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The Phenomenological Space of Timbre

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Introduction

You hear the briefest snatch of sound and know, “Oh, that’s ‘Good Vibrations,’” or whatever. A fact of almost any successful pop record is that its sound is more of a characteristic than its melody or its chord structