of a forest in 32 channels and redistribute this material on the same number of loudspeakers, reproducing the experience of being in the forest very closely, and yet it would still be an objectification, a representation, a function of a listening subject who remains silent and attentive, not a listener who is a constitutive part of the soundscape they experience. (2013b, p. 262)

My work with spatialisation is anchored in a participative and performative understanding. The work grows out of an experiential process that acknowledges the various forces at play at the same time it finds its outlet in an experimentation with 'spatial sound', so often found within the acousmatic tradition. Importantly, as will be shown, knowledge of the technology's intentionality comes to affect the creative process.

Through the projects included in this thesis, this has led to an employment of multi-channel setups in a variety of ways, starting with a quadrophonic setup in *He(a)r* and a 5.1 surround-speaker setup for *I play Northern Lights*. They are grounded in musical traditions in that they are linear in their original composition and do ask the visitor to take a position in a 'sweet spot' for listening. All works can, however, be aired within a museum-like setup, where the visitor can experience it at their own will. In the later compositions of this thesis, I came to move the multi-speaker setup into environments that are situated far from the institutional concert space. This resulted in *The butterflies ascended*—an eight mono-channel work where speakers were placed at various heights along the periphery of the tropical tree house of the Botanical Garden in Lund (SE). *Pytur* utilised a nine mono-channel installation that was created for the site-specific sound work *Spherical white with Diamond*.

As part of this research project, I have also explored multi-channel spatiality in relation to live violin performance. This took place within four multi-channel works, namely within *An Urban Archive as an English Garden* by Franzson which built on the wavefield technology, *Violin with Pytur* by Kent Olofsson set within my nine mono-channel *Pytur*, my own *Höllupula*, set within a quadrophonic setup and *violin fragments* by Franzson which includes AI and is performed within a quadrophonic (double stereo) setup.

5.2.8 Curatorial practices

Instrumental to all artistic methods and the complex material and immaterial negotiations involved is the agency of the curatorial (Martinon, 2013), 'curatorial' should be understood as an agency that manifests differently depending on the context and needs to be reinvented in each situation as it "bridges performative and compositional agency" (Stefánsdóttir & Östersjö, 2022, p. 127). The becoming curatorial of this research project, when framed through a post-phenomenological lens, builds on contextual sensitivity, as well as phenomenological variation and attunement that is technologically mediated as well as situated. Within this research project, the curatorial also exists at crossroads of interdisciplinarity and is a potent tool to negotiate sonic contextual complexity. Herein, it is part of planning (Suchman, 1987) which, as will be shown later in this thesis, can unfold in parallel on multiple temporal scales.

Chapter 6. The concert hall

This chapter is centred around agencies and dynamics of relations in one of WCM's central environments, the concert hall. Such a site usually marks the end point of projects, prior to which programs have been curated, funding secured, and works rehearsed. In the case of a new commission, the process expands with a compositional phase and sometimes workshopping. In addition to the traditional concert hall, there is also a wider range of so-called 'venues'. Through my own live appearances, they have ranged from theatres, pubs, museums, TV and radio studios to gardens, sport arenas, churches, and former industrial sites. Homes have also been turned into concert platforms or venues devoted to experimentation. I use the word 'venues' for they do not tick the box of the architectural, or rather institutional, prowess that one usually connects with concert-hall culture. That description is normally reserved for venues that are perceived as 'temples' (Kirchberg, 2020; Ungeheuer, 2020) for WCM listening and where I only perform when there is institutional backing, such as through a symphony orchestra's fringe event, music festivals, or a concert hall's own music series. What is essential to this chapter, however, is that traditions forged within concert-hall culture affect and regulate the dynamics of relations within the walls of the diverse set of venues detailed above, even in the most informal concert setting.

In the ensuing sections, I will unpack what such traditions entail and how such forces shape the listening relations within concert-hall culture. Given the centrality of such conventions within WCM, it may come as a surprise that, until recently, very little critical discussion or literature has been devoted to the topic, contrary to, for example, the fine arts where museum studies are an integrated part contributing to that field's continuous re-formulation of its relevance within contemporary society. Following my outline, I will detail a listening perspective that informed my artistic work, shared in the latter half of this chapter. The work in question is *I play Northern Lights* created for Nordic Affect's concert at the Dark Music Days[27], 2017 edition, which takes us to the Norðurljós (meaning: Northern Lights) Hall of Harpa in Reykjavík, Iceland.

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[27] Dark Music Days is an annual festival devoted to contemporary music and established in 1980 by the Society of Icelandic Composers.

6.1 The listening culture of the concert hall

In most European cities and North American metropolises, you can locate edifices dedicated to classical concerts. Home to symphony orchestras, these buildings are usually architectural monuments, be it the Royal Concertgebouw in Amsterdam built in the late 19th century, the second Gewandhaus in Leipzig inaugurated in 1884, or the more recent architectural projects such as Disney Hall in Los Angeles, the Harpa conference and concert centre in Reykjavík, or the Elbe Philharmonic Hall in Hamburg. If framed from the perspective of 'experienced space' (Bollnow, 1963), then these buildings are created by architects and designers who "intentionally shape the experience of, and emotional response to, a place through the material environment" (Bille et al., 2015, p. 33). Hence, the architectural space is created "to affect people's moods and guide their behaviour for aesthetic, artistic, utilitarian or commercial reasons" (p. 33). What this may entail is the focus of the next two sections, but let us start by taking a closer look at how an event at such an edifice may unfold.

On the night of an event (let us pretend that it is a symphonic concert), people will stream to the building, perhaps mingle in a large foyer with other guests, many of whom may have had a subscription ticket for years. It is into this very same foyer that people will gather during intermission and after the concert. In this foyer, they may compare and discuss their experiences of the event. Prior to the visit and depending on the financial backing of the orchestra in question, the concert-goer might have had exposure to online digital educational content; they may have even downloaded the program booklet[28] in advance.

Once inside the hall and shortly before the start of the concert, musicians gradually assemble onstage. Some may warm up or play some phrases after they have taken their seats. Then a conductor (in most cases identifying as male) takes centre stage, receives applause, turns his back to the audience, and faces the orchestra. Lights gradually faded in the front of house while simultaneously increasing in strength onstage as the conductor entered. This lighting transition indiates that the audience should focus their sensing on the activity onstage and listen in stillness. The conductor's hand/baton is raised and the playing begins. Then the orchestra plays while the spectators remain immobile and in silence until the end of each work. At that point, the audience has the option to express their pure (or tempered) delight through clapping, sometimes even whistling or shouting. During the concert, the program booklet serves as a trusted tool as it informs the listener as to the number of movements within each piece. However, in many cases it is redundant, since the concert-goer may already be familiar with the

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[28] It is not the focus of this dissertation to look at how program booklets have evolved through time. For further reading, see Thorau (2020).

work and even have a favourite recording of it in their album collections or digital playlists.

The above description will be familiar to anyone who has been 'initiated' into the concert culture of WCM. There are, of course, instances of different types of curation, where there is no program booklet, and the music is announced and introduced between numbers. Sometimes guests may even be allowed to bring their drinks inside, with the aim of evoking a club atmosphere.[29] Despite modifications to the concert situation, the context remains the same: an event dedicated to listening in silence. This codified behaviour is particular to recent times. Scroll back two hundred years and you would have been met with quite a different scenario where people chatted during the performance, clapped inside movements, or even sat facing each other and not the orchestra.[30] It was not until around 1870s, way past any classical epoque, that we arrive at the format with which one is greeted today within what is called 'classical concerts' (Tröndle, 2020). This transition, or change in behaviour, was tied up with social change through 19th-century secularisation and industrialisation. Gradually, music became an autonomous musical artform to be enjoyed in specially designed halls, a shift away from its prior ceremonial, liturgical or festive and vernacular role. Within these edifices specially designed for concerts, the visitor was met by chairs that had been nailed to the floor. Gone were eclectic programs that could mix dancing or lieder with larger orchestral works, with performers playing their own compositions. Instead, an era dawned where the "(t)he program sequence became standardized" and where the audience would devote its "undivided attention to the music in two forty-five-minute blocks" (Tröndle, 2020, p. 19).

Such institutionalisation resulted in a listening tradition of contemplative listening and negation of movement by the audience, or the 'sit-still-and-listen' paradigm (Bhagwati, 2020). It resulted not merely from the outlined social change and the appearance of public concerts, but also through the emergence of a particular understanding of the ontology of scored music. The latter not only regulated the choice of what is played in the hall but altered even 'how' we listen to music. The idea of the 'work concept' and how it has informed relations and distributed agency within WCM is the focus of the next section.

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[29] For further reading on audience renewal attempts within WCM, see Wimmer (2020).

[30] An example is the Alte Gewandhaus in Leipzig, where the audience on the parquet faced each other (Tröndle, 2020).

6.1.1 Structural listening within the frame of the 'work concept'

In her seminal book *The Imaginary Museum of Musical Works* (1992), Goehr raised a critique of philosophy's idealist accounts of music, wherein works are "identified with ideas formed in the mind of composers" (Goehr, 1992, p. 18). By unearthing archival sources, she proposed that the 'work concept' emerged around the 1800s, a practice which moved music away from its temporal and functional—secular or ecclesiastic—emphasis over to music being seen as 'an end' in itself. To be sure, musical works had existed prior to this in Western history—works that are notated and have a beginning and an end. It is revelatory that the word 'work' was rarely used to refer to a composition before the 1800s. With this move, which brought music on a level to literature, musical production is transferred to being seen "as the use of musical material resulting in a complete and discrete, original and fixed, personally owned units. The units were musical works" (Goehr, 1992, p. 206). Michael Talbot makes a similar analysis stating that "between 1780 and 1820, approximately, a genre-centred and performer-centred practice became a composer-centred one" (Talbot, 2000, p. 172). As a result, people started to "'sort' music in their minds primarily according to composer, and not, as previously, according to genre" (p. 172).

Another consequence was that gradually some composers were given the status of 'isolated geniuses' who created works that were to be performed repeatedly in many geographical locations. This had various effects, one being a raised status of instrumental music which, in return, put added demands on the accuracy of notation and produced policies regarding plagiarism and copyright (Goehr, 1992). As elaborated by Trevor Wishart (1996), such notation was of a summative nature, an 'analytical notation' that did not necessarily, through its symbolic representation, rely on aural judgement. The same applied to the fixed pitches, i.e., an "idealisation of acoustic reality" that reflected the fact that "notation demands (…) a finite set of pitch-levels which we can permute and combine" (Wishart, 1996, p. 23). At the same time, musicians entered a new era where they were expected to be 'true to the work'[31] in their 'interpretation', an approach often described through 'Werktreue'. The only possibility for deviating from that task was to develop a parallel activity of virtuosity and extemporisation. However, by the early 1800s, extemporisation (which had been inherent to music-making in earlier centuries) had acquired a different role and "was seen to stand in strict opposition to composition 'proper'" (Goehr, 1992, p. 234), earning such performance expression the aura of 'charlatanism'.

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[31] The exception, where performers such as Lizt and Paganini embarked on extemporisation, either through their own performances or special commissions, was however not given the same social status as the performance of works proper. Rather they were seen as circus acts (Goehr, 1992).

The shift that came in the wake of this composer-centred paradigm—how some composers were given the status of 'isolated geniuses'—resulted in mainstream status for their works. This produced, in return, the rise of the conductor whose role is still, to this day, both that of master and servant—an 'expert' in the work who, at the same time, guides the performers through its interpretation. The conductor could not escape this through extemporisation like the performers; however, as Goehr explains, their lot is "not an unhappy one" (Goehr, 1992, p. 273). Their master position earns them a status that can equal that of the canonised composer and, from a cynical viewpoint, the successful ones "earn much greater salaries than all other classical musicians—except virtuoso performers" (Goehr, 1992, p. 273). Cynicism aside, navigating such a role has often been solved by conductors through "adopting the position that while committed absolutely to the ideal of fidelity, they none the less recognize the importance of interpretation" (p. 277). Such an act of interpretation is constantly referred to through the notion of Werktreue, which opens up to the danger of absolutist claims.

> Without absolute grounds, structure and ideals remain, as does the possibility of finding well-founded criteria of truth, meaning, and value. Ideals function even in the absence of an absolute foundation. They function not least because it is thought valuable for them to do so, and that value can be explained and supported in numerous ways. (Goehr, 1992, p. 279)

The danger lies not least in the power structure that it infers. To be clear: WCM's notion of 'mastery', as noted by Leech-Wilkinson, builds on and ensures the domination of men when it comes to positions of power (Leech-Wilkinson, 2020).

> Women as aspiring professionals are still led to accept a degree of patriarchy in WCM training that has consequences for willingness to be subservient to male performers and gatekeepers, to accept behaviour from teachers and conductors, for example, that would be rejected in life outside the profession. The extent to which men feel entitled in WCM can only be increased by belief in the dead but godlike male composer. Patriarchy is built into this culture, and with it a host of linguistic practices that place women in subservient and undesirable positions. (ch. 10)

Even if strategies set to ensure gender diversity are implemented (see section 3.1.4), the power of institutionalised masculine norms may 'mould' agents set to implement change (regardless of sex), i.e., force them to "accept and adapt their views to the masculinized institutional environment" (Magnusdottir & Kronsell, 2015, p. 319). How such training or disciplining manifests for the performer will be further addressed in the next section.

As for the listener, the shift towards 'work' and its ensuing 'mastery' claims called for a framing of the listener's experience, outlined in the previous section, through the creation of what has been described as a museum culture for music. Such environments, due to the changed ontology of music, afforded the listener no longer to show their boredom over a performance by either stopping it midways or chatting during a piece. Instead, they became an 'audience', destined for the same role as other participants: to focus their aesthetic concern upon the 'autonomous' work. Such compositions, as Clarke explains, "are those for which the logic of structural integration predominates" which, in return, generates an autonomous listening—"the kind of listening that follows the structure of an individual work" (Clarke, 2005, p. 129).[32] But how such an autonomous performance and listening is 'produced' within WCM is reliant on cultural conventions that are designed to serve a system that is "blind and deaf to their context and environment" (2005, p. 129). All the while, as outlined earlier, it has patriarchy built into its culture (Leech-Wilkinson, 2020). This requires us to move from the perspective of structural listening to that of 'listening-as-control'. How this unfolds, in an anthropological space which is triangulated into relations between individual, social, and hierarchical systems (Bollnow, 1963) and where stakeholders continue to shape and uphold such realities, is the focus of the next section.

6.1.2 Listening-as-control

The rise of the middle class and the emergence of music as commodity, mixed with the change in music's ontology (dividing the agencies of composer and performer), are parallel developments which, to this day, continue to lay the ground for the institutional and economic foundations of WCM. As outlined in section 3.1.1, such a system stretches from academia and symphony orchestras to concert organisers, critics, managers, audiences, and the recording industry. The power of the state in the European context within such reproduction, through allotted funding, should not be underestimated—nor the power of individuals, what Born describes as 'charismatic figures' (Born, 2005). These stakeholders continue to socio-culturally define qualities of listening through a prescribed value system that focuses on 'aural perfection' through its 'exact' renditions of scores. Such a cultural construct, if framed from a listening perspective, can be described as listening-as-control as it relies on the 'obedience' of its performers.

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[32] Autonomous listening can of course be seen to hold for other types of music in that it asks the listener to divert their focus away from the sounds of everyday live. It is however a fact that WCM did much to implement such an approach to music.

Due to the shift towards the 'work concept', and here I return to Goehr (1992), the performer had two options: to either ground their performance in an emphasis on the score or underline the event of the performance. But no matter the intentions or any focus on liveness, the subservience to the score, encapsulated in the Werktreue ideal (a stance of allegiance with the text of the work) could only be tempered by virtuosity (Goehr, 1992). It is important to note that the latter approach can be seen as another mode of Werktreue, as the performer never leaves the role of an 'interpreter' of a musical work, even if they try each time to alternate their performance of the musical text (Crispin & Östersjö, 2017). At the same time, the 'preservation' mode resulted in emphasis on certain repertoire, which forms the basis for what is heard within concert hall-culture.

It should, therefore, not come as a surprise that these works create a framework for musical education, a preparation for a performer's professional live. Similarly, music education today still operates within the historical WCM's master-pupil system where teachers tend to "teach the way they were taught" (Holmgren, 2022, p. 19) and align with an 'instructional' paradigm for later recall during examination moments. Such a way of demonstration and imitation explains why there is little space for dialogical practices that support the student's growth towards personal autonomy and shaping their artistic voice (Holmgren, 2022).

For a violinist, this entails great emphasis on Romantic repertoire (concertos and sonatas) mixed with works by Bach and Mozart, alongside pieces focusing on technical prowess such as works by Paganini. Not playing this repertoire can be seen as an act that can diminish your future employability as it is essential to orchestral auditions. The tension this can create may be witnessed when students embark on formulating their individual degree projects. Such was the case for Agnes Scherwin, an undergraduate student at the Malmö Academy of Music whose contextualisation bore witness to how teachers of chamber and orchestral music claimed that certain repertoire was something she 'had' to have played. This, she found in return, produced a competitive atmosphere easily noticed in how the weeks before the technical exam would always circle around what Paganini études one played (Scherwin, 2019, p. 5). Overall, it left her questioning how she could carve out a space to explore her own artistic voice.

Another similar perspective can be found in Tanja Orning's autoethnographic writing about the time of her own studies. Her text bears witness to how her education was steered towards a certain trajectory that had the effect of leaving little space for exploration in relation to subjectivity or identity.

> This wonderful music, the masterpieces, interpreted and embodied by our heroes on Stradivariuses, Guarneriuses and Gofrilleriuses. I was also going to play this music. What

a feast, what happiness lay before me. The iconic interpretations, the iconic cellists—the classical music superstars: Rostropovich, Jaqueline du Pré, Zara Nelsova, Feuermann, Navarra, Starker and Isserliss. All these magicians of the instrument. A gold standard already set. Who was I in the middle of this? What room for action was left for me? Who could I become in this world? (Orning, 2018, in Orning, 2019)

Here, Orning captures various dynamics within the field: how a musician is raised and trained to exist within an hierarchical system or a lineage of performers that are given the status of musical heroes, and how instruments (Stradivariuses, Guarneriuses and Gofrilleriuses) can represent institutional status (Norman, 2013). Her writing also hints at how recording technology has been 'used' within WCM as a tool of regulation and internalisation of values. For example, the hero's status of a performer can only get them so far. If a recording within WCM does not render an exact performance of a score, it can be seen to be riddled with mistakes. These very same recordings are compared for quality and used to set the bar for live performances, contributing to the immense pressure performers can feel, even producing stress and ill health within practitioners (Papageorgi et al., 2013; Skoogh & Frisk, 2019; Yoshie et al., 2009).[33] The institutional focus on composers and scores continuously robs performers of agency and restricts them from trying to expand it within an already restricted and regulated space of live performance, where what performers bring to the table weighs less than composers, and the score is more valued than the live event itself.

Importantly, such a belief system is riddled with anthropomorphism, an example being how it incorporates technologies as a 'means' and fails to credit an instrument's role in how a performer's expression forms. This happens despite research having shown that how a performer's voice (which may engage the agency of a score) is "developed in prolonged explorations of the affordances and resistances of the instrument"(Crispin & Östersjö, 2017, p. 300). The instrument is, in fact, essential to how a performer transmits musical expression (Alperson, 2008; Hardjowirogo, 2017; Magnusson, 2009)—be it sonically or visually—to an audience that is perhaps not always as invested in matters of regulation as the stakeholder system would like them to believe (Leech-Wilkinson, 2020). In the following section, I will look towards another entity that is often merely treated as a backdrop for human-to-human relations, namely the architectural space of concert-hall culture, acoustics included.

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[33] Here, it should be noted that as a recording allows for repeated listening, it could also be argued to have contributed to heightening technical standards of performers, although that, as Leech-Wilkinson (2020) points out, can also relate to over-recruitment and other factors.

6.1.3 Acoustics and concert-hall design

One of the quintessential relationships in music is the one between a performer, their instrument, and the acoustic properties of buildings. It is a relation that is so intertwined that one may speak of music and other arts having both influenced and "been influenced by the acoustics and architecture of their presentation environments" (Long, 2014, p. 1). It was, however, not until the early 20th century that we saw the rise of the field of architectural acoustic studies (Beranek, 1954/1993; Long, 2014), a subcategory of acoustic studies.

The word 'acoustics' is derived from the Greek word 'akoustos', which translates as "heard, audible" (Online Etymology Dictionary, n.d.). As a field, acoustic studies spans across a variety of perspectives dedicated to acoustic production, transmission, and control as well as what effects acoustics can produce and how it is received (Berg, n.d.). Such research has shown the reciprocal and dynamic relations between arts and spaces. Writing thereof is found in Marshall Long's introduction to his book, *Architectural acoustics* (2014), where he notes that a line has been drawn between the difference in living environments and that of musical development in Africa and Europe. In Europe, the tonal scale may be traced to the fact that "prehistoric tribes sought shelter in caves and later constructed increasingly large and reverberant temples and churches" (p. 1). In Africa, on the other hand, performances unfolded outdoors and, consequently, took on "a highly complex rhythmic character" (p. 1). Similarly, Gregorian chant stood in direct relation to the Gothic cathedrals, while liturgical Baroque music was created in relation to the churches of that time.

> In the latter half of the twentieth century both theater design and performing arts became technology-driven, particularly with the invention of the electronic systems that made the recording, film, and television industries possible. With the development of computer programs capable of creating the look and sound of any environment, a work of art can now not only influence, but also define the space it occupies. (p. 1)

Musicians often use standardised words in relation to acoustic aspects of their work.[34] A common concern is 'reverberation', or how an instrument resonates in a given space. The 'liveness' of a space can, in fact, hold many different characteristics and it is here that the frequency spectrum of a space plays a large role. A space where lower frequencies have a higher reverberation can be described as 'warm'. If such frequencies were reduced to favour higher ones, they would be described as 'brilliant'.

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[34] These very same words have been incorporated into the table of definitions, set to promote communications between musicians and acousticians in relation to the design of concert halls (Long, 2014).

Some spaces (churches come to mind) can, thanks to pillars or other architectural structure/surfaces, make sounds and frequencies travel differently within their enclosure. This may, for example, result in 'muddy' or 'diffuse' sound beyond the first rows, or even produce an echo effect. On the opposite end of the scale, where reverberation is reduced, one can get what is described as 'clear' sound, or a 'clarity' of sound. A space that springs to mind in that instance is the music room at Handel House Museum in London, where the clarity is certainly due to the size of the room and the fact that sound reaches the audience almost immediately. But the sound also has 'warmth' due to the wooden floors and panelling. Such a setting can, through these properties, bring forth a sense of 'intimacy'. But if looked at merely from an acoustic, and not atmospheric, perspective,[35] then a sense of intimacy can also be achieved in larger halls through usage of reflectors or canopies (Long, 2014).

Another central issue to performance and acoustics is 'blending'. It may refer to how an ensemble blends together to find the right balance of sound. This is not to say that an ensemble seeks oneness; rather, the perfect blend may entail balancing different 'timbres' to create the right 'texture'. The stage, where performers enter a venue, sends them into an immersive process where they react to and work with the elements described above, attuning to acoustic properties. This can extend to listening on and off stage, which can lead to repositioning and changes to, for example, articulation and volume. The added fact that human bodies, through their mere presence, can alter the reverberation of a space—an effect that varies between spaces—means that 'what happens acoustically when the audience enters' is a common topic of discussion amongst performers.

Yet another dimension is introduced when the performance involves amplification or use of live electronics. This requires an effort from the sound technician (which, in some cases, is also the performer), to calibrate the frequencies of the sound signal from the instrument. This may be needed to avoid feedback or lift certain frequencies to facilitate the response in the architectural space and in relation to the electronics.

Similarly, the electronics may require tweaking in relation to a space in terms of virtual reverberation through the usage of hardware or software reverb. If reverb is added to either electronics or an instrument, then it is often referred to as making the sound more 'wet'. This being written, 'reverb' is not only one button within the system but can draw on various spatialisation approaches. The virtual design of reverberation can get increasingly complex when working, for example, with multiple performers within a multi-channel installation where the electronics may first need to be fine-tuned in relation to the architectural space and instruments then amplified and spread within the installation through varying amounts of sound signal and reverb.

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[35] This perspective will be discussed further in chapter 9 as well as section 10.1.2.

Looking towards the construction of edifices, the development of architectural acoustic studies has been driven by the specialised needs of buildings dedicated to concerts. Therein, we see how producing an enclosure dedicated to silent-listening settings in urban environments may prove to be a challenge. This may lead to inventive approaches such as building a construction within a space, an example being the double walls of the Elb Philharmonic, set to keep out the sound of propellers and other 'noise', as it is situated by the harbour in Hamburg, Germany. The wish for 'noise cancellation' may even lead to an entire house being situated on rubber plates, such as is found in the construction under Malmö Live in Malmö, Sweden which keeps out the reverberation of trains travelling underground.

Within the concert hall, the aim is to create as good of an acoustic spread throughout the space as possible, even to seats farthest back. This entails working with and against some of the properties of sound listed above by addressing pulsation, blend (or improper one), acoustic shadows, echo, etc. (Berg, n.d.). It is also normative in modern concert halls that they incorporate a computer system that allows for shiftable acoustics through, for example, movable canopies.

Common design in concert halls with preassigned seating is the so-called 'shoebox', which is a rectangular auditorium with the stage at one end. In the 1960s, the so-called 'vineyard' model was introduced, where the seating is arranged around the stage, climbing upwards. This can be seen in the concert hall of the Berlin Philharmonie, the newly built Elb Philharmonie, as well as the Philharmonie in Paris, to name a few. Such architecture has been pronounced to be an attempt at the democratisation of the concert-hall culture, echoed in the following proclamation from the Elb Philharmonie.

> [T]he arrangement of the seating in a circle means that everyone in the audience also has a view of the rest of the audience, which increases the feeling of community while listening to the music. The hall places the music at the centre of things, both visually and in terms of the concert experience, making it clear that classical music is not something for the elite, but belongs in the middle of society. (Elb Philharmonie, n.d.)

It is not for this thesis to investigate what power such a symbolic aim holds in shifting the outlook on WCM in society. The vineyard model, however, does what is sets out to do—securing all visitors a better seat at the table, and perhaps even propagating that feeling of 'belonging'—already present within the culture—in a more democratised way. However, the model does not always result in equal acoustics, if one is to go by the first-person account of Leo L. Beranek who, through his repeated listening at the Berlin Philharmonie, found that the acoustics were wanting in some of the upper terraces (Beranek, 2008).

A third common approach, is that of a hall where there is no pre-fixed seating arrangement, making it easily adaptable for various genres. This can, for example, be

found in the high-tech Northern Lights Hall in Harpa, Reykjavík, and Kuben in Malmö Live. The latter builds on the black-box concept which gained prominence in the 1960s when artists began using abandoned locals such as warehouses as their studios. Although initially sparsely furnished and with minimum tech, today institutional black boxes can usually offer access to high-end technological equipment, although the concept is still the same—putting the focus on the performer and serving the needs of whatever artwork is being presented.

Furthermore, the sound within a black box is often dry, making it feasible for amplification or electronic music as it is favourable for control of space-acoustics variables. The dryness here is created through choice of material, underlining again the interwoven connection between material and sound transmission. Thus, although choice of seating is set to align with architectural ideas on sensation in relation to comfort, the choice of the chair material is also considered in relation to acoustics.

Another important element is the lighting system, as it can add to and shape the overall expression of an event. Within WCM, light designs are usually used in a way that puts the spotlight, literally, on the performer while the lights around the audience are dimmed. This diminishes peripheral vision and places focus towards the stage—doubling as a 'listening focus'. This being written, light design is increasingly used to create an atmosphere and contribute to the aesthetics of events.

Despite this obvious importance of space within concert-hall culture, compositions that engage directly with aural experiences in a specific architectural space, or space-music, is not so common. This is again explained in part by the objectification of music through the 'work concept', which transferred music closer to a Pythagorean perspective of mathematics. Herein, composers of acoustic works were to devise musical forms in their heads and transfer them onto paper without a process that would entail listening in real life—for example, through try-outs at the keyboard. This same process, as mentioned, was geared towards producing works intended for multiple performances in a variety of concert halls. It should therefore not come as a surprise that some of the main initiatives of sonic spatial engagement came initially from sound artists, as well as performers who had exited the institutional framework. Some of these initiatives will be traced in chapter 9; in the following section, I will focus on examples of works conceived for and within the concert-hall environment.

6.1.4 Spatial music

At the outset of this section, it is worth raising the fact that the term 'spatial music' is used in relation to the localisation of sound or movement through space. Within Western art music, it can refer to polyphonic works from the Renaissance period, but today it is perhaps more frequently tied to electronic music. The latter was introduced

through tape music after the Second World War. Here, suddenly, was a technology that replaced the phonograph discs and through which sound could be measured and objectified but also re-arranged, modified, routed, and spatialised.

Multi-channel concert production is however rarely geared towards a focus on the architectural space and its acoustics. Rather, we are typically faced with repertoire that, according to Gascia Ouzounian, follows the Euclidian trajectory, or the conception of "time-space as an empty container wherein sounds can develop" (Ouzounian, 2015, p. 76). Like notated works within the WCM tradition, these compositions are created for multiple performances in a variety of locations. It is, however, important to note that the performance of the so-called 'contained space' of acousmatic compositions may work in varying ways.

As noted by Denis Smalley, if the acousmatic space is smaller than the listening space, it brings forth a room within a room, but when it is processed with, for example, excessive reverberation, it can transcend the listening space (2007). Similarly, if the work contains 'environmental' dimensions, then it "is liable psychologically to transcend the boundaries of the listening space" (2007, p. 53). During electroacoustic concert events, the architectural space of performance is usually dealt with in terms of gaining the best spread of sound for the composition through speaker setup and routing, as well as addressing what frequencies should be cut or raised in relation to the space acoustics, how much reverb should be applied to shift the natural acoustics to the background, and so on.[36] The audience at such concert events is expected to follow the silence doctrine of WCM and sit in stillness while listening, although usually situated in a so-called 'sweet spot'.[37]

Tracing our steps back in history, an example that is often held as a landmark of spatial music is Varèse's *Poème électronique* (1958). In 1936, he had already proposed a 'fourth dimension', i.e., spatial projection which was to be added to what he described as the pre-existing properties of the horizontal and vertical movement of sound, alongside its ability to grow and diminish in volume (Varèse, 1936 in Ouzounian 2007). It was not until 1958, however, that he was able to realise this within *Poème électronique* (1958), created for Le Corbusier and Xenakis' Philips Pavilion at World EXPO 1958. What is evident from information from that time is that the pavilion was created as an "automatic apparatus that inaugurates a new art with unlimited possibilities (…) a synthesis of light, colour, picture, speech and music displayed in

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[36] It should be noted that many practitioners within today's field spatial composition incorporate site-respondent methods within their practice such as can be found in compositions by Natasha Barrett and Katt Hernandez.

[37] The sweet spot is the ultimate listener position to best experience the intended balance of music and sound mixes over stereo or multi loudspeaker setups.

space" (*Cirma*, n.d., 1:24). The pavilion's emphasis was not on architecture per se, for when Le Corbusier accepted the commission, he declared that he would not deliver a 'pavilion' but rather a construct that would be cheap and created out of cement (Corbusier, 1958 in Sterken, 2001, p. 265).[38] So, Le Corbusier inverted a projection screen so to speak (Sterken, 2001), wherein he curated an 8-minute *Electronic Poem* aimed at "showing how our increasingly mechanized civilisation is striving towards a new harmony in the future" (*Cirma*, n.d., 1:33).

Varèse's music was therefore created for a 'Gesamtkunstverk' and, although the dogma was for artists to work in parallel, he was given access to Le Corbusier's film component for the show prior to composition. The resulting tape music, although routed into the approximate three-hundred-fifty speakers that were dotted around the building walls, was thus embedded within a virtual multimedia show rather than a composition conceived to forefront architectural space. As noted by Sven Sterken, the pavilion created a rupture between the outside and the inside by turning the inside space into a 'virtual world'. As such, the pavilion, similarly to today's virtual-reality shows, failed to explore "to what extent architecture is able to intervene so as to make virtuality an extension of reality, and not a substitute" (Sterken, 2001, p. 266). But it is that very same 'multimedia show', that results in what Ouzounian sees as Western music's entrance into the realms of Western visual culture, which remains dominant still to this day.

> With *Poème électronique*, Varèse conferred to a 'primitive' and 'primordial' acoustic space qualities that had been reserved for visual space: its linearity, its legibility, and its rationality. In rendering acoustic space 'visual,' [sic] the perception of sounds shifted from the sensual, emotional, and primordial realm of the (non-Western) acoustic imagination to the structured, logical and enlightened realm of the Western visual imagination. In this context, the ability to give music spatial form was not merely a matter of technological prowess. It was also a matter of willing, and enabling, music to function on strictly objective and rational terms, thereby conferring to music the status of 'a way of knowing' as determined within traditions of Western philosophy. (Ouzounian, 2007, p. 55)

Some years later, sound art made its entrance—an artform that, as Nicholas Till notes, can be seen to stand in direct contrast to how "Modernist music and architecture insist upon their medial distinctiveness as markers of their autonomy" (2016, p. 166). As such, sound art "has served to bridge the practices and discourses of visual art, architecture, and music, questioning their claims to ontological exclusivity and autonomy, and foregrounding the relationality, and phenomenal and sensorial

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[38] Xenakis would take this even further with his *Polytope* constructions that combine sound and light.

connectedness, of any art" (p. 166). Fast forward to present times and spatial music can take on various forms that are reliant on a plethora of technological inventions, combined with varying artistic methods and sonic material. Therein, spatial music may engage with site-specificity—even in relation to architectural space, acknowledging how architecture is multimodal just like music, i.e. "experienced not simply as a visual object creating spaces but also through the senses of sound, touch, and smell, the modalities of time, association, and memory, and the contingencies of social use" (p. 166).

The ongoing project *Locomotion* by Frisk is an example of a work that, through its meta-approach to place, casts a light on architectural space acoustics. Initiated in 2019, the work is both an installation and a composition through which he strives to "explore the tension between sound environments that have a clear connection to a place, and those that do not" (personal communication, September 2, 2022). *Locomotion* combines virtual sounds, or synthetic sounds, made from a physical model of a clarinet with field recordings whose sources are highly recognisable. According to Frisk, this brings forth a point of difference or sonic tension (personal communication, September 2, 2022). It is through its performance that another element appears, one which forefronts the role of architectural space. In a version created for The Royal College of Music in Stockholm, Sweden, visitors were invited to move between two halls, each containing the composition. The former, the Nathan Milstein Hall, is an example of a shoebox-shaped hall, though with the possibility of the audience looking either at the stage or an organ situated at the other end of the hall. The latter hall, 'Lilla salen', is devoted to electronic music, adorned with a circular rig of thirty speakers in the ceiling and acoustic panels on its walls. Furthermore, the corridor between the halls was also turned into a performance space, or a third listening position. By inviting the visitor to enter such different listening locations, *Locomotion* not merely reveals the differences in their resonances but, through such juxtaposition, shows the impact of architectural settings on the role of atmosphere (echo included) in the listening situations.

Acoustic spatialisation as an artistic method can be traced far back in music history, with examples including the music of Palestrina and Tallis and the polychoral style at St. Mark's in Venice, afforded by its architectural style. Luigi Nono's opera/oratorio *Promoteo* (1981-1985) follows this tradition. Through the work, he placed singers, electronics, and an orchestra in various positions in relation to the audience. The spatialisation was, however, only realised through the construction of an 'arc' by architect Renzo Piano for the church San Lorenzo in Nono's home city of Venice. The arc becomes a space within a space, a scenography for spatialisation, inherent to the compositional process steered towards a 'pluridirectional hearing' as Nono described himself, through which he hoped to capture the sound of his city with its "echoes and reverberations, its secretive nooks and crannies with their whispers and murmurs, bells,

and the everpresent sound of lapping and gurgling water" (1993 in Till, 2016, p. 182). Through such an approach, we see an expansion of space-music composition towards "an attunement to both the sonic and geographical properties of particular environments" (Till, 2016, p. 181).

The spatial distribution of performers as a compositional parameter is taken further in Rebecca Saunders' *Chroma* series. First premiered in 2003 at the Tate Modern in London, UK, the work is written for five instrumental groups and multiple musical boxes. They are placed in a position that provides a staging throughout the performance space. During the performance, the performers can shift positions within the designated 'venue' that can encompass different buildings. Inherent to the composition is that, in each case, the work needs to be recomposed for the site of performance. The number of *Chroma* works continues to rise, reaching a new number with each performance site, thus acknowledging its contribution to the composition. During the event, the audience is an integrated part of the work; through their different positioning and pacing, they co-create the event's atmosphere. The emphasis on staging sends the work into a liminal space between music and theatre, an element which can become even more prominent in object-based compositions situated outside of institutional space, such as in Carolyn Chen's *Supermarket Music* (2005-ongoing) and Manos Tsangaris' *City Pieces (Window Piece)* (2016).

Another approach is topographical exploration, which can give a site the agency of an instrument. This was the case in the work *CAT 192* (2013) by Hlynur Aðils Vilmarsson and Ilan Volkov, who composed a piece for the adaptable acoustic technology of Eldborg Hall in Harpa. *CAT 192* refers to the name of the computer that controls the technology inside of the hall, an interface which Volkov and Vilmarsson saw as an 'instrument'. Through the work, they revealed to the audience technology including the stage canopy that also produces a noise, multiple doors situated next to the audience, and curtains that all produce sounds and different frequencies (Reykjavík Arts Festival, n.d.). The work was performed by stage manager Einar Rúnarsson and the result was described by Simon Cummings as

> an effective and amusing ballet for the building, highlighting also the tones, rhythms and other sonic throbs, thrums and patterns that emerged from its various movements, which were all the more striking when it wasn't immediately possible to tell what or where the sounds were coming from. (n.d., para. 3)

Another example where a space is given the agency of an instrument is *Playing the Building* (2005) by David Byrne. The work has been performed both in the UK and the USA, though the first edition took place at the Färgfabriken Art Gallery in Stockholm, Sweden. By connecting an organ to the building's pipes, columns, and

crossbeams with the help of air, motors, and solenoids, visitors were invited to play the architectural space. The piece thus enables a visitor to not merely be a listener but also improvise without any prior knowledge of instruments. Although the work is analogue, one could argue that the extension of 'touch', through an extended configuration in an environment, has some ties to the more complex configurations that can take place in digitally controlled multi-channel systems, which I will explore in chapter 8.

An interesting approach is also found in the work *Hypnagogia*, a collaboration between Yann Coppier and Matt Chobotier, through which they produced a virtual listening space. *Hypnagogia* invited the digital visitor to navigate Koncertkirken Church in Copenhagen, Denmark, where sixteen omni-directional microphones had been scattered around the space. Although the church environment had been transported into a virtual visual form and the recorded performance recorded was not visible, the accompanying audio track, created to experience the performance digitally as if performed in the room, provided the listener with a heightened sense of the role of spatial placement and resonances of a space during live-music performance. This work is characterised by Coppier's proclaimed intention to enter a phase of non-anthropocentric recording.

As will be explored in next chapter, recording practices of WCM do indeed follow the human-to-human and score-related emphasis as located in the concert-hall environment. In what remains of this chapter, I will share the analysis of my composition, which also had as its aim to explore non-human agency. At the same time, given the context of its performance, it activated other relations—that of ensemble and audience—and probed at the idea of the disciplined performer's body.

6.2 *I play Northern Lights*

I play Northern Lights was created for Nordic Affect's event at Dark Music Days in 2017. The piece is a 5.1 surround-sound composition in two movements that can also be aired as a sound installation. The sounds were recorded in the company of Angela Rawlings as we navigated through the dimmed Northern Lights Hall in Harpa, Reykjavík. The work was composed at IAC in Malmö, Sweden, eventually sent back into Northern Lights Hall.

6.2.1 Conceptualisation

The idea behind the work originates in my experience of overseeing and partaking in Nordic Affect's dress rehearsals, or so-called 'sound and light check'. Such an act usually

takes place on the day of a performance and entails various mediations that are negotiated between the ensemble and several sound, light, and set-up staff members. We consider performers' positions both within the ensemble but also in relation to speaker layout, acoustics, and audience. Decisions are also made regarding choice of light and its pacing, but what typically eats up most of the time is the calibration of sound within the matrix of instruments, electronics, amplification, and space acoustics.

The sound and light check marks a point of arrival after many hours of rehearsals, not to mention months of preparations encompassing production meetings, funding, composition, and workshops. Throughout the years, I have been struck by the contrast between the dress rehearsal's energy and the carefully choreographed moment of the event itself where the audience enters, takes their seats, and prepares to watch and listen to us—in stillness—perform music from a score. In such moments, the architectural space shifts to the background. The emphasis on human-to-human relations during concert events prompted me to float a micro-lab to creatively explore if I could forefront spatial agency during a performance event. I would attempt this through performance, exploring more-than-human relations to see what other structures of the environment might appear. The recordings thereof would then be transformed into a multi-channel composition for that same space.

The realisation of this idea, centred around localisation, prompted me to choose a surround-sound microphone for the recording. Originating in the 1970s, the split-surround technology—with its configuration of five channels (front left and right, surround left and right, and centre)—enables the listener to experience source localisation. Part of a person's perceptual response, in everyday wayfaring is, in fact, the ability to 'locate' sounds and detect their source (Clarke, 2005)[39], an ability that is filtered out thanks to the sit-still-and-listen etiquette of WCM. This led me to start working from the perspective of 'activation'.

6.2.2 Activation

The creation of *I play Northern Lights* was built on this idea of activation and became the impetus for what I eventually called *The Activation Series*. The series includes work at an abandoned cement factory, resulting in *I play Cement* (not included in this dissertation). *The Activation Series* also features work on the Härnäset isthmus on the west coast of Sweden as part of the *Tapeshavet* activations (see chapter 9).

I used the word 'activation' to deliberately avoid referring to my work as 'performance'. The word 'activation' indicates the aim to approach an exploration of

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[39] This is again entangled with sound's "structural function and cultural and ideological value" (Clarke, 2005, p. 46).

space beyond the habitual relation between a musician and concert-hall acoustics.[40] In addition, seeing how the work's conceptualisation entailed that these very same activations were to be turned into a composition for different becoming within a concert event, the activation became double-edged: an activation to activate institutionally-prescribed relations.

6.2.3 Toolkit

Prior to the visit, I put together a toolkit with various objects to employ for sonic activation. It included nails, a sewer-filter colander, a glass frame, a metallic candleholder, a boccia ball, and a rubber ball. I also aimed to use my violin and voice. The toolbox was designed to provide timbral variations in sound but was also constructed based on my prior knowledge of the Northern Lights Hall, its size and even its materials ranging from acoustic tree panels to iron railings and linoleum flooring. Despite its possibility to shift as a stage reminiscent of black-box aesthetics, the hall holds none of a black-box dryness for it is designed as a recital hall. Acoustic panels adorn its walls that function simultaneously as frames for wall lights. The hall has a delicacy to its acoustics, i.e., affords a warm yet clear sound.

6.2.4 Activations and recording in the Northern Lights Hall

I spent a total of five or six hours in the hall. Much of this time, I was accompanied by Rawlings, who was then also a PhD researcher at the University of Glasgow and wished to gain insight into my activations which led to experiential learning through collaboration.

To further unpack the work, it must be underlined that performance should be understood as a process where the performer seeks to develop his/her practice in relation, distributed through culture, environment, and technology. This is not to be understood as a revealing/framing of the world in a Heideggerian sense (Salter, 2010) but rather as mediation. Where Maurice Merleau-Ponty (1945/2012) noted that mediation concerns the mediation of perception, Mika Elo (2018) points to how "(i)n recent media aesthetic discussions, increasing attention has been paid to the questions of environmental mediations instead of the senses and their mediation" (2018, p. 36). Another perspective is presented by Ihde through a post-phenomenological perspective, suggesting in addition that "technologies can be the means by which 'consciousness

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[40] Certainly, the activations can be seen to employ the approach of performers and sound artists that have, for decades, engaged in this outside of institutional frameworks (this will be further addressed in chapter 9). It was through such doing that I located further terms to describe such acts.

itself' is mediated" (2009, p. 23). By becoming through technological usage, we are used by it as well; we are bodies in technology (Ihde, 2001).

Ihde's post-phenomenological theorisation on the relations between human, technology, and the world may be found in the following schema:

> Human-technology-World Relations
> Variant 1, Embodiment Relations
> (Human-technology) → World
> Variant 2, Hermeneutic Relations
> Human → (technology-World)
> Variant 3, Alterity Relations
> Human → technology-(-World)
> (1990, p. 107)

The first—embodiment relation—involves a relation to technology where the instrumentality of the object is not explicitly noticed by the user. One experiences the world 'through' it. In alterity relations, the interaction with a machine is the aim of the relation, i.e., one focuses on the technology. However, technology can also afford information which requires interpretation to become perception. This is characterised by Ihde as an hermeneutic relation.

As is pointed out by Verbeek through his critical reading of Ihde, the agency of technology may often be a more central factor. This prompts him to expand Ihde's analysis of the hermeneutic relation towards that of a "composite intentionality" (P. P. Verbeek, 2008). It entails a double intentionality—

> one of technology toward 'its' world, and one of human beings toward the result of this technological intentionality. In other words: humans are directed here at the ways in which a technology is directed at the world. This implies that, to conceptualize the basis for composite intentionality, the dash in Ihde's schematic depiction of the hermeneutic relation human → (technology–world) should be replaced with an arrow. This gives the following scheme: composite relation human → (technology → world). (2008, p. 393)

Such intentionality translated directly into my choice of a surround-sound microphone[41] that afforded the gathering of performative 'activation' material (see Figure 4). It also, due to its spatialised intentionality, enabled the recording session to simultaneously produce an aural topographical mapping of the hall that was to afford

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[41] The surround-sound microphone is one I have employed within field recordings. It has very different intentionality than microphones used for normative stereo recording in a hall. This is not to say that spatialised recordings are not conducted in relation to classical albums; they are merely done through a different microphone setup set to serve other aesthetic needs.

the future listener a different sensing of the architectural space and heighten their sense of movement in relation to sound.

Figure 4
Recording equipment in the Northern Lights Hall, January 2017.

Positioned in the middle of the space, the intentionality of the microphone guided the activations. During the session, Rawlings and I brought forth multiple 'resonant dots'—positioned in relation to the microphone. Therein, the technology was also attributed the agency of a future listening subject, since all activations can be seen to be performed with the future event in mind. The central positioning of the microphone marked the middle of the future stage, around which the audience would sit.

To further understand the mode of listening that informed the activations, it is worth looking at Truax's theorisations on listening in environments. Put forth in his book *Acoustic Communication*, Truax, who was a member of WSP, comes up with three levels of listening in relation to what he calls a soundscape or an 'acoustic situation'.[42]

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[42] A critical review of the soundscape approach is presented in section 9.1.2.

1. 'listening-in-search' which is an active and analytical listening to an environment and where the focus is on detail, such as takes place through echolocation, where a human can shout or whistle[43] to gain information about the environment.

2. 'listening-in-readiness' is built up over time and entails a listening where one is ready to receive information, but at the same time one's listening focus is directed elsewhere. The category lands therefore in between the other two.

3. 'background-listening' takes place when there is not a steered listening, yet there is an awareness of the sound in the sense that the listener can recall it afterwards if needed. (1984)

If referring to a musician's engagement with a concert-hall environment, the second mode ('listening-in-readiness') is inherent to a musician's approach as they enter a venue. How one's footsteps echo, how the chat amongst musicians spreads, or how the space resonates when instrument cases are placed on the floor—all of this information is sent into an encounter with one's prior bodily knowledge of space acoustics. One is receiving information relevant to the upcoming task of performance.[44]

As the performer starts to play during soundcheck, they enter a mode of 'listening-in-search'. In that situation, the information gathered can link to how traffic bleeds in from the outside or if the beer cooler in the bar produces noise. Within the Northern Lights activations, my 'listening-in-search' made me realise that the lighting produced a white noise, an ever-present drone that held the possibility of association with speaker statics. As a result, Rawlings and I conducted the activations in almost utter darkness (see Figure 5). This produced a particularly intimate atmosphere and enhanced my feeling of the aural space.

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[43] Truax's formulation of listening perspectives was from a human point of view, but it should be noted that echolocation is shared by other species such as bats and cetaceans.

[44] Background listening is certainly also involved in such processes and, for example, something one can recall after the performance event itself. This is, however, one component within a trans-modal sensing, for while a body encounters acoustics, it also takes in the materiality of the site and attunes to its atmosphere.

Figure 5
Recording at Northern Lights Hall. Photograph by Rawlings.

Truax's point about how one may engage in echolocation is ever-present within the Northern Lights activations, as our activations in the dark unfold as multiple acts of listening to how sounds resonate in the space. At the same time, such activations are a convoluted act, reflected in my comment after I drop a boccia ball from a ladder, I want to 'see what it does'.[45] This reveals how I am also interested in what the relations between the boccia ball and the floor are, and what sounds these relations may produce.

Such becoming or 'worlding' has been described by Ingold (2011) as an act where a thing draws one along the path of its formation. Importantly, such moments play down on the materiality of things (in this case 'a boccia ball'). As such, an object ceases to be an 'object' but rather manifests 'in its thinging from out of the worlding world' (Heidegger, 1971 in Ingold, 2011, p. 214). Through her reading of Heidegger, Salomé Voegelin notes how "(t)he thing is something, but it is not limited by its look or materiality, weight and measure. It can be conjugated and thus the object becomes a verb, attains the power of activity and activation" (Jakobson, n.d.).

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[45] Herein, I see a parallel between our activations, and Akio Suzuki's method of self-study events, developed as early as the 1960s which was based on throwing things, and following them, creating other ways of relating through sound in an environment. Such an act of environmental performance is addressed further in chapter 9.

A good example is our activation of the wire railings on the hall's balcony. We start engaging with them and realise that they have different pitches with which we become engrossed (see Figure 6). At the same time, we experience how things have the possibility to resist—to use Barad's terminology, to 'kick-back'. Due to their thickness and stiffness, the railings do not activate easily, which requires us to wear worker's gloves and stops us from embarking on longer improvisations. It also requires us to take turns in activating the railings.

Figure 6
Activating the wire of the railings of the Northern Lights Hall. Photograph by Rawlings.

Herein, one may note a slight difference from the 'happening' nature of the dropping of a boccia ball as described earlier, or in a playful activation where Rawlings and I took turns to throw a rubberball across the hall. Here, the performance is situated 'closer' to the body, and so becomes more 'habitual'—related to the way I usually play my violin. At the same time, such thinging is still a convoluted process where the repetition, which is a signature of such work, is 'of' the mapping as well as my habitual intuition. Repetition is inherent to how I usually forge sonic relations with my violin, which can stretch from focus on overcoming difficult technical passages or alignment with electronics or Max/MSP all the way to composing with violin in hand or rehearsing

with my ensemble.[46] Overall, the performances followed the pattern of short activations in a series of locations in the hall. This linked to the aim of creating a sonic topography of the entire space within the time available, which in turn demanded a certain efficiency.

To better understand the cognising of thinging, it is necessary to introduce the concept of the 'sound object' (Schaeffer, 1966/2017). Originally put forth by Schaeffer in relation to his phenomenological research during the advent of musique concrète, such an object is not 'material'; rather, it is a sound object that is "the object of our listening *alone*, and is relative to it" (p. 45, emphasis in original). Through his research on embodied music cognition, Rolf Inge Godøy (2006) suggests an expansion of Schaeffer's theorising towards what he describes as 'gestural-sonorous objects'. Drawing on Schaeffer's analysis of the sound object, or its 'impulsive', 'sustained', and 'iterative' properties, Godøy points out that this typology corresponds with sound-related gestures—the sound-producing actions of a performer.

> [F]rom continuous listening and continuous sound-tracing, we actually recode musical sound into multimodal gestural-sonorous images based on biomechanical constraints (what we imagine our bodies can do), hence into images that also have visual (kinematic) and motor (effort, proprioceptive, etc.) components. (p. 149)

With this in mind, my 'confident' performance with a colander and a wall is embedded in what is suspected to be a 'hard wiring' between sensations of movement and listening, brought forth through my training as a violinist. A rare deviation from this occurs when I alter the pace of an activation after it has started, the reason being that the panels start vibrating differently and, as a result, produce a longer sound than I had anticipated. Instead of trying to squash or control it, as the thinging kicks-back, I adapt to its resistance and decelerate my movements.

The sound objects in the activations can typically be identified within the usual 0.5-5-second range of such objects. There are, however, some exceptions to this rule, one instance being the bouncing rubber ball which often brought forth sound objects of a duration up to 7 or 8 seconds, thanks to its bounce on the vast flooring. Similarly, a rolling boccia ball could go up to 12 seconds in one gesture. The most radical example is when Rawlings embarked on an activation with the colander. She walked the entire square of the hall, using the colander as a touching point between her and the wall and then embarks on another round where she runs the same circle.[47] Its possibility to excite

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[46] I should underline that all activations were conducted from the perspective of care and with the aim of being ephemeral. In the case of material that could cause damage, such as nails, I brought in another material from the outside that I used it on as I created sonic markers in the space.

[47] Rawlings' inspiration behind the work linked to that she was at the time developing the performance work *INTIME*, which explores the performance of geochronology in the Anthropocene, in which

such wondrous grainy and vibrant sound in its play with the walls left me in awe, evidenced in my comments to Rawlings afterwards. It also displays how such doing is entangled with subjective, intuitive evaluation of activations, which continues to be of importance as the material is later shaped into a 5.1 surround-sound composition. As she walked the hall twice, Rawlings' activation could have brought forth a sound object of around 4 minutes had it not been for the fact that one of the walls is not wooden but covered with drapery split into parts plus an occasional door surface, which produced an alternation in sound. Therefore, their length varies (one example is 1.18 min., another 52 sec.). After walking the hall, Rawlings launched into a run where the longest sound objects were between 14 and 16 seconds. The move away from the usual length of sound objects needs to be seen to stand in direct correlation to the affordances that arise through such thinging.

In what follows, I will detail how gestural-sonorous objects became essential to the continued composition.

6.2.5 Composition in the studio

I continued to compose *I play Northern Lights* at the IAC studios in Sweden. I use the word 'continued' here deliberately, for I see the activation in the hall, with all its mapping intents, as inherent to the composition. It is here that we see how roles, or rather agencies, converge. But inherent to the creation of an acousmatic composition is the approach of familiarising oneself with the material through repeated listening. This may be seen as an act where one engages in what Husserl defined as a strategy for 'leading back' to the way the world manifests itself to us, enabled here by the intentionality of recording technology that allows for repetition of the sonic object. Such reduced listening (Schaeffer, 1966/2017) is entangled with continuous decision-making. For example, I rule out inclusion of certain sounds, such as the violin and voice, as I feel that the first sends it into institutional context and the latter forefronts the human.

As I continue my work, I refrain from processing the recording through manipulation of speed or frequencies; nor do I use effects such as reverb or engage in sound synthesis. In rare cases, I choose to use techniques of layering and amplification to reveal or make audible sounds that would otherwise have been hidden within the recording. As such, I value the activation moment over the intentionality offered by the DAW in the compositional phase. Therein, I can be seen to value the original activation

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participants run on a foreshore in a counter-clockwise circle. *INTIME* later came to be incorporated her book of performance scores, titled *Sound of Mull* (Rawlings, 2019) and resurfaced in my work in relation to the *Tapeshavet* activations (see 9.2.3).

and the sounds as they unfolded in relation to site during the recording moment. In other words, I prioritise the activations, rather than the affordances that the virtual space of DAW has to offer. Importantly, as I will unpack later in this section, the spatialisation has an inbuilt effect in that sounds alter in quality as they move in space, resulting in such a variation that it would have felt redundant to add to it. But my continued curatorial formulation of heightening the agency of space and its acoustics prompts me to make the decision of creating a two-movement piece, a strategy that augments the effect as it allows the work to surface twice in the program.

As the movements evolved, they came to stand in contrast to each other, with the first having a more outgoing, clear, and loud sonic character, while the second evolved more on a scale of intimate and subdued sounds. To further understand some of the continued compositional choices, it may be useful to return to the gestural-sonorous object, or rather its 'chunking' (Godøy, 2006, 2018; Jensenius et al., 2009). The word implies the ability to cut material up into smaller units, i.e., sonic objects, but also join them into larger formations or chunks, "making the formerly single events/entities totally fuse, or *disappear*, into the new chunk unit" (Godøy, 2018, p. 766, emphasis in original). Given the nature of the material with which I was working, much of the chunking had already taken place during the activations.

Through the composition, I selected and edited that same material to create new chunks. An example is the very start of both movements. The bell-like sounds used to belong to a chunk which consisted of two sub-chunks—three bell-like sounds and a subsequent droning, all performed with boccia on a pole on the upper balcony. In the composition, I intuitively chopped up the three impulsive bell-like sounds into single objects that then oscillate back and forth between different positions in the space, thus creating a new chunk. Through editing, I also morphed or shifted what is referred to as 'envelopes'—the shape of a sound—which links to features, pitch, and timbre (Godøy, 2018). One example is the continuous usage of an iterative sound or plucked railing in the middle of the second movement which, through its composed repetition, gives it the quality of sustained sound. A rather abrupt cut can also move a sound from being sustained to becoming iterative (01:20 in 2nd mvt.) or an iteration to become impulsive (02:14 in 1st mvt).

What is explicit in the intro example is that it is not merely the iterative quality and the contrasting, sustained drone that is meaningful but also the spatial positioning of the sound, within the 5.1. surround setup in the studio. This effect of spatial audio prompted Smalley (2007), through his theory of spectromorphology[48], to propose the

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[48] Through his theorising on space in relation to music, Smalley formulated the term 'spectromorphologies', which can be seen as a further development of Schaeffer's typomorphologies used in this chapter. Spectromorphology is, according to him, "the interaction between sound spectra (spectro-) and the ways they change and are shaped in time" (1997 in Smalley, 2007, p. 36).

term 'circumspace' for all surround formats. In such a space, sound has the possibility of passing or approaching what he described as the listening subject's 'egocentric space'. Hence, from my compositional sweet spot, as I proceed with the composition, I am constantly working with a variation of spatial textures.

Through such an acousmatic approach, composers may engage with altitude and depth, alongside latitude and longitude. At this point, I should also underline that I never approach composition from a such a theoretical perspective, but rather through an intuitive experiential approach grounded in listening and trying out. Therein, I am not merely referring my listening to a so-called 'circumspace' that forms in the studio, but rather I am also 'composing a topology' for the hall and the future event. I am able to recall my performance in the hall and similarly imagine how the work will sound in relation to the audience. I am therefore not merely working with a virtual abstraction. This, then, would be an example of the nested state of cognition, detailed through ecological-enactive theorising, that can "reach far beyond what is taking place here and now" (Kiverstein & Rietveld, 2018, p. 157). It is such ability that makes the composition essentially a convoluted practice.

As I engage in a phenomenological variation through micro-sonic listening[49] in the virtual 5.1 format in the studio, contemplating vertical contrast but also longitudinal/latitudinal variation in movement on each plane, I am in my mind also travelling between balcony and floor and between various points in the space. I even visualise them thanks to the hard-wiring of movement and sound in human perception of gestural-sonorous-objects (Godøy, 2006). Therein, the movement of sound between distant and proximal positions to my egocentric space can prompt timbral alterations. This is apparent in an iterative nail rustle in the second movement, which moves between distant and proximal positioning, with the sounds losing their articulation and clearness the farther they move away from me. The frequency of sound may also radically affect the listening perception. An example is how performances on the balcony may seem to have different depths; the muted wire railings may seem more distant than the high frequency of the bell sounds in the same spot.

6.2.6 Performance

I play Northern Lights was premiered at Nordic Affect's event *In the bottomless hollow of the winter sky* as part of Dark Music Days' 2017 edition.[50] As already mentioned, the

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[49] The concept of micro-sonic listening (Östersjö, 2020b; Stefánsdóttir & Östersjö, 2022), afforded by recording technology, will be further presented in the following chapters.

[50] Other works on the program included Alexander Sigman's *paleoecology* which dealt with vocalisation of prehistoric creatures", Mirjam Tally's *In the bottomless hollow of the winter sky* which drew on field recordings conducted within the body of my violin, Leo Chadburn's *Saturated* which included a pre-

idea for a circular setup and the introduction of a 5.1 surround-sound composition was partly triggered by the site of the event, as the Northern Lights Hall allows for a reconfiguration, ranging from a shifting stage plan to configurable reverberation time and light themes. The architecture is therefore pre-set for varying trajectories of mediation and can, through such malleable technological possibilities, be argued to have a strong agency when it comes to the shaping of an event, its atmosphere included.

But my 'use' in relation to the hall's open-ended design is not that of a pioneer entering undiscovered territory,[51] or "starting anew, with the light, the bright, the white, the upright" (Ahmed, 2019, p. 227). Instead, it builds on sensitivity to the context of WCM's concert-hall culture. From such a standpoint, the stage design and the introduction of *I play Northern Lights* sprung out of critical thinking around the historical context of concert performance and the dynamics of its listening relations. This can be seen to align with what Aneta Szylak describes as 'curating context' (2013), a process of thinking-through-the-curatorial that is, as I have shown, not an already fixed method of knowledge production but rather "a mode of inhabiting the immediate environment for which we are responsible, as a mode of being with context" (p. 216). As was the case with this particular event, this may work as a catalyst for stirring or activating relations.

The introduction of a spatialised composition experienced from within a circular setup moved the ensemble to the middle of the hall, with the audience in a circle around us and the speakers surrounding us all.[52] The circular position and removal of frontal projection is, by no means, a novel idea as it can be found in anything ranging from the Roman amphitheatres to the aforementioned vineyard design of various symphonic halls. Positioning the performers and audience within the framework of speakers is also the A-Z of sound-diffusion practices. Contrary to the amphitheatre and vineyard model, we were all on the same floor level, which meant that all humans in the room would be situated on the same level.

But it was through the event itself that my wish to afford the audience an opportunity for a different attunement was realised. Through that aim, I came to activate or alter the usual agency of the performer(s) as they morphed into audience during the work's

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recorded vocal part singing thirty words describing colour, and *Smiling Tear–Suite for Dark Days* by Úlfar Ingi Haraldsson which explored the dynamics between an acoustic instrument in relation to an ambient acousmatic part and the improvisatory possibilities of the latter.

[51] Through his talk at the Piteå Biennale Online pre-event, Bennett Hogg (2021) outlined how linguistics used to describe experimental music has been coloured by imagery related to Western adventures and explorations in colonised territories, thus aligning with an ideology that has ignored pre-existing relations in environments.

[52] Such a shift was reliant on prior commissions and new commissions working within such a multi-channel setting.

playback. Thanks to the surround technology that affords source localisation, the performers of the activations (Rawlings and I) are turned into avatars.[53] It is a fantastical figure, one that can multiply and engage in movements that transcend the physical constraints imposed on the actual performer. It is also not a purely aural creature, for we are here again met with human's possibilities of recording sound into multimodal gestural-sonorous images (Godøy, 2006). Here we see that "under acousmatic conditions (…) spectromorphologies are the carriers of enacted, agential space" (Smalley, 2007, p. 41). As such, acousmatic music "can be a quasi-visual, as much as an aural, experience" where "visual and sounding space are not easily disengaged from each other" (p. 40). This involves not merely the moving human, but the multiple objects and surfaces at play.[54] However, this does not take place in a virtual listening space; there are other forces at play that came to co-create the work, to be unpacked in the next section.

6.2.7 Topography and sonic mapping

I have previously referred to *I play Northern Lights* as a creation of a sonic topography. The word 'topography' merges the Greek words 'topos', meaning place, and '-graphy', meaning 'process of writing or recording' (Online Etymology Dictionary, n.d.-c). It can refer to a detailed graphic delineation on maps, designed to indicate features of a site such as elevation of mountains, but can also refer to the structural relationship of entities, such as in politics. Within literature, it has sprouted a subgenre describing landscape. In music, however, the word pops up mostly in relation to the artistic sonification of data.

On the other hand, references to architectural structure or designed landscapes are used within acousmatic composition. This relates to what Smalley describes as the

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[53] The word 'avatar' is taken from Sanskrit, meaning 'descent'. It can refer to the incarnation of a Hindu deity or, in our digital times, be used to describe an electronic image that can be manipulated by a user, for example in computer games (Merriam Webster, n.d.).

[54] Such a listening perspective, when taken further towards an actual observation of what is being heard, has been by described by Michel Chion as 'causal listening'. Initially proposed as a contrast to Schaeffer's reduced listening, causal listening can, according to Chion, manifest in various ways. One can for example identify a specific dog by the sound of their barking, however "we rarely recognize a unique source exclusively on the basis of sound we hear out of context" (Chion, 1994/2019, p. 26), the exception perhaps being a human voice. But it is such a mode of causality that he claims is most prominent at the outset of acousmatic situations. This stands in contrast to Schaeffer's aspirations, or that the acousmatic situation would produce a reduced listening, where one separates "oneself from causes or effects in favor of consciously attending to sonic textures, masses, and velocities" (p. 32). This is not to say that it is not possible to enter such a mode as an audience, but whether the listener proceeds unto an oscillation between the two modes is according to Chion dependent on prior training.

'perspectival space' that refers to "the relations of spatial position, movement and scale" (Smalley, 2007, p. 36) from the vantage point of a human's listening position. As noted by Eric Nyström building on Smalley, the listener is "able to construct a global view of the field, or imagine how it could appear from other vantage points. (…) [A]s in a building or a garden (…) the structure guides the attention of its inhabitants/visitors through balance, emphasis, and points of attraction" (2015, p. 190). The important point is that, in *I play Northern Lights*, such attunement is not a mere virtual act; through its design, I juxtapose the 'circumspace' with the site of its origins. Referring back to Verbeek's theories on mediation, the piece can, through this, be seen to offer the audience an example of constructive intentionality, a sub-category of composite intentionality, where the coming together of human and technological intentionality "is not directed at making visible an existing reality but at constructing a new reality" (Verbeek, 2008, p. 394).

But it would be simplistic to frame it merely from a sonic spatial perspective. Rather, I see the work to inscribe a resonating affective mapping of the space. As such, it holds a kinship with Linda Knight's practice which she calls 'inefficient mapping'. This process captures lively moments through gestural, drawn markings created in-situ (2021). According to Knight, such geontological methodology "activates critique and a reimagining of conventional practices of reading space for particular purposes." Therein, and building on Les Roberts, it can be seen as 'hacking' "the idea of the map as a disciplinary apparatus of [...] the state, the global military-industrial complex, multinational corporations, scientists and technocrats" (Roberts, as cited in Knight, 2021, p. 40). As such, inefficient mapping presents "a minor reading of the world that is ethically and affectively attuned" (p. 40).

Such speculative approaches are found in sound art, such as in Jacob Kirkegaard's *4 Rooms* built on Alvin Lucier's work *I am sitting in a Room* (1969). Contrary to Lucier's work, Kirkegaard bypassed the human voice in the looped mediated performance and, importantly, did so in four rooms that are situated within the so-called 'Zone of Exclusion' in Chernobyl. The choice of rooms was made even more poignant by being former meeting points for people. He recorded ten minutes of sound in each room, which was then played at the same site and recorded again, to be sent back through multiple loops. As a result, the work got denser and denser, embarking on a dance which formed through the space's resonating frequencies. Certainly, *4 Rooms* was not instigated as sonic mapping, though is referred to as 'sonic time layering' on the website of Touch that later released the recordings on an album. Through its ties to site, the work does create a poetic sonic map of architectural space.

I Am Sitting in a Room (1969) made the intentionality of technology, as well as acoustics of architectural space, explicit in its performance. At the same time, the work is also a performance 'of' Lucier's own bodily condition, and an exploration thereof, as

he has stuttered since childhood. This is made explicit in the final phrase of his recitation: "I regard this activity not so much as a demonstration of a physical fact, but more as a way to smooth out any irregularities my speech might have." The work performed a powerful point at the time of its conception and can be seen to encounter some of the anthropomorphic issues outlined in this chapter. Another take on the method's possibility performing a spatial critique is found in Cathy Lane's *Here We All Are*, which brought the work's method outside to her own garden. Therein, the work comes to break out of institutional space and reflect on our urban environments, yet with the added poignant layer that it was conducted during Covid-19 in times of lockdown in the UK.

Returning to *I play Northern Lights*, its creation or sensorial mapping of space pushes at the grid of institutionalised governing of relations in the concert hall. At the same time, the work both alters and reveals the performer's conditioning. Although I (as performer) sit onstage in stillness, I am listening to my own avatar—an avatar that runs and moves 'differently'. This work, afforded by the 5.1 surround technology, comes at the same time to radically transform or expand the stage so that the audience is suddenly sitting within it, looking outwards both frontally and peripherally as they receive sounds from all directions. Again, this is not unusual in concerts where both acoustic and acousmatic works are featured. The different perspective offered here lies in the contrast between the performer onstage and her virtual other, as well the fact that the sounds of the acousmatic composition stand in direct relation to the architectural space.

Similarly, the work, through its spatialisation, functions as a reminder that sounds in an environment are indeed situated and, as we experience them, we also perceive their localisation. I am aware that it is a conceptual point that may be lost on the audience as they were in the usual sit-still-and-listen conditioning and within an environment that is designed to keep sound out. Lastly, it is worth noting that to perform the work elsewhere acts as a rupture to its concept. Even if it were to be included in a concert event, the transferral turns the work into a normative electroacoustic composition of spatial music that may, at its best, open up attunement to a site 'elsewhere'. This would, in return, dissolve the referential or commentary ties between me sitting onstage and the avatar body.

6.3 Summary

How does this micro-lab further reveal and address the condition of agencies in concert-hall culture?

Through an autoethnographic approach, I unpacked in the first half of the chapter the dynamics of 'listening relations' within the concert-hall culture of WCM. This included its historical conditioning, through which music was transferred into the domain of commodity alongside the introduction of the 'work concept'. This led to further unpacking of its causal effect on agency—composers being seen as producers of autonomous works, the rise of the conductor, how performers were to abide by the Werktreue concept, and how the audience was conditioned to entertain structural listening and contemplative stillness. Furthermore, it also shed light on how such a culture has come to promote an aesthetics of perfection, resulting in listening-as-control upheld by the many stakeholders of WCM. We also discussed how this has led to an anthropomorphic stance, where non-human agencies are set to serve such an ideological system.

Following this came a summary of the role that acoustics play in performance, proceeding onto spatial music and later works that explicitly engage with architectural space through their composition. The examples drew a picture of various methods such as lending architectural space performative and/or instrumental agency, topographical exploration in relation to space, and even sonic modification of its architectural structure. Other methods can be seen to exist in a liminal space between theatre and composition, leading to an upending of staging, giving added agency to the architectural space through a reconfiguration between audience, space, score, and performer.

I showed how such analytical thinking was essential to my curatorial approach in relation to the practice-led execution, which resulted in the composition *I play Northern Lights*, unpacked in the second half of the chapter. Therein, the curatorial work holds affinity with what Szylak has described as curation of context (Szylak, 2013). As an act of attending to listening relations within WCM but also the very site of the event, such work produced the wish perform a sonic topography, formulated as an act of activation. I detailed how such activations are a case of mediation, where the intentionality of technology plays a decisive role but also how the activations, if seen from the perspective of thinging, entail a convoluted process where a performative activation also serves as a topographical marking. Similarly, such thinging, due to different configuring, has the power to push at the normative length of sound objects. When it came to the work's continued composition, I detailed how phenomenological variation through reduced listening is essential to such work. Therein, the thinking-through-composing within the 5.1 surround-sound setup was analysed as an act of transmodal listening where the

composer engages with chunking of sonorous-gestural objects. Through this, the composer oscillates between the spatial affordances of audio technology and the spatial affordances of the architectural construction in both past and future.

I unpacked how, during its performance for an audience, the work may have a quasi-visual effect but also may afford a constructed intentionality. I showed how such an analytical framework needed to be further explicated to share its world-making potential. As the composition was sent back into the hall in a concert event, it may be perceived to perform a sonic mapping that has an affinity with Knight's speculative method of inefficient mapping that can produce a 'hacking' of institutional governing. In *I play Northern Lights*, such an interference pushes at the grid of normative relations in concert hall culture of WCM, wherein the architectural space is often perceived as a backdrop or container.

As the performance of the work unfolds in relation to the very same site it has sought to map, the piece forefronts the agency of the space. At the same time, the work may be seen to act upon the conditioning of the performer, as the virtual other has a different agency than the performer sitting onstage. Such analysis, as found in this chapter, of the ongoing configuration and reconfigurations of situated actions brings to mind Barad's point about agency—how it "is the enactment of iterative changes to particular practices" (Barad, 2003, p. 827). Such activity—conceptualised by Barad as 'intra-actions'—formed within two different micro-labs set in the studio environment, which is the focus of the next chapter.

Chapter 7. The studio environment

While the previous chapter looked at situated actions within the concert hall, this chapter is set within the recording-studio environment. Following an outline of the listening culture of WCM and its impact on the distribution of agency within such an environment, I will proceed onto two micro-labs. The first is the *Raindamage* album project, set within Greenhouse Studios in Reykjavík, Iceland. The work on the album triggered the idea for *VARP*, an installation providing insight into the creation of an album. The second micro-lab takes us to the IAC studio in Malmö, Sweden and into the creation of the quadrophonic composition *He(a)r*.

7.1 The listening culture of the recording studio

The recording studio came into being thanks to one of the most consequential developments within music in the 20th century, i.e., the introduction of recording technology. Made possible in 1877 by Edison through the invention of the phonograph, he envisioned it to be a technology of business communication (Gitelman, n.d.). However, it came to serve other purposes which, as Gitelman states, transpired not merely through institutional or power-inscribed actions, but rather "arose in relation to the social lives of people and of things" (n.d.). Therein, she traces this to how, in addition to being technologies, they are also 'media', noting further how "phonographs and records seem to have possessed an extraordinary 'interpretive flexibility,' a range of available meanings wherein neither their inventor nor the reigning authorities on music possessed any special authorial status" (n.d.). And so it was that recordings and their players turned into home commodities, to which radio, TV, and even computers were later added.

   The first recording studios were akin to laboratories, dedicated to technological invention. It was not until the construction of Abbey Road Studios in 1931 that we see

the emergence of purpose-built studios (Horning, 2020).[55] Regardless of whether a studio was part of large labels or independent enterprises, the work within such a hub followed a similar trajectory, where the work was configured with technologies and their development. As outlined by Susan Schmidt Horning (2020), the transferral from analogue over to electrical recording gave the recordists more control over sound production and the musicians more space in the studio. Later, the introduction of the magnetic tape, alongside the possibility of stereo and multitracking, transformed the editing possibilities, resulting in "more time spent in recording, more involvement of technicians in the creative process and, in some cases, artists being permitted to see and to touch the controls" (p. 119).

It is in flux with this that we see how the album-making of the 1950s goes into "the direction of becoming an art form in itself, not only a reproduction of an artistic event (…) and the first steps towards integrating composition with the technological process were taken" (Auvinen, 2020, p. 163). In the 1960s, engineer-producers and the artists of popular music came to form what producer George Martin (sometimes referred to as the 'fifth Beatle') described as the 'composition team' (Albin Zak, 2001 in Auvinen, 2020, p. 162). This shift—found in the works of engineer-producers such as Giorgio Moroder, Brian Eno, and later Kraftwerk as well as 'self-producing' artists like Stevie Wonder and Prince—entailed the studio's transferral into a 'musical instrument' (Auvinen, 2020), "bringing together composing (songwriting), performance and engineering." Fast forward to present-day digitised times, we are met with a record production that, according to Auvinen, is still "comprehended as a collective effort despite the possibility afforded by digital technologies for one person to take over several or all of the activities" (p. 162).

Looking closer at distributed actions in the studio from the viewpoint of architectural space, it becomes apparent that there exists more than a spatial division between the control room of the sound engineer and producer and that of the tracking room, where the artists are. Therein, microphoning, aimed at securing the best possible sound within the space reverberation, may result in musicians having to position themselves in a way that falls far from their habits outside of the studio environment. In addition, as there is isolation between the control room and the tracking room, part of the gear is devoted to enabling listening between those sites, such as talkback, headphone amps, headphones, and studio monitoring. This points towards why the working environment, the architectural layout, and material/technology of the recording studio

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[55] It is not the purpose of this inquiry to detail the development in architectural design of such facilities. For further reading on the development of acoustic design and the organisation of objects in space, see for example *Recording studios since 1970* (Bates, 2020).

needs to be weighed to unpack the activity that takes place between songwriters, composers, sound engineers, performers, and producers.

But there are other forces at play in these environments that can affect or even counteract open-ended productivity to such an extent that it results in musicians and even record producers opting to work elsewhere. An example is how the "vast majority of commercial studios are coded and understood as male/masculine spaces" (Bates, 2020, p. 135) which, as noted by Bates, has led to the exclusion of women, or their withdrawal from such environments. Hence, architectural layout, infrastructural technologies, and inbuilt values of the recording industry may all come to inhibit the potential of music-making (Bates, 2020). This aligns with Rietveld et al.'s ecological-enactive reading of how affordances relate to the abilities available in the form of life (see section 2.2). It acknowledges the sociocultural nature of practices, which translate into spatial practices, or 'place affordances'. This may be traced to places being "aspects of the sociomaterial environment that offer possibilities for action (…). Accordingly, places can put constraints on the structure of our field of relevant affordances" (2018, p. 58). This last point, when it translates into institutionalised governance, is instrumental when it comes to understanding the recording practices of WCM and its agential formation or rather division, to be addressed in the upcoming section.

At the same time, the unpacking of such a listening culture necessitates the re-introduction of listening perspectives at the heart of album creation—how the tape-recorder and later digital technologies have enabled a listening perspective that is referred to in this thesis as 'micro-sonic listening' (Östersjö, 2020b; Stefánsdóttir & Östersjö, 2022). As noted in the previous chapter, the act of micro-sonic listening, when employed in the field of WCM, can be seen to have contributed to heightening technical standards (Leech-Wilkinson, 2020) thanks to performers' repeated listening and referral to albums that represent the field's dedication to what is deemed to be perfection. However, during the process of album-making, this reduces micro-sonic listening to merely 'listening to takes', the reasons behind which I will unpack in the following section.

7.1.1 Western Classical Music's agential division within the recording studio

In accordance with how use becomes tangled up with 'ideas' about 'how' to use, the recording of WCM's music became co-opted by its ideologies. A typical WCM album is still, to this day, aimed at producing an illusion of 'liveness' and 'single performance' through which the listener is secured an exclusive 'listening position', and wherein intentionality is invested in producing a performance that abides by the Werktreue ideal. This happens despite a change to the album's ontology, where the classical producer is no longer seen to take a 'photograph' of a musical event but is a producer

of 'artefacts' (Auvinen, 2020). Consequently, although the studio and its recording technologies have long served as a creative tool for producers and composers, the recording process for the performer within WCM is contingent on a specialised division of labour. This entails that, as part of their work in the studio, a performer shows up prepared and tries to 'nail' the piece in as few takes as possible. During such work, the reflective moments are mostly designed to review the success of takes and drive the recording forward according to WCM's aesthetics of perfection.

The ideology relates to the 'work concept', where a note that deviates from the score is seen as a failure (Leech-Wilkinson, 2020). This also explains why performers can be induced to perform differently in the recording studio than in live performance. This was attested in a survey conducted by Dorottya Fabian where nearly 80% of the participants reported taking fewer risks in the studio (2008).[56] Importantly, the agential division within studio work, outlined in the previous section, is continuously reinforced on an educational level, where classically trained performers and even many composers "do not receive training in music production technologies and/or do not show interest in them" (Auvinen, 2020, p. 167). This so-described disinterest needs to be seen as the result of the values promoted by the many stakeholders of WCM. As such, and as outlined in the previous chapter, a performer's agency is steered towards the technology of their instrument with the aim of producing perfect performances, keeping them from creative engagement in relation to 'other' technologies.

Shifting perspective to the sound engineer, producer, and mixing engineer, their roles vary depending on genre as well as individual projects. As Paul Thompson and Phillip McIntyre (2019) point out, 'microphoning' needs to be viewed as a creative practice that "requires an applied knowledge of microphone characteristics, the acoustics of the room, the technique of the performer and the sonic properties of instruments" though such practice needs, in return, to be "carefully balanced against the expectations of the field in order to achieve the resultant recorded sound" (Thompson & McIntyre, 2019, p. 167). Given that such work, like that of a performer, is embodied, "no two engineers will bring exactly the same skills or knowledge to a recording session" (p. 167). Within WCM, the recording of a classical album may employ both a sound engineer and a producer who work in parallel. It is not uncommon for one person to take on both roles. Another model, more common within contemporary music, is that the composer takes on the role of producer—and even sometimes also that of sound engineer, thanks to training acquired through practice where they have used the studio as a compositional tool and/or acquired knowledge

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[56] Although Fabian does not make the link, I feel that one should not underestimate the fact that the lack of repeat can also be traced to financial realities, i.e., conducted within a field of limited funding, including dramatically altered income from album sales, that does not allow for a prolonged process of experimentation in the studio.

about microphones and DAW. This aligns with tendencies in popular music where we have seen the appearance of the self-producing composer/auteur. It is therefore not viable to state that the choice to self-produce within WCM is always a financial one, as it may be just as well an agential choice and essential to the person's artistic habits. This counteracts Auvinen's claim in the paragraph above, as I see the lack of studio training to be increasingly reserved for the role of the performer.

Given the emphasis on liveness in WCM, the producer, alongside the sound engineer, often works outside of an actual studio, and in a wide array of churches and halls sought for their acoustic qualities. During the recording moment, the producer's role can expand beyond the usual discussion around 'perfect' pitch, synchronisation, or rhythm to discussions on musical phrasing. In such instances, the producer can be seen to contribute to the artistic voice of the soloist or the ensemble. A good producer can also undertake the role of mitigator when different artistic wishes and intentions surface in order to ensure a good and positive workflow, necessary to an efficient recording process.

When a producer is specialised in a certain repertoire, they can have strong insights when it comes to the work's performance. This, again, brings to mind the compositional team of popular music, although here it could be framed as a performance team set to produce or compose the ideal performance. But it needs to be underlined that in WCM, the role of producer is often distributed between several individuals. Within the recording of a contemporary music album, a production team can include multiple agents who act as producers during the process of album creation, ranging from ensemble members to composers or colleagues from other ensembles. Similarly, the production decision regarding the location of recording is often driven by the performer, composer or artistic directors.

Editing in WCM is usually in the hands of the producer/editing engineer who may also have worked as the sound engineer during the recording session. As mentioned earlier, this phase often reduces the participation of the musician to a consultative agent, where they do not even listen to takes but rather pinpoint instances within the first edit that need addressing. This being written, it seems to be becoming more common at the outset of editing that a performer may be asked to pick takes from a boiled-down studio version. From my own observations within the field, this is usually related to strategies of keeping the production costs down in an already struggling field.[57] It should,

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[57] It should be noted that the realities of album-producing are entangled with logistics regarding contracting around album releases. When the composer or performer raises the funding for its production and chooses to release it on a label, it is 'licensed' to the label for an agreed-upon number of years, securing that the master rights stay with the performer or composer. When a label takes on the recording and production costs, the standard is that they gain the master rights. However, as is becoming more frequent in today's environment of dropping sale revenues, the latter mode is starting to function in such a way that the performers are asked to take on the role of choosing takes for

however, not be viewed as a negative development for it can give the artist a heightened agency regarding aesthetic decision-making. Similarly, it asks them to consider dynamics essential to editing, or how such a process is reliant on identifying "edit points, accurately with acceptable matches of pitch, tempo timbre and dynamic from one take to another" (Barrett, 2010, p. 96). As the editing progresses, the merger between takes can be further facilitated through the mixing process where for example auto-tuning or changes in speed can be implemented through digital tools.

The final phase of post-production, prior to distribution, is mixing and mastering. Within popular music, it is a set of practices that seems "to have more or less survived as independent categories of contribution distributed to highly specialized agents" (Auvinen, 2020, p. 168). Within WCM, it is not unusual for the same person to embody the roles of mixing and mastering. This can be explained by the fact that what is seen as meaningful is the production of an exclusive acoustic space. In that instance, Daniel Shores sums up a common approach grounded in "looking for the cleanest path possible, from the microphone to the end master" (FabFilter, n.d.), where the mixing and the subsequent mastering evolves around transparency.

This differs greatly within work where the studio is perceived as a musical instrument, as it entails that much of the mixing is in the hands of the composer—even the final mix and master. Either way, mastering should be seen as "the last creative step in the audio production process, the bridge between mixing and replication—your last chance to enhance sound or repair problems in an acoustically-designed room—an audio microscope" (Katz, 2002, p. 11).[58] This resembles colour grading in the visual domain, where "the overall final product is adjusted in terms of dynamics processing, levelling, equalisation, and noise reduction so that it is intelligible, in audio terms, across all playback systems" (McIntyre, 2012, in Watson, 2017, p. 24).

In what follows, I will proceed onto two micro-labs that creatively engage with the studio environment. The first—the *Raindamage* album project—was steered towards altering ways of working during post-production. The studio work of the composition *He(a)r* resulted in 'different' ways of working within the recording booth.

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editing and contracted to buy an agreed-upon number of albums from the label. For further reading on compensation in our digital times, see Burgess (2020).

[58] It should be noted that mastering is undergoing a radical transformation due to new software with AI technologies that masters automatically based on analysis from existing recordings.

7.2 *Raindamage*

A wish to activate the usual simulation of live performance within WCM album-making led me to formulate and realise the *Raindamage* project, recorded at Valgeir Sigurðsson's Greenhouse Studios in Reykjavík, Iceland. The project united the ensemble Nordic Affect (Halla Steinunn Stefánsdóttir, violin; Guðrún Hrund Harðardóttir, viola; Hanna Loftsdóttir, cello; Guðrún Óskarsdóttir, harpsichord) with composers Úlfur Hansson, Hlynur A. Vilmarsson, and Sigurðsson. Sigurðsson was, from the outset, engaged to be producer and mixing/mastering engineer. Sound engineering was done by Sigurðsson and Paul Evans.

7.2.1 Curation for activation of agency

I instigated the *Raindamage* project through my role as artistic director of Nordic Affect. Its curation, set to activate agential relations, built on prior experience as well as observation of the impact of WCM's performance values on album production. Through its design, the project sought inspiration in how the studio and its recording technologies have long served as a creative tool for producers and composers. It was from this knowing that I formulated a project that was not to build on an aesthetics of perfection or simulation of a single performance but, rather, to transfer the creation of an album further towards the intentionality of sound-processing technologies. Everyone involved was set to work as a 'collective', as opposed to my later album project *strengur* (see chapter 10), which was designed around the self-producing artist through the alternating roles of performer and composer.

As stated, the project evolved around works by Hansson, Sigurðsson, and Vilmarsson with whom we had collaborated on the concert production *Flow*[59] which premiered "Þýð" by Hansson, the eponymous composition "Raindamage" by Sigurðsson, and "[:n:]" by Vilmarsson. Nordic Affect was set to record those works for the *Raindamage* album and, through that, creatively explore the possibilities of mediation during the post-processing. In addition to producing a musically convincing album, I commissioned from each of the composers an electronic sister-work for the album. The idea increased the role of post-processing aimed at employing the digital music systems in the recording studio as compositional tools. The curatorial formulation, grounded in knowledge of the multistability of technologies (Ihde, 2007), can thus be seen to set up a situation for what Suchman calls 'artful integration' that "emphasizes the ways in which new things are made up out of laborious reconfigurations—always partial,

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[59] *Flow* took place at Roni Horn's Library of Water as part of Reykjavík Arts Festival in 2015, in co-production with Artangel, UK.

provisional, and precarious—to familiar arrangements and modes of action" (2011, p. 15).

To realise this required specific recording strategies.

> "Þýð" by Úlfur Hansson: separation of voices and string-playing (violin, viola, cello). String-playing was recorded together and singing was recorded together.

> "Raindamage" by Valgeir Sigurðsson: each string player (violin, viola, cello) to be recorded separately, with electronic part in ear.

> "[:n:]" by Hlynur Aðils Vilmarsson: a 'reference' take with all players, following which each player (violin, viola, cello, harpsichord) to be recorded separately.

Certainly, the strategies for Hansson and Sigurðsson would have been conducted in the same way, had the aim been to reproduce an acoustic performance. When it came to Vilmarsson's work, the divergence from standard practice was, however, felt already during the recording, for to achieve his idea that the post-production would entail 'composing the work' resulted in a radical approach since we had to record a work that was otherwise reliant on improvisation amongst the group, separately. As a result, the ensemble took on an expanded role in the production to make sure that figures and phrases aligned in timbre, directionality, and speed.

The post-production differed between the three works in that in Hansson's and Vilmarsson's pieces, the composer worked together with Sigurðsson, Evans, and me towards a final outcome as a compositional team. The work on Sigurðsson's "Raindamage" was, however, due to his longstanding role of interdisciplinarity in one person, only undertaken by him. The next section gives further insight into how the editing was conducted as it unfolded in paralell with the recording session.

7.2.2 Editing of *Raindamage*

In Sigurðsson's "Raindamage", the editing process took place during the recording session, akin to studio practice in popular music, where takes are almost immediately chosen. This entailed that the soloistic violin part was first recorded and configured with the electronic part, followed by the cello and viola being recorded on top. This coincided with the fact that their parts had been written to morph and align with the electronics.

Sitting beside him in the control room was Sigurðsson's sound engineer Evans (see Figure 7), who was in charge of starting up takes in the computer as well as selecting takes within the project according to Sigurðsson's instructions. During a later interview with Sigurðsson, he described an habitual approach as a state where he is in a certain

headspace, a "very focused listening" (personal communication, December 12, 2022). During those moments, he wants to 'react' as much as possible. Not doing so means that he will have to make a greater effort later to enter such a listening state, but then in relation to an archive. Certainly, something may appear afterwards that needs alteration, but working with harvested material is something he connects more to his compositional phase rather than editing.

Figure 7
Recording of Sigurðsson's "Raindamage" at Greenhouse Studios. In picture: Evans and Sigurðsson.

At the same time, Sigurðsson embodies both the role of producer and composer. An example of the effect on such a situation is when Sigurðsson asks Loftsdóttir to adjust bowings in a long passage and work towards a freer and more fragile sound production. It is a much more detailed process than the request for a 'lighter' sound that he expresses in relation to an earlier spot and, in fact, it takes a few goes. Through this searching-through-listening, he can be seen to be composing the recording as he tries to find the right merger between the cello part and the electronics. At one point, he asks Evans to turn off the click track to enable a less metric approach for Loftsdóttir.

During my listening to Loftsdóttir's playing, I notice that there is a note missing in my prior recording (that is, by then, integrated in the session). Sigurðsson had not noticed the missing note but offers to address it on the spot. In that instance, rather than picking a take where all notes are present, he chooses to edit the current recording, so that it aligns better with the electronics. Hence, the sonic outcome overruns the score; Sigurðsson values the sounding result over the notation. Here, Sigurðsson shifts seamlessly between the role of the producer (let's fix the missing note) to that of the composer (let's change the pitch structure and work on the mix with the electronics).

7.2.3 Post-production of "[:n:]" and "Þýð"

The post-production of Hansson's "Þýð" was done with the aim of layering the voices as well as certain passages in the instrumental part, a process which he asked Sigurðsson to lead from the studio. After an initial edit by Evans based on my choice of takes, Sigurðsson starts to work with Hansson's idea of layering and sends his first bid. This starts a process where Hansson and I come with varying commentary as we forge our way towards a final track. They pertain both to tunings and cleaning up certain sounds, but expand also to more specific commentary by Hansson. This ranges from usage of decapitator or culture vulture[60] to enhance sound and wishes for augmented distortion of sound to enhance aggression in the piece to thoughts regarding automation linked to the interplay between the texture of the instruments and the voices.

Ultimately, the transcreation of material that manifested through Sigurðsson's layering of voices altered my view on the work. I had always been appreciative of it. However, it includes moments of distortion where chords in the instruments push at the ongoing vocal droning. Hence, it is physically demanding all the while one is sent into a state of vulnerability as it pushes against control and perfection. But through the layering and listening to edits, I could start to enjoy its effect rather being engrossed with its 'performance'. This gave me the idea to recreate the 'layering' live in performances with Nordic Affect by inviting the audience to join us in the droning.[61] This, if framed from an ecological-enactive perspective, may then be seen as an example of how a micro-lab may come to shift the perceived 'field of relevant affordances' (Rietveld et al., 2018). Although the editing and mixing process adhered to norms in that we perceive some sounds and tuning as disturbing to the listening experience, the digital sampling/layering/mixing opened up a space for 'other' ways of relating.

Such work conducted both through interactions in the studio and remotely, through file-sharing, transfers us into a compositional team that works around the studio as if it were an instrument. Such 'co-composing' became even more enhanced through the work on Vilmarsson's "[:n:]". As stated, his plan was to create the piece through editing the recordings made in the studio, a possibility enabled by its open-ended score, which consists of sixteen variations or modules during which the focus for the player is on one set of material at the time. Therein, the notation is to be understood as instructions for

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[60] The vocabulary used in relation to mixing can be highly specialised, making it appear as 'jargon' to an outsider. The wording may refer to equipment used in sound production, such as seen above, where 'the decapitator' is used in relation to the saturation of sound and 'culture vulture' can be used to add distortion to a recording.

[61] As a result, we have invited people to drone with us in concerts throughout Europe and the US. When possible, we even invite people onstage to partake in the droning, rather than from the hall. In either case, such performance removes the fourth wall.

improvisation within the ensemble. Based on my pick of takes from the studio session, he enters the mode of an electroacoustic composer.

In the wake of this, Sigurðsson and I listen through his first edit, and can both hear attempts at layering that go beyond what Nordic Affect can ever possibly do live. This sounds full of promise and so we encourage him to develop it further. When the second version arrives, it is layered but has lost some of the affective qualities found in the first version. I therefore pitch the idea to hand both edits over to Sigurðsson, to hear if he can merge the edits to create the final version. Vilmarsson was up for this experiment. In addition to such a merger, Sigurðsson uses VR processing and a fine-tuned spatial build-up of individual tracks. This produces a sound world that oscillates not merely linearly between tonal material through improvisation but also between different digital spatialisations.

7.2.4 *Raindamage* as mediation

The different forms of mediation that album production can take may be understood through Ihde (1990) and Verbeek's (2008) theorising on the varying forms mediation can take, balancing different modes. For example, an acoustic album within WCM is invested in placing the receiver/listener in a top-quality listening space and editing of takes should conform with WCM's ideas of an ideal performance. Such an approach that has its focus on a 'transparency' from recording to mastering would then be an example of album production invested in 'representation' in relation to a phenomenon in the world, even if the creation of the artefact entails multiple edits and the removal of any tactility or graininess through, for example, spatialisation plug-ins.

In the case of electroacoustic albums, we enter Verbeek's composite relations, where technological intentionalities are explored as "relevant in 'themselves'" (2008, p. 393). Such an 'addition' is present within the *Raindamage* project, also when it came to Hansson's and Vilmarsson's compositions that might in other album contexts have been approached with the aim of representation. Instead, during the post-processing, they were transferred into something that cannot be replicated in real life.

The way we negotiate work of the composite variant is through micro-sonic listening, a process present in all our practices, and a prerequisite for album-making through a collective effort. This entails, as was shown in the previous sections, a working process where commentaries that spring from micro-sonic listening are 'of' varying affordances that are always culturally embedded. Indeed, I would later set up a micro-lab to explore album-making created by a self-producing artist—an approach reserved for the *strengur* album project to be unpacked in chapter 10. *Raindamage*, on the other hand, followed the familiar model of collective album production. In other

words, it needs to be acknowledged that "in its materiality the record cannot be disentangled from the industry that produces it" (Nataraj, 2020, p. 386).

During the work on *Raindamage*, which evolved around negotiations in relation to the studio computer, I began to contemplate how such an artefact is 'closed off' or how consumers of albums may have very little insight into the mediation that occurs when it comes to making an album 'track'. I contemplated whether it would be possible to provide insight into such processes through an installation. This idea was realised through an installation titled *VARP*, the focus of the next section.

7.3 *VARP*

7.3.1 An installation on album creation

The idea for *VARP*,[62] a 16-channel audio-visual installation, was to give the visitor an insight into the production of album tracks. This entailed creating a dome where one could step into Sigurðsson's editing computer at Greenhouse Studios. This was developed through discussions with Sigurðsson who lent the stems to the 16-channel audio.[63] Furthermore, the installation includes visuals that draw on video documentation shot by Hansson and Elín Hansdóttir at the initial *Flow* concert, during which Roni Horn's glacial installations worked as lenses—a way of situating the project, i.e., displaying its context (see Figure 8).

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[62] *VARP* is Icelandic, referring to the verb 'að varpa' which means to throw light on something (the word 'projector' in Icelandic is, for example, skjávarpi—something that 'throws' light onto a screen). It can also refer to varp, which means egg-laying (það að verpa), breeding place, and nesting ground (varpstaður).

[63] The installation used the stems from "Raindamage" and "[:n:]". The works' recording approach entailed a split between the many parts. Combined with the layering in "[:n:]" and the electronics in "Raindamage", this made the works suitable for a 16-speaker setup.

Figure 8
Still from documentation of *Flow* at the Library of Water. Photograph: Úlfur Hansson/Elín Hansdóttir. Post-editing: Margot Edström.

Farther afield, an interesting example of an artist's own presentation of the recording process during its actual real-time event is found in PJ Harvey's *Recording in Progress* installation in 2015. During the installation, she recorded *The Hope Six Demolition Project* in front of the public at Somerset House in London. Similarly, film has been used with impressive results to document the working methods of bands and figures of the popular music scene such as The Rolling Stones, U2, The Beatles, and David Bowie.

Another approach that unites an investigation into the identity-creation albums can offer the listener through an artistic method is found in Paul Nataraj's doctoral project *You sound like a broken record: a practice led interrogation of the ontological resonances of vinyl record culture*. Through the work, he conducted interviews with album owners, later to be carved into the records resulting in "one vinyl record containing sound pieces that use the 'broken records' and the respondents' narratives as their sonic material" (2018, p. 5). Such a format, according to Nataraj,

> provides a different set of affordances for resistance, ones that are once again becoming prevalent in new contexts. If the music industry is the wicked witch, trapping and enslaving music, with inbuilt obsolescence and unabating newness, then YSLABR contributes an original approach to its ontology, teased apart from the layers of the collaborative palimpsest of the record. This new approach reveals a fluid and ever-evolving rhizome that is apotropaic to such industrialized and canonical constraints. (2020, p. 394)

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Another initiative, albeit set to address the lack of 'display' within the art world when it comes to such artefacts, can be found in Wolfgang Tillman's *Playback Room*. Originally created at his gallery in Berlin, the room creates a situation for high-quality listening—often not present in terms of playback equipment—and where the space is devoted to one artist at a time, not unlike an approach often found within galleries and museums. *The Playback Room* was later installed at Tate Modern in London and used as a platform for *The Playback Room Sessions*, a series where artists shared and discussed their own productions as well as the influence of other recorded works on their lives and works.

One may note similarities between *VARP* and Tillman's *The Playback Room*, in that it creates an event for listening. However, *VARP* differentiates itself from Tillman's work as it cracks open the studio computer, instead of creating a listening situation dedicated to a single finished artefact. As such, *VARP* transfers into the domain of sound art where the listener's engagement falls far from the habitual everyday listening to an album. The installation was aired as part of my 25% seminar in 2016 and, as will be detailed in the next section, can be assessed from different perspectives.

7.3.2 Success and failure in the micro-lab

VARP links to my interest with AR's attempts to explore and experiment with the transferral of musical knowledge.[64] I had witnessed the exhibition *Inside/Outside* which employed the tracing or documentation of the micro-lab in its artistic process (see section 2.4). Such a juxtaposition is echoed within my initial ideas for *VARP* that were geared towards creating an installation where the visitor would interact with the stems of the album through 'naïve' technical systems, or wooden construction, that would enable people to pull out individual stems from the album and construct their own tracks. In that instance, I was inspired by the media usage found within artist Rúrí's *Archive – Endangered Waters* (2003) created for the Venice Biennale, which allowed the visitor to engage with an archive of endangered waterfalls, each presented through photographs and field recordings. By choosing and sliding out the pictures of waterfalls, the visitor is invited to engage with them through a playback of singular or combined waterfall sounds. In the case of *VARP*, neither time nor funding allowed for such an approach and so I landed on the format of a looped installation, where visitors could navigate through listening and, in parallel, experience the visuals through the videography of the initial concert event at the Library of Water. That material had been shot through the lens of columns of glacial meltwater, an installation by Horn at the Library of Water, and was, for *VARP*, reworked into new 'columns' within the black box.

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[64] Recent developments include the practice of stimulated recall, as well as the audio paper, shared later in this thesis.

As artistic output, *VARP* may certainly be found to be an installation of poetic beauty. However, if assessed as an artistic product set to creatively work with and share the mediation processes of album-making, then I see *VARP* to be lacking in that it 'stages' the stems and visual data instead of sending the material into a new round of mediations. Rather, the material should have been subject to a reconfiguration of the stems in real time. The reason why I failed to do so was that I was still so invested in situating the work in relation to the studio environment, rather than critically asking what this new context had to offer, consequently prohibiting its potential for new trajectories.

Shifting perspectives then, *VARP* may be seen as successful presentation of 'data' which could have been incorporated into a lecture on the micro-lab. Another option would have been to create an audio layer, based on the analysis in this chapter, that would have been incorporated in a transforming installation. That way, I would have obtained a similar rigour as is found in *Inside/Outside*, which includes the analytical material of a micro-lab.[65]

In what remains of this chapter, I will present a second micro-lab, *He(a)r*. Contrary to the *Raindamage* album project, *He(a)r* activates and critically engages with what aural thinking can entail when it comes to work in the studio through the recording environment.

7.4 *He(a)r*

I created *He(a)r* (2016) for Nordic Affect's concert in the Northern Lights Hall in Iceland at the 2016 edition of Nordic Music Days.[66] Performers in *He(a)r* are Carina Ehrenholm, Rawlings, Liv Kaastrup Vesterskov, and me. A text score was built on writings and digital works by Rawlings (*In Memory: Jökull*, *Jöklar*) as well as by Horn, Oliveros, Schafer, David Suzuki, Bruce Chatwin, Bernhard Leitner, Heidi Fast, Robert Macfarlane, Voegelin, and me. The work was mastered by Olofsson.

He(a)r is a quadrophonic composition in four movements which can also be presented as an installation. It was later reconfigured into a stereo version in seven movements for Nordic Affect's album by the same title, where it was placed in between other commissions by Nordic Affect—as had been the case during the time of its

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[65] This is something that I explored when I embarked on the creation of audio papers. See Stefánsdóttir (2019, 2021).

[66] The 2016 edition was curated and directed by Guðný Guðmundsdóttir under the banner of *Living Archives*, a title linked to Hild Borchgrevink and Ross Karre's workshop held during the festival on the creative archiving of contemporary performing arts.

premiere. Like the *Raindamage* album, it weaves together electroacoustic work with compositions written for the ensemble. It picked up the thread from Nordic Affect's *Clockworking* album released in 2015, in that all works are by female creators. This counted in the case of *He(a)r*, as the composers were Hildur Guðnadóttir, María Huld Markan Sigfússdóttir, Mirjam Tally, Anna Thorvaldsdóttir, and me.

Given the focus of this chapter, the following sections engage with the work's recording sessions at the IAC studios in Malmö, Sweden. I detail how these sessions were designed, which necessitates an unpacking of the work's contextualisation and compositional method seen to be under the influence of the hörspiel. Hence, I begin by outlining the hörspiel's history and development, which stands in direct correlation to recording technologies and studios.

7.4.1 The hörspiel

The start of the hörspiel tradition can be traced to Germany during the 1920s and '30s. One of its propagators was Hans Flesch, the head of Rundfunk in Frankfurt. More of a theoretician than creator, his vision for the hörspiel, as Daniel Gilfillan explains, was twofold.

> [I]n one sense a self-referential genre, one that explores its very connections to the medium that produces it, and in another sense, it is a form that delights in its own intermediality by drawing on the dramaturgical techniques of stage drama, the journalistic techniques of reportage and interview, and the compositional techniques of new music, while being aurally bound to the technologies of the broadcast studio. (2009, p. 70)

From this, we see that the hörspiel, already at the time of its invention, was theorised to hold the possibility of serving various fields, i.e., a platform for interdisciplinary approach. As noted by Erik Rynell (2014), it opened a space where theatre practices could enter a new relationship with music and reach a blend or mix that went beyond stage practices. Similarly, it gravitated towards an electroacoustic musical form, involving "spoken words as narrative elements that can be of documentary kind or dramatized fiction" (Olofsson, 2018, p. 32).[67] Through analysis of his own work in intermedial contemporary theatre, Olofsson has gone on to show how such a composition springs out of vertical dramaturgy and polyphony, which entails non-

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[67] Its influence was felt outside of the realm of broadcast and recordings, a seminal example being how Heiner Goebbels, through his attempt to compose "with sounds 'as a language'" (McKeon, 2022, p. 31), developed "the hybrid form of the 'Hörstuck' a theatre of the ears, through counterpoint and film-like techniques of collage, montage, close-up, cut, and dissolve" (McKeon, 2022, p. 31) and which he later developed into 'scenic concerts'.

linear causality between entities. Therein, he has identified three stages: *conceptual framing*, *macroform*, and *mesostructure* (see Figure 9).
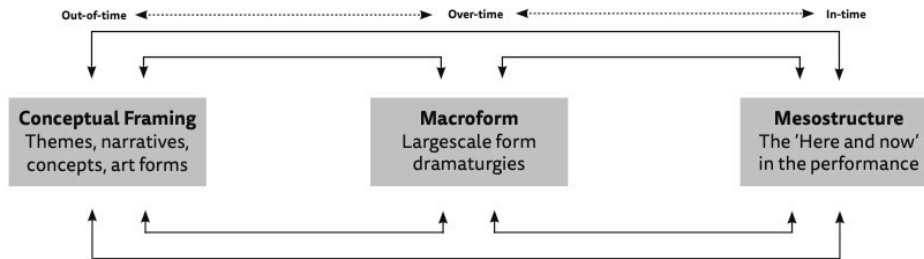

Figure 9
Overview of Olofsson's creative process in intermedial theatre (2018, p. 198).

He(a)r did not involve the same complex causality as presented in some of Olofsson's collaborations, nor was it steered towards a live performance on stage. Instead, it took the form of an acousmatic hörspiel-influenced composition, set within other pieces on Nordic Affect's program at Nordic Music Days. Its creation followed the trajectory of an out-of_time conceptual framing that may be seen to collapse the processes of curatorial contextualisation and autoethnographic thinking within the laboratory.[68]

7.4.2 Into ecology

As already stated, the relay between practice and theory prompted me, at the outset, to take an ecological perspective on practice (see section 2.2). Through this, I came to consider musicking both through the lens of affordances in relation to instruments and other technologies and environments, and also through a contextual lens. As I started curating Nordic Affect's concert at Dark Music Days, I eyed the possibility of creating a composition that would spring out of such reflections while, at the same time, being performed within an event that essentially evolves around varying affordances.

In Spring 2016, I began to build a text score that drew on various listening situations combined with text that related to female bodies whose creative voices have often been

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[68] The hörspiel influence within my work should perhaps not come as a surprise, seeing that I initially learned digital editing through my work as a radio producer (2007-2014) at The Icelandic National Broadcasting Service. I was familiar with how the medium had provided a site for artistic experimentation with noise, voices, and text in radiophony. In fact, through some of my initial composition 'collages' created for the drawer, I came to use material that would often be employed to create an atmospheric effect within radio production, such as fragments of voices, field recordings inside and outside my home, and even reappropriation of musical material by others.

kept to the sidelines of WCM as well as imaginaries related to site and place. The fact that the work was geared towards a concert event affected its structure.[69] The event programming led me put down a framework of 3-4 voices in narration, all approximately two minutes in length, to be placed in between other works. The number of voices was triggered by the multi-channel format or the quadrophony, which was enabled through the placement of the ensemble in space, i.e., in the middle of the Northern Lights Hall with the audience surrounding performers and the four speakers surrounding us all.

As my curatorial work in relation to space, composition, and other commissions converged further, I started defining the topography of the event as a 'jökull' (meaning: glacier): one big environment that 'held all'. This was assisted by the fact that the first work on the program, and which lent its name to the event. was titled *Warm Life at the Foot of the Iceberg*, a composition by Tally. The final piece, *Treatise on Light* by Georg Kári Hilmarsson, further enforced the glacier idea in my head as the lighting plan Hilmarsson proposed was aimed to nearly blind the audience at a crucial moment in the work, which I had begun to think of as snow blindness.

In flux with this, I found myself making ties between WCM's denial of its many 'others'[70] and the nature/culture divide, which is deeply ingrained in Western epistemology, despite its inseparability in ecological relationships that are both biophysically and socially formed (Malone & Ovenden, 2016). Such an approach, where I started to magnify the number of forces or entities that could affect a composition, became even further magnified in later installation work. Thanks to such a curatorial formulation which grew out of attending to relational entanglements and their ethics, I had the idea to include performative engagement with glaciers in the work. This prompted me to approach Rawlings about whether her work related to glaciers and her practice of "site-invested artistic attunement through listening and intimacy" (2020, p. 19) could be included in *He(a)r*.

7.4.3 Geopoetics for poiesis

I had gained insight into Rawlings' practice thanks to a prior encounter in Reykjavík and had read her work *Jöklar* and *In Memory: Jökull*. The former "compiled the names of fifteen Icelandic glaciers and glacial tongues in order to extend a longer-term meditation on their current states of being by countermapping their

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[69] I later came to develop the act of score-making towards 'performance scores' that would both include texts that grew out of 'performative reading' as well as photographs and recordings, set to create situations for performative response (see 9.3.2).

[70] See chapter 3.

given names to imagined names resulting from climate-change transfiguration" (Rawlings, 2014, p. 12). *In Memory: Jökull* draws on her collection of compound names for linguistic sensoriality and attunement.

> Glaciologists predict that all glaciers in Iceland will melt within 100 years. Since settlement within the country, the Icelandic word for glacier has been jökull (plural: jöklar). Icelandic boasts a variety of compound words that feature jökull within them. The list of compound jöklar includes references to geographic features, such as jökulá (glacial river) and jökulruðningur (moraine). (Rawlings, 2015)

Such work can be categorised as geopoetics,[71] a subcategory of ecopoetics which builds on ecocriticism (Magrane, 2015). It questions the dualism of Western thinking and so "an ecopoem becomes a tool for altering the reader's perceptions from the anthropocentric to the biocentric" (Scigaj, 1999, in Magrane, 2015, p. 8). The idea was to weave such material into the composition and, through that, create a counterpoint to all other text material. However, this was not only to encompass recitation of Rawlings' text, but also include a performance of geopoetry, an act upon which I had not previously embarked but knew was part of her practice.

In this way, the studio session was steered towards an open-ended process based on a dialogical principle. Such distributed production incorporated normative studio processes, in that it was to employ recording the performance, later set for compositional editing, mixing, and mastering, with me acting as a self-producing artist.[72] What shifted in relation to the studio environment was that the work in the recording booth[73] moved away from institutionally prescribed parameters towards new trajectories.

7.4.4 Improvisation and activation in the studio booth

The studio session with Rawlings was divided into three stages:

> 1. Verbal attunement and strategies for performance
> 2. Duo improvisation
> 3. Solo performance and reading by Rawlings with Stefánsdóttir acting as sound engineer and producer

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[71] Eric Magrane defines geopoetics as "creative geography, including discussions of geographer-poets and of poetry as a research method; second, as literary geographies of poetry; and third, as geophilosophy" (2015, p. 87).

[72] Only in the final phase of mastering for the quadrophonic setup did Kent Olofsson enter the process.

[73] I use the word 'booth' in this instance as Studio B at the IAC is a recording space that is designed to achieve sound isolation, as opposed to the acoustics found in a live room, or music room, of a studio.

Prior to the session, Rawlings had shared a duo performance between herself and Laureen Burlat, which built on *In Memory: Jökull*. I also received her article *Five Meditations on Desire and Loss near Glacial Moraines* (2015) where she traces the development of her practice of 'becoming-with' glaciers.

> When we hear the word *jökull*, we receive inherited traces of utterance from bodies that experienced Icelandic glaciers 1,000 years ago. To familiarize myself with the word's pronunciation, I place *jökull* in my mouth and utter it repeatedly. This proximity cultivates desire—desire for the word, desire for the idea of glacier, desire to better understand the glacier, desire to be with the glacier, desire *to become glacier* (as verb, as action), desire *to glacier*. (pp. 143–144, emphasis in original)

Such geopoetic becoming-with, as proposed in the quote above, acknowledges the words 'social history', while the text traces how, through performance, it can become a tool for cultivating sensitivity.

During the studio session, our intention was to intersubjectively explore this method. But to arrive there required an initial phase of 'curatorial sharing' through conversation (see Figure 10). This linked to the event's conceptualisation, topographical layout, and the ideas for the composition. Further conversation linked to our research and practice at large. This brought up topics such as the idea of the North, sustainability, global industrialisation, nationalism, exoticism, studio production, Borealism,[74] utilitarian policies, branding and tourism, listening, presence, glaciers, the art world's focus on the Arctic, and field recordings.[75] In addition, Rawlings shared her thinking into site

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[74] Christopher B. Krebs coined the term Borealism in 2011 in a paper on Roman writings about the Germanic North. Krebs outlines how Roman Northern discourse bears a remarkable resemblance to Edward W. Said's Orientalism (2011, p. 202).

[75] Many of these topics related to my initial autoethnographic writing, mapping the context from which I came. The neoliberal utilitarianism in Iceland around the Millennial shift had sparked official attempts of 'nation-branding' (see Huijbens, 2011). In the following year, the government of Iceland launched a special task force which produced the report *Ímynd Íslands: styrkur, staða og stefna [Iceland's Image: Strength, Position, Policy]* (Grönfeldt, 2008). The report suggested that Icelandic artists should be engaged in creating success stories about Icelandic companies. In the wake of the release of the report, the Society of Historians sent out a declaration pointing out that the sentiments conveyed were not in line with historical research of the last decades but coloured by the views and myths forged during the struggle for independence. In the wake of the financial crash in 2008, the authors of the *Report of the Special Investigation Committee* underlined the need for the Icelandic nation to cultivate a realistic, responsible, and balanced self-image, based on knowledge and understanding of its culture and society, as well as the importance of developing critical thinking and enhancing the citizens' abilities to see through propaganda and empty branding (Árnason et al., 2010). The core of branding, i.e., that the story needs to be positive, was not on the retreat as I embarked on my research. Only a few years after the financial crash, the Icelandic nation, its nature, and music were 'put to use' in order to create a positive story and further initiatives, following in the wake of the Eyjafjallajökull eruption, through the marketing project *Inspired by Iceland*.

connection, site respondency set to generate an empathetic gesture, as well as the possibility to interface with sites at a geographical distance.[76]

Figure 10
Curatorial sharing in the studio.

It is here that we see an example how the curatorial, as it navigates the topic of ecology in relation to artistic creation, is bound to engage with and contextualise social and historical discourse—political agendas included—in its search for methods that may, in return, become a platform for resistance. The curatorial platform is not intended as a 'commentary' on such conditioning, although that can certainly be used as an artistic method, but rather, as "a jailbreak from pre-existing frames" (Martinon, 2013, p. 4). We see how the curatorial may be "a gift enabling one to see the world differently, a strategy for inventing new points of departure" (p. 4)—an agency that embraces art's possibility of being an active force in the formulation and alteration of change both inside its field but also on a larger societal scale. Such contextual sharing through dialogue should be seen as improvisation, a creative act, and a process inherent to a human being's social and cultural life. As argued by Elizabeth Hallam and Ingold,

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[76] At the time of our meeting, Rawlings had embarked on a PhD at the University of Glasgow, exploring the performance of geochronology. In her dissertation, she summed up some of her intentions as follows.

> Fundamental to my practice-as-research is investigating the potential for response-ability to be a method driving artistic praxis, where the research I conduct investigates how to set up frameworks of facilitation through which I and other human participants can reflect through the idea of response-ability via an experiential learning process (2020, p. 66).

"people have to work it out as they go along. In a word, they have to improvise" (2007, p. 1). Therein, the knowing is not steered solely towards our 'topics of interest'; it is a knowing-in-connection (De Jaegher, 2019) through which we establish trust and emotional connection. This approach essentially 'establishes perform-ability'.

As I share with Rawlings that I have come to liken the idea of voices in the speakers within the future work to an old Icelandic folktale that involves communication across mountaintops, she immediately picks up on that and states that she finds it as a directive fascinating and different from the intimacy that had driven her performance with Burlat. She imagines it as a creation of 'echo-space' and so we embark on performance (see Figure 11). From this, we see how microphones afford both an 'imagined future' speaker setup, and how both technologies may modulate towards a stand-in for mountaintops as we try a structured improvisation building on the words 'jökull' and 'jökla', as well as Rawlings' work *In Memory: Jökull.*

Figure 11
Performance in the studio.

Herein, we are back with Ihde's concept of multistable variations or how a technology's structure affords different trajectories or developments (Ihde, 2007). Another example is how we employed the recording equipment to document a virtual site-respondent practice, understood as a phenomenological variation in relation to glaciers, atmosphere, and weather. This entailed us dissolving the word 'jökull' in our mouths (thus imitating climate breakdown). We then experimented with different imagined glacial positions. In fact, we leave Rawlings' text score and go further into improvisation

based on experiential exploration to a site at a geographic distance. In that instance, Rawlings chooses to stay with the topography of the glacier, while my experiential exploration conjures weather systems into my performance, of the feeling of air and temperature at different heights. Such different approaches are evident in our comments afterwards.

> Stefánsdóttir: I was really in a place… where you get frostbite. It's not just the place, it's a state.

> Rawlings: To be in the horizon line with… for me is… like sound… I changed the sound thinking I'm in the horizon line, no, it's like going into a crack. But I'm still glacially oriented…

Such performative actions affirm Rawlings' aim. These actions recurred in her PhD dissertation, where she asked, "(c)ould the movement of abiotic entities, in geosemiotic sense, produce an **abiotic affect** or **atmosphere** to which interconnected humans (…) are susceptible?" (2020, pp. 28–29, emphasis in original). This ties in with strands that I explored later in my research through a site-specific, or rather site-respondent lens, where I explored how environments and their entities phenomenalise the world.

When we felt that we had managed to create material that would work in the continued composition of *He(a)r*, I stepped out of the recording booth, took a seat at the mixer, and embodied only the roles of sound engineer and producer. Rawlings recited her poetry and performed solos in the vein of our duos. The strategy to record each vocal artist separately provided more flexibility in the work's composition for the four speakers. After the session, I completed the text score and met with Ehrenholm and Kaastrup Vesterskov in the studio.

7.4.5 Directing in the studio

My recording session with Ehrenholm and Kaastrup Vesterskov, with whom I worked individually, was split up between reading the text score and embarking on glacial performances. They are both actresses and have consequently trained to work with the microphone, i.e., learned to steer their declamation towards such an intimate space that stands in stark contrast to the approach needed on a large stage. Similarly, they are used to working with text from various perspectives, which may entail bending text away from its semiotic origins towards the sonic domain.

The recording process was akin to some of my previous radio productions, where I would alternate between listening and instructions to find the right tone of declamation. I initially aimed for two different situations, the first being what I described as an 'Attenborough' style, referring to a narration style many people already

know aurally—a 'knowing voice' which takes the listener by the hand. In the second variation, Ehrenholm and Kaastrup Vesterskov were to invite the listener into a more personal or intimate rendering of the text. In both instances, I asked for either a 'bright' or 'smile in voice' effect, i.e., different phenomenological situations.

In one instance, a more declamatory approach was needed, prompting me to use the directive 'you are making an advertisement'. At times, I would provide insight into the context of the text, where it was coming from or what its role was to be in relation to what followed on the program. An example was the text "sing with me", taken from Heidi Fast's 'Invitation to a *Night Song Action*' (2006, Ouzounian, 2015, p. 86), set to create a moment during the concert where I would start talking on top of the piece and proceed to invite the audience to join us in a performance of the next work on the program. The directive there was to sound 'inviting'. Repetitions of text would often circle around a request for slightly different rhythm, pace, more sunshine in the voice, or isolated pronunciation of words/sentences to be patched in through a later edit. From this, we can see how the sonic directing is constantly referred to as an out-of-time imagination in relation to the voices' future sounding within the quadrophony, as well their relation to other works in the event. As such, my thinking-through-directing was driven by a curatorial imagination that bridges different spatial and temporal scales and stands in relation to technologies.

In the second part of their session, Ehrenholm and Kaastrup Vesterskov launched into improvisations akin to the ones I had done with Rawlings. This required them to familiarise themselves with a prior unknown language (Icelandic) and ecosystem component (glacier).[77] I shared the idea behind the performances and performed for them to better convey what I was looking for. During the session, they performed both the breakdown of the words 'jökull' and 'jökla', as well as an improvisation based on different positioning in relation to a glacier. Therein, their performances do not take on the form of site-respondent practice. Rather, it can be seen as an invitation to a re-enactment of my own phenomenological experience. In later work, I would instead create scores that allowed for experiential or phenomenological exploration by the vocal artists themselves (see chapter 9 on *The butterflies ascended*)

These studio sessions formed the basis for a continued composition of *He(a)r*, culminating in a premiere at Nordic Music Days. It is not the purpose of this chapter to dive into its continued process of composition but rather analyse further the implications of such activity in the studio booth.

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[77] The choice of readers of the Icelandic text, who were not Icelandic, was a tactic set to open to the notion that the rhetoric around the environmental battle in Iceland has, at times, promoted the preservation of Iceland for Icelanders. A counterpoint to this was the fact that all performers of English texts were non-English speakers, thus addressing the other end of the spectrum, the Anglo-Saxon governance on a global scale.

7.4.6 *He(a)r* as operational redefinition

As outlined earlier in this chapter, situated actions within the studio environment are prescribed by clearly delimited agencies and values that drive and impact the mediations of a recording process. If seen from the perspective of 'figuration', then engagement within the space and with technologies produces a configuration—configuration being "a device for studying technologies with particular attention to the imaginaries and materialities that they join together" (Suchman, 2012, p. 48). Normally during a studio recording, the microphone is an artefact that is configured to fill the function of 'capturing' sound that, in return, stands in relation to a score and performance values of perfection. Therein the microphone may, as I will further detail in section 9.3.3, bring forth a space of performance for a performer or even, especially when monitored over headphones, be part of their 'instrumentality' (Alperson, 2008). The studio session with Rawlings, thanks to various imaginaries and shifting affordances, led to a process of reconfiguration, or 'operational redefinition' (Rheinberger, 1997), of work in the studio booth.

To further unpack this, I look towards the events unfolding from the perspective of 'tasks' as well as technological 'usage' therein. As outlined in section 7.4.3, much of the initial time was devoted to curatorial sharing. Such activity within a studio booth is highly irregular as it falls far from the performative 'delivery' mode. Sharing curatorial thinking does, indeed, take time and transforms the recording booth into a 'different listening space'. Following this, Rawlings and I embark on improvisations, followed by further discussions on performance strategies, later to be followed by Rawlings' solo performances. During this entire time, the recording equipment is left on, an act which stands in contrast to the usual studio practice where the recording button is only on during takes. This aligns with AR practices, where the same recording equipment can have hybrid roles—that of documenting research as well as producing recordings for further artistic work.

Similarly, as my analysis showed the microphones came to afford 'other' relations, as they functioned as stand-ins for speakers at the future concert event, became virtual mountaintops, and also documented our site-respondent practice to a site far removed—functioning as such akin to field-recording equipment. This hybridity plays down the materiality of things and shows how "(m)ediation does not simply take place *between* a subject and an object, but rather *coshapes* subjectivity and objectivity" (Verbeek, 2005, p. 130, emphasis in original).[78] If referred back to Barad's theorising, subjects and objects may be seen to emerge through their encounters: "The world is an

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[78] This brings us back to the concept of 'thinging', introduced in the previous chapter. I will further look at what occurs in such a conjunction of movement and perception in section 9.2.3.

ongoing open process of mattering through which 'mattering' itself acquires meaning and form in the realization of different agential possibilities" (2003, pp. 817–818).

By working on a piece for a concert event that has an eco-systemic focus and by taking 'jökull' into our mouths, microphones and the studio are reconfigured. It is certainly a sense-making "that encompasses kinaesthetic, perceptive and affective processes, which underline the sticky thickness of such experiential acts" (Stefánsdóttir & Östersjö, 2022, pp. 119–120). But it cannot, as has been traced in this and prior sections, be separated from technologies and the possibilities they offer. Through these agencies, "(r)elations of exteriority, connectivity, and exclusion are reconfigured" (Barad, 2003, p. 818) to such an extent that they push at normative ways of working and relating, as represented by a focus on score and its performance through Werktreue values.

The *He(a)r* micro-lab echoes Spatz's DCTV approach (see section 2.4), which was designed to bypass the mode of production conditioned by 'delivery' to the art world and rather explore the possibilities of videographic thinking. The work with Rawlings can be seen as a kind of phonographic thinking, enabled by colliding our different agencies and working from intermediary positions in relation to technologies.[79] Importantly, these actions in the studio booth should not be seen as an act of resistance, but rather a usage that is welcomed and encouraged thanks to utilitarian ideas linked to the laboratory within AR that creates a space for performative experience and "sharing built on trust" (Östersjö, 2020b, p. 122). As such, the AR laboratory "holds potential as a site for challenging the inherent inertia of art worlds (…) and for the creation of art work which is not immediately situated in a specific art world" (p. 124). The studio at IAC, through its history within the infrastructure of AR and the laboratory approach, could therefore be argued to fall under an institutional framework that is imbued by 'regimes of value' (Suchman, 2005) that are already open-ended: a technological hub set to enable phonographic thinking.

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[79] It needs to be brought up that, in line with the work of the self-producing artist, there was no sound engineer or producer on the other side of the glass in the studio. By eliminating outside 'ears' that can be at times seen to reiterate values of a field and steer the working process in the studio towards predictable outcomes was certainly instrumental to the design of the micro-lab. However, as I have already embarked on various studio sessions where the performer is a self-producing artist, be it in relation to notated scores or improvisation, I can state that it does not suffice to alter the affordances of studio work. To produce such an effect, the agencies involved need to enter a more dramatic reconfiguration as described in this micro-lab.

7.5 Summary

This chapter presented two micro-labs that engaged with the studio environment. The *Raindamage* album project did so by giving signal processing a heightened agency, a process which was negotiated through a networked approach. Micro-sonic listening served as a method that allowed for collaboration through the studio technologies. Through its creation, the album activated a resistance to the simulation of a live event, so often found within WCM album projects. This afforded new insights into what a live performance may entail, resulting in an alteration of the performance of Hansson's "Þýð" at later concert events. The former point, or its activation of the album ideals within WCM, underlines how any AR experimentation with the album format, as it is situated in an art world, cannot be separated from its commercial release. Failure to do so may be seen as an act of denouncing some of the mechanisms of the very same work that it seeks to address and challenge.

At the same time, the micro-lab stayed within the usual collective format of album-making, a format that I challenged through a later album project titled *strengur*, to be presented in chapter 10. I also detailed the scarcity of work (beyond film documentaries) that provide insight into the production of an album to the public and unpacked my own attempts to create such a work through the installation *VARP*. Through analysis of the installation, I detailed how the introduction of an added material layer grounded in the work's analysis would have transferred the installation into a piece that would have combined artistic process with display of the micro-lab.

The chapter concluded with the presentation of a second micro-lab—recording sessions that took place within the *He(a)r* project. The process showed the radical possibilities of an AR laboratory approach when exploring phonographic thinking in the studio environment forged from intermediary roles. Therein, technologies may afford other relations (field recording or stand in for spatial layout at a future event) than those commonly associated with the studio environment. This, in return, plays down the materiality of things and asks one to further consider artistic creation from the perspective of thinking in motion wherein various entities form a 'hive of activity' (Ingold, 2011), a point which I came to further analyse in subsequent micro-labs.

Importantly, this chapter showed again how material produced in the AR lab can both serve as artistic material and research data. Such an example is found in the *VARP* installation, which built on the display of album stems/data and the videographic tracing of the concert *Flow* that laid the ground for the album project. Similarly, the *Raindamage* project shows how autoethnography was inherent to my curatorial contextualisation of the micro-lab. Reversing the tables, the curatorial—as it forms within this micro-lab—sets a process in motion that, through its 'difference' to familiar ways of working, may provide new knowledge of work in the studio environment.

Chapter 8. The virtual

'The virtual' in relation to music can take on a variety of meanings, yet two principal directions can be discerned. On the one hand, the term may refer to virtual online music or immersive digital technologies, including virtual musical instruments. On the other hand, it refers to the virtual in relation to phenomenological or philosophical analysis. As such, when conducted from a philosophical perspective, it can link to unpacking modes of perception where "(t)he real and the virtual (…) continuously co-exist and interact with one another" (Frisk & Karlsson, 2010, p. 287). The virtual may refer "to everything that is not currently/presently here (including incorporeal, past, or ideal events)" (Sauvagnargues, 2003, as cited in de Assis, 2018, p. 53).

Similarly, such an understanding can feed into the development of experimental artistic methods, an example being de Assis' work, which engages with the ontology of musical works conceptualising scores as the possibility for "virtual diagrams or intensities as virtual events" (2018, p. 27). A phenomenological perspective of the term can surface in relation to the 'virtual feeling of musical expressiveness' (Christensen, 2012) or be employed to describe a virtual musical listening space that shifts other sounds to the background (Christensen, 2012; Clarke, 2007). Furthermore, the virtual can been used to refer to the idea that "(i)n every creative project there is an invisible (…). The virtual is the invisible of this writing" (Kozel, 2010, pp. 219–220). As such, the virtual is "something that has not yet happened but exists as a raw potentiality" (Kozel, 2007, as cited in Kozel, 2010, p. 220). Furthermore, Francisco Varela's framework of a 'mesh of virtual selves', which he sees to form on a cellular, immune, and cognitive level, has served to further explore identity and interaction (1995). The above review is in no way exhaustive but seeks to show that the usage of the term is, in each case, linked to the epistemological perspective adopted by the researcher.

Within this chapter, and in line with the PhD project's overarching aim of exploring agency through varying situations, the virtual is first and foremost employed through its association with digital technologies. This is not to say that such approaches have not been present in prior chapters, such as within the surround-sound setup of *I play Northern Lights* or the compositional and mixing processes of the *Raindamage* project and *He(a)r*. The difference is that the work presented in this chapter was designed to actively explore sense-making in relation to virtual technologies. This was enabled

through collaborative projects instigated by Franzson. Our first micro-lab evolved around performativity within a sonic hologram, while the latter brought forth a work which included the performativity of AI. As I will unpack, both works incorporate collaborative approaches that expand the agency of the performance environment and the role of recorded material beyond what is often the case in WCM's composer-performer collaborations (Östersjö, 2008; Schiavio et al., 2020). Seeing that the conceptual idea behind the coding-composition was reliant on field recordings necessitates an outline of such a listening culture.

8.1 Listening culture of field recording

As outlined in chapter 2, the origins of field recording intersected with various fields and approaches, starting with the recording of our so-called 'natural environments' and later as a methodology for the fields of ethnomusicology and anthropology. The technology, as noted by Mark Peter Wright (2022), became entangled with colonising acts where the 'field' should be seen as "an asymmetrical construct, a place assembled from systems of power and cultures of extraction" (p. 41). Similarly, such recording was tied up with the idea of 'preservation' which bypassed the 'presence' of the field recordist, envisioned as a transparent agent. This has been described by Voegelin (2014) as 'sonic butterfly catching', revolving around

> capturing sound for categorisation, naming and pinning it down in collections and archives. This is an example of field recording contributing to empirical and scientific knowledge about the world, whose comprehension is improved through better bit rates and higher sound quality to capture an authentic sound. This field recording relies on labels and descriptions, conventions from the archive and its pedagogical objectives, to make up for whatever information is lacking from the object caught in sound. (para. 1)

Following recent years' critical review of such practices, field recording is today, and as already stated in my method chapter, conceptualised as relative to the recordist, where values and techniques shaped over time affect the outcome of the sonic material produced.[80] Hence, field recordings are deemed to be

> as much creative reworkings of a reality (that didn't exist before or outside of the recording) as they have documentary value. They present at once an actual or possible

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[80] In the following chapter, I will give an explicit example of this in relation to my own DIY field recording usage (see section 9.2.3).

world and a mirage, oscillating between an abstraction from their immediate surroundings and their connectivity to a site. (Cobussen, 2022, p. 30)

At the same time, such activity stands in direct relation to technological development of artefacts, such as batteries, microphones, recording gear, headphones, and cables.[81] The history of some microphones is entangled with listening cultures of the military as well as the medical field. An example is the hydrophone, developed for detecting icebergs and submarines during the World War I. Although invented at the cusp of 1900s, geophones were further developed during the same war to detect enemy artillery. Similarly, low-frequency recorders, which can capture anything from earthquakes to bats, have a connection to military sonar technology. Herein, we are reminded of how such 'innovation' is not neutral in its design and, as such, "(r)ecordings drag with them parallel frequencies and historical contexts, the epistemes of technological listening" (Wright, 2022, p. 94).

Furthermore, their usage—which may allow even a beginner to record the sounds of a river, soil, or electromagnetic events at affordable costs[82]—is enabled through utilitarian policies in relation to mining, nuclear power, wind- and hydropower, and geothermal sources. Similarly, the production process of field recording artefacts may, like that of other musical digital technologies, be entangled in workers' exploitation. Such complexities are dealt with by artists in various ways, either through public acknowledgement or through works that give, heighten, or even forefront the agency of some of the forces involved. Another strategy, driven by sustainability considerations, is to use gear that is shared between multiple users and/or work in a way that limits the carbon footprint in terms of travel.

The way the equipment is directed at the world begs the recordist also to formulate an ethics that avoids what Matthew Burtner (2011) describes as a method of "virtual reality acquisition" (p. 244). Such an articulation takes place at various moments and starts long before one presses the recording button. It permeates one's movements and actions onsite as well as in relation to how the material is later used. I will further address such an ethics in the following chapter on ecological sound art but, for now, and in the interest of further formulating what such an ethics can entail in relation to the listening culture of field recording, I will limit myself to bringing up an interesting example found in Steven Feld's recording of the Bosavi people. Initially, his usage of recording

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[81] In that instance, Cathy Lane and Angus Carlyle identify three realms within the arts where technological development has expanded, namely "at the point of the original recording, in the glow of the sound studio, and in the different ways that audiences can be invited to engage with the work" (Lane & Carlyle, 2013, p. 9).

[82] This is not to say that I am not aware that such usage is still a usage of privilege and not available to all, due to unequal social and economic realities.

equipment within the field of anthropology was inspired by camera usage set to capture "the body's tracing of space" (Steven Feld, in Lane & Carlyle, 2013, p. 206). His continued usage, set to demystify his equipment in relation to the same people, led him to embark on shared listening. This resulted in an approach which he came to call 'dialogic editing', which in return gave the Bosavi people heightened agency in the process.[83]

The notion of dialogic editing builds on how the recording technology affords micro-sonic listening and phenomenological variation not only during the recording moment, but also during later phases of engagement. Marcel Cobussen (2022) argues that field recording can be understood as 'an experimental practice' which enables

> new connections both less and more than a live experience. Less, because it will never be able to completely capture this live experience, and more, because it will—probably— also register things that were not experienced directly or consciously at the moment of visiting that site. (p. 30)

Such experimentation can be located within various artistic approaches, ranging from the 'sonic object' driven musique concrète to so-called soundscape compositions and soundwalks monitored over headphones. This may also be found within electronic and electroacoustic compositions, works that mix media, as well as in film and theatre music. Furthermore, it is inherent to ecological sound art, presented in the next chapter, and can also play an important role in intercultural and interdisciplinary collaborative endeavours.

The micro-labs presented in this chapter link to material exchange between a performer and a composer in a collaborative HCI project. Within WCM composer-performer collaborations, such material usage is not uncommon.[84] Reflecting over my own collaborations, *INNI – Musica da camera* (2013) by Þuríður Jónsdóttir springs to mind. Created for violin and electronics, Jónsdóttir juxtaposed the reworkings of an Icelandic lullaby with a field recording of breastfeeding. By collapsing the boundary between her private life and that of her work life, she invites the listener into one of the most intimate of 'chambers' and puts a spin on the term 'musica da camera' (meaning: chamber music) while she reminds the listener of the designated chamber for lullaby performances. By using such a recording, she aligns with a long line of female artists

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[83] This methodology holds on certain levels a kinship with the method of stimulated recall (Stefánsdóttir & Östersjö, 2022), further introduced in the following chapter.

[84] It should be noted that within collaborative projects between performer and composer the field recording material is usually not generated by the performer, nor stands in relation to any conceptual creative input from the performer.

working in the electronic arts that have used the medium to push at the silencing of female voices and their experiences in public life (Lane, 2016).

In 2019, Lilja María Ásmundsdóttir created *Shapes of flight underneath the riverbed* for Nordic Affect and her light and sound sculpture *Hulda* for performance at the Brunel Museum in London. The venue is a former tunnel shaft, constructed in mid 19th century as part of the infrastructure of the Thames Tunnel. In a later version created for performance elsewhere, Ásmundsdóttir developed an electronic track with both the sounds of *Hulda* and field recording from the shaft. Herein, the electronic part comes to act as an atmospheric ethnography from the site through its tremors and reverberations, produced in part by the underground system of London.

In *Urbexploitation* (2017) created by Nicole Lizée for Nordic Affect, Lizée uses audio and film footage to create a work that falls within her urbex series, which seeks inspiration in the flawed cities of 1980s and '90s video games. The work included material from my filming and recording of an abandoned cement factory in Reykjavík, Iceland which, together with other material gathered by Lizée in Montréal, Canada, became the ground for her further composition. Therein, the field recording material, alongside reworking of data and game footage, pushed and shaped her sonic composition of the piece, resulting in a work that can be seen as "excavation of the hidden, lost, abandoned, forgotten, and destroyed ruins of cities" (Lizée, n.d.).

Farther afield, Katt Hernandez employed field recordings as material for her compositional method of 'transposition' which resulted in a solo work titled *Sten/Stone* (2017). The piece was part of a larger project through which she approached the psychogeography of Stockholm through composition (see Hernandez, 2023). As can be detected from the title, the field recordings were of stones in various states, namely "in the river, in a fountain, being moved and broken by great machines, falling down the sides of cliff faces, grinding under feet in winter" (Hernandez, December 12, 2022, personal communication).

In the *Altered States* (2020-2021) series, Natasha Barrett collaborated with Nordic Voices to explore the relationship between man and environment, using field recording as material. According to Barrett, "(e)ach work expresses nature defending itself against human disturbances, finding an altered state in the rehumanisation of the acoustic and electronic voice" (Bandcamp, n.d.).

Another approach is found in Paula Matthusen's piece *by the inexplicabilities we call coincidence* (2018)*,* for it introduces the usage of field recording as a way to hijack an instrument. Created in collaboration with pianist Kathleen Supové, the field recordings were conducted in Supové's hometown Portland, Oregon and comprise the migratory Vaux's swifts and other sounds. The sounds were then placed inside the piano, as well as routed in different ways, an approach which enabled two different tracks to work together—

one resonating the interior of the piano, and then the second articulating the exterior world of the piano by playing through a conventional stereo playback system. The pianist navigates between these two worlds, playing a very slow melodic line on a zither placed inside the piano utilizing a handheld fan. (Matthusen, n.d.)

A final work, which admittedly pushes more towards installation art, is Coppier's *Family life – recomposed* (2022) whose first version was aired during an IAC residency. The work employed a DIY approach to spatialisation, presenting the sounds from the composer's home, captured with sixteen microphones over the course of a few days. By playing these within a taped layout corresponding to his family home in Copenhagen, Coppier works actively with and against the dissociation that can take place through field recording. At the same time, the work presents a reworking of the field recording, where Coppier has zoomed in on certain happenings in the everyday life of this family of four and, through further composition of the material, he gets it to fluctuate further into a non-semiotic sound event. This residency was part of a longer process where the work was to be turned into a VR form and from there back into installation space.

From the above, we see how all these works, albeit through varying artistic methods, employ field-recording material to explore relations. This may involve private spaces, reimagining urban spaces, or even being steered towards reworking historical digital spaces. It may also be used to assert the co-creative power of architectural space within concert events or as a method to affirm connection to site, all the while being used to alter an instrument.

In the work *Höllupula* (see section 10.2.4), I used an archival field recording to explore family connections, but in what follows, I will share the micro-lab *An Urban Archive as an English Garden*, which resembles Matthusen's work in that it is performer-specific while, at the same time, the field recording fed into creative work in relation to a virtual environment.

8.2 *An Urban Archive as an English Garden*

An Urban Archive as an English Garden was instigated by Franzson. The composition, which can be shared both as an installation and performance piece, is made up of four solo works. The intention is that all versions are performer-specific and "their sounds and musical actions developed in close collaboration with each performer, only to be

performed by them" (Franzson, n.d.).[85] The work received its premiere at the 2019 edition of the SPOR festival in Aarhus, Denmark.

8.2.1 Towards a wavefield environment

The work revolves around a sonic hologram which builds on Wave Field Synthesis (hereafter: WFS), a technique originally developed in the late 1980s at the Delft University of Technology in the Netherlands. WFS is a spatial audio-rendering technique applied to a large number of speakers to bring forth an artificial wavefront. As such, it can be used to create virtual acoustic environments. Within *An Urban Archive*, it was applied as follows.

> The piece uses a custom built 24 channel wavefield / delay–based–panning system for extremely realistic sound localization. Even though a proper wave–front is not constructed due to the low resolution and distance between speakers, the system still retains a number of the benefits of a wavefield, such as arbitrary speaker location and number, holographic representation of sound, and a spatial image that doesn't rely on a single correct listening position, resulting in an equal listening experience from any position and allowing sound to have direction and position in space. (Franzson, n.d.)

Experiencing *An Urban Archive* is, therefore, different to stereo or surround-sound systems where the listener needs to be placed in a 'sweet spot'. Here, the listener can navigate the space as a 'sonic environment', an idea which Franzson made explicit in the work's title. Within acousmatic music, there exists a tradition of gravitational consideration within a spectral space, where sounds move and shift as 'diagonal forces' (Smalley, 2007, p. 45). Similarly, this has prompted practitioners to make a connection between such work and that of landscape architecture. This made itself felt in Franzson's idea behind the relation between sound signals and their the resonances within the WFS design,[86] where he conceived the diagonal force as topographical lines brought forth in time. As a method to explore such a hologram as an extension of reality rather than a substitute, Franzson opted for embedding urban field recordings within

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[85] Such an intention goes against the commodity outlook on musical works within WCM, where the aim is that a work should be performed by as many people/ensembles as possible.

[86] This was explained by Franzson in an email.

It is a bit like a tree in autumn, where one tree is in front of another. The one that is closer has nearly lost all its leaves, but the one behind it is blood red but you get an extra depth by seeing the skeleton of the naked tree in front, or like one component is withered while the other is full with life. The same sound can be heard at different times and trigger these different states. (Franzson, personal communication, January 7, 2019)

it.[87] In line with his wish for a personalised approach, the recordings were conducted in each performer's hometown environment.

> Matt Barbier's Los Angeles, USA
> Russell Greenberg's New York, USA
> Halla Steinunn Stefánsdóttir's Malmö, Sweden
> Júlía Mogensen's Reykjavík, Iceland[88]

The 'how' of the field recording, which is the focus of the next section, stood in direct relation to the WFS technology.

8.2.2 Field recording for a wavefield

The act of field recording was conducted by walking a square which aligned with the garden-like layout of the hologram[89] and was conducted various times in different directions for layering with the WFS technique. This evokes similarities to the 'soundwalking' method, which sprung out of Schafer's WSP. One of the project's main protagonists, Hildegard Westerkamp, described it as follows.

> A soundwalk is any excursion whose main purpose is listening to the environment. It is exposing our ears to every sound around us no matter where we are. We may be at home, we may be walking across a downtown street, through a park, along the beach; we may be sitting in a doctor's office, in a hotel lobby, in a bank; we may be shopping in a supermarket, a department store, or a Chinese grocery store; we may be standing at the airport, the train station, the bus-stop. Wherever we go we will give our ears priority. (1974, p. 18)

But as Elena Biserna (2021) points out, the historical listening practice of WSP entails that "sound-making is often subordinated to listening, and 'playing the environment' while traversing it doesn't become a research or artistic methodology in itself" (p. 302). This aural focus is a blind spot as the "walking body always establishes a plurality of relationships" (p. 310). Certainly, my walk for a future-space, as a way of creating a virtual garden within the city, can be seen as a mapping set to bring forth a context. Such mapping, conducted through traversing, also maps the atmosphere and ambience

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[87] It is here that we see a parallel to Le Corbusier and Xenakis' architectural experimentation in relation to the Philips Pavilion (Sterken, 2001) (see section 6.1.4).

[88] This piece was added for the second performance of *An Urban Archive* within the Hljóðön series curated by Þráinn Hjálmarsson at Hafnarborg Museum, Iceland.

[89] It should be noted that each solo work, built on a specific geographical pattern, mine was a square, while others built on the form of a dot, a line and a triangle.

embedded in the city's social life.[90] This was reflected in my choice of field-recording equipment—a Zoom H6 that works well in terms of portability and a coat hanger with a couple of omnidirectional DPA 4060s microphones, chosen for their ability to capture a city's ambience.

I started out by two possible locations of interest, which I felt had interesting sound worlds to offer, as well as being sites that affectively were 'Malmö' to me[91]—the Kungsgatan alley and the canals in its vicinity, as well as the harbour area by the closed-down Kockums shipyard.[92] My goal was to create a situation of being 'within' the recording rather than 'forefronted' in it. This required a choice of shoes that created little friction and to walk and move at a moderate pace. Such 'performance' aligned with my ideas around what would be meaningful within the hologram, meaning that I did not want to steer the focus towards spectatorship or voyeurism in relation to a human body. At the same time, I was under no illusion that my positioning and pace of walking would not shape the ambience of the recording. This aligns with Jean-Paul Thibaud's (2011) theorising which sees ambience as the indicator of the affective between a human and environment. As such, "(u)rban ambiances operate each time a subtle interweaving of synaesthesia and kinaesthesia occurs, as a complex mixture of sensation and movement" (Thibaud, 2011, p. 43). This may serve as an example of how technologies afford a sensory ethnographic perspective (Pink, 2015) while at the same time, the very same usage of the technology, in combination with a traversing mapping, enacts a 'staging' (Böhme, 2017) of atmosphere or, rather, urban ambience through walking-as-mapping, which is monitored through micro-sonic listening.

The two recordings, conducted around Kungsgatan and the harbour area of Malmö, became the grounds for further listening and discussions with Franzson relating to the qualities we were looking for in terms of timbre and sounds within the hologram. Hereby, the recordings triggered further contextualisation of the socio-political realities of Malmö.

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[90] Perhaps not surprisingly, and as I will trace later in this chapter, the traversing practice became instrumental when I started formulating performance strategies/techniques in relation to the hologram.

[91] At the time of recording, I had only lived in Malmö for four years. The field recording became a way for me to claim the right to be considered a Malmö resident and to see Malmö as my place at the same time that it became a tool for further contemplation on who gets to traverse as well as 'share' a place from the stance of belonging. In that instance, it is my belief that field recording should be considered a powerful tool to strike up conversations regarding boundaries, identity, and inclusion in relation to society.

[92] I had visited Malmö in the '90s and sensed how the cultural identity of the city was still then tied up with its industrial reality. In fact, it was something one could not miss as, prior to the bridge existence, one sailed to Malmö and was welcomed by the huge Kockums Crane, now removed from the city skyline. The Kockums shipyard was also a workplace which got my iron-wielding grandfather, during the unemployment bout in Iceland in the 1960s, to consider upending his family and moving to Malmö. This however did not take place.

We agreed that voices felt like a vital component, as Malmö is a city where the inhabitants come from around 180 countries and speak something in the vicinity of 150 different languages (Malmö city, n.d.). It also felt important to position it in an area that encapsulates the radical urban transformation taking place in Malmö, where old industrial buildings are giving way to high-tech architecture as in the harbour area.[93] We completed drafting the walk through the help of Google maps (see Figure 12). Through the choice of location, and further through the recording act itself, the field recordist "can carve out an embodied auditory geography, inscribing the body in a conversation with the environment and establishing a dialogue with the city's architectural fabric and social life" (Biserna, 2021, p. 311). Importantly, such curation also confirms John Drever's claim that the choices made regarding what to include and what to exclude is a creative endeavour that is simultaneously shaped by the artists' ideologies (2001).
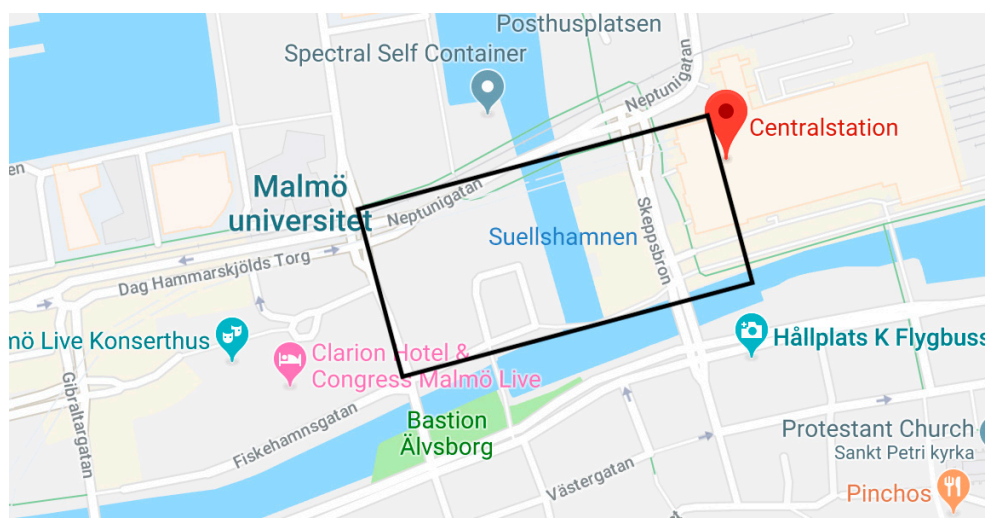

Figure 12
Final layout of the square for *Skeppsbron*.

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[93] The walk took me past some of the buildings that mark the regeneration of the industrial dock, such as Malmö Live and the university buildings. Other sites included a restaurant housed in a former coffee factory with a view of the Lantmännen Cerealia grain factory, behind which the closed-down shipyard of Kockums industry is situated. I also passed through the train station that receives visitors from various destinations, including people who travel over the bridge from Copenhagen. In the years preceding my recording, the station had also been the gathering point for a mass arrival of Syrian refugees and, for some of them, the station became a site where they could finally feel safe (Olsson, 2015). From there, I strolled along the canal where, on the other side, grand old houses reign, a monument to Malmö's quick expansion at the end of the 19th century thanks to the industrial revolution. At the end point of my walk is a bridge which is the home of composer Kim Hedås' permanent sound installation *Via* (2015), created in relation to the opening of the new concert hall Malmö Live.

Such a dialogical act is, however, the source of legal and ethical consideration. Prior to the project, Franzson consulted a lawyer specialised in privacy legislations who stated that the project's particular approach passed scrutiny. The lawyer in question drew parallels between that and the act of photography, i.e., it is not legal to set out to take a photo of a certain person, however if a person happens to walk into your frame as you are working, it passes legal and ethical concerns. But the legality does not necessarily imply that the act is ethical. We are here with how the necessary permission-asking when working onsite, set to be further unpacked in the following chapter, also extends to how material is handled in the creative and presentation phases of work. Although it has been shown that human beings are poor at voice recognition (Latinus & Belin, 2011), Franzson—through his compositional approach of layering the recordings—can be seen to secure an amount of illegibility securing an ethical treatment of the material, where only fragments of sentences, such as 'en öl' (Swedish for 'one beer'), may appear.

8.2.3 Micro-sonic and shared listening

The field recording marked the beginning of a process that was present throughout the project, that of 'shared listening'. Such an approach involved field recordings, sample recordings, reference takes, amplification, resonance technology, and the hologram's speaker-system layout. The process can be seen as structured around the following tasks:

- choice and recording of site
- development of the WFS hologram and resonances, including video and audio documentation from Franzson's testing at IRCAM, Paris, France
- recordings of violin performance in relation to the development of resonances
- testing in auditory space at ZKM in Karlsruhe
- installation in space at the SPOR festival, Aarhus, Denmark

Following the first phase detailed in the previous section, Franzson created a wavefield rendering of my field recordings. Listening to them became a way to embrace the field recordings' configuration within the WFS. Following that, he further developed the system within the walls of IRCAM in France, a process which he shared with me through videos of multi-channel testing. This included work on one of the key system components or its resonances, which were to be configured into varying temporal and spatial positions and let out by gate triggers, activated by a sound signal from the performer. The sound signal was drawn from Franzson's pitch analysis of the field recording within the WFS and went beyond normative notation. To put it simply: the sounds of the city are not tuned according to Western systems.

As I started to engage with the notation, the focus was on pitches. The next stage moved onto experimentation with sound production (sul tasto, circular bowing, sul ponticello, over pressure), which was still structured according to individual pitches that ranged from normal notes to harmonics. This was then modulated further by playing around with pitches and sound production in relation to a reference take and a pitch chart created by Franzson (see Figure 13).

Figure 13
Pitch chart by Franzson.[94]

As I learned through our later testing, a failure on the performer's behalf to send out the right signal could disturb the system, i.e., aggravate the resonances so that they would multiply, drown the field recording-based sounds of the hologram, and take a while to die out. The resonances, gate triggers, and the sounding hologram were thus configured with the sonic signal from the performer. From this, we see how the shared listening not only served to explore material and affective dynamics, but also to share

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[94] The L, M, R in the chart stands for the Left, Right, and Middle of the sounds within the reference recording.

the intentionality of technologies (violin included) set to later affect the process of notation, further system coding, and, as I will later detail, my performance strategies within the hologram.

Towards the end of the work with the pitch chart, I start to further envision my future performance within the hologram. Through our mail exchange, one can see that I perceive the hologram as a site, where one tries to 'be with'. At the same time, I feel that such an act may turn me into what I describe as 'a poetic avatar' within the environment. Furthermore, as I record pitches with the reference take, it becomes clear that I did not want to become a copycat of the hologram's sounds in my improvisation. For example, a moment where I came to imitate a car horn seemed like a wrong approach. I also experimented with playing 'on top of' the sounds of the reference take, meaning denying or ignoring its existence, a method which is not unusual within improvisation. That again felt like a futile approach. Essentially, I felt it was hard to judge the outcome or approaches, not being inside the hologram itself.

Such instances underline the open-endedness of the process, where I am oscillating between the affordances of my instrument in relation to the notation as well as the reference take. Therein, I experiment with components that are not indicated in the score, such as articulation, timbre and dynamics, and timing of sounds, trying to determine the possible improvisational span within each note in relation to the hologram.[95] Meanwhile, Franzson's exploration of affordances concerns traditions of idiomatic writing for my instrument, but also notation in relation to the system, as well as the sonic results that need to serve the system. Although the notation is reliant on prior compositional and performance-practice traditions, the choice of notes is affected by the spectrum of frequencies within the system. This in return formed the basis of his continued configuration of the resonances, i.e., further tweaking the system according to my signal and in relation to the hologram. Such affordances encompassed the instrument's signal in terms of stability/instability in relation to the trackers that were to open the resonance gates. Such complex navigation between a myriad of affordances reminds us that "(c)onfiguration is a practice enacted always from within, in other words, however much its objects may be figured as 'out there' and its concerns focused on how to delineate their relations and boundaries" (Suchman, 2012, p. 57).

Suchman's argument is essential to her theorisation of situated actions set to push against the notion that once one has made plans for design, the action simply follows (2007). Rather, 'plans' should be seen as "a form of situated activity that results in projections that bear some interesting, and as yet unexplicated, relation to the actions that they project" (p. 13). From what has preceded, we can see how plans are manifold,

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[95] Here, it should be underlined that we were still working on pitch basis and I was therefore not thinking about any overall structure in relation to a score.

operate on a wide-spanning temporal scale, and are entangled with my playing/signal. As such, I am constantly trying to imagine my future performance at the SPOR festival. But to arrive there, it was essential to embark on some further testing; I needed to step inside the virtual hologram to further make sense of the 'how' of my performance. Such try-out was initiated through a two-day workshop at The Sound Dome of ZKM in Karlsruhe, Germany.

8.2.4 The tentacle violin

The Sound Dome is part of ZKM's Hertz Lab and is

> a high-tech instrument for sound spatialization in a cube. 43 Meyersound loudspeakers are suspended three-dimensionally in space on an elliptical ring system, another four are set up on the floor. The loudspeakers are arranged in a dome-shaped arrangement around the listeners. With this loudspeaker instrument, polyphonic space-sound movements can be realistically represented and perceived from any place in the concert hall. (ZKM, n.d.)

Once installed there, Franzson and I began by testing how his system/resonances responded to the input from the violin (see Figure 14).

Figure 14
Initial try-out by mixerboard in the Sound dome at ZKM.

The very first notes reveal the 'otherness' of such an act; I describe it as being akin to having 'spatial extension', or to use Franzson's phrasing then, it sounds as if I have

tentacles throughout the entire space. Certainly, my David Hopf violin, built in the 1780s and in Baroque setup, is usually amplified when I play contemporary repertoire.[96] This transfers the violin from analogue to digital mediation, where my signal is projected into space through speakers (see Figure 15). But here, the signal's configuration adapts a tentacle-like existence through which the resonances come to shift and shape the virtual hologram. This is nothing but radical and if I were to liken this to an actual concert space, then the parallel would be that my violin playing would shift the walls and consequently the acoustics of the space. De Souza has observed that as instruments transfer along the analogue-digital continuum, it becomes a "mediation, in which the player gradually loses touch with the site of sound production" (2017, p. 31). This holds true for the tentacle violin. At the same time, due to the signal configuration, it is more radically felt, as it alters my usual relations to the speakers. I no longer perceive them as bearer of signal into acoustical space (performer-violin-DPA-speaker → space) but rather as integrated in the performer-violin-gateways-hologram configuration.

Figure 15
First try-out within the sonic hologram at ZKM.

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[96] My instrument does not flourish in the acoustics of dry black boxes or as a solo instrument in large contemporary venues. The spatial attributes are, however, not the only contributing factor to amplification, as many of the works that I have commissioned include electronics. Amplifying the violin with a DPA 4099 microphone is, therefore, a way to create a sound where all entities meet: the violin, the electronics, and the space.

In the next phase, I try to gain further understanding of how the sound travels which, in return, links to questions regarding how I approach the performance. This stands in relation to the density/occurrence of my performance, but also qualities such as timbre, articulation, and level of playback. At the outset, I try to relate to the hologram's many textural layers through different means of imitation. As I learn how individual notes spread and magnify, dependent on duration, I start to play what I come to call a 'pulsation polyphony' (see Figures 16 and 17). An approach where I am creatively working with length and articulation of notes creates a texture through the resonances.

Figure 16
Continued testing at ZKM with Franzson.
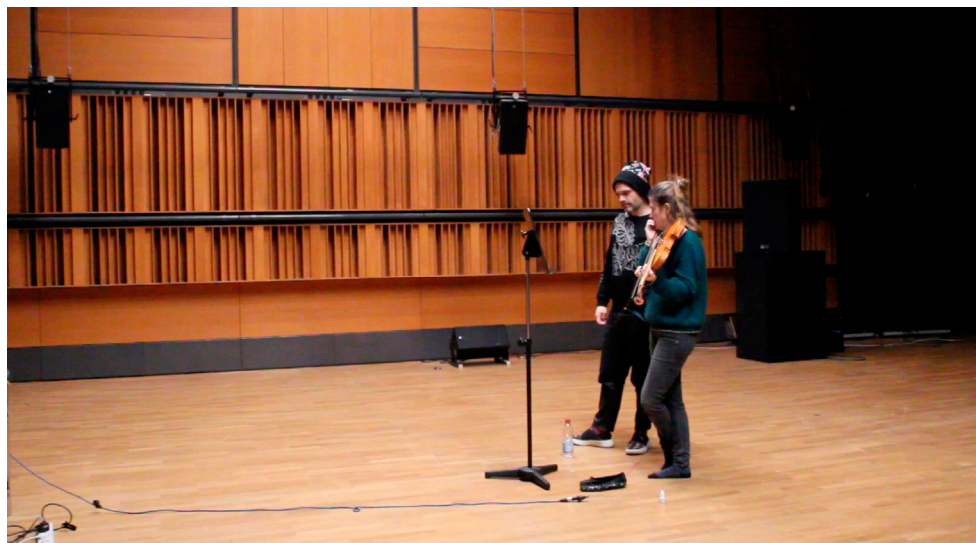
Figure 17
Discussions on performance strategies with Franzson.

The initial strategies of the pulsating polyphony, conducted through both irregular repetition of notes as well as the extended technique of finger tremolo with the bow playing above the fingerboard (sul tasto), become the backbone of my sound production. None of this is expressed in the score but is rather a strategy that I bring forth for expressive means to try and shape a performance that feels meaningful. This supports the claim that "expressive musicking appears to be a constitutive aspect of learning technique, rather than a category to be superimposed when an adequate technical level is achieved" (Schiavio et al., 2019, p. 11). This can be related to how Frisk (2008), through his analysis of interactive compositions, suggests that what he terms 'interaction-as-control' must sometimes be given up in order to bring forth more dynamic and reciprocal modes of interaction. This, he suggests, allows for a modulation from control to difference, or 'interaction-as-difference', the impact of which he describes as follows.

> The common nominator, the prerequisite, for *interaction-as-difference* and a [sic.] improvisatory and self-organizing attitude towards musical practice it the notion of giving up of the Self. Only if the Self is able and willing to accept the loss the priority of interpretation (as for the composer) or the faithfulness to ideology or idiomatics (performer). Only if one is willing to *forget* is *interaction-as-difference* made possible. (p. i, emphasis in original)

Such work, as is seen in the collaboration with Franzson, requires us both to give up a sense of self. However, perhaps it is more typically a matter not of forgetting, but rather of actively seeking to avoid habit, to intentionally seek to resist its temptation. This would entail a choice between what Coessens and Östersjö (2014) describe as resonance (with the affordances) or resistance (of habit). How this negotiation unfolded, as the work was brought into a meeting with the public, is the focus of the next section.

8.2.5 Curation as traversing intentions within a hologram

Following the workshop at ZKM, Franzson finalised a score and created a Max/MSP patch for rehearsal. It provided a temporal framework for me to memorise the work, which lasts for 45 minutes, and become further acquainted with the inbuilt response of the resonances. My rehearsing evolved around pacing. This was not merely related to occurrence of notes but rather, I perceived the pacing of the music to be configured with my traversing movements in the virtual garden. It was however not until I arrived at the Rå hal hall at the Godsbanen venue in Aarhus, Denmark for dress rehearsal and premiere at the SPOR festival, on May 11, 2019 that I could embrace and experiment with what such an element entailed for my overall performance.

Choreography as a practice originates in dance but has, in recent years, started to serve as a theoretical framework within various fields. Within WCM, non-dance and non-theatrical organisation of space has been central to development within contemporary music to investigate contemporary aesthetics and question hierarchies, including prescribed institutional regulation connected to the 'work concept'. An explicit example thereof is Hodkinson's *Nothing breaking / Necessary Places* (2022), created for Nordic Affect where the performer(s), audience, playback systems, and other objects enter a configuration—structured from within a text-and-movement-focused score—that sends human contributors into a state which upends familiar relational stabilities. This entails audience becoming performers—bearing the responsibility for the success of the event, the voices of performers becoming displaced through playback, and performers hijacking their own instruments and performing in various locations.

Other examples of such work may be found in Scenatet's project *Concert Walks*, created by Anna Berit Asp Christensen. Therein, the audience was invited to leave their usual sit-still-and-listen positioning as they navigated the forest area of Geist Glorup in Denmark and entered various musical situations. Another example where the performers engage in choreography while the audience walks into the piece is found in Chen's *Supermarket Music* (2004-ongoing). The piece grew out of her work with the Chinese guqin instrument, originally intended for meditation in nature. Substituting nature with supermarket aisles and their muzak music, she created work for performers

where "(s)itters in cart intone the names of products passed, conducting cart-pusher through changes in speed and volume" (Chen, n.d.).

In *Walter Benjamin in Ulvsunda*, a piece for loudspeaker orchestra and violin, Hernandez brought her outside practice indoors. The work employed her walking in an industrial area near the Bromma airport in Stockholm, Sweden—contemplating Benjamin's *One Way Street*—as a method during the performance of what became a multi-channel piece. What she did in the performance is rare, walking in a circle with an unamplified violin within an acousmonium, responding to individual speakers through violin improvisation. In Sweden, the research project *Music in Movement* was launched in 2012, exploring the relatedness of sound and movement, and to use 'gestural-sonorous objects' as compositional material, merging the practices of musical composition and choreography. This constituted the foundation of Nguyễn's (2019) PhD project at Malmö Academy of Music, which looked at the choreography of gender in traditional Vietnamese music and developed it towards hybrid formats. Such an approach can be seen as a rewriting of the body archive through performative actions (Nguyễn, 2020).

Parallel to this, skilful movements have been the focus of music research, ranging from skills in terms of visual processing of notation, phenomenology of instrumentality (De Souza, 2017), and social cohesion (van der Schyff & Schiavio, 2020) to sound-producing gestures and perception (Godøy, 2014; Visi et al., 2020). An attempt at classification of musical gestures can be found in the following list.

- Sound producing gesture; actions that are responsible for the sounding result.
- Communicative gesture; movement intended for communication with other: audience, other players and so on.
- Sound facilitating gesture; a category of actions that is linked to both sound-producing and communicative gesture. Although they do not produce sound, they aid the action in various ways, for instance in the way musicians keep common time through rocking movements.
- Sound accompanying gesture; movement that is made in response to the sound, like dancing and marching. (Jensenius et al., 2009)

As I will go on to show, even the fourth category does not allow for a fluid understanding and analysis of the movement of my performance. Rather, it is a pacing or traversing of space which is tied up with the practices of environmental performance, through which one uses walking as method for experiential and phenomenological

engagement. At the same time, such experiential mapping is nested within a virtual performance space where the performer and her instrument are configured.[97]

In order to unpack such movements, I look towards Jaana Parviainen, Kai Tuuri, and Antti Pirhonen's (2013) investigation into movement within HCI design. An enactive view on perception led them to propose a choreography-based approach to further analyse the dynamics of movements involved. According to them, the traditional review of 'use' recognises only a fraction of movements relevant to such interaction, and even bypasses temporality or procedures. Through this set of observations, they arrived at the following proposal:

> the dynamic flow of movements should be analyzed forming meaningful interactions and relations between different animate or inanimate agents. By using here the term choreography, we want to capture not just agents' movements and gestures but the constellations of movements in which different agents are involved. (p. 108)

Therein, Parvainen et al. formulate an analytical grid of three levels of engagement: 'micro', 'local', and 'macro' movements. The micro pertains to actual and imaginary movements (such as touch and its experiential qualities), the local is based on intentionality of movements, and the macro circles are interconnections to other milieus.[98] By taking a local-level perspective, "the focus of this bodily engagement shifts to the intentional, environment-oriented and social aspects of interaction, and how the micro-level (actual and imagined) movements connect to the choreographic continuum of the user's actions" (p. 110).

Such choreography is dynamic, i.e., not a question of switching in a computational-like manner between different modes. For example, on a micro-choreographic level, my sound-producing gestures are a flux of movements of varying muscular usage and, as I will trace, 'of' varying impressions or sensations. This is conducted in relation to my instrument and its coupling within the tentacle-like system within the environment. The micro-level responses—pace and posture included—are thus continuously affected and shaped by varying mediations that encompass both technology and environment (see Figure 18).

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[97] It should be noted that Franzson's initial intention was not invested in a traversing performance and all other performers came to perform the piece from one designated spot within its grid. This linked to their instruments' affordances in terms of amplification and 'walkability'. In the case of the violin, both its design and the possibility of wireless amplification and a wearable stopwatch made traversing possible. Returning to the hijacking of instruments (or in this instance mediated relations within a hologram), my decision to move beyond one position was easy given the fact that such a hologram does not have performance traditions set in stone.

[98] An example of the macro is how, through usage of a phone, I may be reminded of its entanglement with mining realities at a site far away.

Figure 18
Documentation from the premiere of *An Urban Archive*, at the SPOR festival.

One of the simpler examples is when the sound of a traffic light within the hologram prompts a rhythmical response in my playing, or when I register the movement of cars outside the window of the hall and use their movement as score. Another example is when a resonance strophe that I have triggered blends or dissolves with another sound of the hologram. Through this, the resonance comes to the forefront, what otherwise might simply have been perceived as a background sound. Hereby, my playing becomes a way of making 'present' what was already there yet unnoticed by me. I am captured by the beauty of such morphing, which prompts me to listen to it while traversing, rather than immediately responding through further playing. It is here that we see how the attunement, "a capacity to be affected by or calibrated by our environment, especially by those forces of which we are unaware" (Brigstocke & Noorani, 2016, p. 3) may invite retrospection.

Gernot Böhme (1993) understands such sensing as one where "(w)hat is first and immediately perceived is neither sensations nor shapes or objects or their constellations (…) but atmospheres, against whose background the analytic regard distinguishes such things as objects, forms, colours etc." (p. 125). Another example of such an environmentally-steered movement, which forms along the lines of micro-level choreography, is when the atmosphere, caused by a ray of a sunlight, gets me to halt. I choose to stay with the sensation, bathed in sunrays, allowing my contemplation of the 'outside' to be part of my performance. This is entangled with my 'local' choreographic

intentions; what I perceive as meaningful in terms of the performance is the experiential path of discovery.

It is via the local choreography that we see how *An Urban Archive* produces an effect akin to theatre scenography. Until now, I have not lent many words to the venue itself, or the Rå hal hall (see Figure 19), situated in the Godsbanen venue, a former goods station in Aarhus. Rå is Danish for raw and, with its industrial feel and no central heating, the hall has a distinct feel which captures you the moment you enter. You can sense the past of the city on this site. At the same time, it has become redundant in present times and so the building is now home to the city's re-urbanisation plans. Seen from this perspective, SPOR curators Anne Marqvardsen and Christensen's choice of site did much to establish the works' overall atmosphere, where a virtual urban archive is set into an encounter with the urban architectural past, with Aarhus city life unfolding right outside of its windows. Hence, the curation of Marqvardsen and Christensen, set to create the right context for the work, works in parallel as a staging which contributes to and affects the performance's overall atmosphere. This has similarities to staging in theatre, where atmospheres

> are, then, not just something one feels but something that can be generated deliberately by specific, indeed material constellations. The paradigm here is the art of scenography, where stage designers habitually produce a climate by arranging things, spatial constellations, light and sound in specific ways. As a result, a space of a particular basic mood arises on stage, within which the drama can then unfold. (Böhme, 2017, p. 119)
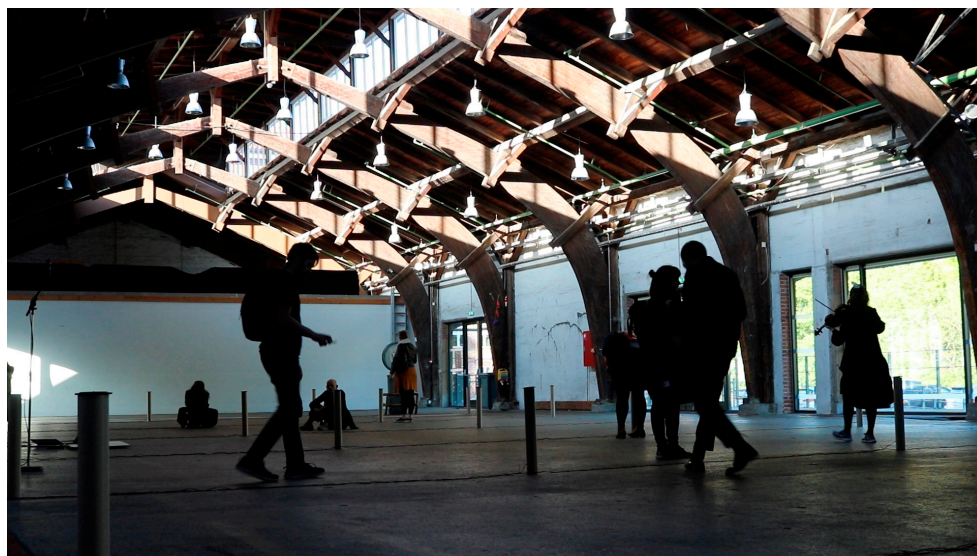

Figure 19
Documentation from the premiere of *An Urban Archive*, at the SPOR festival.

As I step into the installation to perform, I am stepping onto a stage and, through my entangled performance, I embark on altering the stage environment. But interestingly, so do its visitors. Through their presence and navigation, they come to rewrite the work, atmosphere included. The effect that the work has at the outset on their bodies is evident in that they slow down and start traversing with the aim of experiencing, rather than walking to get from point a to z. I also pay attention to their movements and positioning. An explicit example is when I choose to stay put and play close to someone who lies on the floor and listens.

It is perhaps through the atmospheric elements outlined above that we start seeing how the word 'interactivity', often used within HCI to denote the activity in relation to matrixes such as the hologram, starts to fall short. A critique thereof was aired already a while ago, for example by Margaret Morse who pointed out in *The Poetics of Interactivity* (2003) that the once useful term had gone to mean too many things and that it "is expressed not only in art but ubiquitously in every sphere of contemporary life where chips reside, from automatic tellers and garage-door openers to computers that access discs, CD-ROMs, and the World Wide Web" (p. 17). Instead, Morse argued for replacing interactivity with the concept of responsiveness, which allows things to function as subjects. This rethinking of agency is presented in the work of Kozel (2007) who questions the so-called smoothness of interactivity and points out the messiness of the act as "agency might be spread across a range of human modalities, distributed across bodies and across materialities" (pp. 186–187). This prompted her to modulate responsiveness towards 'responsivity' which, according to Kozel, encompasses also the experimentation and the loop of activity and passivity involved.

I find Kozel's proposal useful as it forefronts not only the complexity of such performative work, but points also—through its focus on the importance of activity and passivity—to the importance of what I call the curatorial. By attending to relations, I ground the performance in an act that was there from the very beginning as I walked and recorded/mapped a virtual garden in Malmö. Through such navigation of listening intentions, I situate my performance in relation to "a whole tradition of thought that understands walking as a means to perceive, read, and comprehend the environment" (Biserna, 2021, p. 297). I do not position myself on the hologram's side, which would put more focus on the tentacle/instrumental relations rather than the work's possibilities of acting as a stage for experiential encounter grounded in everyday movements. Therein, the movements of a car become a score, the feel of sunlight translates into a moment of pause, the morphing of sound asks to be listened to, the movement of other bodies becomes an invitation to move, the sound of a voice within a hologram may invite a rhythmical pattern, and the duration of a resonance may dictate my pace. Such performative responsivity therefore entails a dynamic expansion of performance, one that invites 'performing differently' in relation to space,

technology, and audience. In the following section, I will explore what bearing such trajectories has for one of WCM's key concepts: virtuosity.

8.2.6 Virtuosity in the hologram

A historically complex term, virtuosity has been a way to describe the ultimate mastery of skill. A performer may be a virtuoso and a piece can be virtuosic. Within the work-driven tradition of WCM, and as elaborated by Crispin and Östersjö (2017), virtuosity became an act that did not align with the usual fidelity to a score but rather linked to the realisation of the perfect musical performance. This entailed "attainment of a high level of virtuosity, and of the charisma and the ability to engage the audience of the consummate performer" (p. 292). Such notion of virtuosity became entangled with WCM's demands of conformity, which Leech-Wilkinson (2020) sees as at the heart of unrealistic demands within the field (see section 3.1.1).

While virtuosity as a skill can be seen to balance the level of risk (Kanga & Gorton, 2016), it should be underlined that risk-taking can be part of music-making without specific connotations to virtuosity, risk strategies in improvisation being one example. The same goes for the presentation of works, such as described in this chapter, where both the novelty of the system design as well as the duration afforded by WCM's infrastructure for setup and rehearsals can be seen to add to the level of risk, or breakdown, during performance. Certainly, there are exemptions to such frameworks, particularly within certain cultures in France and Germany, such as at the Experimentalstudio in Freiburg or ZKM and IRCAM, but it is quite common to arrive at a site, do a test run, and then plunge straight into the premiere. To minimise such risk-taking, Franzson performed test runs prior to our arrival in Aarhus, during which he would let the system run for twelve hours to be sure that, on the day of its airing, the WFS and the resonances would hold. This is, however, usually seen to fall under risk in relation to invention and part of the 'programming composer', rather than virtuosic performance.

Virtuosity then is tied up with mastery of instruments/voice through complex and/or fast techniques: to push towards what is humanly doable in relation to instruments. However, the invention of new instruments may widen such categories. An example is found in Alice Eldridge's description of how performance on the newly invented feedback cello pushes at habits. As a result, "learned sensory motor contingencies which underly virtuosity in classical sense are out the window; control and mastery give way to a necessity to be open to an unfolding relationship with the instrument" (2022, p. 17). Similarly, through the work of practitioners situated within Western , we start seeing a dismantling of what constitutes virtuosity, detected in Magda Mayas' reflections.

I think of technique or virtuosity in a musical context as the ability to execute an idea, in a clear and exact way, whatever that idea is. There is as much virtuosity involved in pressing a key on a laptop at exactly the right time or knowing when *not* to play as there is in being able to execute many different physical movements at a high tempo at the same time. (2019, pp. 53–54)

This may be understood as a modulation of the notion of virtuosity towards imagination or creativity.

Seen from such a perspective, my performance of *An Urban Archive* is filled to the brim with moments and decisions made on the go—to know the right time to resume, to be with sunray, to improvise next to a person lying on the floor, and to launch into response as I hear a humming within the hologram. While things unfold through responsivity in movement within an ever-altering environment, the sounds embedded within it are familiar. I know the sounds of the halting bus, the rattling of a shopping cart, the tune from the restaurant that sounded into the warm autumn in Malmö, and the hum of voices and acoustics of the central station. What is of importance here is that the repetition is always a source of new sensorial insights. I find a similarity with Pamela Z's description of her usage of loops or how "(w)hen a human repeats something, it changes with each repetition. But when a machine repeats something, it changes with each repetition because the ear begins to listen to it" (Pamela Z in Rodgers, 2010, p. 219). Seen from this perspective, my performance is steered towards allowing myself to be led by a continuous discovery in relation to the environment. Each time that I enter the environment, my intentionality is affected by all other events in the room, ranging from the movement of sunrays to movements of visitors and my alteration of the hologram through playing.

This being written, there is certainly an element of risk related to the performance, found in Franzson's configuration of my signal with the trackers, which invited the possibility for the system spiralling out of control in case I played a wrong note. My decision to play by memory can also be seen to up the ante in terms of risk-taking for a wrong note. For that matter, a note played at the wrong time within the work could aggregate the gate triggers. At the same time, the piece evaded any pyrotechnics so often associated with virtuosity in relation to my instrument. That possibility is removed through the violin's configuration within the system.

So, I am invited to think openly about what can constitute such a performance. Although the work invites an engagement that might seem rich enough through the possibilities created by the tentacle-violin setup, I decide to anchor my performativity within its possibility of appearing as an environment: its staging. It is perhaps here that we encounter the real risk-taking for, as van der Schyff and Schiavio (2020) point out, a performer is "highly dependent on a range of communicative actions between

cooperating agents and the society they are situated within" (p. 486). Returning to Crispin and Östersjö's observation at the opening of this section of virtuosity being tied to how the performer manages through an ideal performance to 'engage' the audience, then we are reminded that it takes place within the framework of frontal projection, where the audience's listening focus is steered towards focus on the human. To play a system that can work as a sonic hologram, a musical structure, and a hybrid instrument is to resist familiar habits and work through its 'difference'. It leads to new relations that not only question what 'virtuosity' is, for what need is there for the notion of virtuosity when it comes to imagination and creativity that balances relations, but also begs us to ask what the ethics of music-making may become as we enter new stages and contexts.

8.3 *violin fragments*

The micro-lab presented in the following section revolves around a collaboration with Franzson on *violin fragments*, a composition for violin, AI, and electronics. The work was premiered at Dark Music Days' 2022 edition and released as part of the *strengur* album later that same year. As such, it followed in the wake of *An Urban Archive* and was also designed to explore virtual creativity through digital technologies.

8.3.1 Training and performing with artificial intelligence

The work incorporates fundamental components from *An Urban Archive* in that it uses its field recordings as well as the resonance technology. The difference lies in that it does not configure this within a WFS technology but uses the field recordings as a stereo track. Instead of the pre-configured and pre-rendered gate triggers, the resonances are here generative as they are performed by an AI. As such, the AI is to be understood as "a neural network capable of learning a spectral representation of a soundfile and synthesizing a novel output based on the trained model" (Franzson, n.d.-b). This generated output is then in turn used as generative resonances that the violin can activate.

The work, 14:45 minutes in length, was composed for the concert event *Surfacing*[99] which I curated for Nordic Affect's concert at Dark Music Days. Like in *An Urban Archive*, the pitches of the score grew out of the spectral analysis of the urban sounds of

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[99] Through the event, I invited four composers to work under the thematic banner of 'affective geographies'. Alongside Franzson, the other participating composers were Ásmundsdóttir, Hodkinson, and Ida Lundén.

the field recording. My recording of the score was then used as the basis for the training of the AI. To do so, Franzson ran the recording through a short-time Fourier transform (STFT) analysis to break down the changes in signal over time and create a spectral representation. The software then sent the data "through an encoder that compresses the data into a latent layer" (Franzson, n.d.), which was followed by a decoder that produces a new spectral frame. Franzson then fed arbitrary information into the latent layer and new spectral frames were produced and used in varying ways, i.e., "for synthesis or convolution, as an impulse response in a hybrid reverb, or for cross–synthesis". Aesthetically, the AI responses or performance of resonances are similar to the resonances in *An Urban Archive*, the main difference being found in an accompanying white-noise-like component.[100]

My work resumed as I started working in a Max/MSP patch, which gave me the power to alternate the length of the resonance, the amount of accompanying noise as well as bass. My work with the generative system could be recorded for shared listening to evaluate the results. During this phase, Franzson continued tweaking the balance between violin, the environmental sounds, and the AI resonances. Similar to *An Urban Archive*, the notation invited improvisation. I came to emphasise three sound-producing effects that felt meaningful in relation to the AI and the environment. These were 'unstable finger vibrato', 'slow vibrato', and 'irregular rhythms', or what I had called pulsating polyphony when working with *An Urban Archive*.

The AI version found in *violin fragments* does not need an input to generate its sounds. Our co-creation entails that my signal works akin to a spotlight, i.e., reveals what the AI is 'thinking' or 'performing' at the moment of connect, which brings its sounds out of the virtual system.[101] But as I got to know it, I learned that the AI holds an element of liveness that is unpredictable. This was not merely in terms of the quality of its process signal, which could exist on a scale of a spatialised 'flourishing' over to a more echo-like signal, for the generative/improvising AI would at times not respond while only gushes of its accompanying noise would appear.[102]

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[100] Incidentally, the duration of the white noise effect can be traced to AI rendering that Franzson performed in relation to my piece *hvinskyn*, where the noise duration arose from work with field recordings of wind. This project is discussed in detail in chapter 10.

[101] This was further developed by Franzson so that the AI can now listen and take into account what it hears. The new AI was a co-creator in the work *Fragments, work in progress, wandering* (2023), created by Franzson for a string trio and premiered by Nordic Affect in 2023 at Dark Music Days.

[102] The white noise, which can almost be described as a 'signature' of the AI resonances was, according to Franzson, a bi-product of the first versions of his AI design. Instead of trying to remove it or denounce it, Franzson decided to work with this sonic component and augment its presence by scaling up the waves of noise. He kept it within this work and others, as he saw its potential as forming an "aural score component, set to convey time to the performer. In this way the noise

We are here back with Frisk's point about socialities present within HCI which can entail a 'rudeness' both on behalf of performer as well as the system (2020). In this instance, my response is similar to *An Urban Archive* in that I opt not to employ a strategy of rudeness in return. I come to identify such a performance, where an AI may choose not to respond or not be empathetic to my playing, as requiring an attitude that is to be found in the practice of mindfulness, where one may simply observe comings and goings without emotionally reacting to them. My mindfulness approach, to let the AI do what it does, bears kinship with recent enactive formulations in relation to ethics and human social interaction. In that instance Hanne De Jaegher, building on Kym Maclaren, has come to describe knowing as a relationship of 'letting be', which "provides a nuanced way to deal with the tensions between the knower's being and the being of the known, as they meet in the process of knowing-and-being-known" (2019, p. 847). Through my acceptance of the AI's behaviour, I steered my performance towards the opportunity for listening-in-search, set to both sense how it reacts but also what our co-creation, which unfolds through loops of responsivity, does in relation to the environment and the piece overall. In that instance, the curatorial thinking—the density and the shaping of the work—became a joint endeavour with Franzson as we embarked on shared listening to the Max/MSP sessions.

My initial performance strategy was to not make my presence felt too much, which prompted Franzson to comment that the environment could tolerate more, a sentiment with which I agreed upon listening to a recording of the rehearsal. After the next session in which I was more active, I noted that there was a thin line between creating and merely filling in. Based on my listening, I deducted that I should reduce my contribution around 20% to find equilibrium. In that instance, I connect boredom to the act of 'filling in', an act where I just tick some instructional box with my playing rather than engaging in an improvisatory listening act led by curiosity and discovery. As such, my formulation of what I deem to be meaningful can be seen as tied in with a spiritual aim of sorts, to be in a state of attunement rather than delivery.

Due to the Covid-19 pandemic, the date of *violin fragments*' premiere was postponed for over a year. I therefore recorded the work for the *strengur* album prior to its premiere at Dark Music Days. It is usual within WCM to 'live with' new commissions or perform them live multiple times prior to album-recording. However, as I will further unpack, there is a difference between the temporal nature of the stereo recording—conducted with AI in the Max/MSP patch—and its more spatial live version that Franzson and I felt that it did not matter that the album recording came first.

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functions as a 'time baseline' from which the performer can get a sense of the unfolding of time" (Franzson, January 10, 2022, personal communication).

To prepare for the live event, I headed into the Black Room at IAC with sound technician Jonas Jönsson for try-outs with a quadrophonic setup. The violin signal was sent into all four speakers and, at the outset, I was positioned in the middle of the space. The initial work was focused on finding the right blend between my signal and the environment. This entailed tweaking the length of the resonances as the resonances need longer duration in a live performance. This shifts it more towards spatial concerns than the stereo-like Max/MSP recording where the focus is more on linear aurality. As for tweaking volume, I formulated it along the lines of arriving at a state where the violin signal would feel comfortably low in relation to the environment. I did not want the listening to have as its focus my 'solo' sound production.

This stood in direct relation to some further decision-making, explored by Jönsson taking on the position of audience. I was at that point still standing in the middle of the space and our immediate point of discussion was whether I would perform from there. We tested what it would do if I shifted my position closer to the speakers. This radically transformed the feel of the performance in that I no longer became the 'focal point' although my sound was sent to all speakers. I had the possibility to perform with a wireless microphone setup and play the piece from memory which meant that I could navigate the stage at will. I was therefore following this testing, engrossed with thoughts on whether I should walk circularly or across the stage, and whether to sit down at the end or exit the hall.

In the end, the choice fell on walking onstage after the start of the electronics and engage in circular walking behind the audience (see Figure 20). This way, I can oscillate between two different modes: one where I exit the visual field of the audience, allowing me to align with the non-embodied AI and secondly, to 'appear' to the audience as a pedestrian violinist who listens and reacts to the unfolding of urban sounds. At the end of my part, I walk out of the hall, meaning that for the remaining last minutes, the only audible sound is the rendition of the urban environment of the past with the performance/presence of the AI and myself already becoming a memory within the work.

Figure 20
Premiere of *violin fragments* at the Dark Music Days, 2022 edition.

The work in this chapter confirms material and post-phenomenological perspectives as aired in Ihde and Lambros Malafouris' (2019) observation of how "affordances and resistances of materiality arise from relational use contexts" (p. 201). Similarly, through its analysis, I can be seen to follow the line of Suchman's reasoning, i.e., that to look at situated actions in relation to HCI is not a question of arguing for "the question of machine agency from first principles" but rather to take as focus "how the effect of machines-as-agents is generated" (2007, p. 2). In what follows, I aim to juxtapose the two micro-labs presented in this chapter to further situate the work in relation to the HCI tradition but also continue to analyse the agencies at play.

8.4 Of materiality and prototyping

The works presented in this chapter align with an HCI tradition that sees the boundaries between persons and machines as being "discursively and materially enacted" (Suchman, 2007). Such a perspective within the field of musical HCI does not see the machine as a source for human manipulation (Lewis, 2021), yet neither does it assign human cognitive skills to such systems (Frisk, 2020). Furthermore, and as elaborated by Frisk, the work conducted in relation to musical interface or instrument pushes at the ontology of musical works for, although they have often been labelled as 'instruments', "in some cases these systems are as much a part of the score as

the score is (if one at all exists)" (Frisk, 2020, p. 35). At the same time, as Simon Waters writes:

> (t)he fact that computers *require* a level of design (in the form of programming and 'interface design') to function usefully for humans has elevated the consideration of 'designed intent' to a point of near-ubiquity, and masked approaches beyond the human–computer interaction (HCI) paradigm which might have much to offer, particularly those which recognise the essentially improvisatory, contingent nature of much human conduct. (2021, p. 135, emphasis in original)

Rather, as he notes, such actions need to be apprehended from an ecosystemic understanding, where 'plans' and 'situated actions' transmute into one another (Waters, 2021) and the performer "plays within an ecosystem which co-constitutes her activity" (p. 135).

Herein, it should be noted that *An Urban Archive* and *violin fragments* are the result of distributed creativity. Gorton and Östersjö (2016) observe that many studies of composer-performer collaboration build on a division of tasks in the creative process, divided in two independent phases: 'pre-compositional joint invention' followed by a post-compositional negotiation "where composer and performer work together on a score after it has been written, perhaps editing the notation, and jointly developing ideas about its interpretation" (p. 581).[103] In their paper, they propose an analytical approach that weaves these together through negotiation of a discursive voice between composer and performer as a fundamental principle in the creative process. The micro-labs presented in this chapter, similarly, point to how a binary perspective on the distribution of tasks is challenged through the changed ontology of works, where written notation is but one component of what is essentially a musical-system design that can take on the role of virtual environment, co-creator, archive, and hybrid instrument.

Zooming in on the formation of the composer's voice, Gorton and Östersjö note how it is formed in relation to notation. In this instance, given Franzson's coding, 'notation' needs to be replaced by a category which I choose to define as 'systems', which can hold anything ranging from coding, recordings, and spectral analysis to maps, scores, and other writing. With our numerous shared listenings in mind, Franzson can even be seen to be guided by a performative practice just like a compositional one. Through this, we see the vast expansion of the role of materiality

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[103] It should be noted that this is far from always being the case within the field of contemporary music, for very often the pre-compositional invention is skipped. This may be traced to different reasons, one being the lack of funding to allow for such activity, or simply the composer relying on compositional methods which bypass collaboration.

and media. What is notable in that instance is the fact that Franzson's overall idea for the projects led the performer (me) to partake in the prototyping process[104] and materially contribute to it through field recordings and reference takes. The works in this chapter are therefore the result of an initial compositional/design idea and prototyping on behalf of Franzson, followed by a collaborative prototyping process, which includes both the compositional process and its tweaking, conducted through a dialectic with material/media and performer. I also propose that the prototyping process should be seen to encompass the premiere of the composition, for it is not until then, in relation to visitors/audience, that the full effect of the systems can be fully tested.

If framed from the perspective of thinking-through then, Anna Xambó Sedó proposed in her thesis on tabletop interfaces for music performance the notion of 'thinking-through-prototyping': "a process where products are designed by working iteratively on a prototype, immersed in a continuous creative process based on a collection of dialogues with materials: sketching on paper or shaping clay, for instance" (2015, p. 38). Such thinking-through in relation to the system design of *An Urban Archive* was, in my case, entangled with my search for the right techniques for the performance in relation to the system. This work spanned a process which unfolded in my home studio (recording of pitches, including different timbre), onsite testing at ZKM (violin's configuration within the system, experiment with articulation, density in relation to resonances and hologram, movements within stage), back in the home studio in Max/MSP (further articulation/timbre in relation to resonances and urban rendering), and through run-through and performance at SPOR (e.g. exploring articulation in relation to the spread of resonances in relation to the hologram, playing in relation to system/environment, as well as movements in relation to the site/scene). Similarly, my clothing adapted to the piece; I wore a stopwatch on the inside of my arm, had pockets that could accommodate the wireless transmitter, and chose shoes that would not create too loud of a sound as I walked the hologram.

It is worth highlighting that the score-map of *An Urban Archive* results from a spectral analysis and works as a structure for my performance. This hologram's layout

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[104] Such material contribution has a kinship with the method of 'cultural probe' (Gaver et al., 1999), an idea that began to have an effect on collaborations within the field of HCI at the start of this century (Tahıroğlu et al., 2020). Initially developed and tried out by Bill Gaver, Tony Dunne, and Elena Pacenti (1999) the cultural probe was developed as a tool to create 'inspirational data' and set to feed into a design project that was geared towards enhancing the presence of European elders within their communities. As the project progressed, Gaver and his colleagues found that the probes, which consisted of various tasks, "provided us with a rich and varied set of materials that both inspired our designs and let us ground them in the detailed textures of the local cultures" (p. 29). At the same time, the probes "provoked the groups to think about the roles they play and the pleasures they experience, hinting to them that our designs might suggest new roles and new experiences" (p. 29).

also provides a form for the performance. Similarly, the length and spread of the response of resonances may indicate a structure, as does the topology of urban sounds and its longitudinal repetition. In addition, the hologram is constantly re-written throughout the performance, but also through the movements of visitors within it. In *violin fragments*, the score is still considered more of a map but the role of the aural score is emphasised through the co-creator's (the AI) white noise. In both works, the urban sounds in the electronics bring forth a structure, or a sonic topology, that arises from the everyday sounds of Malmö, where footsteps and traffic lights create rhythms, bus breaks create a sustained sound, and traffic noise works as a droning undercurrent.

Zooming in on movements in relation to performance space, in *An Urban Archive* my movements stand in relation to the pulsations of such a virtual 'environment' but also the various forces, detailed in my prior analysis, ranging from visitors to sunrays. As such, the importance of stage, understood as scenography, becomes more prominent than is usual within WCM. In *violin fragments*, the movements occur within a familiar staged concert situation, where the traversing is put in direct relation to the urban environment and, through that, transfers me to a position between the speakers and audience, which is contrary to the usual centring of the performer of multi-channel works. Based on this, then, our negotiation of the work, also evolves also around 'staging'.

While referencing Turnbull's writing on the laboratory-like building of cathedrals in previous ages, Suchman notes how laboratory practices may come to reconfigure persons, roles, and practices (2007). The same can be observed in the micro-labs discussed in this chapter, although, instead of the stones of cathedrals, we are engaging with virtual sound. It leads to a spartan choice of three modules of articulation, performed with variations in terms of length, timbre, and dynamics. At the same time, the process opens to different ways of doing; I improvise and include traversing as experiential mapping in my performance.

Such work in electro-improvised music prompted David Borgo to propose a "shift from viewing tools as extensions of the human to a condition where nonhuman networks of tool-systems 'instrumentalize' the human" (2016, p. 113). As pointed out by Verbeek, such cyborgian intentionality takes many forms, one being the composite intentionality brought up earlier (see section 6.2.5). Verbeek's proposal arose out of his observation of how Ihde's focus on the relations between humans and technologies came to veil the intentionality involved. Looking at both pieces from such an angle, then, they reveal to the audience or visitor new aspects of our everyday urban surroundings but also how systems, to use Verbeek's formulation, "'experience' the world" (2008, p. 393).

In *violin fragments*, my co-creation with the AI affords the audience sonic glimpses of how the AI—which is working in ceaseless response to the environment behind the

curtains, meaning within the computer—is directed by or responds to the urban sounds. In the hologram, a virtual environment which can also work as an ever-morphing system through performance, is created. Hence, the work itself is a new reality, a phenomenon that is not existent in our non-digitised reality.

Within such constructive intentionality (Verbeek, 2015), I am co-creating with an AI or playing a hybrid instrument. My movements materialise sonic relations—the configuration of my sound and that of the system as well as the disembodiment of the system. Therein, I can be seen to lend the virtual system a physicality or sociality in relation to the visitors and the audience. Within the hologram, my movements, as well as the movements of visitors, become a physical reminder of the ghosts that haunt the urban archive. This brings to mind Kozel's proposal that "we can regard technologies not as tools, but as filters or membranes for our encounters with others" (2007, p. 70). This, again, brings me to the final section: how such work brings forth ethics in movement.

8.5 Ethics in movement

Similar to how Kristina Popova et al. (2022) formulate a view on ethics, this research project considers it to be "situated in pre-reflexive corporeal experiences rather than solely formalised lexical rules" (Vulnerability and intercorporeality section, para. 6). According to the phenomenological account of Levinas (1969), ethics begins when we are face to face-to-face with the 'other'. However, Ezequiel Di Paolo and De Jaegher, through their reading of Levinas, point out how his perspective introduces an ethics enacted through difference, yet where one is "confronted with someone else's world, irreducible to mine" (2022, p. 248). What their enactive research into sense-making shows is that humans "constantly assimilate and accommodate alterity" (p. 248). Building on Di Paolo's and Knud Løgstrup's research, the following claim is made.

> We typically encounter others with a "natural trust" like the trust our bodies have in the world. We tend to trust others with an attitude of surrendering, without which truly social acts would be impossible. The ethical demand is a demand silently placed by this trust, a demand to participate well, to know how to coexist, how to speak, when to create distance. Alterity does not need to be radical in order for the encounter with the other to generate this ethical demand. Radicalising the other without due attention to concrete context and reciprocity and without giving central role to co-constitutive participation risks absolutising alterity, whereas both intercorporeally and in the constitution of linguistic bodies, self and others interpenetrate (Di Paolo, 2016 & Knud Løgstrup, 1997 in Di Paolo & De Jaegher, 2022, p. 248)

The above formulation has human agency as its focus. But what emergent situated actions show is that the 'other' may be a technology that guides and affects our movements. As stated by Morse, "hard, binary distinctions between human and nonhuman and between open and closed do not bear close scrutiny" (2003, p. 21). It may in fact be hard to distinguish between 'intersubjectivity' and 'interactivity', as they are neither "a set of fixed oppositions, nor are they easily separated in the psyche" (p. 22). Such relations are 'virtual', "as is the muddle of subjectivities involved" (p. 22).

Returning to the notion of ethics forged through movement, empirical research on what such work may entail is found in Sara Eriksson et al.'s (2020) study which looked at the creation and introduction of drones within the work *The Aerial Robotic Choir*. Through an ethnography and video annotation of the work conducted in a collaboration between Åsa Unander-Scharin and Ana Majdak, they came to show how "(e)thics is something we experience, negotiate and practice when we are in movement with others and our environment"(Eriksson et al., 2020, p. 10). Such an ethics needs to be seen as 'situated', i.e., reliant on the habitual orientation of the performer which, again, is situated within culture. As a result, design cannot be seen to have one pre-decided ethics; rather, they arise from the situation, where "(v)alues and norms are co-constitutive between designer, user, context and technology in situ" (p. 3). The above project evolved around a choreographer who gained deeper understanding of her own work with drones as she embarked on training a singer, who felt threatened by performing with such artefacts. The singer was not involved in the prototyping process, which perhaps explains the level of 'threat' experienced as she was introduced to a ready-made artefact about which she could not gather insights during its 'vulnerable' stage of prototyping and thus create relations with it over an extended time.

The case study is similar to the one presented in this chapter in that it produces various 'modes' of care. Franzson's care for the system brought on through prototyping; his care is seen through his facilitation of my work with the systems. My care towards Franzson is expressed by trying to understand the system and the work's overall aim, our joint care towards how I direct the field recording towards the urban environment, and care for how these field recordings are incorporated into the works. My care towards the systems in both work, is apparent in the prototyping process and performance. An explicit example of this last point can be located in my aim to play the right pitches, during the right time period, in *An Urban Archive*. A crash would not only reflect on me, but also the system, as well as Franzson. Herein, we encounter what I brought up in the section on virtuosity—how altered settings and situations can forefront ethics and prod at notions of virtuosity.

But as Frisk (2020) highlights, an ethics in relation to artistic practice can take on different forms than can appear in other social contexts. As an example, he introduces Cobussen and Nanette Nielsen's discussion of how guitar improviser Keith Rowe's

non-listening approach may prevent him from 'relapsing' into prescribed performative conventions (Cobussen & Nielsen, 2016, as cited in Frisk, 2020). In this way, "(n)on-listening introduces resistance in the interplay whereby the ethical capacity is increased rather than hindered" (Frisk, 2020, p. 38). As such, the intentionality of the technology asks me to actively formulate how to perform which leads to new affordances and relations, easily detectable through my improvised movements but also through an aurality that is so obviously 'audibly' interlinked with the systems.

Through both works, I create different relations, be it to the visitors of *An Urban Archive* or to the stationary audience of *violin fragments*. In the latter work, I came closer to the audience than is usual, and they perhaps felt my presence differently or more acutely as I walked behind the last row. I am hovering in between what Smalley describes as the personal and social zone (Smalley, 2007), or rather, in the performance personal zones eclipse. Similarly, in *An Urban Archive*, the visitors and I embody to a certain extent the same performative movements as we walk within the hologram. The social relations of what constitutes a concert performance are altered and, together through such a choreography, we produce what Smalley calls an 'ensemble space'. The visitors traversing the space becomes a "fabric of the music in the process of articulation" (2007, p. 39).

Music performance is typically "enacted within a rather stylised framework compared with other cultural environments, or the natural environment" (p. 39). In this micro-lab, due to the altered mediations, we face a very different context compared to the ordinary concert environment. Such poetics of responsivity brings to mind Frisk's deduction that "(i)n music it is possible (…) that the aesthetical domain frames the ethical, but in reality it is clearly more complex (…) and that there is an interrelation between ethics and aesthetics" (2020, p. 37). This is a point that should not be taken lightly, and a very useful figure of thought when it comes to further discussing of what social relations music-making can become a part.

8.6 Summary

In this chapter, I have looked at situated actions in relation to virtual digital technologies. This required an outline of the listening culture of field recordings and some of the ways field recordings have served as material in collaborative projects within WCM. The field recording within the micro-labs aligned with Biserna's critique of how WSP's historical listening practice treated traversing or sound-making as subordinated to listening (Biserna, 2021). Therein, I showed how field recording, when conducted as an experiential sonic mapping, is permeated by atmosphere and ambience embedded

in the city's social life and transformation. At the same time, how such a walk was conducted had direct ties to the system design of the piece.

Through the above analysis, as well as of the continued work in two micro-labs, I showed how thinking-through-prototyping involved a row of materialities which necessitated micro-sonic listening. Similarly, I showed how such an act, if framed as 'shared listening', was essential to the reconfigurations of human-technology-environment relations. In addition, I introduced the analytical tool of 'responsivity' to further understand how such work in relation to technology and environment unfolds. I demonstrated how a performance driven by responsivity encompasses moments of thinking-through-the-curatorial. Through my analysis, I detailed how the curatorial was instrumental during the prototyping phase in attending to the multiple agencies at play and the possibilities of such a performance. I also discussed how the curatorial is essential during the performance of the work where it perceptualises attunement within virtual and real scenographies, while it responds to varying mediations and thereby comes to shape and effectively alter the ambience of the work. This, in turn, necessitated an unpacking of how such a work may come to push at and ask for a reformulation of what virtuosity entails, opening up to an understanding of virtuosity as linked to imagination and creativity. This may, in return, push at prescribed relations within the performance space, and even the usefulness of the term itself.

The micro-labs resulted in works that fall under composite intentionality. As a performer, I may be seen to lend a physicality to virtual systems. This necessitated a further outline of ethics in movement. By pinpointing moments within the micro-labs, I aligned with an enactive expansion of phenomenologically driven ethics—how any meeting with alterity, or 'other', needs to be seen as situated, embodied, and co-constitutive. Through such an account and through an agential view that takes agency not to belong merely to the human, I showed how the poetics of responsivity may hold many modes of care. How such acts unfolded, through situated actions set outside of institutional frameworks, is the focus of the following chapter which takes us into the domain of ecological sound art.

Chapter 9. The west coast and the tropical palm house

This chapter presents ecological sound art, an approach whose history can be traced back to performers and sound artists who headed outside of institutional environments. Following the outline of such listening cultures, I will proceed onto sharing my work conducted as part of the *Tapeshavet* activations, that took place on the west coast of Sweden. The chapter proceeds to *The butterflies ascended*, an eight mono-channel installation created for the tropical palm house of the Botanical Garden in Lund, Sweden. As will become apparent, the work's creation cannot be separated from its entanglement with various biotic and abiotic forces—the co-constituents of our environments, located both onsite and at the site of installation. Importantly, the chapter will detail the role of technologies in such mediations.

9.1 Listening practices of ecological sound art

In 1963, Akio Suzuki performs *Throwing Objects Down a Staircase* at the Nagoya train station in Japan. Initiated as spatial exploration within his architectural studies, this marks the beginning of a series of self-studies evolving around 'projection' or 'throwing' and 'following' within an environment. In the 1970s, Max Eastley heads outdoors in the UK and lets a river play his hydrophone, turning it into an instrument. The recording is released in 1975 on his album with David Toop titled *New and Rediscovered Musical Instruments*. In 1983, Jon Rose starts bowing the fences of Australia, the beginning of a project that is still ongoing, realised in later years together with Hollis Taylor. In 1987, Oliveros, Stuart Dempster, and Panaiotis climb into the Fort Worden Cistern in the US and record an album amongst its 45-second reverberation time. Oliveros had, at that point, already developed a method of 'sonic awareness' released in her book 'Sonic Meditations'. After this performative engagement, the Deep Listening Band was born and her theorisation on their listening approach becomes Deep Listening®, which also lent its name to their debut album.

The above outline introduces some of the musicians and sound artists who, from the 1960s onwards, brought their practice outside of institutional space. It marked the beginning of what is today a small niche of experimentation in music that takes performative, experiential activity conducted in relation to environment as its starting point. Certainly, sound had prior to this undergone a so-called 'liberation', as found in the works of Luigi Russolo and Varèse where noise started to be treated as musical material. But the emergence of this field coincides with the growing tendency of site-respondent and critical spatial practices. This included acoustic ecology and land art, that later developed into public art (Kwon, 2004), but also the pedestrian choreographic engagement outside of art dance later developed within the method of 'contact improvisation' which situates itself between art, sociality, and sport (Foster, 2002). Composition also exited the institutional space as seen in the Fluxus scores of LaMonte Young, or works created for an audience in public space, an example being the Argentinian Movimiento Música Más.[105] But the environmental performance differed in that it is essentially an improvisatory act, where a performer's experiential exploration is freed from musical models and spurred by exploring what relations may be forged through performing in and with an environment.

Fast forward to more recent initiatives, and we are met with the work of John Butcher, John Grzinich, Richard Skelton, and members of the Landscape Quartet: Sabine Vogel, Hogg, Östersjö, and Matthew Sansom. Their work is conducted either with instrument or found tools/objects in hand and mediated through audio and video recording and photography. Furthermore, practitioners may engage in various other activities onsite such as score-making, listening exercises, and building of instruments or installations. All such activity revolves around an attitude of with-ness, i.e., a participatory approach described by Hogg as follows.

> It was during an experiment floating my violin on a river, and listening to it through microphones placed inside the violin's body, that I learned that for me an ecosystemic art needs to be participative, inclusive, and involved. Making environmental sound art is a process of learning through negotiation and participation rather than searching for something already "out there" that "needs" to be represented. (2013a, River projects – Resonant Pathways section, para. 3)

Through this, we see how environmental performance stands in direct contrast to the original representational tendencies found within acoustic ecology studies, which undervalued the reciprocity of the recording and the recordists, to be further unpacked in the following section. Succinctly, such performance, according to Hogg (2013a), can

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[105] Other examples of later time compositions created for in-situ performance can be found in the works of Tomoko Momiyama, Knut Olaf Sunde, and Daniel Ott.

be understood as a refusal to hide the presence of the artist or impose an artistic and/or aesthetic vision onto the surface of an ecosystem. Importantly, such epistemic action has emerged as a valuable tool when it comes to articulating "experiential insights into landscape, the individual imaginary, and the situatedness of the human subject" (Hogg & Sansom, 2015, p. 260).

Inherent to such work is how it employs recording technology and micro-sonic listening, or monitored listening that takes place over headphones onsite allowing for repeated listenings and phenomenological variation (Stefánsdóttir & Östersjö, 2022). Such was the case with Hogg's floating violin, which provided experiential insights regarding depth of water, different currents, waves, and turbulence (Hogg, 2013a). Another example is Östersjö's aeolian guitar practice, which is realised by stringing a guitar around the tree(s), with the strings extending from the bridge of the instrument. The body then enters an assemblage of guitar-string-tree-wind where the strings must be brought to tension by putting body weight into the ecological system. By responding and shifting the weight, the pitches of the wind-driven harmonics can be alternated (Östersjö, 2020b). This is done through monitoring over headphones, which also comes to define the experiential learning (Stefánsdóttir & Östersjö, 2022).

Vogel, on the other hand, has developed a practice of field recording that resembles Eastley's in that she plays microphones in an improvisational manner through movement onsite. Another approach sees her play recordings from the site through a transducer speaker setup in-situ, "weaving together sound, materials, and site" (Vogel, 2015, p. 329). This is encountered in the work *Bogong Gum Trees* (2015) "that combines recordings of 'played' bark from two gum trees (used to compose two tracks played through transducer speakers attached to the trees), with improvised flute playing on-site and a wind harp constructed between the two trees" (p. 332). Through this last example, we see how already onsite Vogel starts to creatively work with the possibilities that recorded sound offers, by feeding the sounds, afforded by the intentionality of the technology, back to the site in an ephemeral way for further improvisation and recording.

When sharing such an experiential process for audiences, practices differ. It may result in an event onsite but, more often than not, the ecological sound artist shares it elsewhere through installations, albums, or concert events that can incorporate video and audio recordings from the site, scores, and even sculptures. To better understand what effect such works produce, we may view them through Robert Smithson's concept of 'Nonsite' (Smithson, 1968/1996). Smithson's theorisation was forged in relation to his work with geologically and geographically driven art, as part of the Land Art movement, which prompted him to claim that "one site can represent another site which does not resemble it" (para. 2). Fundamental to his reasoning is that art, as a mode of expressivity, is not to be subjected to being understood according to the lines

of logic yet nor should site-respondent work be seen to be one of abstraction. Rather, between the three-dimensional Nonsite and the original location "exists a space of metaphoric significance", thus "(e)verything between the two sites could become physical metaphorical material devoid of natural meanings and realistic assumptions" (para.2).[106]

An ecological sound-art work can be seen through the same grid, although it is forged from within a sonic thinking. Through such work, video may be used to share traces of the materially constituted atmosphere onsite. Performative engagement with the shells of an eroded shell bank may resurface in a Nonsite through vocal improvisation and breakdown of the word 'shell'. As such, the transfer from site to Nonsite evolves around the transcreation of experiences in one site onto another.

9.1.1 Some thoughts on concepts

Various phrases have been used to describe the listening culture of such performative responsivity; 'improvisation with the environment' is one, 'environmental performance' another. The focus on sound and listening has also led it to being positioned within sound art, as seen in Hogg's reference to 'environmental sound art'. Similarly, 'ecological sound art' was part of the discourse in Lund when I started practising it—terminology that I have chosen to use. Such usage here is a way to position practice within ecologies of knowledge. Furthermore, and despite sound art's capacity to accommodate varying approaches when it comes to listening and sound (Lane & Carlyle, 2021), I see the ecological prefix helpful as it points towards its mode of inquiry. It is often not a site-specific practice set to result in a work or installation in public space, but rather centred around work onsite that is invested in further understanding the sonic relations between human and environment, later shared through a Nonsite.[107]

At the same time, it needs to be mentioned that both terminologies—environment and ecology—have undergone a reformulation where both concepts have become 'denaturalized'.

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[106] Smithson's work fell under the second wave of site-specific practice that confronted the experience and phenomenologically driven origins of such work through institutional critique that saw "the site not only in physical and spatial terms but as a *cultural* framework defined by the institutions of art" (Kwon, 2004, p. 13, emphasis in original). The continued development of such an approach will be further addressed in the following chapter in relation to the site-respondent work *Pytur*.

[107] My usage differs from the more representational usage of such terms, a usage that is already in place (Bianchi & Manzo, 2016; Gilmurray, 2018; Vandsø, 2020) set specifically to function as an umbrella term for people working to address ecological or environmental issues. This terminology reflects the convention within visual arts, namely eco- or ecological art (Gilmurray, 2016).

> The environment was born at exactly the moment when it became a problem. The word *environment* still haunts us, because in a society that took care of its surroundings in a more comprehensive sense, our idea of environment would have withered away (…) Society would be so involved in taking care of 'it' that it would no longer be a case of some 'thing' that surrounds us, that environs us and differs from us. (Morton, 2009, p. 141, emphasis in original)

Similarly, as shown by Erich Hörl, the notion of ecologies is undergoing a radical transformation where "relational technologies and an algorithmic governmentality reduce, regulate, control, even capitalize relations to an enormous extent" (2017, p. 8). To 'exit an institutional space' as a performer is no longer what it was in the '60s, for it may send you into virtual or telematic environments that require a radical rethinking of what musicking within such a social space may entail.

It may therefore not come as a surprise that Oliveros was performing, towards the end of her life, as a member of the Avatar Orchestra Metaverse, which took place in the online virtual world *Second Life*. Another member, Tina M. Pearson, has noted how the group would approach *Second Life* as an instrument (Korn, 2014). Such a description brings to mind Oliveros' comment on how the members of the Deep Listening Band perceived the cistern with which they interacted in the 1980s as an instrument they used for composition (Williger, 2020). This certainly brings us back to the habitual formation of performers' and composers' listening attitudes which may lead to an environment being turned into an instrument.[108]

Another project, which was designed to push at or perhaps reveal the ecological nestedness of such digital spaces, is found in the telematic performance *iða* (Icelandic for eddy) that I embarked upon with Rawlings, Maja Jantar, and Franzson as part of the Piteå Biennale pre-event in October 2020. The concert grew out of improvisations to produce a live-constructed graphic score that took as its starting point the material geophysical forces that shape and enable our telematic encounters. As such, the material that we used stemmed from our various site-respondent engagements at sites that fell outside of so-called intelligent environments. System-coded by Franzson, we created a setup that allowed the listener to mix their own listening experience, allowing them to actively engage with and alter the work as they oscillated between listening perspectives.

Such a creative approach to telematic performance aligns with an ongoing formulation of worldly relations that asks us to find other pathways in how we relate to the world. It aligns with Chaone Mallory's proposal that, "(r)ather than environmental activism consisting of action being taken by 'humans' 'on behalf of' the more-than-human world, we can see activisms as a political space where humans and the more-

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[108] Examples were detailed in chapter 8 overviewing compositions that dealt with architectural space.

than-human world make embodied political subjectivities, and as Barad says, worlds, together" (2008, p. 11). It ties in with a multifaceted discourse that takes place across academic disciplines, wherein ecofeminism has for example lifted the Eurocentric pathways of ecocriticism (Salleh, 2016) and, as will be detailed in the following section, how the separation of sound from its environment has played into cultural norms.

9.1.2 Against soundscape

The term 'soundscape' was brought forth by Schafer (1977/1994) and denoted by him as "any acoustic field of study" (p. 8). According to Schafer, it could refer to musical composition, radio programs, and acoustic environments alike. Put forth in relation to WSP, its aim was certainly holistic as it set out, in the late '60s, to examine our acoustic ecologies or the soundscapes of our environments. 'Soundscape' is a modulation of 'landscape', a word that is central to Western visual representational thinking of the 'environment'. This led Denis E. Cosgrove in his book *Social Formation and Symbolic Landscape* (1984/1998) to define landscape as "a social and cultural product, a way of seeing projected on to land and having its own techniques and compositional forms; a restrictive way of seeing that diminishes alternative modes of experiencing our relations with nature" (p. 269). As part of his book, he showed how such projections or ways of seeing have evolved through time—already in Medieval times, landscape had become a 'background' in paintings, but with industrialisation and arrival of capitalism (tourism included), the "separation of individual from land and its private, personal consumption through sight, had become a way of being" (p. 270).

Within WSP, we see such representational tendencies, for example through how the recording technology was employed and contextualised, i.e., where the human being was considered, an 'observer' documenting the acoustic ecology thus bypassing how the recording is always relative to the user.[109] Similarly, the archive that was brought forth was also subjected to WSP's value system wherein so-called hi-fi soundscapes (for example, countryside and night) were considered more valuable than what they defined as lo-fi soundscapes (such as daytime and the urban). If compared to Schaeffer's attitude to the recording, wherein the sound was considered outside of its context through acousmatic listening, then Schafer's usage of the recording, as noted by LaBelle (2015), can be seen to be situated at the opposite end of the spectrum through its ideological and representational tendencies. This was transferred onto soundscape as composition

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[109] It should be added that, at the same time, Schafer (1977/1994) nurtured a complex relationship to this technology which was essentially at the heart of his 'archival' project, seeing it essentially as a negative process as he felt it produced a split of sounds from their original site.

which was grounded in the idea to preserve, enhance, and exploit the environmental context (Truax, 1984). Through this,

> (t)he listener's past experience, associations, and patterns of soundscape perception are called upon by the composer and thereby integrated within the compositional strategy. Part of the composer's intent may also be to enhance the listener's awareness of environmental sound. (Truax, 1984, p. 207)

Another member of WSP, Westerkamp came to create a classification for such works, one being a type of documentary or narrative soundscape, consisting of mainly unprocessed sounds, whereas the latter could work with processed ones. However,

> whatever the continuity is or the proportions are between the real (unprocessed) and the abstract (processed) sounds, the essence of soundscape composition lies in the relationship between the two and how this relationship inside the composition informs both composer and listener about place, time and situation. (Westerkamp, 1999)

Westerkamp explores such relationships in *Kits Beach Soundwalk* (1989). The piece builds on her recording at Kitsilano Beach in Vancouver, Canada, layered with her own narration. Through the work, she makes explicit the intentionality of the recording equipment while, at the same time, uses it to create a poetic journey of varying texture and timbre. As such, the work highlights personal relationality to environment as well as technology.

Another perspective is presented by Ingold who questions the concept of 'soundscape' from the outset as it proposes a slicing up of environmental experience. It aligns with Cosgrove's claim in relation to landscape or how such a cultural construct reflects 'ways of seeing' and may stop us from exploring our environmental relations. This is reflected in Ingold's proposal that, instead of such a 'singular' perspective, we should rather see the body situated in a 'weather-world' (Ingold, 2011) where air, wind, and sunshine are forces in flux 'in' which we sense. Such an expansion towards the 'atmospheric' chips at the sedimentation implied by embodiment and questions the very usage of such terminology as it implies something one 'has'. Rather, we make our way "through a nascent world" (p. 73). Hence, as 'immaterial' weather pushes at the usual 'material' discourse, it is bound to create a shift in an understanding of agency. It is from within such an understanding that ecological sound art is forged, visible in Hogg's statement below.

> If we wish to pursue an acoustic ecology that is ecosystemic, and a soundscape that is sonic, we cannot only represent ourselves by an invisible and inaudible "hearpoint" – a microphone pointed at the world. There is no doubt something paradoxical about an environmentalism that seems to put so much emphasis on the human subject, but it is precisely his human

subject that needs to be reconfigured and rethought if a sustainable ecology is ever to be possible. (2013a, River projects – Resonant Pathways section, para. 10)

In what follows, I will share insights into the micro-lab *Tapeshavet*, conducted onsite at the west coast of Sweden.

9.2 The *Tapeshavet* activations

The *Tapeshavet* activations was a micro-lab conducted in collaboration with G. Hansson, Hultqvist, and Östersjö. It was part of larger Swedish Research Council project led by Hultqvist and Hansson at the Gothenburg University titled *Composition at the limits of the conceptual. A shrinking emptiness - meaning, chaos and entropy* (2015-19), which explored the artistic creation of meaning in musical and literary composition. As such, the micro-lab was unusual in that it looked at environmental performance, but with the initial ignite coming from the sensorial archive of a poet, as presented in a book.

9.2.1 Agency through a book

The project, which started with an onsite engagement over the course of three days in summer 2018, was an invitation to go to the Härnäset isthmus in the Bohuslän region on the west coast of Sweden in search for the sound of the book *Tapeshavet (Tapes Sea)* (2017) by G. Hansson. The title refers to a post-glacial coastline during the Stone Age, namely the Tapes transgression, which was situated by what is today called the Skagerak strait and the Kattegatt sea area. *Tapeshavet* rests on G. Hansson's lifelong engagement with this site. The book is a poetic archive that pushes at the boundaries of mainstream literary genres for—through poetry, prose, diary writings, archaeological notes, botanical excursions, referencing to other thinkers and writers, and farm and family stories—G. Hansson explores what is today called Härnäset isthmus on the west coast of Sweden across temporalities. In view of the temporal and geological complexity one encounters in the book, it is also possible to connect *Tapeshavet* and that of geochronology which, according to Rawlings, "offers an opportunity to think through an eco-ethical knowledging in temporal and spatial fluctuation" (Rawlings, 2020, p. 68).

It was through the invite to engage with the sounds of *Tapeshavet* that G. Hansson, Hultqvist, Östersjö, and I were given agency to 'enter a site'. Such 'permission-asking' is at the heart of ecological sound art and can unfold in various ways, such as through a long-term engagement with a place or, as in this case, an invite extended through

collaboration. It is an ethics that acknowledges the 'co-constitution' of such an onto-epistemological undertaking or, as formulated by Anja Kanngieser and Zoe Todd: "when we mobilize place, land, water, atmospheres, and other nonhuman beings in our histories, we must be mindful of all the relations and reciprocal responsibilities that we are invoking" (Kanngieser & Todd, 2020, p. 389).[110] Here it is important to highlight that the permission-asking does not merely occur at the beginning. It is, as I have shown, "an ongoing process, through which one becomes capable" (Stefánsdóttir, 2021, 08:54). This activity requires us to cite "place and nonhuman beings as sentient and agential forces that have the capacity to consent to or refuse collaboration with us" (Kanngieser & Todd, 2020, p. 392).

Prior to the trip, G. Hansson and Hultqvist chose sites that they thought would be of interest for performative engagement:

- an abandoned stone quarry;
- the Fågelviken bay area, which included a gunpowder storage and carved-out granite;
- and a shell bank i.e., a white shell deposit

Once on Härnäset, we also recorded G. Hansson's narration about some of the sites and their histories, alongside his poetry reading and further field recordings on a small beach in the Fågelviken bay area as well as a farm field/forest area. Throughout our time, G. Hansson continued telling us stories which made ties between the book and the locations in which we found ourselves. It certainly added to my feeling of 'performability' to gain insight into some of the histories of human and non-human entanglements. But such social acts that extended to shared meals, further discussions on the book, our work in general, and attempts to get tech gear to work during the evenings contributed to a feeling of trust and openness between the human participants, some of whom had never worked together. However, as I was to find out, such co-constitution as formed within the *Tapeshavet* activations was so different from normative performance situations that it left me unable to create a crack in the data. This necessitated some new analytical tools, outlined in the following section.

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[110] I find it necessary to mention that such ethics is not something I encountered the first time within academia nor through the activity of ecological sound art, but rather through active engagement and socialisation from a young age. An explicit example thereof is how I was taught never to pick moss as it would take a duration beyond my own lifetime to repair such damage. Similarly, many of the folktales I heard as a child evolved around humans relating to their environments and what happens when things go out of balance.

9.2.2 Mediations as multi-entity performance

The work presented in this chapter positions the performer far from any 'concert-hall environment'. However, performance in either environment can be understood as a process where the performer seeks to evolve his/her practice in relation and distributes it through culture and technology (see section 5.2.5). But within ecological sound art, what such activity 'does' is that the surroundings are replete with performative affordances, ranging from birch bark and wind direction to erosion or economies. It can be seen to amplify the sticky thickness between a performer's kinetic, perceptual, and affective states at the same time that it pushes at institutionally formed ideas about what a performance can be, including what experiences and relations it may afford.

As I embarked on coding the audio and video recordings made at the site (see section 5.1.2), I felt like I was not managing to create a crack in the process. I was sitting with the results of how environmental performance, due to its removal of 'performance for', drastically transferred the focus of performance from institutionally driven values to evolving around 'other socialities'—'other' intra-actions. To tease out a more nuanced understanding of how the activations formed, I felt that I needed to approach the coding from a conceptual perspective. At the same time, it felt like no concepts fit. To understand this, it is worth looking at Barad and her formulation of how 'apparatuses' may result in the need for rethinking both materiality and discursive practices.

> Apparatuses are material (re)configurings/discursive practices that produce material phenomena in their discursively differentiated becoming. A phenomenon is a dynamic relationality that is locally determinate in its matter and meaning as mutually determined (within a particular phenomenon) through specific causal intra-actions. Outside of particular agential intra-actions, "words" and "things" are indeterminate. Hence, the notions of materiality and discursivity must be reworked in a way that acknowledges their mutual entailment. In particular, on an agential realist account, both materiality and discursive practices are rethought in terms of intra-activity. (2003, p. 820)

Such rethinking of what performance may be has appeared on the grid through the concept 'interspecies performance' (Chaudhuri, 2003). However, it does not include many of the abiotic elements I have encountered through my work, such as cement, wind, rocks, and iron poles. The concept of more-than-human also often surfaces within various research fields as well as being a popular concept within the art world. But between ecological-enactive theories of how a human is structurally coupled to an environment and the phenomenologically driven analysis of Ingold on air, I felt it was clear that a human is already, in its living state, more-than-human. I was at that point engaged in a performance of Rawlings' scores related to geochronology and aired my issues with her of not having a word for such a performance. The terminology Rawlings

suggested was 'multi-entity performance' (Rawlings, personal communication; Stefánsdóttir, 2020, 2021). The term is grounded in the notion of 'multi-entity justice'—Rawlings' adaptation of Ursula Heise's 'multispecies justice' (Rawlings, 2020)—and extends to include both biotic and abiotic entities.[111]

As I returned to coding, I conducted it from the conceptual stance of multi-entity performance. It was by no means the final analysis, but it became a gateway towards topic areas, an important step towards a continued analysis of such processes, to be presented in the next section.

9.2.3 Onsite

To get to the abandoned quarry on our first day necessitates a walk through a swamp, wherein one can spot the quarry's old rail tracks. During our walk, we wedge past birches and other vegetation that are in the process of reclaiming the site. As we turn a corner and enter the quarry, we are met with a continuation of the birches' re-forestation. There is no escaping that this has been the location of mining of the so-called Bohuslän granite. The bodies of the birches have adapted to the demolished site, growing in various positions: on the slopes of the quarry's hills, in groups or in solitary conquest, alongside stone chips, and boulders. It recalls Anna Lowenhaupt Tsing's claim that the forms of plants and fungi reveal their biography, "a history of social relations through which they have been shaped" (2013, p. 32). It is a powerful encounter to stand there with the sound of wind in the birch leaves under the glittering sun, life and destruction intermingling, an eery feeling and a reminder that life continues also in capitalist ruins. It is also easy to conjure the ghosts of miners of the past as one stood there, and to imagine the sounds that must have perpetrated the site as it was blown up and carved out, an imagination certainly made even more vivid by G. Hansson's book. At the same time, our voices, as they resonate onsite, start to inform me about its acoustic properties as we stroll around and discuss what we are experiencing.

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[111] Rawlings' proposal and reasoning behind the concept of multi-entity justice can be found in her doctoral dissertation *Performing geochronology in the anthropocene: multiple temporalities of North Atlantic foreshores* (2020), published the year after our discussion.

> By this term, I adopt Ursula Heise's "multispecies justice" but extend the concept of becoming- and thinking-with to embrace or entangle both biotic and abiotic entities—not solely emphasizing the biotic or conventionally defined "living" as implied in "multispecies." 'Multi-entity' recommends categorical, relational consideration for biota (plant, animal) and abiota [water bodies, weather, geologic form(ul)ations]. This is likewise differentiated from environmental justice as the term suggests placement/location and unity/whole rather than the many entanglements implied by 'multi-entity' and urging response (response-ability, responsibility, responsiveness). (Rawlings, 2020, p. 182)

From this, we see how to enter a site is a situation filled with sensory input and permeated by atmosphere. On this site, the atmosphere, understood as the feeling of a site, is also coloured by working-class and socio-economic realities, an awareness of 'what-was-at-stake' which, as I will show, affects how we engage with the site. It asks one to extend one's senses beyond the habitual human-instrument relations towards granite and birch, which may in return invite a tactile engagement.

The complexity of performative engagement in ecological sound art prompted Östersjö and me to coin the term 'fleshy listening' (Stefánsdóttir & Östersjö, 2019)—a formulation set to highlight its entangled state. The term draws on Erin Manning's discussion of 'fleshy touching/touch' through which she foregrounds a body's possibilities of bringing forth 'relational matrices' as a 'sensing body in movement' (2007). Our aim, like that of Manning, is to put the focus on the multi-modal essence of sensing and its processual and ethical nature while, at the same time, highlighting the habitual intuition of our tactile listening.

Vogel and Sansom describe such initial attentive moments of fleshy listening onsite, prior to any tactile engagement, as 'tuning-in' (2015). Vogel's continued formulation describes the tuning-in as an essential part of the work: "the whole process is the piece" (p. 327). When the experiential process is conceptualised this way, we may see how fleshy listening is not restricted to an activation of an object and sound sampling thereof, but extends to a wider field of bodily experience, to unearth what other relations may arise.

Returning then to the opening of this section, phenomenalisation grows out of everything ranging from the sonification of wind in birch trees to the atmosphere brought forth by heat. Such becoming 'through' brings to mind Ingold's concept of 'correspondence' or 'joining with' which "is not additive but contrapuntal, not 'and…and…and' but 'with…with…with'" (2022, p. 13). It is from within such 'with-ness' that one may suddenly identify a possibility for tactile engagement.

Given the collaborative nature of the work, the *Tapeshavet* activations are usually instigated by one person becoming attuned to a possibility, while others watch and perhaps later join. Hultqvist, for example, spots a cylinder during our work in an abandoned quarry and starts playing it (see Figure 21). Gradually Östersjö and I—who started out by listening on the side—also dive in. I start by playing it with a rusty wire but eventually I reach for a piece of birch bark lying on the ground. It should not be seen as a mere 'conceptual' move, i.e., to grab bark form the plant that has been re-foresting the site to play the human's leftover debris. Rather, we need to understand this on the basis of Maxine Sheets-Johnstone's (2017) claim that phenomenological insight needs to be situated in movement, where "agency is experienced directly and immediately *in the conjunction of movement and perception*" (p. 19, emphasis in original). Hence, "whatever *the perceived* object in motion—whether a butterfly, a

person, a mobile, a tree branch, an airplane, or oneself—movement constitutes its dynamics, and those dynamics rather than the object—hands or feet, for example—may come to fore" (p. 18, emphasis in original).

Figure 21
The cylinder at the abandoned quarry.

I had already been engaging with the cylinder through a rusty wire. By swapping over to birch bark, I am looking for a tool that can allow for a 'difference' when it comes to the tactility. The choice should not be seen as 'random'; I am used to bowing a violin with a bow, where the friction between horsehair and gut strings of my violin elicits a sound which I can alter through various techniques in both left and right hands. And so here, I reach for material that I perceive to allow for such friction. I then start 'bowing' the cylinder with bark in my hand and I even try, habitually, to search for further friction by slowing down, which results in a squeaky, dryish bark sound. After various approaches, the sound suddenly transforms to a bell-like sound accompanied by a lower frictional sound that feels almost teeth-clenching.

Such work is usually 'tacit' but, in this instance, my work takes place as shared listening with Östersjö standing next to me, monitoring over the headphones. The process is therefore shared between us as he perceives the cylinder's affordances through my performative actions and is able to coordinate it to his own performative habits, an attentiveness which Julian D. Kiverstein and Erik Rietveld (2018), according to their

ecological-enactive perspective, describe as 'action-readiness'. Through his observations, Östersjö is able to propose other approaches. The pattern of the work follows other instances found in this thesis where the fleshy listening, or the responsivity, unfolds through loops of activity and passivity. The cylinder and birch bark do not simply and effortlessly 'reveal themselves' and the work requires all sorts of adjustments, both in terms of the recording equipment but also positioning of the cylinder and adjustment of my positioning in relation to it.

Through their research on the art of pottery and work with clay, Malafouris and Maria-Danae Koukouti built in part on the framework of 'skilled intentionality' "where the potter's intention is not *pre-formed* but *performed*"; therein, "the potter's attentiveness and the potter's intention are often inseparable"(Malafouris & Koukouti, 2022, p. 277, emphasis in original). They identify two modes of attentiveness forming, the first being conscious and the other immersive. However, it forms along a temporal continuum, thus "(a)s the potter grows to know clay better the need for conscious attentive engagement drops. Eventually with practice the nature of attentiveness will be reversed turning into the mode we call '*immersive attentive engagement*'" (p. 278, emphasis in original). This occurred when things took flight and a scintillating bell sound appeared. I had found a technique that brings forth a sound that feels meaningful. Similar to clay-making, then, the alternation that was described above— where I found the right amount of pressure, speed, and friction and the resulting change in the vibratory qualities of the sound—is not perceived as belonging to the cylinder or the bark; "rather they are the dynamic properties of the kinaesthetic patterns of movement" (p. 279). Through such fleshy listening, I touch and am touched. The results prompt Östersjö and me to utter our amazement, and we deem it to be so great that it is 'like a piece'. This may suggest that "(f)orm, although it is historically influenced thanks to the socialisation of one's performative body, has always emerged through bodily engagement" (Stefánsdóttir, 2020, p. 89).

Such performance is also permeated by care, which may come to give voice to entities of deep temporalities. An example is found in my performance on the next day in a former gunpowder storage that housed the chemical explosives used to blow up the 920 million-year-old granite. Nothing about the construction revealed its exact former purpose, although one could see that the abandoned construction had belonged to the quarry. Rather, it is from G. Hansson that I learn about its place within the utilitarian history onsite.

Standing there within its square formation, I decide to launch into a performance that can be seen as a way of confronting these human imprints for I decide to enter a variation of "Intime" by Rawlings (2019, p. 37). Originally conceived by Rawlings as a site-respondent work relating to foreshores, "Intime" invites the performer to become sensate with the movements of wind and ocean currents. I had witnessed her perform

such a variation during the activations of the Northern Lights Hall (see 6.2.5) but also performed it with her in its intended setting on foreshores in Iceland and Sweden. The work is essentially aimed at "envisioning the deep time situatedness of the immediate site in which they are located" (Rawlings, 2020, p. 63). Through my circulation embodying entities that were at play onsite in deep geological time, I can be seen to perform an act of resistance as I bring them into an encounter with the acceleration of breakdown, realised by human forces.[112]

By siding with movements of wind and ocean, I radically alter my performative habits. I can no longer sit or stand still as I engage but have to run in circles while playing the walls of the storage (see Figure 22), described in the stimulated recall annotation.

> I start tentatively with a stone, at a walking pace, listening to its qualities, which are quite pleasant although a bit mucus like in its sound. The mucus effect is perhaps not what an outsider would think of when hearing it but the touch between the stone and the humid wall prompts a tactile feeling of a mucus like surface, which results in a dampened sound. There is almost just as much sound coming from my walking, as I step on the debris. After this initial attunement to the sound I go and pick up new tools and am ready for performance. I enter a circulation at a greater speed, with a larger stone in hand. It proves to be quite base-like [sic]. Next up is a found tool resembling a putty knife, and now things start happening as it wakes up the space and manages to draw out a broad spectrum of sound. My colleagues are listening, Stefan comments "that's a good sound", and at the same time Gunnar is reminded that he has sandpaper in his bag. After a round with a hairbrush, whose bamboo pins don't bring about much 'rapport', I switch over to Gunnar's sandpaper. It creates a friction that sends vibrations all up my arm and is threateningly deafening, but it is the right whirlpool of sound as it gets the space vibrating like never before. I become a bow and shoot through space (…). It is hot, and I try not to stumble over the debris and in between performances I'm gasping for breath. (Stefánsdóttir, stimulated recall annotation, in Stefánsdóttir & Östersjö, 2022)

Through this we see how, similar to the work with the cylinder, I am listening-in-search for that moment when the thinging leads to the right rapport and sound. It can only come through doing, through us forming what Ingold (2011) describes as 'hive of activity'. What is perhaps notable is that, contrary to the event with the cylinder and the birch bark, and the fact that I liken my body to a bow, I do not necessarily perceive the gunpowder storage as an instrument, perhaps relating to the fact that I am having to drastically alter the stance of my body as I side with oceanic and atmospheric entities.

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[112] The breakdown caused by the cement industry, the very same material of which the storage was built, is certainly another element that appears on the radar during such a connect.

My listening intentions are still guided by my habits in relation to touch, with all its vibration and speed and rapport or resistance between hand and the materials at hand.

Figure 22
Activation in the former gunpowder storage.

In the next and final stimulated recall annotation, I aim to show how such habits may also come to inform my intentionality in relation to technologies but also how they may come to afford new perspectives on listening.

> It is the second day of our work and we have headed to a shell bank (…) It is scorchingly hot, as if the acceleration of climate breakdown is making itself felt. I get the green light to start with my performance, but throughout it my colleagues are watching and assessing the possibilities, which prompts their own ideas for the next performance. I place myself amidst this testimony of erosion and destruction to activate the shells. In order to catch the sound I stick my DIY kit, or a coat hanger with two DPA4060s into the ground close to me. This microphone setup allows for detailed close up recording, and has been one of my main go-to devices. As I enter the performance my movements are miniscule, I feel like I have to handle the shells with care, a testimony to life lived

9.000 years ago. At the same time I know that my kit will catch this tactile closeness, and invite future listeners into this private sphere. Not long after I start my exploration I have to stop and move my gear as the wind is disturbing the microphones. I resume my performance. There are endless fragments, and they have different sonic qualities, some are matte, others shimmery. I let the shells play each other by rolling them down the bank. A new disruption; now the shells hit the equipment. Eventually I find a good angle and can let them activate each other. I'd really prefer to be here alone and perform for longer than is possible, to get lost in this. I want to be 'with' what is called ´smæð´ in my language or smallness. (Stefánsdóttir, stimulated recall annotation, in Stefánsdóttir & Östersjö, 2022)

The above example clearly reveals the ethics-in-movement, evident through how I feel the need to handle the shells with care (see Figure 23).

Figure 23
Shell amidst a shell bank.

Another point of importance is my interest in miniscule sounds, the recording of which is enabled by my DIY setup. Such an approach should be seen as interlinked with my accumulated experience of performing my Hopf violin from the 1780s, in Baroque setup. Its bow is a technology created to enable a rhetorical approach to sound. It is strung with gut strings that produce a grainy sound through their resistance when bowed. It is an instrument that invites intimacy and some of its sounds, such as when

I lift my finger from the resistant gut string, are rarely audible to the audience. I have therefore on previous occasions used the DPA 4060 microphones to enhance such quiet sounds. Returning to the shells, then such an aesthetic approach can be seen to drive my performance, for the intentionality of the technology both amplifies tactility and affords new insights, feeding into my responsivity to the shells. Here, the perspective of sensory technology affords new phenomenological insights both onsite but also later during the material's transformation into a work that meets an audience. Such a process is the subject of the next sections.

9.3 *The butterflies ascended*

The butterflies ascended (Fjärilarna steg upp) is an eight mono-channel installation, created for the tropical palm house of the Botanical Garden in Lund, Sweden. The work included the performance of vocalists Sofia Härdig, Felicia Konrad, and Kaastrup Vesterskov and built on activation material from the *Tapeshavet* project, carried out together with G. Hansson, Hultqvist, and Östersjö, in the Bohuslän region on the west coast of Sweden. Furthermore, the many entities inside the tropical palm house, as well as outside its glass structure, came to co-create it through their presence.

9.3.1 Stimulated recall as an artistic method

On the return from Bohuslän, it was not straightforward how I should proceed with sharing the experiences made onsite, all the while keeping a meaningful connection to G. Hansson's book. In this instance, and as described in section 9.2.2, an analysis of the mediations involved was conducted through the conceptual stance of multi-entity performance. As can be seen in the analysis in the previous section, the work encompassed multiple agencies and a thickness of experience that was permeated by imagination and atmosphere. Referring to Smithsons's theorisation of how the creation of a work's Nonsite grows out of a space of metaphoric significance (Smithson, 1968/1996), then an idea arose that the work needed to match the 'thickness' of experience onsite in combination with the book's archival elements and entropic strands. This gave me the idea to create a piece for the tropical palm house of the Botanical Garden in Lund, Sweden.

> The tropical palm house is a breathtaking space, it 'engulfs you' the minute you step in. There is visual abundance thanks to the multiple plants, placed in an almost labyrinth like structure. The light comes through the glass roof, and is in constant change, filtered through leaves of the trees outside and moving clouds. There is an earthy smell and as

the plants require 80% air humidity you are embraced by heat. As you navigate the room you start noticing a high pitch sound that one can mistake for bird calls. If you stay for a while you may realise that there is a little camouflaged creature moving in the plant beds; the sound you have been hearing is the calls of 'epidobates tricolor' or multiple phantasmal poison frogs. Stepping into this space I felt I was physically met with something that could match this tingling sense of thickness that I was carrying with me. Like a trickle of shell sounds and rays of light streaming from my fingertip but resting in foglike density. This space was going to enable me to extend my lived experience and allow visitors to enter an explorative mode with all their senses. (Stefánsdóttir, reflective annotation, in Stefánsdóttir & Östersjö, 2022)

As can be seen in the reflective annotation, the work was not to be created for what Smithson describes as a 'Nonsite', i.e., a gallery's white cube. Consequently, the choice of site entailed a radical expansion of entities/agencies that needed to be considered in the compositional process. The site expanded my roles to embody the agencies of botanist, photographer, recording engineer, acoustician, biologist, qualitative researcher, director, producer, dramaturg, writer, and set designer. This echoes Åsa Stjerna's outline of sound art's transversal process of artistic creation where "relations span between material and discursive, and human and non-human, components" (2018, p. 26). Some of those roles surfaced in relation to the creation and recording of a performance score which was essentially an act of transcreation, an artistic method for the translation of sensation into new sensation, as well as for sharing a site-specific experience with performers who were not present at the original site.

9.3.2 A score for transcreation

If referred to Smithson's reasoning as to how the creation of Nonsite entails bringing forth a work that holds a metaphoric relation to the original site, then the score can be seen to grow out of what I perceived as meaningful within my performative encounters. This related to various material forces (shells, granite, ruderal ecosystems) but also to the deep time or vast spanning temporalities encountered and modulated in part into the improvisation of the breakdown of shells to sand. I also included in the score an atmospheric photograph that I had shot at the end of a long workday, documentation of a moment where I had been brought back to my youth and summers at my grandparents' farm. The score was therefore porous, just as when one engaged onsite—where the material, immaterial, and atmosphere thereof can conjure forth imagination and memories. The score creation also grew out of my decision to return to the book and conduct a performative reading on the basis of my experiences (see Figure 24). It is a method that I had used in prior works, where I let my feeling of such an event or

engagement with a site steer a text-score construction. As such, it grows out of a reading informed by my experiences of fleshy listening onsite.
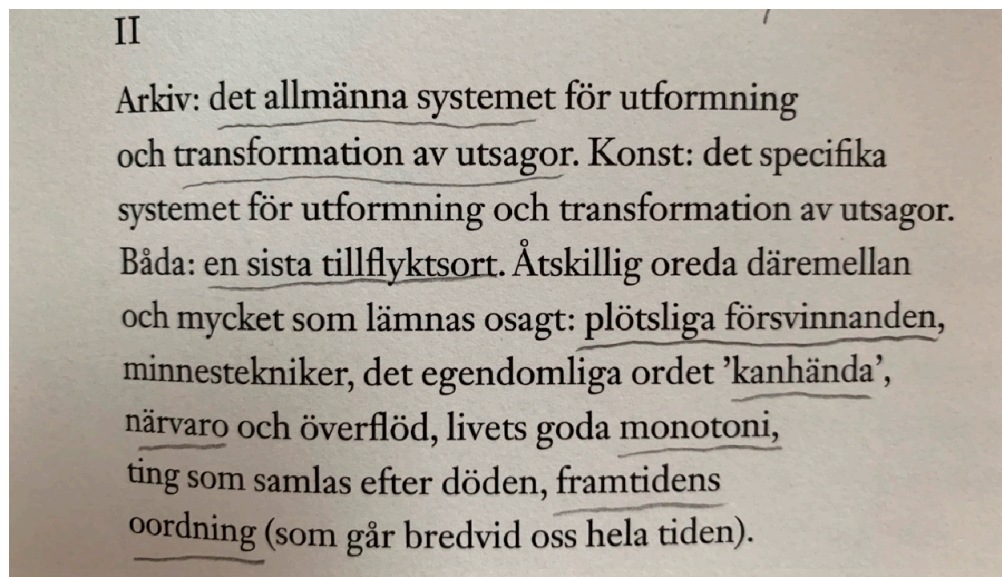

Figure 24
An example of the filtering which took place in relation to the performative reading.

Yet such an act is also steered by the curatorial as it takes into consideration what thematic choices could prove to be colonising for the new site. I had, for example, concluded that utilitarian histories seen from human perspectives and cultural anecdotes had little role in relation to the plants. Similarly, my visit to the site had led me to the conclusion that there was little space for the 'reciting poet' as the text needed to enter the premises of the sounds from the west coast, as well as the environment on the new site. This called for a text treatment that would let it oscillate between sonic and semantic domains.

To enable such an oscillation entailed deciding on the density of the text. This I deemed to be reliant on the new site's acoustics. I therefore brought a portable speaker to the palm house and embarked on a listening session, described as follows in a reflective memo.

> I used the sound files from another 9 channel installation to hear how sound travels and blends into the space. A way to attune to possibilities of placement, but also a way for me to learn how sounds travel and diffuse amongst the plants; to learn what sounds do not belong here, and how dense they can be. (Stefánsdóttir, reflective annotation, in Stefánsdóttir & Östersjö, 2022)

On the basis of this attunement to the site, I could complete the score where text fragments were structured into passages that I titled *atmo sphere*. Atmo, usually understood as air, stems from the Greek word 'atmos' which means vapour. Text fragments would be sent into the world on the breath of a vocalist yet destined to become a thread in a larger web created not only through the spatialised sound but also by the sensorial affordances at the palm house, tropical humidity included. As can be seen in the score, located in the RC, few text snippets were actual verses, while other *atmo spheres* consisted of a filtering from passages that were even ordered on the page in a way that allowed the vocalists to navigate at their own will and create their own version through sensing.

Looking at the score, it becomes apparent that the texts enters various dimensions of temporality. One is reminded of death, impermanence, but also of the magical start of life when nothing had a name, while other passages present the joy of life during hot summer eves. Texts worked as transcreation of experiences onsite, by going back to G. Hansson's book, and letting the sensorial guide my reading.

In addition, the score includes photographs, sound files, and instructions that send the performers into improvisation with material entities and words spurred on by phenomena such as transmogrification and erosion, encountered both onsite and through the book. An example is the play with and breakdown of the word 'skal' (meaning: shell). Furthermore, two binaural works *study in sound – the fossilised ocean* and *study in sound – the quarry* accompanied the scores, set to send the vocalists into micro-sonic listening in relation to entities that were also featured in accompanying photographs. One photograph was also used as an invite for the vocalists to go photograph a ruderal site in their own vicinity, later shared with me for improvisation. Finally, the photograph found below (see Figure 25) was shared with the following instructions: "Attend to this photo. Sing, whistle or hum whatever tune comes to mind, but without words" (Stefánsdóttir, 2020). The heading of the piece was taken from G. Hansson's text: "The boundaries are not where we think, not now, not before[113]" (2017, p. 38, my translation).

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[113] Hansson's original text in Swedish reads "Gränserna går inte där vi tror, inte nu, inte förr".

Figure 25
Photograph from a piece within the score for *The butterflies ascended.*

The photographs and the recordings in the score remind us that technologies do not 'capture' things but rather create a 'sensory domain' (Pink, 2015) that brings together "a series of interconnected events involving encounters, objects, emotions, sensations, weather, persons and more" (Pink, 2015, p. 172). As such, the material sensorial ethnography can be extended towards others for experiential engagement. It is this potential that is at the heart of the performative situations, set up in *The butterflies ascended* score, conceived as situations for experiential attunement. As already stated, the test at the tropical palm house led me to conclude that three voices would be ideal. These roles were graciously accepted by Härdig, Konrad, and Kaastrup Vesterskov.

9.3.3 Sensorial processes in the studio

I was present for the recording sessions of Kaastrup Vesterskov and Konrad[114] and took on the roles of sound engineer, dramaturg, and director. The idea had been to set up, through the score, an open-ended session to enable the process of transcreation through the performer's responsivity to the score. With the later composition in mind and to

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[114] Härdig conducted her recording in her home studio in Stockholm.

allow for greater variation, I suggested to all three vocalists an initial framework of second- and third-person perspective for their recitation. The second-person perspective entailed relating to a friend, and the third-person perspective referred to a more neutral tone. Whispering was also used to create a different timbre.

The work with Kaastrup Vesterskov and Konrad unfolded as shared listening. Our discussions between takes could link to pace and timbre, but also formulation of strategies such as "distance" and "description" rather than "narration" (Kaastrup Vesterskov, personal communication, April 15, 2021). This in return served as a foundation for new takes. The process was one of openness and experimentation, as seen from Kaastrup Vesterskov's observation: "I would not have gotten there without guidance. But neither without the wild improvisation" and, as she continues her elaboration, she describe how "you cannot do anything wrong. We just need to search. And then there is something in it that we can build upon" (Kaastrup Vesterskov, personal communication, April 15, 2021).

The focus for the text recitation was on creating a set of different situations, as when I asked Kaastrup Vesterskov to put a situation on top of recitations when she was to repeat the sentence 'här men inte här (meaning, here but not here). At the same time, I wanted to steer away from theatrical expressivity as could be heard in my directive 'not to act'. In a stimulated recall session, I asked Konrad what such a mindset entails for her. This led her to make a distinction between poetry reading, acting, and the particular practice exercised in this collaboration and enabled by the score. The latter approach involves refraining from adding meaning, a performative approach which Konrad described as "(t)o try and reduce but also to create, as it were... to 'hold' the text in a somewhat different manner" (see video example 8 in the RC).

Stimulated recall sessions were carried out after the studio sessions. As mentioned in section 5.1.3, such an approach allows the research to stay within the domain of sound. By engaging with data, the initial lived experience is transformed, through phenomenological reduction, into an object for reflection and later meta-reflection, set to deepen the understanding of how musical subjectivity forms and the role of technological mediation therein (Stefánsdóttir & Östersjö, 2022). Through such an act, one is reminded of how micro-sonic listening is essential to studio work. Härdig, who perceives the microphone as being part of her stage 'instrument', states that to skip headphones in the studio would diminish her sensitivity, akin to working with "gloves". Through its usage, the headphones together with the microphone create a "space for performance" (Härdig, personal communication, April 15, 2021). Likewise, Kaastrup Vesterskov described how such a space enables an aurality of "detailed nuances" and the improviser to "hear herself in a different way" (Kaastrup Vesterskov, personal communication, April 15, 2021).

The stimulated recall provide insight into their performative approaches, an example being how Härdig, through her improvisation to a photo, chooses to zoom in on a curtain found in the picture (see Figure 25) and starts to imagine its movement. As she lets the curtain's imagined fluttering affect her voice, she works in parallel with "how a forgotten melody, comes through the window, as a memory from a long time ago" (Härdig, personal communication, April 15, 2021). Other improvisations may become more convoluted, as observed by Konrad in relation to her interpretation of the word 'skal' (meaning: shell)—"(t)here is something that I do not understand about the word, maybe it is its form (...) Here I am sort of still with the sensorial feelings of the word itself, I do not leave the word. I am between the sound and the word and its meaning" (Konrad, personal communication, April 16, 2021).

We see here how to put 'skal' into your mouth and embark on fleshy listening entails an ethics-in-movement, a way to familiarise yet also create a sense of estrangement and difference in order to explore relations. Such a phenomenological variation cannot be separated from the technology. If referred back to Verbeek's theorisation on mediation, then such a performance can be understood as an augmented intentionality, directed through the recording setup towards Konrad's own voice and exploration of her relations to 'skal', wherein she oscillates between aurality and semantic meaning.

Essential to the experimental design of this micro-lab was to explore whether I could set up a situation of exploration for the performer. As such, the score effectively takes on the nature of Nonsite for the performer to engage. Its effect may be witnessed in the commentaries above. The score, combined with an awareness that this would then later feed into a larger Nonsite, generated a sense of freedom in the studio, expressed by Härdig as follows: "it felt safe that I could try different ways (...) (a)nd then you would know what fit in context, in relation to the other voices." In fact, "it was rewarding to be able to just go" (Härdig, personal communication, April 15, 2021). Through the recording sessions, a large material archive was created which enabled my continued work on the composition in my home studio. An analysis of that, as well the overall composition process, is the focus of the next section.

9.3.4 On composition

As stated, it was not until I had conducted an analysis of the fieldwork that I was able to embark on the process of composition, where the Nonsite was to match the 'thickness' of experience onsite. My hunch was that the Botanical Garden might be a good setting, immediately affirmed as I stepped into the palm house and felt that "I was physically met with something that could match this tingling sense of thickness that I was carrying with me" (Stefánsdóttir, reflective annotation in Stefánsdóttir & Östersjö, 2022). I was certain, as shown in this reflective annotation on my visit, that

this was going to work. This can be seen to be part of 'planning' which, as Suchman reminds us, is also a situated activity (2007). But the 'hunch' which forms part of the planning is what Suchman refers to as 'projections'—inherent to planning.

Similarly, Ludger van Dijk and Rietveld (2021) through an ecological-enactive account and through observation of architects' work on an installation, came to refer to such activity through the term 'anticipations' which bear an "unexplicated, relation to the actions that they project" (p. 13). As such, they are not merely the result of skill or prior practice. Rather, they are tied up with the affordances of the situation.

> Even in their most intuitive rendering—as possibilities for action—affordances already imply anticipation (…) That is, although they are available in the current environment, they pertain to that which the environment offers a skilled individual to do in the *future*. The ability to engage affordances then (i.e. to be invited by them, being responsive to them), is already anticipatory. (van Dijk & Rietveld, 2021, p. 351, emphasis in original)

But the anticipations may work on multiple scales. An example is found in my description in section 9.3.2, or how I brought a portable speaker to the palm house for playback testing. Such listening works as an anticipation of how sound will travel in the future and what atmosphere it might create while it informs what density the text should have in the score, as well as how many voices it needs. It is also an anticipation relating to what speaker setup may work in the space. We see here how such compositional activity aligns with van Dijk and Rietveld's claim that "by means of acting someone can be concurrently enacting multiple affordances over larger timescales" (van Dijk & Rietveld, 2021, p. 361). If presented from a different viewpoint, "any activity that appears as a finished *action* can be part of a continuing string of actions that forms a larger *activity* still unfolding" (p. 356, emphasis in original). This is evident in how the initial analysis feeds into a choice of site, a sound test onsite helps to finalize the score, the score in return is sent into studio, and the results affect the continued composition. From the above test, we also see how the compositional and curatorial agency co-exist, as the multiple affordances at play are considered and weighed to facilitate decision-making for continued work.

The anticipatory character may also be identified in the studio sessions, where my directing would be continuously geared towards the following compositional phase as well as its final effect. When I had familiarised myself further with the material, the compositional work was carried out in my home studio. This process resulted in a construction that can be seen to consist of five to six sections that intersect. These sections were differentiated in various ways in terms of recitation and sounds. At only one point in the work do I let a single sound reign (a bell-like sound from cylinders), followed by the only point in the piece where the voices meet in mutual recitation, a

play over the word 'björnbär' (meaning: blackberry) to create a sociality reminiscent of fun summer nights.

The complex and stimulating challenge is however that this, as well the minute work within each section, is realised through an overall construction of eight mono-channel tracks that also need to be interrelated. The process is negotiated through listening to where the material leads me. A choice of tone and timbre in one voice may call for a different phenomenological situation from another. This relates to what van Dijk and Rietveld (2021) describe as the 'inviting character' of affordances and how, through perceiving it, one may see "the affordance being enacted—as having a 'direction'" (p. 362). From such a perspective, processual work is not "*about* the process, but they are *of* the process" (p. 367, emphasis in original). Hence, if we return to my visit to the palm house, despite my intuitions regarding its materials, my conviction about the possibilities I saw does not entail that I knew the outcome of the compositional process in advance.

Another example of the anticipatory nature of the composition is how the pacing is constantly referred to the 'feeling of pace' that I had acquired as I explored the affordances of sound through playback onsite. In addition, I composed with a large *Monstera deliciosa* plant by my desk as a constant reminder of the sensibility of plants. In fact, I weighed all sounds and volume against what I deemed to be a right effect for those sentient beings. My decision to mainly work with granulation in the sound processing was also related to my wish to respond to the atmosphere onsite, its humidity and abundance of greenery included (see Figure 26). A granulation created a sense of sound diffusion that I found desirable as the work would travel amongst leaves and engulfing humidity, enhanced through the speakers varying position from floor level and upwards.
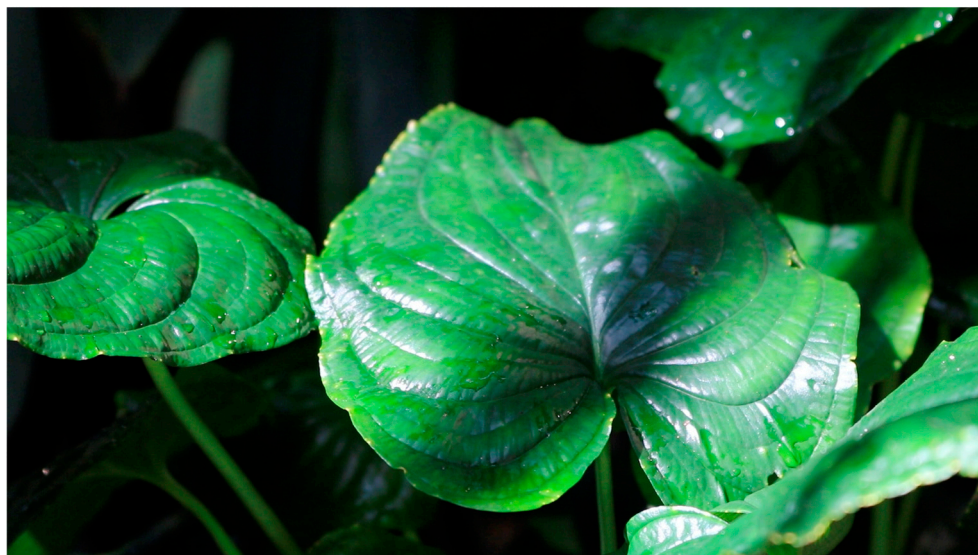
Figure 26
Screenshot from the video documentation of the work, located in RC.

The number of speakers, set to create a good spatialisation, stood again in direct relation to the layout and size of the space, combined with elements such as abundance of plants and the overall atmosphere. The choice of speakers was not only reliant on the wish to make them melt into the environment, but also its tolerance to humidity. Therein, other materiality became part of the process, including second-hand water-resistant fabric which I used to coat flowerpots borrowed from the Botanical Garden to create a beehive-like protective structure around the media players as well as cables, which had been specially constructed for the work.[115]

These decisions were driven forward through discussions with the sound engineer at IAC, Jönsson, as well as with Olofsson, who were both present for the setup the day before the opening. It was first during the setup that I could finally experience the work, with Jönsson and Olofsson acting as audience, listening and wandering amongst the plants. On the following day, the doors of the Botanical Garden, which had been closed due to Covid-19, were opened for visitors as part of Lund University Future Week. As so often happens with sound-art works, it reached higher audiences than any contemporary music event may expect and it was a joy to experience the diverse

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[115] Such flexibility when it comes to technical logistics is not always possible, as discussed by Stjerna (2018): commissioners, from public agencies to art institutions, continue to predefine the technical setup, specifying the sound generating hardware as well as the type of loudspeaker and even their spatial location when commissions are announced. Such situations manifest the cemented idea of technology in terms of "neutral container" to be filled with sound, ignoring the practice's complexity and revealing an ongoing reliance on Cartesian understandings of space in the process. (pp. 83–84)

demographic of visitors (see Figure 27). As they strolled amongst the plants, they encountered sounds of shells, sand, cylinder, and other entites, together with the vocalists Härdig, Konrad, and Kaastrup Vesterskov, who blended in and oscillated—in relation to the humidity, the plants, and the singing frogs. Even the sprinkling system corresponded and contributed to the work.

Figure 27
Visitors within the *The butterflies ascended* installation.

9.4 Summary

In this chapter, I have looked at situated actions within ecological sound art. Starting with an initial outline of the history of such an approach, I detailed how such environmental performance draws on technological mediation, wherein technologies may allow for new insights through micro-sonic and repeated listenings. Furthermore, I have discussed how Smithson's notion of Nonsite (1968/1996) can be applied to the process of transcreation, since experiences onsite are shared with the public at a Nonsite. I also addressed how such an experiential approach stands in direct contrast to the initial strategies of WSP, and how eco-systemic understanding in relation to environment chips at concepts such as soundscape and embodiment.

Through my analysis of environmental performance on the west coast of Sweden, I showed how it necessitated a rethinking of both relations of performance and discursive practices, detailed in the chapter. The second part of the micro-lab, dedicated to the transcreation of experiences onsite into a Nonsite, showed how a score may work as a Nonsite that affords its vocal artist the possibility of experiential attunement. A stimulated recall thereof showed how sensorial material, brought forth by technologies, may set up a process of phenomenological variation in relation to varying phenomena, including how the score and knowledge of the future composition through editing created a sense of safety and freedom for the performer.

I detailed how stimulated recall, both through an analytical analysis presented in a book chapter (Stefánsdóttir, 2020) and the artistic method of playback at the palm house, was essential to the work's composition. Importantly, that listening enacted an ethics-in-movement set to shape the transcreation through attending to the sentient beings that reside on the site of installation. Finally, I unpacked how projections or anticipations are inherent to the composition of such an installation. Building on van Dijk and Rietveld's (2021) ecological-enactive theorisation of affordances, I showed how such activity during the composition could work on multiple timescales but also how it is an open-ended process, where affordances ranging from reverberation to 'other' sociality and atmosphere can invite further activity. As such, the composition is never pre-formed, but is 'of' such processual and relational activity.

Chapter 10. Hér

The previous chapters have focused on situated actions in relation to the concert hall, the recording studio, the virtual domain, and, finally, ecological sound art that forms initially as environmental performance. The present chapter titled HÉR (Icelandic for here) introduces two micro-labs that were undertaken in the later part of the PhD project. The first micro-lab invited Olofsson to engage with my multi-channel installation *Þytur*. This resulted in *Violin with Þytur* by Olofsson, a solo work created for performance within the installation. The second micro-lab is the album project *strengur* released on Carrier Records in 2022, set to explore album-making from the perspective of the self-producing artist, although through alternating the roles of performer and composer.

10.1 *Þytur*

The installation *Þytur*, with which Olofsson was to engage, is a sound installation of nine independent mono-channels. It was initially part of *Spherical White with Diamond*, created for the site of National Trust Formby (UK), thanks to a commission by Curated Place (UK) for NATUR-North Atlantic Tales.[116] NT Formby is part of UK's largest sand-dune system, which stretches for twenty kilometres between Liverpool and Southport on the Sefton Coast. Essential to the commission's aims was that, in addition to bringing forth a composition for the site, my work should include engagement with the archival and heritage collections at Crosby Library.

    Spherical White with Diamond can be understood as site-specific sound art presented in public space. But as observed by LaBelle, "paradoxically the historicization of sound

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[116] All works within the series, instigated as part of EU's Year of Cultural Heritage and produced and curated by Agusta Thorarinsdottir and Andy Brydon, were to deal with archives. Examples of engagement with archives and institutions included uncovering shared LGBTQI+ stories and histories between Iceland and the UK (Jez Dolan); a project that set the spotlight on the life and culture of offshore oil workers in Denmark (Marie Von Krogh); a work that engaged with the Norwegian Institute of Recorded Sound (David Henckel); and a visual and audio work that built on the stories and myths that connect Hull and Grimsby in the UK to Iceland (Dodda Maggý).

art and the historicization of site-specific and contextual practice remain separate" (2015, p. xiv). This happens despite the development of site-specific methods within sound art coinciding with the emergence of such an approach within performance and installation art, which entailed "a move away from objects toward environments, from a single object of attention and towards a multiplicity of viewpoints, from the body toward others" (p. xiv).

LaBelle sought to remedy this through the publication *Background Noise: Perspective on Sound Art* (2015), devoted to analysis of sound-art works, whose aim was in part "to recognize how sound art is built around the very notion of context and location" (p. xiv). Amongst examples in the book is Max Neuhaus' continuously droning *Times Square*, whose sound rises from the subway tunnel at a designated spot in New York City. The work sets up a situation which "raises aurality as an issue bound to the specifics of place and location" (p. 157). Another approach is presented in Achim Wollscheid's *Flexible Response*, a permanent installation on a building in Hattersheim, Germany that entails the activation of a light grid through live-processing of sound both inside and outside of the building. Through this, as stated by Rafael Lozano-Hemmer, the architectural construct is turned into a 'relational architecture' (Lozano-Hemmer, 2000 in LaBelle, 2015, p. 258).

Based on the above, and as pointed out by Stjerna, we see how site-specificity is not a 'fixed form' (2018).[117] Rather, it may be seen as an approach grounded in a poetics of relationality. Therein, a site may condition what artistic methods are applicable. As they unfold, such a process "must constantly be negotiated and reinvented, experimented with, and tested out, in direct conjunction with each specific site and its material and ideological circumstances" (p. 18).

This certainly held true for the creation of *Spherical White with Diamond*. Logistics related to infrastructure were, for example, essential to the process and surfaced at different moments through discussions regarding number of staff, possibility of volunteers, access and requirements of accessibility, electricity (or lack thereof), and possibilities for the overnight dismantling of gear. Importantly, the ethics of such an endeavour were essential to the planning, for the work needed to unfold as an ephemeral event that would not leave further marks onsite, other than footsteps and sound vibrations, at a level of 'care'.

Instrumental to the overall process were two residencies onsite, facilitated by Maria Brewster. Importantly, my first visit should be seen as the beginning of the process of 'permission asking' (see section 9.2.1), a process of gaining agency to work with the site and its many entities. This was done through experiential learning, as I walked, listened,

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[117] For further reading on site-specific work outside of the sonic domain, see Kwon (2004) and Kaye (2006).

recorded, and created wind-spurred scores.[118] Amongst recordings were miniature activations of shells, hydrophone recordings of the ocean, and a recording from beneath the Marram grass on the sand dunes. Such a listening session underlined how any sound on the surface travels to the space below, a space to which I would later dedicate an entire sound installation. I also recorded the sound of birds on the Sefton coast, and later the sound of a vessel's fog signals on the bay, from the site of my dwelling in Crosby. The latter had a direct relation to the navigational maps that I would later use as a foundation in one of the sound works. Similarly, I engaged in analytical listening to try and fathom what sounds and entities would become co-creators when the work would be installed onsite.

There is a vast difference between the beach site and woodland side of the sand dunes, but also dependent of whether the ocean is in a state of flow or ebb. The very same traversing practice was also steered at learning what entities were at play, ranging from biotic entities such as plants to wind direction and shifting sands. Also, I considered how humans engage with the site in their everyday lives. The very same walks informed me what would be doable or recommendable in terms of onsite engagement within an installation from a topographical perspective.

Other activity entailed the gathering of material for later activations. Material included the shells of razor clams but also bits of tobacco waste and a few more shells. Additionally, I embarked on creating a site-specific score within my *strengur* series that employs ink, used gut strings, and architectural tracing paper in relation to the play of wind (for more reading on the *strengur* series, see section 10.3.1). Additionally, I shot photographs as material for continued sensorial attuning away from site (see Figure 28).

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[118] The site-specific nature of the work entailed that field-recording material, where I was not engaged in activations, was only to be used as processed within the work, or as material to further think about the site in my home studio. An exception was the recording of Marram grass underground, a sound that is not audible to the visitor's ear onsite but was made accessible thanks to the intentionality of contact microphones. I was not interested in conceptual approaches such as the 'translocation' of sound from one site to another within NT Formby, as found in the work of Bill Fontana where he has translocated sounds between cities (Cologne and Kyoto) or within a city (Stockholm). Nor was I interested in the transposition of sound from a site into the same location (for more on the method of transposition, see Hernandez, 2020).

Figure 28
Photograph shot on the sand dunes of NT Formby.

Further connectivity was facilitated through conversations with Brewster, as well as through navigating the site with Sally Orritt and other NT staff who shared its history. Through them, I learned about how the site, due to its sandy soil, was used by locals for growing asparagus, but also how the sand-dune cliffs were used as a dumping site for waste from the tobacco industry located nearby. The dump is easily visible to this day in the dark sedimentation caused by tobacco leaves, as well as in the dark brown boulders that break off and lie scattered on the beach. Orritt also provided insight into the wildlife that makes the area its home, ranging from the red squirrel to natterjack toads and sand lizards.

They also took me to the location of prehistoric remains, where I got to experience human and animal imprints in the beach's silt, dating back around 8,500 years. It was a powerful sensation, one where I could 'feel' or almost 'grasp' time as if there was only a thin membrane between me and the people or animals that had left those marks. This opened further conversation about Formby from a deep-time geological perspective, while our next stop, on top of the shifting sand dunes, brought up the weather on local and global scales. Similarly, we headed to the former lifeboat station, established in the 18th century to aid wayfarers that got into peril thanks to the ever-shifting sandbanks on the Sefton coast.

The learning extended to the Crosby Library, where I searched for local literature, alongside papers and books on climatology and meteorology reports to books on the coastal line and its geological features. I had also asked in advance to see old maps of

Liverpool Bay, a visual material that bears witness to humans' wayfaring in an environment. Additionally, I inquired about possible mythologies and tales related to the coastal line and its surroundings. This was done to try and get a deeper understanding of people's relations, and even spiritual bond, to Formby through the ages.

The first residency was conducted without the pressure of coming up with a form for the work. In the wake of my first visit, I came up with sketches for an event of encounters. These sketches were brought into my next visit, which included possible location-scouting for the work, together with Andy Brydon and Agusta Thorarinsdottir from Curated Place, Brewster, and Orritt from NT Formby. Following the mapping of a possible trail in combination with further discussions on logistics detailed earlier in this section, I settled on an idea for the work where visitors would be greeted at the outset with a map that would lead them into various sensorial/listening contexts. In addition to *Þytur*, these included *Spherical White with Diamond* and *The Shadowy Space Beneath*.

The mono-channel piece *Spherical White with Diamond* is a poetic transformation of a text found within one of the 19th-century Marine Survey maps of Liverpool Bay found in the Crosby Library. The maps, aside from being breath-taking artefacts, contain information about the depth of the sandbanks of the bay, intended to facilitate navigation as ships arrived and exited the Liverpool Bay, a history of transportation that is interlinked with UK's colonial past. At the same time, the map is redundant today due to digitisation but also the ongoing alteration of sedimentation within the bay, alongside alteration of navigational signs, etc. As I assemble the words from the map through a sensorial reading/writing, I perform the ongoing alteration that takes place on the site as erosion and sedimentation. The text, recorded by Jez Dolan, was to be played from a pole at high tide (see Figure 29). This would create a sense of 'difference', a possibility to experience the site anew as people are usually drawn to the beach during times of ebb. In addition, the ocean, with its sounds, would co-create the piece as this was to be the only track consisting of no other sounds than a human voice, reciting over the entity whose rise is starting to threaten the Sefton coast.

Figure 29
Photograph from the site intended for *Spherical White with Diamond.*

The Shadowy Space Beneath is a stereo work which builds on texts from Jane Sprackland's *Strands* (2013), a book which grew out of her engagement with the dune system and its beaches over a period of twenty years. The work combines readings by David Dolan Martin, Ellie Paskall, and Alicia Prowse in a hörspiel-like work designed for people to linger and even sit down while listening on the top of the sand dunes (see Figure 30). Through the work, I set up three different phenomenological situations or 'narratives' (I, we, you) based on Sprackland's text,[119] which evolve around everyday

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[119] I am grateful to Sprackland for her trust and generosity as she allowed me to alter her text slightly to accommodate such a phenomenologically driven score creation.

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relations to the site. All situations are directly related to experiences I had while in Formby—namely, standing next to 8,500-year-old human and animal prints which are preserved in the silt on the beach; the encounter with biotic beings that call the beach and dunes their home; and encounters with material onsite, resulting from prior utilitarian policies that allowed for the dumping of tobacco waste. I combined this with Sprackland's text on coal scatterings that are the remains from a prehistoric forest about which I had read in one of the books at the Crosby Library. All readings were sent into an encounter with processed sounds relating to sand activations, i.e., the very same material with which the listener would be surrounded during their listening. Through this, the processed sand performances 'morphed' and dictated the pace of human voices.

Figure 30
Photograph from the site intended for *The Shadowy Space Beneath.*

As can be seen from the above, curatorial reflexivity led to a compositional method linked to movement of phenomena onsite—the possibility of transmogrification from 'morphing' sand and dunes, 'erosion' linked to rising sea levels, and 'sedimentary changes'. The role of the wind in the shaping of site became central to the third work, *Þytur*—a sound installation of nine independent mono-channels, intended to be set in a woodland area on the inland side of the dunes (see Figure 31).

Figure 31
Photograph from the site intended for *Þytur*.

The word 'þytur' is Icelandic for the whistling or rustling brough forth through wind and is a word which describes the sonification that occurs as wind touches a surface. My decision to work with such a phenomenon stemmed from my observation of how

wind is constantly 'at play' in the sites' formations, as wind moves and blows sand into the dunes and shifts them inland gradually. By using an Icelandic word, I underline how atmosphere, understood as wind, knows no national borders and how such a site's local becoming is one of eco-systemic relations that may be affected by global alterations of climate. The decision to create a sound installation, set to work as a rustle amongst trees, was triggered by my experience of visiting a site where sand dunes are in the process of drowning an old pine forest (see Figure 32).

Figure 32
Pines forest area claimed by sand at National Trust Formby.

As seen in the photograph above, the sand dunes continue to move inland—a process which the NT Formby rangers are to 'safeguard'. I found it a fascinating thought—to safeguard destruction. It showed the complex ethical grounds they are having to tread as they take care of a site where sand dunes may provide restorative outdoor moments, while these sand dunes cease to protect the coastal lines and become entities that can threaten humans' and other biotic entities' ways of being. At the same time, it cannot be thought of without its eco-systemic entanglement, as I learned through my discussions with the NT rangers. Such processes are being accelerated thanks to storms becoming more ferocious onsite, a phenomenon emerging from human involvement. I decided to take this as an impetus to position a work in a forest area on the dunes,

but also to create a work that may be seen as a response to such eco-systemic complexities.

My encounter with the pine trees prompted me to think of the world tree Yggdrasill from the Nordic mythology. Within such a belief system, Yggdrasill is at the centre of the world; its roots extend in the direction of three wells. One well is Urðabrunnur where the three norns of fate reside—namely Urður (representing the past), Verðandi (representing the present), and Skuld (representing the future). Their task is to nourish the tree by bringing it water and white mud/loam while they safeguard the threads or fates of humans, which they also have the power to affect; by cutting a thread, the norns can end a life. It is a mythology that I learned at a young age growing up in Iceland, but I had also been busy looking into the history of the site and discovered that Formby (with 'by', referring to the Danish word village) is a reminder of the Vikings' invasion and settlement in this place. Essentially, this gave me the idea to introduce three female voices into the work—Jantar, Rawlings, and myself.

The vocal artists engage in improvisation over material that grew out of my modulation of Rawlings' work "Hocket Barnacles",[120] which is part of Rawlings' book of scores, *Sound of Mull* (2019). "Hocket Barnacles" is to be performed in relation to a site, using the medieval hocket technique. According to Rawlings' instructions, the utterances should "interdepend sound and semantics within the soundscapes where they are uttered" (p. 70). Due to the logistics where we did not all have the possibility to experience the site, I created my own version of the work and invited Rawlings and Jantar to improvise over a list of words that I brought forth (see Figure 33).

beneath
rivulets
drop
fog
mist
sorrow
drown
beneath
shadowy
trace
sun
starfish
trace

---

[120] Rawlings, Jantar, and I had performed "Hocket Barnacles" some months earlier at the Sea Loft in Kinghorn, Scotland.

loss
trace
tidal
and
ebb
and
forestbed
anda

Figure 33
Excerpt from the "Hocket Barnacles" text material, created for *Þytur*.

The improvisations were, in return, included in a larger web of nine independent tracks envisioned as 'sonic responses' to the site. The responses grew out of activations with various materials ranging from clam shells and sand to found plastic. Responses also arose through field recordings and their processing, including sonification, as well as improvisation to a *strengur* score created onsite. This was done with a harmonium, an 'air'-driven instrument, and through whistling, a reference to the whistling effect 'þytur' can produce. Harmonium and whistling were selected as ways to engage with air, the very element that wind moves. My ongoing thinking about eco-systemic interconnectedness led me to work with two other strung wooden instruments—a nod towards the woodland onsite but also a thinking about the word 'string' which, in my language can also refer to a wind direction. I worked with the Icelandic drone zither, but also my violin, which I used to improvise over the *strengur* score. Other sounds, from my own archive, linked to the site's entangled global eco-systemic state.

It is through the above that we can see how the artistic method behind the creation of *Spherical White with Diamond* is grounded in a curatorial attuning that thinks through and balances relations and interconnections. It demands that I take on the roles of cartographer, producer, meteorologist, ethnographer, writer, folklorist, dreamer, historian, biologist, botanist, acoustic ecologist, flaneur, geologist, dramaturg, graphic designer, and director. This is all done to bring forth an event where the visitor is invited to step into a work where they are free to navigate, sense, and make-sense at their own leisure. For humans, the duration of the work was designed to be according to the time people took to move and sense. But other biotic entities such as Marram grass and worms were foreseen to listen and capture vibrations as well, making me, as detailed earlier, take them into account in terms of what work I would create and how it would be installed. Essentially, it is a work that is co-created onsite by the movement of light, sounds, and various other biotic and abiotic entities alongside the rising tide.

This curatorial work offers an opportunity for what Norman (2018) has described as 'tuning'. It is a word which "has multiple practical and metaphorical meanings. We tune in and out, we tune machines as well as instruments, and fine-tune to adapt ourselves and our systems" (p. 203). It is here that we see how the word may have affinity to processes inherent to attunement, a concept to which I have repeatedly referred in this thesis and which may both denote "a capacity to be affected by or calibrated by our environment" (Brigstocke & Noorani, 2016, p. 3) as well as something that may be more akin to empathy which "requires attentiveness to contact zones, to modes of encounter and translation" (p. 3). Norman's formulation has, however, more of an 'active' potential inscribed in its meaning, as it aligns with how the word (a modulation of the word 'tone') has been used within music since the 15th century. Through her writing on our transformed instrumental practices and increasingly technologised environments, Norman differentiates between 'normative or monopolistic tuning' and tuning aimed at 'opening up'. The former "flattens and inhibits horizons of possibility" while "opening up to discrepant, the superfluous and the deviant (…) extends our experiential and cognitive bandwidth" (2018, p. 208). It brings to mind another analytical concept that I have applied throughout this thesis— Verbeek's constructed intentionality in relation to technologies, echoed in Norman's claim that "(b)y artfully separating and joining things, we can synthesise novel images of things that (…) cannot be directly received from the senses" (p. 207).

Through these perspectives, *Spherical White with Diamond* can be seen as a work that tunes into a site, through technologies, to ephemerally alter it for a short period of time. In doing so, I turn my tuning abilities towards testimonies of locals and their relations to site, tune into the site's multi-entity and its eco-systemic relations, and even hack a map and rearrange it into poetry to push at our constant wish to govern our environments. This map had previously been made redundant by the ever-shifting sand beds. All the while, three voices spin and create threads in a myriad of directions from within a larger web that is ever-altering, never the same, constantly shifting and morphing in its unstable tunings that align and disalign. Importantly, the work as a whole is never to be the same, constantly altered thanks to its co-constitutions by the movements of entities onsite. It brings to mind Haraway's words that "(i)t matters which stories tell stories" (2016, p. 101); similarly so, it matters which tunings tune tunings.

As fate would have it, the Covid-19 pandemic put a stopper to the work's premiere, for UK shut down one week before its realisation. I have therefore not been able to analyse its effect onsite. However, some months into the pandemic when a small window opened for public performance in Sweden, I was given permission by the commissioners to air *Pytur* at IAC during Gallery Night in Malmö. The transferral of the work into a Nonsite, within institutional space, presented the opportunity to realise

an idea that I had carried with me: to ask composer Kent Olofsson to respond to one of my installations through the composition of a solo work for violin. This process is the focus of the following section.

10.1.1 *Violin with Þytur*

From the outset, Olofsson's idea was to base *Violin with Þytur* on a traversing strategy, aimed to invite me to engage with nine graphic scores situated in as many positions within the installation. This idea grew out of our discussions regarding *Þytur*'s initial role onsite, where it was created for experiential wayfaring and tuning. That very same element can be seen to be essential to my ecological sound art practice at large, where traversing is a way to learn and create relations while it can simultaneously work as an experiential mapping. This also affected how the work was exhibited at IAC, for *Þytur* did not find its way into one of IAC's halls but was installed through an irregular placement of speakers in and outside of its café area. This allowed the sound to bleed or become porous, contrary to the usually 'contained' intentions in multi-channel performances in concert settings. This strategy was grounded in ideas around onsite 'experiential exposure' or 'encounter'. To further work with the element of 'difference' for which I had aimed onsite, the speakers were placed in positions that were not easily visible (up on beams and behind panels and doors).

Olofsson's habitual ways of working with electroacoustic music has been forged through a career of thirty-five years.[121] In an interview, he describes his method as built on "listening in on the spectral content of the sounds, to find sonic links between the instrument and the electroacoustic material. A reciprocal process of going back and forth between writing for the instrument and shaping the sound of the pre-recorded" (Olofsson, personal communication, March 11, 2023). This time around, the process differed as the electroacoustic material was by another composer, and of a site-respondent nature. *Þytur* produced a feeling of 'difference', as electroacoustic materials had on prior occasions "been more of extensions of the sound of the instrument. This was more like composing within a landscape" (Olofsson, personal communication, March 11, 2023).[122]

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[121] His approach to composing for instrument and electronics links to a tradition that can be traced back to Stockhausen's *Kontakte* (1959-60), realised at the Westdeutscher Rundfunk electronic-music studio in Cologne, Germany. The work exists in two versions, the latter being created for tape, piano, and percussion—a composition which started a whole tradition of works for instrument and electronic sound.

[122] The piece certainly holds a similarity with Franzson's *An Urban Archive as an English Garden* in chapter 7.

When it came to the notation, he opted for graphical scores (see Figure 34), a method through which he sought "to create a music that would extend beyond what I could imagine with my inner hearing. To use my visual imagination to open up for a music yet unheard. Drawing, shaping fanciful pages of sheet music where the music was felt through the visual" (Olofsson, personal communication, March 11, 2023). Such transcreation, resulted in scores where one encounters playing instructions, poetry, classical Italian music terms, precise musical notation that dissolves into signs, lines, symbols, and words. Through this, the score both works as a technology for me to perform within the installation, but also as visual content for the visitors, who are free to circulate within the environment during the performance.
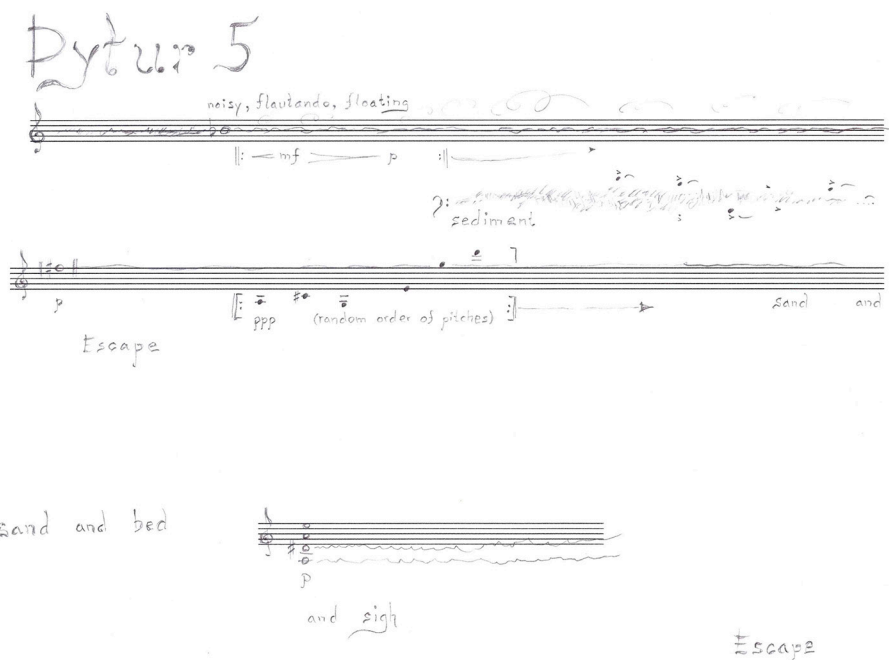
Figure 34
Score 5 from Olofsson's *Violin with Þytur.*

The nine parts were positioned in different spots by us, taped onto walls or put on music stands. An explicit performance strategy on my behalf is that I walk into the installation like a visitor, and then commence when the time feels right. Not everyone needs to have discovered that the work has started; rather, the sound of my violin as it spreads into the speakers announces its commencement and invites people to listen. The scores themselves are 'open' in that they do not contain any time restrictions and I am also free to perform them in any successive order.

For the premiere, I had, during the run-through, decided where to start and end, with my navigation in between being geared towards an irregularity, steered away from circular movement. This again acknowledged my intention that things would unfold in-the-moment, i.e., I would enter this knowing that various forces would impact the performance. To explain: on the score page, I am met with various signs. During the performance, I may embark on playing what greets me in the score but, through this and thanks to the scores' configuration with the tracks, my playing may draw my attention to sounds within the installation. Similarly, a sound from within the installation may affect how I approach my performance; it may invite me to alter my timbre, pace, pitch, to start whistling, or let it affect where I would like to proceed. At the same time, my sound signal is amplified into most speakers and, through such a configuration, I come to expand through space and alter or reconfigure its sound, which may also produce an effect that feeds back into my playing. But the eco-systemic relations do not end there, for, at the same time, my performance is affected by the visitors, their positioning and movements, the meditative approach invited through slightly dimmed lighting, the resonance and feeling the work produces, and the feel of navigating the architectural space's layout. This produces another phenomenon within the 'scale' of affordances, or atmosphere, that seems "to fill the space with a certain tone or feeling like a haze" (Böhme, 1993, p. 118), and whose effect I will return to later in this section.

It is through the above that we may discern further differences in working with spatialised electronics, since *Violin with Pytur* also introduces the co-creative element of audience movements, as well as haecceities such as light, atmosphere, and architectural layout. At the same time, the composition comes to transform the experience 'of' the installation. During Gallery Night (which lasts a weekend from morning until evening), the work was displayed as in a museum setting, where a sound installation may exist parallel to visual works. As such, the culture is very much one of 'passing through', during which attentive listening may last for a few moments, before people shift their focus to a visual work.[123] During those periods, they may perceive the work through an oscillation between what Truax (1984) defines as 'listening in readiness', where one is ready to receive information while at the same time one's listening focus is directed elsewhere, and that of 'background listening' which entails an awareness of the sound in the sense that the listener can recall it afterwards if needed.

Furthermore, there were other installations in the adjacent spaces whose sound would bleed into and mingle with *Pytur*. The *Violin with Pytur* performance event, held

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[123] This being written, sound installations can certainly be given a 'room of their own' within a museum setting. Also, as sounds travels and permeates a space, sound art that is not confined to headphone listening comes also to impact the experience of all other work displayed as it shapes the ambience of the exhibiting room.

in the evening, stood in direct contrast to this as it came to promote the element of temporal 'duration' in combination with its spatial nature. As unpacked earlier, it is, however, a temporality that is subject to the situation and the performance unfolding over time.[124] In this way, Olofsson's composition does not transform the installation into a 'new work' but rather transforms it, or reconfigures it, into a new sonic experience. Seen from this angle, the composition comes to augment the pedestrian element and the attitude of navigation with 'curious ears' from onsite—elements that may become downplayed in the regular museum-like display.

My immediate reaction after the event was that I had rarely felt such synergy during a performance, an experience perhaps made more intense as it was the first time that I performed after many months of public restrictions during the Covid-19 pandemic. The experience of moving and being close to other bodies in an environment had acquired new dimensions. Throughout this profound and moving experience, I had a sense of 'shared listening' or 'shared attunement'.

Similarly, Olofsson's observation of the event, including my slowness of movement between each waymarking station and the overall 'common focus' or 'common listening experience', prompted him to liken my performance to having a ritualistic—bordering on sacred—aura. To induce such tone or mood was never part of his compositional method; it came about through the event. Certainly, the act of repetition can evoke a sense of ritual, as it formed through an ongoing invitation to listen and attend from various positions, combined with the slow pace of movement. Similarly, the words uttered make a link to other entities on this planet, which might have produced a holistic eco-systemic feeling. However, the sensorial experience cannot be separated either from other sounds in the room (my performance included), the communal listening, the choice of reverb, the lighting, the choice of speaker layout, or the care listeners showed as they swayed their bodies to allow me to pass (see Figure 35). Atmosphere can certainly be complex to unpack and, interestingly enough, the photographic documentation from the event does not correspond to the sensations it evoked, despite technologies holding the possibility of tracing sensorial ethnographies (Pink, 2015).

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[124] If it had been a composition for stage, it would have entailed a different 'temporality', i.e., shifted it towards a more fixed time, and perhaps existing in the company of other works.

Figure 35
A photograph from the premiere of *Violin with Þytur.*

Through his philosophically driven analysis of atmospheres, Böhme claims that they can be 'staged' through the 'making'. Therein, atmospheres

> are, then, not just something one feels but something that can be generated deliberately by specific, indeed material constellations. The paradigm here is the art of scenography, where stage designers habitually produce a climate by arranging things, spatial constellations, light and sound in specific ways. As a result, a space of a particular basic mood arises on stage, within which the drama can then unfold. (2017, p. 119)

For the event, we had certainly worked with elements that fall within 'staging': specific lighting and speaker layout.[125] But the feeling-of-performance to which I refer above did not arise until the performance event itself. Here, however, as I performed Olofsson's work, I can be seen to be working towards a certain listening mode, through the slowness of movements, that can perhaps best be described as 'attunement' to everything that was unfolding in the moment.

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[125] Earlier in this thesis, I have shown how the design of seating and lighting is, within WCM's concert-hall culture, used to serve its listening culture.

According to Böhme, attunement possesses "mood qualities. Felt space is the modulation or articulation of bodily sensing itself. To be sure, this modulation or articulation is caused by factors that need to be identified" (2017, p. 92). Therein, he proposes to look at such factors as 'generators'. Referring to my earlier analysis, then such generators may link to light, human movements, the narrowness of the paths I can take within the architectural space, diffusion of the installation in space, and the way my audio signal spreads in its amplified state. However, instrumental to one's bodily attunement or sensing is what Böhme describes as 'disposition', which is tricky to unpack. As I have shown earlier, one's disposition may be affected by habitual engagement with technology. Such is the case with my interest in the microscopic when it comes to field recording and photography, an interest that can be seen to stand in co-relation to the aesthetics offered by my Hopf violin.[126] My disposition is discernible in *Pytur*, alongside my practice of experientially mapping a site through walking. Similarly, Olofsson's detailed sonic response—which again is linked to his thirty-five years of attentive and creative listening—opens a performance that aligns with such a disposition. What it generates is something that we tried to capture later with our phrases of shared listening and shared attunement.

From the above, we see how the Nonsite creates experimental conditions; it brings forth a laboratory, which enables a process akin to what Spatz describes as "redrawing and redrawing a line between the known and the unknown (…) to a different location in epistemic space" (2020, p. 36). Through this, the sound artist/composer becomes a performer within another's composition and reconfigures her own work. Similarly, as witnessed by Olofsson, the Nonsite nature of the work entailed an alteration to his usual way of working with electroacoustic material. Within Spatz' DCTV method (see 2.4), participants would swap roles, alternating between director and practitioner. This process entails that 'roles' are put "into a more complex and fragmentary circulation" (Spatz, 2020, p. 86). The aim of Spatz's research project was to push at the institutionally cemented power positions within audiovisual thinking. Within this micro-lab, we did not alternate roles. Rather, the aim was to 'unleash' the installation with all its intentionality to see what aural thinking it would produce. In the next part of this chapter, I will share another micro-lab where the process took the form of circulating roles.

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[126] I see the analysis of what atmosphere we bring forth, and what atmospheres are produced in-the-making, a highly relevant research topic for WCM. It may certainly surface, without being addressed as such. An example that comes to mind is Small's discomfort at concert-hall events, produced by their social order. Similarly, the discussion may expand towards asking what atmospheres, or ambience, is present within the field's education where certain subjects may feel excluded—for example, within digitally driven music creation.

10.2 *strengur*

The album project *strengur* is the result of a collaborative project with Franzson, Lương Huệ Trinh, Olofsson, and Tally. Sigurðsson at Greenhouse Studios oversaw final mix and mastering. The project differentiates itself from the *Raindamage* album project, presented in chapter 7, in that it presents not a collective album project, nor a singular focus on exploring the role of post-production. Rather, the project invited a series of self-producing artists to embody both the roles of performers and composers. The album takes its title from my score *strengur*, which worked as a catalyst for the design of the micro-lab. This necessitates an initial outline of the creation of the score.

10.2.1 The creation of the score

> I am sitting on an eroded concrete overlook. It is a sunny day. The air is nippy so the wind coming over the Öresund strait feels like gjóla (breeze, slight gust of wind). I have gathered stones and twigs and pinned down transparent sketching paper on top of the concrete. I pull out my old gut strings, they show me the wind direction and I tie one to a nearby railing, dip it in red ink and let go. The gjóla starts to play with the string, sending it across the paper. I sit on the cold ground and watch. Occasionally, I swap out a string or a piece of paper, or re-dip the string in the inkpot. As the gjóla continues, red shapes appear. Patterns from the surface under the tracing paper emerge, made by stones encapsulated in the coarse cement, bird droppings and the lichen that lives on it. (Stefánsdóttir, 2022)

The above text is taken from the booklet of the album *strengur*. I had long been contemplating the possibility of including the organic matter of my used gut strings as part of my environmental performance activity. In fact, I have the habit of not throwing them out when I change strings and so I have a collection of strings that bear the marks of the friction that occurs during playing, where bow and fingers wear them down. In 2019, I decided to give it a go, as I was scheduled for a day of work and sharing of practices with other ecological sound artists as part of an Interference symposium in Malmö. We chose to head out to Klagshamn peninsula outside of the city, a site of landfill that stretches into the Öresund strait (see Figure 36). As I start tracing its foreshore, for a site where I can work, I discover that it is covered with an alarming pink hue decorated with the markings of bird feet. Even some of the seaweed has taken on this alarming colour. I feel unsafe at first, thinking it is spillage from a nearby industry, but then I realise it is yet another sign of climate change, a red tide caused by algae bloom. I follow its trail and eventually come to a weather-battered cement

platform created for bird-watching which I deem as a good site to launch into the performance, described in the text above.

The process leads to three drawings. The patterns from the cement beneath the tracing paper give me the idea to complement this with photographs from other foreshores (see Figure 37). As such, they come to act as a substitute for the affective patterns onsite while, at the same time, they are also sensorial photographs that trace the forces at play in foreshores, ranging from silt, stones, and sand to the impact of light, wind, and wave movements.

Figure 37
Second movement of *strengur*.

A few days later, Östersjö, Nguyễn, Suzuki, and I premiere *strengur*. We keep the length of movements in line with the time it took the wind, gut strings, and ink to create each of the three graphic scores—a directive giving entities further agency in the event. All performers were at Klagshamn during the outing and, as part of the performance, Nguyễn allows memories of the onsite play of her daughter and her friend inform her improvisation.

The work, like so many experimental scores, can also exist as visual art.[127] Red traces were brought forth through 'gjóla' from the northwest, resting on the background of a shallow stony seabed of the foreshore, black granular sand, as well as silty patterns that appeared during a moment of ebb on foreshores. A year later, *strengur* will be the catalyst for a new album project.

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[127] The history of graphic notation, a departure from traditional notation, can be traced back to the experimental scene in New York, where Morton Feldman and Earle Browne created some of the first works. An interesting publication of contemporary experimental scores can be found in the newly launched *Graphéme—a publication for experimental musical scores* (2021), founded by Ute Wassermann, Tony Buck, Mazen Kerbaj, Magda Mayas, and Racha Gharbieh.

10.2.2 The recording project *strengur*

The initial idea behind the *strengur* album was to ask composers Franzson, Lương, Olofsson, and Tally—with whom I had collaborated as performer—if they were willing to enter a new format of collaboration, one where they would be performers. This would entail performing and visualizing a performance of *strengur* created by gut strings—the very same technology they had considered as they composed written solo works for me. For this, the score was expanded with some further instructions—varying choices or modules regarding the number of movements and length of performance (for further see Appendix A). In addition, as the initial plan was to stream the performances, the tracks were to include a visual component that could either be a documentation of the live moment or visuals for which choice of media was free. Here it should be underlined that I knew that all composers are also performers and I had already collaborated with Lương through improvisation. The invitation can be seen as an activation of collaborative relationships, but also as modulation of the method of 'material exchange', which I had explored through some of the collaborations, i.e., the contribution of field recordings (*violin fragments* by Franzson) as well as extended techniques recorded with my field-recording setup inside of my violin (*In the Bottomless Hollow of the Winter Sky* by Tally).

As such, the micro-lab aligns with other laboratory projects that have sought to tease out an enhanced understanding when it comes to work in the arts through designing situations that may upend positions of habit. Such was the case in Spatz's micro-lab where all participants alternated between the roles of performer and director when filming (2020). A different lab, which sought to challenge the habits of its participants, is found in the work of the Vietnamese/Swedish ensemble The Six Tones, in which each member prioritised mutual learning across their respective musical cultures, above their embodied traditions. In the early years of their work, this entailed longer periods of uncertainty in their roles (in particular, how to negotiate the relation between the two female Vietnamese members and the two male Swedish musicians) as well a sense of navigating musical collaboration without a firm aesthetic ground. Instead, they began to understand their work as grounded in an ethics of hospitality (Nguyen & Östersjö, 2019). Their continued work has existed in a liminal space whose focus is essentially to create the right fertile conditions (openness and trust) for meaningful intercultural collaboration (for further reading on the work of The Six Tones and ethics, see Cobussen, 2019).

Another interesting approach is found in interdisciplinary collaborations between music and theatre instigated by Olofsson and Jörgen Dahlqvist of Teatr Weimar. Such work led them to develop the conceptual tool of 'shared space', which is again divided into the subcategories of 'shared physical space' and 'shared communicative space'

(Dahlqvist & Olofsson, 2017). The latter incorporates an audience perspective, while the former "is about understanding the conditions a space offers: the possibilities, challenges and limitations" (Olofsson, 2018, p. 200). The work of gaining such an understanding is tackled by all contributors within the production, often resulting in floating roles that, in return, may push at institutionally established ownership of works.

Through the above, one may detect a common thread which entails creating situations of intermediary positions, set to upend familiar power structures. Within my own work, I had achieved this through the *He(a)r* studio session with Rawlings (see chapter 7) and the *Tapeshavet* activations (see chapter 9). Here, however, the aim was not to bring all participants into engagement within a shared space; rather, the aim was to design a micro-lab where the self-producing artists would engage in both roles of performer and composer. This came, however, to undergo further alterations.

The curation of the album was conducted through conversations with Carrier Records, a New York City artist-owned label of which Franzson is one of the instigators. The plan was that the work should translate into a 'side A and B', each representing one role. As the planning progressed, we started eying the possibility of adding a third work to the equation, a composition by all composers that would grow out of the preceding process of solo composition and improvisation.

Such an approach is rare in the usual 'compilation'- or 'portrait'-driven album formats of contemporary music. Within the first format, an ensemble records prior existing works by a series of composers and in the second, one or more performers/ensembles record works by one composer. But through the initial decision to send roles floating we start to probe what is meaningful. The focus lands on a processual journey rather than the trajectory of creating an album that would deliver to already-set standards. Certainly, it is not unknown for an album of acoustic music to have electronic interludes, but then it usually adheres to the aforementioned album formats–one example being Nordic Affect's *He(a)r* whose works had been created for concert-hall performances.

strengur cut its ties to such an endeavour through the introduction of a third work. The album would rather become a platform for a laboratory. Such curation was made possible thanks to the multistable variations offered by digital platforms—our platform of release—for, through a digital approach, there is nothing to say that an album needs to fall within the length offered by physical products which allow for seventy-four minutes on a CD and around twenty-two minutes on each side of an LP. In WCM, the physical format is usually the standard, and the digital release the exception. The decision to only release digitally made it possible to include the music videos, created as part of the *strengur* improvisations, in the Bandcamp release. Similarly, it could be enjoyed in various ways, either as one long album (which turned out to be two hours and twenty minutes),

but also as five short albums, each representing one collaborative relationship.[128] Consequently, the upload on Bandcamp encompassed six different formats.

It is far from a new approach, for what constitutes an album is renegotiated time and again. A recent example is Nyokabi Kariuki's album *Feeling Body* (2023), a sound diary of experiences with long COVID. Similarly, Espen Sommer Eide produced the LP *The Waves* (2019), which works as a 'spatial' album recorded at the Marres House for Contemporary Culture in Maastricht, Netherlands while, at the same time, serving as playback material for a spatial installation at the very same site.

As part of the production, I oversaw the recording and editing of my solo violin performances, apart from "violin fragments" whose nature—a performance with an AI—required Franzson to conduct the editing, albeit based on our listening and discussion of takes. It is beyond the scope of this chapter to analyse all albums, but I would like to highlight a few notable points. All the solo works included electronics and offer interesting insights into the many forms the final mix of electroacoustic music may take. Hopping swiftly between the first tracks of each of the five albums, one will encounter a violin part that is EQ'd and spatialised in various ways, underlining its configuration with other sounds. In Lương's "Departure of a Leaf" and my own "Hölluþula", I recorded vocal parts and the violin separately. In the final mix, it would have been possible to position the stems quite close within the spatial frame; however, Sigurðsson positioned them in separate spaces.

It is interesting to compare this to my recording a few years earlier of *2 Circles* by Hildur Guðnadóttir. The work is written for violin and voice, without any electronics. It evolves for a large part around continuous vocal harmonising with double stops in the violin as it explores the possibilities and fragility of the violinist as 'sound giver'. This unity translates into that I had to record violin and voice at the same time, consequently the spatialisation imitates real life.

In "Hölluþula", however, what was seen meaningful was not necessarily to imitate a concert situation; rather, the material was sent into the 'composed space' of DAW. As a result, my voice in "Hölluþula" aligns with other voices, although differentiation is made between which stems belong to the original fixed media, and which belong to the living performer. In the end passage, my role as vocalist becomes almost more forefronted than the violin, which is positioned more to the right and in a space that is situated farther back. Similarly, my voice in Lương's "Departure of a Leaf" is positioned in front of my violin performance.

It is also worth sharing the process of transforming *Violin with Þytur*, a solo work composed for a nine mono-channel installation, into an album version. To do this, I

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[128] Certainly, *strengur*—as all music today—can be enjoyed as single tracks within private or official playlists.

created a stereo track out of the nine mono-channels of *Þytur*. To transfer the work into such a format called for a certain reduction of sounds as well as their spatialisation within a stereo field, voices included. The transfer to this format opened new possibilities for the text material. Onsite, I had felt that my role of visiting artist entailed that all text material needed to be in English. Here, on the other hand, the ethics of onsite production did not have such a stronghold, and so Jantar and I became free to improvise in languages of our own choosing: to allow our bodies and experiences to have a larger 'say' in the improvisations. This resulted in that I re-recorded my part in Icelandic and Jantar, who has a multilingual background, embarked on a version that mixes languages. As a nod to the live event, Olofsson suggested that we would use the order of scores and the length of the performance as it unfolded during its premiere, and which had been documented, as a grid for the album version. Certainly, length and order were slightly altered as my editing progressed, but this can still be seen as an example of how the 'double cut', or the tracing of research, can also serve as artistic material.

Another point worth highlighting is how Franzson, in his live performance of "strengur", chose to give the audio of the video recording an enhanced agency. His improvisation is conducted through a modular synthesizer. Normally, this would entail simply using that signal as the soundtrack for the album and even his music video. However, through its post-production, Franzson chose to merge the synthesizer recording with the audio of the video recording of the performance. This means that the sonic events of the architectural space became 'amplified'—as important as the synthesizer event. Here, we hear the laying down of cables, lighting of matches, everyday sonic events which, through the mixing, are given a stage of their own. In contrast, the sounds heard through the synthesizer performance link to material that he had been generating for my own third work, which I will detail in the next section.

When it came to the third and concluding works, some participants chose to expand the scope by including sonic material from other directions than found in the two preceding tracks. In that instance, Lương shifted from working with tonal material from Icelandic culture in the first track to her own culture in the third track, as "Thinh không (Ether)" incorporates field-recording material from Vietnam. At the same time, my vocalisation of the Vietnamese diphthong technique in the solo work is reworked into a fantasy-like creature, thus sending my live recording even farther into the domain of sound-processing. Olofsson, on the other hand, sought inspiration in the multimedia project *Zona* on which he was working in parallel for his third work. Similarly, Tally expanded the recorded material of performances with which she worked so that it also included archival recordings from her work with performers Matilda Andersson and Anna Petrini.

Although *strengur*, as a digital artefact, can appear as a 'maximal' compilation project, its aim was rather to explore what would happen through a laboratory process of

shifting roles. As stated earlier, it differentiated itself from the *Raindamage* project where the process formed along familiar lines of a collective effort in terms of album-making; its only activation aim was to explore the possibilities of post-processing. However, as that album also included electronic works by the composers of electro-acoustic works, it bore a similarity to *strengur* in that the electronic works of Sigurðsson and Vilmarsson both came to reference or use previously recorded material with the ensemble in their electronic works. Incidentally, Vilmarsson's material of composition was generated through oscillator performance. At the same time, and as unpacked in chapter 7, Ú. Hansson chose to display or forefront the technique of processing in his electronic work, albeit through collaboration with another performer.

In *strengur*, this process is expanded by morphing the roles from composer to performer and then back again. To further trace what 'aural thinking' it produced, I will explore the album "Halla Steinunn & Halla Lovísa" in the following section (see Figure 38). Therein, we are met with an output that started with a composition which can be seen to stretch the term 'collaboration' to the limits as it entailed working with an archival recording with my 'langamma' (meaning: great-grandmother), Halla Lovísa Loftsdóttir (1886-1975).

Figure 38
Cover of the album Halla Steinunn & Halla Lovísa.

10.2.3 Halla Steinunn, Halla Lovísa, and the AI

> Some years back I came across a compilation album which included recordings from Ísmús, an Icelandic online music and culture archive. I was surprised to find a recording of my 'langamma' or great-grandmother, poet and farmer Halla Lovísa Loftsdóttir, singing. This led me to discover a larger database entry dedicated to her, including interview snippets and singing—among them one of her own compositions. The encounter sparked the wish to 'meet her' through sound. I chose her performance of a part of an Icelandic oral hymn tradition—tunes that were passed on person to person, set to the 17th century Hymns of the Passion by Hallgrímur Pétursson—as a meeting place.
>
> At first, I improvised with her, but I felt like I could not 'meet' langamma, partially because of the tuning system in which she was singing. I turned to Vietnamese đàn tranh player Nguyễn Thanh Thủy, a master of improvisation and different tuning systems to hear if she could help me find a way in. It took my friend, trained in traditional Vietnamese performance to open the door to music making with langamma. On the basis of what Nguyễn heard and improvised, I embarked on a process that first led to a purely electronic piece which later developed into Hölluþula, a quadrophonic work for solo violin and live voice. (Stefánsdóttir, 2022)

Listening to "Hölluþula", you will hear Halla Lovísa's voice. It is a vocal performance that is usually excluded from the WCM sphere, both due its age and its unschooled status. However, the same goes for my own unschooled voice, as I sing with her. Therein, it aligns with a wider trend.

> The act of using one's own voice and language in one's own way is a radical move within electroacoustic music and sound art and women sound artists use voices, their own and others, in ways that subvert commonly held historic, socio-cultural prejudices against the existence of women's voices in public spaces. (Lane, 2020, p. 199)

Such a political task can also be seen to hold true for *He(a)r* (see chapter 6) or how that work lent a voice to a performer's perspective from the 'inside'. At the same time, the work performs other forms of resistances to power through employment of languages as well as glacial performances—an invitation to extend our listening abilities towards our planetary others.

Similarly, the work with the recording of my langamma, due to the archival aspects, could not only work as a tool to dismantle the bias against voices of women, for the recording was entangled within a specific culture and set of beliefs. She is, in fact, vocalising so-called passion hymns, written in the Lutheran meditation style by priest and poet Hallgrímur Pétursson, first published in 1666. To this day, reading of the text is still broadcast on Icelandic Radio in the period leading up to Easter and read in

churches during Holy Week. The passion hymns have been set to music by composers, but they were read or sung before that, to tunes that are now lost or no longer alive in oral memory.

My meeting is therefore not just with her and her voice, with all its personal intersubjective layers, but with a culture that stretches far back in Icelandic history. The work is, therefore, in a zone where I can both be seen to try to connect with her, as my langamma, while at the same time negotiating the content of her singing. There were various samples in the archive but, in the end, I chose to zoom in on a snippet which evolves around the eternal topic of morality and remorse, as it narrates Peter's sentiments after his denial of Jesus.

> Strax flaug í huga hans,
> hvað þó síst varði,
> lausnarans orð og ans
> í aldingarði.
>
> Back to the Garden scene,
> His conscience took him,
> His memory torment keen,
> Tore him and shook him. (Wilson, 2010, translation)

I chose to use Peter's repeated denial as a method within the composition and so the piece overall works with the element of repetition. This aligns with langamma's singing within an oral folk tradition while it perhaps underlines the difficulty of such a 'performance', She only exists within an archive that I deliberately choose not to manipulate further than through slight change of timbre to indicate that she again disappears away from me towards the end. I also employed the approach of letting my voice exist both in the electronics and as a live element, creating a bridge between the electronics and my live signal. The transferral into an album track entailed, as in the case of all other solo works, a re-composition of the spatial relations that exist in live performance. Consequently, the conversation of Sigurðsson and I during final mix circled around the level and relationality between varying stems of the electronics and the recorded tracks, the quality of sonic spaces, and wetness/dryness of individual stems.

Contrary to the other composers, I was able to continue working with my instrument from the first track in the improvisation of *strengur*, which created a direct material tie between the tracks. From the module options offered in the instructions, I chose to work with the first movement, and the duration of 00:08:26.[129] Inspired by the layered nature of the score, I decided to unleash the same method on the performance by

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[129] During the final mix, this was extended by a few seconds.

stacking my improvisations. The ground layer is an aeolian violin performance, recorded close to the site where the score was created. I then went into the studio at IAC and began by tuning the open strings of my Hopf violin to pitches found in the aeolian recording, a scordatura-tuning strategy aimed at giving the wind a heightened agency in the improvisation.

All other layers were instances of single takes, one of which kept to the time instructions. To this, I added two shorter single takes but chopped them into pieces to fit the chosen length. The first short take was created by improvising to the score with a found object, i.e., a bird's feather on the violin's strings. In the second, I employed the gut string that had created the score on another membrane, namely a drum. All such decisions contribute to the composition of the improvisation.

Through her production of a radio series devoted to extended piano techniques, Mayas (2019) interviewed a series of practitioners about their work with objects. She found that the interviewees responses resonated with her own experiences as an improviser:

> here, objects were being described not only as additional instruments, but as things that allow for the development of personal relationships. Sometimes, musicians even described this as an 'osmosis' between object and instrument. Sometimes, they referred to such objects simply as things that they love, which 'grow' and evolve in the course of being used. (p. 17)

In the case of my *strengur* improvisation, I may be seen to implode what constitutes an 'object', as it includes not only a feather and drum but is also extended towards wind through aeolian recordings. It is a phenomenon that has been present throughout my entire life, but one with which I started to purposely work in summer 2017 as I started to film wind movements and record its sonification as it touched surfaces. In that instance, I will never gain a sense of 'ownership' as described in the text above, unlike to, for example, the feather. It has however led to a deeply personal journey, as I have tried to cultivate different relations to wind. It is therefore a laboratory that is ongoing, one which surfaces within this thesis and is already at this moment continuing its passage outside of it.

It is here that we are met with the question of where work starts and ends within such an onto-epistemic undertaking. Certainly, each engagement marks a 'cut', if I refer to Barad; as a gut string is held against the wind to observe its direction, a cut is enacted. The wind and its movement continued to be a focus in the video. Here, however, we may see how the cut turns the tracing (understood as double cut), or the documentation video, into artistic material. I include the video documentation of my aeolian performance, as well of the *strengur* score, in the video. This is layered on top of the video—an editing method that I take from the layering that is present within the

strengur score—which I shot on the 'Ribban' beach in my hometown, Malmö. The videos all draw on varying manifestations of wind movements, be it through its moving of straws, flickering of a feather as it lies amongst eelgrass, the movement of waves caused by the friction between surface water and wind, and the reflection of light on concrete, pulsating thanks to the surface movement of waves.

This is a sensorial videographic material which traces how atmosphere, understood as wind and weather in combination with light, constantly shapes our surroundings and, through this, shapes our atmospheric existence, understood as tone or mood. The 'live music video' is thus not set to trace my movements, but rather that of another entity. Through this, we are again met with my preference for directing technologies towards details and the microscopic. At the same time, the video works as visual documentation, one that goes beyond the -graphy of ethnography. This is a video 'of' my documentation of atmospheric matters, but also documentation of performances that include wind in its apparatus, all edited within a movie that may provide atmospheric insights into the movement of wind thanks to the intentionality of the technologies. This exemplifies how the trying out and archival material of laboratoriality may exist in one and the same format. To this, another layer is added—the wind-spurred improvisation.

As I approached the third, concluding work, I decided to continue working with wind, i.e., let my field recordings of wind co-create it. I had in other projects worked with varying types of morphing software, which allows one sound to morph or alter another. Some of the technical variables with which Franzson works, in relation to his AI design, aligns with such approaches. I had by then gained insight into the difference, or the unpredictable outcome of the AI in Franzson's "violin fragments" as it is coded to be a 'performative' technology that 'cognises' in relation to my violin signal.

This time, I wanted to send bits from the stems found on track 1 and 2 into such a mediation, but instead of the AI working according to the parameters of resonances in relation to a violin, it would be an AI resonance that acted on the premise of wind. Franzson was up for the experiment. This, he informed me, would happen along the following stages, wherein the amplitude modulation would be wind-generated:

NOISE--->AI RESONANCE--->AMPLITUDE MODULATION

The continued work led to the decision that my recording of 'strekkingur' (meaning: strong wind, one that pulls at you) would perform best. Additionally, I used vocal and whistling improvisations from my "strengur" studio session that had not been used in the official track. I also added another relative's voice to the matrix—the humming of my mother.

Our work was conducted as shared listening through file-sharing over the Internet, where Franzson would forward tests, and I would listen and respond to them. In that instance, I was looking for various shades of processing/breakdown and showed less enthusiasm over renditions that felt to have too direct of a tie to the original track. I wanted to 'hear' the 'encounter'. Following this, I embarked on composition through which I added a few more recordings which I had processed further. To make the processing explicit, I allowed original wind recordings of 'strekkingur', as well my whistling, to be heard in an unaltered state at the beginning and end.

The title of the work is "hvinskyn", an invented composite word that unites 'hvinur' with 'skyn'. 'Hvinur' refers to a type of sonification that occurs when wind hits a surface. It is translated into English as whistling but, to me, 'hvinur' is an enigmatic sound, one that may be of a present yet muffled timbre. Just the thought of 'hvinur' brings up certain sentiments—an atmosphere. 'Hvinur' is sent into an encounter with the word 'skyn', which means a sensing of something. For example, 'heyrnarskyn' is the ability to sense through listening. As such, the title "hvinskyn" refers to the ability to sense the sonified movement of wind. The ability, in this instance, is made possible by the intentionality of technologies—a process of tuning, yet done through what Norman (2018), building on Louis Bec, describes as 'metagestures' which are generated and relayed through digital prosthetics.

10.3 Summary

This chapter shared two micro-labs. The first explored what composition and performance within a Nonsite may entail. The second was a recording project, designed to further explore what aural thinking within the laboratory may become when conducted through alternating the roles of performer and composer. Through analysis of the former, I showed how the Nonsite work *Þytur* introduced experimental conditions within an institutional space. Therein, it came to enact a transformation on Olofsson's usual artistic methods for electroacoustic composition. At the same time, his composition re-introduced elements that had gotten lost in the transferral from the site, enhancing at the Nonsite the co-creation of the work through other sounds and movements. As such, the performance occurred within an environment/ scenography/multi-channel installation dedicated to experiential attendance, while the performance of the solo work brought forth a new atmosphere, identified by a profound mode of attunement.

The creation of the *strengur* album was essentially designed to explore the work of the self-producing artist and possibilities of aural thinking through a design grounded

in the fragmentation, or fluidity, of roles. This came in return to push at the prescribed format of an album release but, more importantly, pointed towards how such processes of both performer and composer should be seen as varying modes of tuning to and through technologies, and how these experiential insights shape our methods in return. Lastly, I traced how, in both micro-labs, the material generated through the double cut, or the tracing of laboratoriality, could become material in works. In the case of my video, then, it may be seen to produce a sensory-ethnography where the becoming of wind is in focus.

Chapter 11. Discussion

This PhD project has sought responses to the questions posed in chapter 4. Firstly, how can ecological-enactive and post-phenomenological perspectives on musical practice within WCM challenge current understandings of the roles of performer and composer? Secondly, what artistic methods can be employed to provide a more robust understanding of the fluidity of these roles, to uncover their potential for artistic renewal in the creation and performance of contemporary music? Findings related to these questions will be examined in the next sections, with the aim of drawing theoretical argumentation together with knowledge drawn from the artistic outcomes. From there, I will proceed to reviewing the research process which had, as its overarching aim, to explore and address the knowledge gap related to agency from the perspectives of the performer, curator, and composer active within the field of contemporary art music and sound art. This was designed to unfold through a series of micro-labs, dedicated to looking at situated actions. To conclude, the final section of this thesis points towards future lines of inquiry.

11.1 Discussion of findings

11.1.1 Question one

How can ecological-enactive and post-phenomenological perspectives on musical practice within WCM challenge current understandings of the roles of performer and composer?

For the first research question to be clear, I must start by detailing what I mean by 'current understandings'. As can be seen in the many examples provided in this thesis, the practices of composer and performer are continuously being re-imagined by many practitioners. It should also be noted that my research operates along a continuum of contemporary music and sound art that may be seen to trace its lineage to the work of Schaeffer, Stockhausen, Varèse, Suzuki, Oliveros, Lockwood, Lucier, Westerkamp, and Maryanne Amacher. But, as displayed throughout this thesis, the affordances predicated by the stakeholders of WCM position the performer far from being the

dynamic agent who explores novel relations between musicians, sonic spaces, and musical traditions, as found in the works of Oliveros or Lucier. In fact, the standardised role of cultural spaces and the notion of a canon of musical works in WCM entails that 'creative collaborations', as noted earlier in this thesis,

> may do little to shift or break those boundaries in any dramatic manner; but in more implicit and procedural ways they help to carry forward the long process of dismantling the still persistent myth of the autonomous-genius composer and his or her helpful and accommodating interpreter–performer. (Linson & Clarke, 2017, p. 134)

In what follows, my discussion will be continuously set into play with such inertia, as I unearth how the theoretical framework may challenge current understandings of the roles of performer and composer.

Ecological-enactive perspectives inform the micro-labs and propose new ways of doing.

In his book *Ways of Listening: An Ecological Approach to the Perception of Musical Meaning* (2005), Clarke showed how ecological theories may both be applied to unpack structural listening linked to the notion of the autonomous work in WCM while also questioning such a construct. Importantly, the latter should be done without writing off the impact that culture has had and what listening culture it has created. A similar sentiment is found in the ecological-enactive Skilled Intentionality Framework (Rietveld et al., 2018), that underlines the need for contextual sensitivity, so essential to this thesis. An example is how I have detailed the impact of Werktreue, which pre-defines the affordances of scores for performance and how non-human entities, such as architectural space, function as a backdrop for human-to-human relations that revolve around 'great performances' of 'great works'. It also entails that recording technologies are co-opted for the usage of putting the listener in an exclusive acoustic space through a performance set to align with WCM ideologies.

Such observations informed the micro-lab design of *Raindamage*, which explored alternative possibilities of post-production within album-making. *I play Northern Lights* aimed at discovering what other structures of the environment might be perceived through activations conducted in a concert hall. Through other micro-labs, such as the *Tapeshavet* activations and the graphic score *strengur* and performance thereof, I showed how performative responsivity to environments may unfold both within and outside of institutional spaces. Attending to non-human agency reverberated within all my work.

Such an approach aligns with a long tradition of experimentation in music, as when Oliveros, Dempster, and Panaiotis performed in the Fort Worden Cistern, which they lent the agency of an instrument. This exemplified how performers may steer their

performative abilities towards 'other' spatial and sonic relations.[130] Through the above descriptions, we see how the micro-labs were informed by an awareness of how relations might be pre-defined, and their designs were intended to question or alter some aspects of presumed agencies, often by exploring co-relations between theory and practice.

Ecological-enactive theories display a mutuality in the roles of performer and composer.
Through my analysis in this thesis, I showed how performance and composition are reliant on 'nested cognition' and how such agent-environment relations may span "multiple scales of complexity, many of which reach far beyond what is taking place here and now" (Kiverstein & Rietveld, 2018, p. 157). Through analysis of the *Tapeshavet* activations, I detailed how a performance with shells entailed coordinating technological equipment that allowed insights, afforded by the headphone monitoring, to feed into my activation. Simultaneously, I handled shells with care based on an imaginary of their living state thousands of years ago. During the composition of *I play Northern Lights* through a 5.1 surround setup, I attended to pace and timbre while simultaneously referring the positioning of sounds within the circumspace (Smalley, 2007) to the topography of a site far removed.

Importantly, actions of both performer and composer go through loops of activity and passivity, albeit in relation to varying technologies and means of expression. I do not state this to 'dilute' the divergence between those roles; such loops form along the lines of inclusion and exclusions, i.e., enactment of differences that are directly linked to sociomaterial practices and are part of identity creation. But through such loops, both performer and composer engage in alternating between so-called online and offline cognition which, again, is tied to the nested state of cognition.

> We should not think of offline cognition as a distinct type of cognition, but as a more complex form of coordinating nested states of action readiness and activities to multiple relevant affordances. Such a process is complex because of the nesting of the activities and their increasing reach through time. (Kiverstein & Rietveld, 2018, p. 157)

Such offline aspects, inherent to the practices of composer and performer, are, in this thesis, seen also as essential to the becoming-curator, or the 'curatorial'. An agency that forms within practice and is dynamic as it attends to the ongoings of performance and composition.

As shown through the analysis of the *He(a)r* micro-lab, it is not a mere 'commentary' or 'attendance' to agential formations, but rather an agency that may serve as a catalyst

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[130] Such acts expand radically beyond the so-called 'classical improvisation' that is increasingly being introduced within education to allow performers to carve out a space for their creative voice with emphasis on aesthetics and interpretation, i.e., in relation to repertoire.

for activity and guide the work, political entanglements included. Through curatorial sharing between Rawlings and me, one may witness how contextual sensitivity is quintessential to the curatorial. A performer who contributes to the prototyping of a system may also be seen to engage in different curatorial loops.

To complicate matters, a performer's thinking also unfolds as thinking-through-practice—as it takes shape in the moment of performance. An example is found in Olofsson and Östersjö's searching-through-listening, as they seek the right approach to a glissando in Olofsson's composition. The solution arrives through action, attested by Östersjö, who observes that "the playing comes quicker than the analytic thinking. The same thing happens again when I find that broken chords work nicely also later in the same bar" (Östersjö, 2008, p. 237). Here, the offline cognition is not the moment of solution, but rather a moment of attesting that a solution has been found.

Looking towards my own practice, then, the composition of the violin part in "Hölluþula" grew out of improvisation with the electronic part. It could alternate between structured improvisation on top of a tonal progression, or take shape as a free improvisation that, similar to Östersjö's example, could entail that the 'solution' to a musical problem was presented through performance. Another example of thinking-through-listening may be detected in my panning of electronic works. Although fixed spatialisation has become common in recent years, my activity thereof may hold ties to the long-time practice of sound diffusion. Here, however, as was the case of *He(a)r* and my *studies in sound* created out of the Tapeshavet activations, I engage in realtime diffusion in the studio that is then saved in my DAW.

My proposal for the curatorial is therefore by no means set to undervalue the thinking that goes on through the tacit processes of thinking-through of a performer and composer formed through activity. Rather, I address what has been an under-theorised role within music, or those moments of offline cognition, that should be seen as essential to the 'how' of configurations and reconfigurations.

Ecological-enactive and post-phenomenological perspectives show how technologies shape habitual sensorial engagement in musical practice.

The analysis in this thesis, as well as prior AR research, shows how technologies, understood as instruments, shape one's listening attitudes. I have described how the habituation that has arisen through working with my Hopf violin affects my work with other technologies. I have observed how my performance-training has provided a similar focus on minute details in my site-specific recording practices and in my use of photography, through which I focus on zooming in on details, perhaps not always immediately visible to the wandering eye. This was teased out through phenomenological perspectives formulated within stimulated recall, describing "how

the affordances that a situated individual simultaneously responds to are related" (Rietveld et al., 2018, p. 65).

An example is found in my stimulated recall annotation of my performance at a shell bank monitored through my DIY field recording setup: "I feel like I have to handle the shells with care, a testimony to life lived 9.000 years ago. At the same time I know that my kit will catch this tactile closeness, and invite future listeners into this private sphere" (Stefánsdóttir, stimulated recall annotation in Stefánsdóttir & Östersjö, 2022). In other instances, the same DIY setup was used in relation to performances of the Hopf, to invite the listener into an even closer vicinity to the instrument than is usually afforded in an acoustic concert, as found within the collaboration with Tally on *In the Bottomless Hollow of the Winter Sky*. Such an example, as with the previous, reveals the sensorial insights afforded by technologies. This brings me to the next point of juxtaposition—analysis of ethics-in-movement—which aligns with Kozel's claim that "we can regard technologies not as tools, but as filters or membranes for our encounters with others" (Kozel, 2007, p. 70).

Ecological-enactive theories and phenomenological insights reveal performance and composition as ethics-in-movement.

Kozel's statement rests in the claim that ethics are not preformed—"not about laws, judgments, and rules" (p. 70)—but rather are formed through responsivity. But what are the possibilities for responsivity of a performer within the framework of WCM? Throughout this thesis, I have cited thinkers and performers who have felt the need to address WCM's pre-conditioning, where "musical knowledge is often transferred to students in a more or less uncritical and decontextualized fashion" (van der Schyff et al., 2016, p. 86). Through Leech-Wilkinson's (2020) example of how an orchestral musician may extend their sense of creative agency by using personalised fingerings, we can see how they may perform an ethics-in-movement in relation to their instrument and in connection to a score. This again may entail an ethics-in-movement within their section in relation to space, the conductor, and the entire orchestra. Here, we are reminded of how an analysis of ethics-in-movement must always take into account the power structures in the socio-cultural context. Hereby, I argue that AR approaches through experimentation may hold new possibilities, also for musicians situated within major institutions in WCM, to enhance their agency and further explore the possible dynamic of relations within the system.

I have referenced several examples of how AR, through experimental design, has probed existing conditions of relations, ultimately resulting in 'other' ethics-in-movement. An example is D'Errico's performance, which radically dismantles pre-conceived ideas of what the interpretation of works may be, allowing her to enter another kind of responsivity (see further 3.1.1). Similarly, Amaral introduced other

technologies than her piano through her curatorially-driven artistic method, amplifying environmental sounds within the concert setting and thereby pushing at the silent backdrop that informs WCM performances.

Returning to my own practice, by employing ecological-enactive theories and post-phenomenological perspectives, the outcomes of two micro-labs, or my performances within *An Urban Archive* by Franzson and *Violin with Pytur* by Olofsson, indicate various forms of responsivity. The loops of passivity and activity related to for example virtual digital systems and audiences, as well as architectural space, and atmosphere. Similarly, my playback in the tropical palm house as part of *The butterflies ascended* evolved around an encounter with plants, other sentient beings, and the atmosphere of the site. Overall, the creation of such a Nonsite may be seen as reliant on unpacking and attending to the ethics formed in movement through the *Tapeshavet* activations.

But the ethics of intersubjective meaning-making may unfold as experimental phenomenology, which is the focus of the next point.

Post-phenomenology allows for a deeper understanding of the role of technology in the practices of performer and composer.

The role of technology in the practices of composer and performer can be better understood through Ihde's experimental phenomenology. I will detail how such processual work may unfold as an act of micro-sonic listening, then return again to the notion of ethics. Phenomenological variation, created through technologically-mediated listening can reveal the intentionality of the technology. Repeated listening may be a way for a composer of multi-channel installations to familiarise herself with the material at hand; it may guide and shape an aeolian violin performance or be a way to judge the density of playing with an AI. I have also revealed how such an act, as it unfolds through 'shared listening', may be essential to artistic collaboration.

This was the case within *An Urban Archive*, where repeated listening to a field recording could be a way to discuss and attend to its timbral qualities, but also further understand the socio-political realities of the site. The phenomenological variations, conducted within a sound-dome, opened discussion regarding the spread of sound and performance strategies. The listening also supported the composer to identify possible points for improvement in the system while aiding a performer to embrace an instrument's configuration within a system and its effect on it. Such phenomenological insights, as detailed through the analysis in chapter 8, formed as thinking-through-prototyping, which may serve various roles and hold different affordances and meanings for the performer and composer. The many rounds of experimental phenomenology with Franzson effectively became a process through which Franzson, as composer, gained phenomenological insights into what effect the system and the work could have on me as a performer. A historical perspective has shown that varying

forms of experimental practices have served as value-laden tools of discrimination (Crispin, 2019; Östersjö, 2020a). Here, I see great potential for the application of collaborative approaches to the use of technology that may be forged through shared listenings, experimental phenomenology, and stimulated recall to establish openness and trust in integrated collaborative work.

Ecological-enactive and post-phenomenological theories afford detailed insights into the complexity of performance and composition.

Through the development of practices and their analysis through the theoretical framework, I showed how a performer may act within a broader landscape of affordances than is promoted by stakeholders of WCM. The analysis was built on the concept of nested cognition, detailed earlier in this section, and has revealed how performers, like composers, may engage with multiple affordances, some of which reach far beyond the physical space. An example is found in my activation at a gunpowder storage, where I embodied the movements of ocean and wind currents in deep time, thereby enacting a justice towards the industrial breakdown of the site.

Importantly, the field of relevant affordances is continuously evolving during performance and composition. Such an expansion may necessitate analytical approaches that go beyond normative gestural analysis. This was the case in my analysis of *An Urban Archive*, which called for the usage of Parviainen et al.'s (2013) ecological-enactive choreographic framework. It allowed me to detail how my performance oscillated between micro and local movements. In the micro-performance level, a local movement of a sunray could get me to halt, while morphing resonance within the hologram could trigger my imagination. On the local level, my performance could reconfigure the hologram while the movements of visitors within the environment could affect my performative gesture, again on a micro level.

Another useful approach was presented through the combination of phenomenological and material perspectives, such as found in Malafouris and Koukouti's proposal that material engagement may be seen to fall along two modes of attentiveness, the first being conscious and the other immersive. How this unfolds can be heard in my audio paper *Fleshy listening and multi-entity performance: On analytical approaches within artistic research* (2021), for instance in its discussion of my activation of a cylinder. As it unfolds along a temporal continuum, I familiarised myself with the cylinder through the employment of birch bark. This included various loops of activity and passivity—of the conscious kind—until things suddenly fell into place and the cylinder started responding with a sound that felt meaningful. It is here that I have arrived at so-called 'immersive attentive engagement' (Malafouris & Koukouti, 2022) and lose track of time. It is that dynamic of engagement that prompts me afterwards to declare the activation being like 'a piece'.

Steering my focus towards composition of multi-channel compositions then, their multiple reworkings are of a conscious kind and link to a whole spectrum of affordances, ranging from speed and timbre—creating a complex web of meaning by juxtapositioning recorded text—to spatial positioning. Similarly, my composition of the violin and vocal parts for "Hölluþula", although forged through improvisation, stayed on the conscious side. It is also here that post-phenomenological insights may help unpack how the performance of the piece, within a quadrophonic setup, with a score, may not lead to an immersive state. As detailed in section 3.1.2, the embodiment relations (Ihde, 1990) that can be seen to be a prerequisite for an immersive state shift towards hermeneutics through engagement with visual components such as a score, or through amplification, which transfers the tactile engagement with a violin onto a digital continuum.

The expansion of relevant affordances prompted me to align with the concept of multi-entity performance (Rawlings, personal communication, 2019; Stefánsdóttir, 2020, 2021). This helped me to embrace the expansion of environmental performance, acknowledging the role of 'other' agencies in performative relations. Similarly, I applied the analytical tool of 'fleshy listening' (Stefánsdóttir, 2021; Stefánsdóttir & Östersjö, 2019) (see section 9.2.3). It stands as a more subjective approach, one which brings the perspective back to the body, all the while referring to the habitual intuition involved in thinking-through-listening. The 'fleshiness' also underlines my performative and tactile connectivity to the world. To listen fleshily as an ethics-in-movement always entails to be touched and affected in return. The concept therefore holds great affinity to responsivity in its phenomenological mission.[131] Through my analysis in chapter 9 of the *Tapeshavet* activations and their transcreation within *The butterflies ascended*, I showed how attunement is central to fleshy listening and further that it may entail steering one's focus towards 'other' socialities and result in giving voice to multiple entities. Importantly, "fleshy listening (…) can involve a wide range of phenomena, and not merely those at the tip of your finger" (Stefánsdóttir, 2021).

Ecological-enactive theories show how anticipations and planning are essential to performance and composition.

By employing ecological-enactive theories (van Dijk & Rietveld, 2021), I showed how composition, such as it formed within the installation *The butterflies ascended*, unfolded

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[131] To forefront the 'fleshiness' of humans is also a way to forefront a body, a move that is certainly of political dimensions, as was Manning's formulation of fleshy touching/touch (Manning, 2007). It may, therefore, serve to further think-through the implication of WCM's stabilities and its denial of certain bodies, as well as disciplining or governing all things fleshy according to certain ideologies. Such perspective may "raise concern for whose vibrational potential and frequencies we honor. Fleshy listening thus holds the potential to move and stir epistemologies" (Stefánsdóttir, 2021).

on multiple timescales. A sound test could inform me about density of text in a score, future placement of speakers in the installation, and how to treat biotic entities with care during my composition in DAW. The practice may, therefore, be seen to form "through the 'inviting' possibilities for action offered by the materials given" (p. 359). The work, destined for a future installation, also stretched far back in time, as it was essentially reliant on understanding the multi-entity involved in the *Tapeshavet* activations, which I unpacked through a book chapter (Stefánsdóttir, 2020). It is here that we see how 'affordances' "are at once pertaining to a *past* of shared practices in which materials figured, while also *currently* affording, and affording a *future* continuation of activity" (p. 359 emphasis in original). Such anticipations were essential to the prototyping of *An Urban Archive*, albeit referred to the different fields of relevant affordances of Franzson and me. The outcome, however, was not knowable in advance, as it was only until the hour of its performance that it was revealed.

Such preparation and anticipation may be understood as action-readiness, which "is a situation-dependent bodily phenomenon in-between overt action and ability" (Rietveld et al., 2018, p. 57). It may be applied in the moment of performance as I navigate an installation. As I attune to sounds farther away in the installation and calibrate my next playing in response, I may be taking in the positioning of people around me, all the while thinking about where I should navigate next, which may again be reliant on the architectural layout and the overall atmosphere in the space. Action-readiness also helps explain the dynamic nature of my work as performer and composer, as those agencies cognitively co-exist. This is the focus of the final point in my discussion of the findings to the research question.

Ecological-enactive theories' formulation of a landscape of affordances in combination with post-phenomenology may help to understand the dynamic flow between the practices of performance and composition.

Throughout this thesis, many examples are provided of how the roles of performer and composer take on varying forms, dependent on context and the particularities of situations. The micro-labs have brought out several examples of how my long-term embodiment of violin performance also informs my compositional practice. Building on Wittgenstein, Rietveld et al. (2018) detail how the social dimension is implicated in shaping and sustaining a landscape of affordances through a 'practice-based normativity' (Rietveld, 2008 in Rietveld et al., 2018). As such, affordances may continue to exist for decades, evident in how traditions of experimentation in music, traced to last century, are still in play, despite many of its originators having passed. Similarly, as has been detailed throughout this thesis, by situating the micro-labs within environments of importance within the field and through contextualisation thereof, I showed how work may be constrained by 'place-affordances'. Seen from this angle, the

arrival at a 'place' or 'behaviour setting' (Barker, 1968; Heft 2001 in Rietveld et al., 2018) "pre-structures our field of relevant affordances readiness" (Rietveld et al., 2018, p. 58).

Based on this, I propose to look at a 'place' to further understand how the 'region' within which I operate has shifted in the last years. For if there is a site that clearly displays the transformation, then it is my home studio environment. There are other technologies now in the studio and in my computer, proof of altered individual-environment relations, that translate into a shift in region of the landscape of affordances. This is not an observation meant to reduce the ties that my work in the studio has to the outside world. All work conducted there stands in relation to the art world. An example is how the track "Violin with Þytur" involved re-mixing a nine mono-channel installation into a stereo track, aligning the form of the track to the documentation of my live performance. It is still worth looking at the studio to capture the difference that has taken place in the past years as it has gone from being the studio of a performer and curator towards that of artist-researcher, the artist being understood as self-producing performer, composer, and curator, active within the field of contemporary music and sound art. By zooming in on the last micro-lab of this thesis or the *Halla Steinunn & Halla Lovísa* album created in the studio, I aim to better explicate the agencies at play.

The first track is an electronic composition with an acoustic solo part, whereas the second track layers improvisations guided by a graphic score and also includes a video that draws on the same layering technique as found in the improvisation and in the *strengur* score. The third is an electronic composition, which builds on material from the two other tracks, reworked by an AI. I perform in the two first tracks whereas, in the third track, I rework my performance, all the while self-producing all three tracks which interrelate on various levels—archive in the first and third tracks, different modes of live performance in first and second tracks, and work with wind in the second and third tracks. The work in the DAW takes on varying forms, all dependent on the material, the affordances of the software, and my skilled intentionality.

To tease out further insights, I turn to the concept of 'voice' that was presented in section 8.4. Through their analysis, Gorton and Östersjö (2019) proposed that the outcome of artistic collaboration could be understood as a search for a 'discursive voice'. While their analysis builds on a wider socio-cultural understanding, a core feature of this process is the joining of a performer's voice, developed through long-term engagement with an instrument, with the composer's voice, formed in relation to notation. As a performer and composer, I perceive my performer-composer's voice as forming through the technologies with which I engage and the experiential insights they afford. It is an activity, as I have detailed earlier in this section, that is shaped by my habituation, which is a strong agency in my work with digital technologies.

Obviously, such phenomenological ongoings stand in relation to the world, as I skillfully tune into and re-imagine phenomenon through my sonic thinking. In the formation of discursive voices in the collaboration between performer-composer and composer-performer, similarly complex configurations of voices can be observed.

This brings me to my second research question.

11.1.2 Question two

What artistic methods can be employed to provide a more robust understanding of the fluidity of these roles, to uncover their potential for artistic renewal in the creation and performance of contemporary music?

As shown in the outline of artistic methodologies in chapter 2, I have employed, developed, and tested several artistic approaches—activation, field recording, micro-sonic listening, stimulated recall as artistic method, spatialisation, photography as artistic material, and the curatorial. Out of these, I identify micro-sonic listening and the curatorial as the two avenues that may provide deeper insights into the fluidity between the roles of performer and composer. In what follows, I will detail each avenue. Towards the end of the section, I will further discuss and situate their potential in a wider context.

Micro-sonic listening (Östersjö, 2020b)—a mediated form of listening, evolving around sound captured by microphones, transmitted to speakers and often monitored with headphones—has come into play in every micro-lab of this thesis. It has afforded new experiential insights during both performative and compositional phases and is also essential to curatorial workings therein. Micro-sonic listening can therefore be seen to feed into and drive creativity forward in its many configurations and reconfigurations. As described across the thesis, it can enable and shape the activation of shells; be a method to learn about vibratory elements in a tropical palm house; serve to think about the social life of a city; work as a way to learn about the configurations of a system; drive intersubjective work; create a situation for site-respondency to a site far removed; help guide and shape aeolian violin performance; be the a-z of calibrating the amplification of my violin; help steer the composition of a 5.1 surround-sound work; and drive the positioning of speakers in a greenhouse.

Furthermore, as has been shown, the curatorial is not a set of prescribed methods. Rather, it needs to be re-invented in each situation as it negotiates the many agencies at play in artistic practice. Through the curatorial, I have attended to matters such as the speed and loudness of sound in relation to plants, weighed in tidal charts in relation to site-specific work, steered tempo and tone in the studio, guided a performance at a

shell bank, and used photography for note-taking. The curatorial has, in this thesis, emerged as an agency that works as an ignition but also serves as guide in unfamiliar terrain, an agency that builds on knowledge while also producing it. The curatorial is not an agency that tries to live up to the disciplinary nature of analytical methods, although it certainly engages with various theoretical writing to hone contextual sensitivity. The curatorial may, in fact, be unruly, prod at institutionally established values, and question power structures—all while it creates gateways for ethics forged in movement and considers the relations that arise. Through a study of the author's curatorial practice, the role of a curator is understood as dependent on the negotiation of the many agencies at play in artistic practice.

This brings me to the latter part of the question, how micro-sonic listening and the curatorial may serve as potential approaches for renewal in the composition and performance of contemporary music. As has been evident through the samples given in this thesis, numerous practitioners are continuously re-imagining what making sound and music may be. But, as Jonathan Impett (2017) observes, building on Giorgio Agamben and Alain Badiou, "(w)e inhabit a cultural environment of fragmentation, a glorious but potentially disempowered kaleidoscope of overlapping interests, tastes, and traditions in which the academy and the state have withdrawn from judgements of intrinsic value and criticism is impoverished" (pp. 221–222). With the aim of amending this, he states that the concept of the canon is no longer a viable foundation for music-making. Rather, "the production of knowledge is the natural work of music—or, less ambitiously, of Western art music—and that in this present environment the work of musicians must be to address its need for a context, however local, in which to emerge" (p. 222). This sentiment is echoed by Born, albeit through research on digital art music.

> [T]he neoliberal university (fourth plane) makes possible inventive first-plane musico-social experiments, while retaining a specific (third-plane) raced, gendered body of practitioners. In academic digital art music, the action and the politics arise mainly on the first and second planes, against a background of resilient continuities – and the virtual absence of a politics – on the third and fourth planes. (2022, p. 479)

To amend this requires leadership that enables employees of teaching institutions to formulate shared targets on multiple levels.[132] Leech-Wilkinson identifies teachers as the most powerful stakeholders of WCM when it comes to upholding and bringing forth its value system. Its ideologies lay the grounds for so-called intended learning

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[132] I take the idea of shared targets from Hargreaves and Shirley's *The Fourth Way* (2009), grounded in the idea to bring "about change through democracy and professionalism rather than through bureaucracy and the market" (p. 72).

outcomes (Biggs, 2003) to which all teaching is aligned. This may, however, lead to student feeling 'trapped' as they find "it difficult to escape without learning what he or she is intended to learn" (p. 2). This point was echoed through the testimonies of Orning and Scherwin in section 6.1.2, as to how the teaching of WCM leaves little space for the individual's creative 'voice'.

At the same time, as stated in chapter 3, educational practitioners face renewal demands as their students are destined for portfolio careers in a market characterised by over-recruitment (Orning, 2017). One bid of what such alternation may entail is found in Holmgren's empirical research into piano pedagogy in WCM, formulating ways of improvement when it comes to forms for teaching and learning.

> [M]eaningful organisation was envisioned as collaborative, dialogical, characterised by openness, humility, honesty, and mutual understanding where musical interpretation is viewed as a complex, ongoing, open-ended process, allowing for multiple, incompatible views, breaking from the master–apprentice model and the current restrictive ideology. (2022, p. 475)

We see here how such a method would go beyond the still dominant master-apprentice paradigm.

Through his ecological-enactive research on instrumental teaching, Tullberg formulates how a sustainable process may form through activities that go beyond a focus on repertoire.

> What might seem like peripheral activities of music learning might over time have profound consequences in terms of affordances. Beyond practice, there are a number of ways through which a musician may develop the sensorimotor relationship with their instrument (…) this can mean alterations of the instrument end of the continuum, such as changes of the spatial layout (e.g., retuning, remodelling of keywork) and the sound-producing system (e.g., different strings, changing the bore of the instrument, preparations). These alterations have the potential to open up for explorations of new affordances of the instrument. (2022, p. 8)

He further notes how practicing another instrument, or learning music traditions that expand beyond one's 'field', may lead the student to direct their "attention to aspects of musicianship that previously were not available for reflection, and thus be the first step towards change" (2022, p. 8).

Through their enactive research on music, Schiavio and van der Schyff note that a recent development in music education "increasingly embraces improvisational, informal, relational, and contextual methods of teaching—inherently different from more traditional canons based on knowledge transmission and reproduction of the score" (2018, p. 4). Such ongoing revision aligns with what Orning defines as a

'polyphonic performance practice' which seeks to "empower the students to think and act independently. If we enhance their artistic perspectives, the students get an opportunity to shape and sharpen their skills and personalities, coupling practice and intellect in their visions of their future possible selves" (2019, Conclusion section).

A pan-European survey (REACT, 2021)—looking into how student's creativity, alongside reflexive and critical thinking, might be promoted—identified the following points of action for curricular change and emerging competence areas:

- Holistic and tailored education with a student-centred approach;
- Increased tuition in music pedagogy;
- A deeper and substantial connection of music performance modules in HEIs [sic] curricula with other music related courses, with other art forms, and with the music performance industry as a whole;
- Establishing an international dialogue, collaboration, and exchange of ideas with other universities' students and faculty;
- Courses on technological literacy and competences;
- More practical opportunities and artistic mentoring support as well as career management;
- Development of critical thinking and self-reflection skills;
- Importance of understanding authenticity in performance. (p. 22)

If we compare this to the points made by Impett and Born, this otherwise commendable report fails to make a tie to what the role of music-making within society at large may be, a perspective that must be considered in any revisions of higher music education.

I have, for several years, taught AR practices to undergraduate and graduate students as part of a course which seeks to enable their independent thesis projects. It has brough my attention to how the projects of classical and contemporary music students often align with the intended learning outcomes. This is to say that they want to improve their interpretation, which may go in the direction of performance practice, or explore methods that may help them practice more efficiently or help them deal with the pressure produced by the values of perfection. Composition projects, on the other hand, are more often characterised by solitary activity than by collaborative projects with performers, although there are exceptions to this rule.[133] It is here that I see great potential for the aforementioned approaches—how, if introduced at the outset of studies, it may allow the students to arrive at their degree projects in a different manner.

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[133] In rare cases, such as within a pilot project that I instigated in collaboration with IAC, I have been able to design projects that were steered towards introducing students to work with technologies, both of which resulted in the production of audio papers.

Not only will they already be familiar with some of the methods that they can use as analytical methods (ease when it comes to documenting their practice, contextual sensitivity which feeds into autoethnography, and stimulated recall in relation to the data gathered) but they also will have been empowered to guide their interests in other directions than what the present inertia dictates.

To be clear, it is not the aim of this thesis to come up with a course plan grounded in micro-sonic listening, but I would like to consider some of its potential. Most students have embodied relations to both acoustic instruments and digital tools. By bringing these practices together through micro-sonic listening, the student's landscape of relevant affordances will expand. Such courses may be taught across genres within music departments but would also be adaptable for cross-discipline offerings between departments. The situations of listening may also range from collaborative endeavours in relation to stage work, in studios, and outside of the institutional environment. Importantly, given the curatorial aspects, it could highlight contextual sensitivity and offer entryways into discussing the ethics of listening. Micro-sonic listening could highlight and expose them to creative possibilities within various situated actions while asking the difficult questions of how a technology is employed, towards what end, what are the boundaries of inclusion and exclusion, as well as what and who is heard.

Returning to the goals identified by the REACT team then, the proposed methods of micro-sonic listening and curatorial approaches may potentially contribute to many of the areas listed. There is a rigorous ongoing revision regarding future higher education in music, a revision that may be discerned through the above report and the research of Holmgren and Tullberg. Some institutions may have gone ahead to implement new approaches, such as involving students in positive feedback and peer-learning or making pedagogy a part of coursework or offering new-media or sound-art courses.[134]

Whatever the direction it will take, I see the concept of 'place affordances' to offer an interesting entry into discussion thereof. As explained by Rietveld et al. (2018), "places are aspects of the sociomaterial environment that offer possibilities for action" (p. 58). Throughout this thesis, I have detailed what the place affordances of the concert hall or the studio environment are, according to WCM values. Given the ongoing revision, it is viable to ask: What place affordances will there be at future institutions? What situations may students expect to enter? Will performers find themselves recording their own sessions? Will the coursework stretch into the urban areas through

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[134] Programs devoted to performer-composer agency or cross-disciplinary course offerings when it comes to staging do exist, but they are exceptions to the norm. Similarly, it may not be enough to introduce students to work in the studio if it is not accompanied by the aim of introducing ways of working that go beyond the usual Werktreue approach or a familiar separation of tasks when it comes to studio work.

environmental performance? Will students gather for cross-disciplinary coursework on sensorial ethnography or stage practices? Will they meet for stimulated recall in relation to their work? Will they engage in intercultural collaborations? Only time will tell.

11.2 Summary and a final reflection on research processes

This PhD project was conducted as a series of micro-labs designed to look at situated actions (Suchman, 1987, 2007) within contemporary music and sound art. The alignment with Suchman's concept of situated actions was essential to the research's overall aims of exploring the culturally, technologically, and environmentally distributed nature of agency, wherein the particularities of intent and action should be seen as "contingent on the circumstantial and interactional particulars of actual situations" (1987, p. 123). Therein, I applied the following methods for analysis:

> Analytical Autoethnography
> Qualitative Coding
> Stimulated recall

To help elicit further understanding, these approaches were complemented with ecological-enactive and phenomenological theories. Additionally, Suchman's formulation of agency, as it forms through configurations and reconfigurations, is situated on the borders of anthropology, feminist science, and technological studies. Towards the end of my research, I turned to Barad (2007) to further conceptualise my findings through her agential realism, which is posited within the differences, understood as inclusions and exclusions, that are produced through intra-action.

As noted in the Introduction and chapter 2, the laboratory approach (Maharaj, 2009; Rheinberger, 1997; Spatz, 2020; Suchman, 2005) was fundamental to the research design. My approach aligned with Suchman's work, presented in the Introduction, in that the micro-labs were documented to help later create a deeper understanding of the knowledge that forms—in my case, with a focus on agency and its formation within artistic processes. Through this, I experienced how my role as curator, shaped for many years as part of my artistic practice, was instrumental to formulating and floating the laboratories dedicated to thinking-through-practice. An explicit point is how my activations series, instigated early on, was designed to gain further insights into the non-human agencies at play. This wish continued to reverberate within all other micro-labs, some of which were instigated by others, some by myself.

Detailed in chapter 4, the experimental conditions afforded by the doctoral position in combination with the experimental systems in which I was operating resulted, in the

initial phase, in an expansion from working from the positioning of performer and curator in the field of contemporary music towards the role of composer and the field of sound art. But it was only well into my research that I started to fully grasp the radical possibilities of the laboratory approach. By familiarising myself with Spatz's (2020) work, which sought to upend familiar power positions and explore videographic thinking from intermediary positioning, I could recognise similar patterns within my own micro-labs. In fact, two micro-labs unfolded in ways that bypass the usual power relations found within WCM environments. In the first, the *Tapeshavet* activations, I entered environmental performance together with G. Hansson, Hultqvist, and Östersjö. Although it was formulated as a search for the sounds of the book *Tapeshavet*, the participatory approach found within environmental performance can be seen as a platform that offers the possibility to explore aural thinking from intermediary positioning.

The second example is how the studio recording session with Rawlings in *He(a)r*, conducted from shared intermediary roles and by removing the 'outside producing eye', came to radically alter ways of working within such an environment. Due to their possibility of multistable trajectories, the recording technologies not only brought forth a 'performance space' but also stood in for speaker-positioning in future performance space or took on the role of 'field recording' a site far removed. As outlined in the *Raindamage* and *strengur* projects, studio environments may be creative sites for self-producing artists. What emerges here is an aural thinking that was not steered towards album production, but rather at gathering material for an electroacoustic composition. The 'how' of such 'doing' was not merely a case of vocal improvisation. Through curatorial formulation and improvisation that abounded in geopoetics, we altered our ways of working in the studio and explored new relations to the technologies involved. This serves as an example of how laboratory approaches may provide new insights into what technologically-driven aural thinking may entail when untangled from former ideologies.

Another essential point is how the so-called double cut—the fact that the observation and doing are archivally traced (Spatz, 2020)—may offer new material approaches. As presented through my work with photography, the tracing, understood as ethnographic note-taking, fluctuated between the roles of documentation and artistic material. My photography could sometimes serve as documentation of work onsite, as in the *Tapeshavet* activations. But I have shown examples of how documentation from *Tapeshavet* was later incorporated as artistic material in performance scores for *The butterflies ascended*.

In my *strengur* video, the trying out and the archival tracing of the artistic process co-exist in one and the same format. Here, the video includes the recordings of an aeolian performance but also the documentation of its making, as well as the

documentation of the making of the score. The merging of artistic output with documentation and analysis of practice was further explored in my audio papers. Here, sound-art compositions were combined with the recorded documentation of the trying out, both onsite and in the studio, in a research-output format that merges analytical, dramaturgical, performative, and compositional approaches.

As detailed in chapter 2, the closing cut of the material tracing "needs to be implemented transversally across (…) practice" (Spatz, 2020, p. 108). This may alter the notion of what constitutes 'the work'. Such was the case in *The butterflies ascended*— the culmination of a long process that spanned everything from initial activations, other live events, editing of a hörspiel, midway analysis published as a book chapter, alongside all other activity during the process that would normally be called the 'composition' of *Tapeshavet* (see section 2.4). In chapter 10, I detailed a similar point—how my work with wind on the *strengur* album is but one manifestation of a long and ongoing work with such a phenomenon, which began in 2017 and is ongoing.

The activity of archival tracing meant that audio and video technologies often became part of collaborative projects. I am grateful to my creative partners who graciously accepted such ongoings. In that instance, I would especially like to highlight the openness and trust Härdig, Kaastrup Vesterskov, and Konrad showed in embarking on an act of stimulated recall, providing further insight into their performativity within *The butterflies ascended.*

A challenge within this PhD project, like that of many other pieces of AR, is the difficulty of sharing the artwork of AR in academic contexts. A prime example is *I play Northern Lights*, which can only be experienced as it was intended within a concert event, in the hall for which it was created. It is perhaps the closest I have come to Richard Serra's statement of how the removal of a site-specific artwork from its site destroys the work (Serra in Kwon, 2004). Despite this, it has been exhibited in its 5.1 form at my part-time doctoral seminars and is now shared as a binaural recording in the RC.

As I have highlighted in this thesis, I experienced on two occasions how analytical research processes did not go according to plan. These are outlined in section 5.1.2 on qualitative coding. Importantly, the difficulties that presented within the coding of the *Tapeshavet* activations—which were solved through the concept of multi-entity performance and consequent analysis that was first shared in the book chapter *Let's (be) play (ed by) an ocean: of situated actions within ecological sound art* (Stefánsdóttir, 2020) and later refined in the audio paper, *Fleshy listening and multi-entity performance: On analytical processes within artistic research* (Stefánsdóttir, 2021)—cannot be divided from the 'difference' that the laboratory produced in terms of relations, which altered my understanding of the phenomenon of performance. This meant a reconfiguration

of boundaries enabled through intra-action with technologies and multi-entity in environments.

Here I arrive at the point of how this research process has opened my eyes to the great potential technologies have to offer. I argue that the method development of the project has implications for the design of AR through the model of the laboratory. Herein, the use of audio and video technologies, in particular in their application within stimulated recall methods, is an integrated part of analysis and artistic creation. The AR laboratory is proposed as a framework through which the potential of AR in music— as a vehicle for the development of new practices in professional contexts and in teaching environments—is substantiated and facilitated. This brings me to the last section, set to formulate paths for future research.

11.3 Formulation towards futures

And so hér/here I am at the end of this PhD project, which has sought to address three under-researched topics in music research: agency, the work of an interdisciplinary musician, and the role of the curatorial within such work. My research has revealed its intermedial nature—how my performance and composition form through technologies, in relation to environments, and through intersubjective meaning-making. This is certainly not new. But whereas prior research has detailed the multiplicity of the 'performing I' or the 'composing I', my hope is to have revealed through this project that who the 'I' is, when conducted from intermediary positioning, a much more unruly agency than even the hyphenated titles—of performer-composer or composer-performer—suggest.

It suffices to look at some of the projects that have been presented in this thesis to grasp this. The environmental performer improvised to the *strengur* score, brought forth by my old gut strings and wind. This was presented in a video that combined ethnographic filming of my work with continued videographic work in relation to atmospheric movement. It is an activity that leans towards composing of an improviser. My live performance of "Hölluþula" fell closer to the tradition of WCM due to its notational aspects. That part grew out of improvisation and became material that was reworked within the electronics. I also include my performance of Olofsson's *Violin with Pytur*, for it is set within my own multi-channel composition. As such, I come close to 'composing the performance', a concept that Olofsson applies in his work within intermedial theatre. Similarly, my multi-channel installations grew out of activations and performative experiential insights.

This last point brings to mind Hogg's comment about how the only way to rethink a sustainable ecology is to put an emphasis on the human subject (2013a). What I hope to have achieved, similar to his and Ingold's phenomenologically-driven approaches, is both to reveal the potential of performative and compositional activity when it comes to reconfiguring eco-systemic relations, but also to point towards the potential of technologies in such undertakings. Through these, they may afford new insights in the phenomenological mission to think-through our relations to various phenomena in the world.

At the same time, my research has aligned with Suchman's (2007) point that the emergent nature of situated actions entails that they are not 'predetermined', yet neither are they 'random'. Hence, "(a) basic research goal for studies of situated action (…) is to explicate the relationship between structures of action and the resources and constraints afforded by material and social circumstances" (p. 177). The lack of infrastructure and support for longitudinal projects in the art worlds of contemporary music was one of the reasons behind my initial interest in pursuing a PhD. The driving force was that the everyday realities, through the lack of institutional support, entailed that the possibilities for discovering what 'other' ways might exist for thinking-through-performing were limited. This brought me into an environment that allows for the floating of laboratories and open-ended approaches.

Given my experience with laboratoriality as outlined in the previous section, it therefore falls naturally that I dedicate my first point for continued research to the question of what unexplored aural thinking may arise in an AR laboratory, designed to bypass the pre-forming of agency, human and technological alike. Such research holds great promise to further explore the possibilities that the collaborative interaction with audio and video technologies offer. Similarly, I pinpoint the need for continued research in relation to agency, and the need for research clusters that approach it from the angle of interdisciplinary work conducted by individuals embodying both the roles of composer and performer. Thirdly, further research is needed into ecological sound art, not least into its multifaceted methodology. Fourthly, I believe AR has great potential for further developing the analytical approach of stimulated recall. Such a phenomenological mission, as well as the other proposed lines of inquiry, may in return support what sonic thinking can afford us as we tune into and through material entanglements in our technosocial societies.

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Appendix A: Accompanying instructions for *strengur*

strengur
by Halla Steinunn Stefánsdóttir
from northwest
score based on a site-specific performance - 55.5299° N, 12.9341° E

<div align="center">Notes on 'strengur'</div>

The score sprang out of a site-respondent visit to the Klagshamn udde, a peninsula south of Malmö, Sweden. It consists of an initial score created on site by gut strings, wind and ink on transparent sketching paper, later to be merged with photographic media linked to foreshores. The word 'strengur' is Icelandic and translates into English as 'string'. In that instance it should be noted that in Icelandic 'strengur' can be used to describe a type of wind that runs along things, such as mountains or buildings, in a persistent way.

<div align="center">Notes in preparation for the 'strengur' live stream</div>

For this stage of the 'strengur' project a new layer has been brought forth, namely aleatoric strategies, presented below through a row of modules. The first module links to your choice of movement(s) and the second to the total length of your work. All lengths are in some way determined by the initial duration of the wind performance at Klaghamns udde. The third module links to the output format for the live stream. So modules for your weaving and stringing:

Score modules
- sense one movement of the score
- sense any two movements of the score
- sense all three movements of the score

Length modules
- 8'26"
- 5'43"
- 12'17"
- 7'42"
- 11'08"

Streaming modules
- Live performance, captured on video
- Audio accompanied by visuals, choice of media (video, photography etc.) is free

<div align="center">— I look forward to the continuation —
Hlýja | Warmth
Halla Steinunn</div>

Appendix B: List of figures and photos

Chapter 2

1. The continuous reciprocal loop between action and perception, as described by Gibson (1979/2014).

Chapter 3

2. Chart of subjectivity formation from the perspective of the performer (Gorton & Östersjö, 2016, p. 584).

Chapter 5

3. Hahn's chart for analysis of qualitative data (2008, p. 9).

Chapter 6

4. Recording equipment in the Northern Lights Hall, January 2017.
5. Recording at Northern Lights Hall. Photograph by Rawlings.
6. Activating the wire of the railings of the Northern Lights Hall. Photograph by Rawlings.

Chapter 7

7. Recording of Sigurðsson's "Raindamage" at Greenhouse Studios. In picture: Evans and Sigurðsson.
8. Still from documentation of *Flow* at the Library of Water. Photograph: Úlfur Hansson/Elín Hansdóttir. Post-editing: Margot Edström.
9. Overview of Olofsson''s creative process in intermedial theatre (2018, p. 198).
10. Curatorial sharing in the studio.
11. Performance in the studio.

Chapter 8

Chapter 9

Chapter 10

HÉR! An Exploration of Artistic Agency

This thesis is about the agencies at play in artistic processes. It is explored through the work of a performer, curator, and composer active within the fields of contemporary music and sound art. Starting with the proposition that agency is emergent and forms through sociomaterial relations, this PhD project sets out to explore how such acts may unfold in relation to the concert hall, the recording studio, in the virtual domain, and as ecological sound art. The thesis highlights the need for contextual sensitivity where agency is concerned while building on such knowledge to explore 'other' ways of connecting and relating through sound and music.

Violinist, composer, and curator **Halla Steinunn Stefánsdóttir** is born in Iceland but based in Malmö, Sweden. She has been the artistic director of Nordic Affect since its inception in 2005 and made numerous appearances with the ensemble at festivals and concert venues in Europe and USA. Her compositional output and commissions have spanned everything from electroacoustic compositions to sound and media installations. Stefánsdóttir's playing and compositions are featured on albums by the Carrier Records, Brilliant Classics, Musmap, Bad Taste Records, Tally, and Sono Luminus labels.

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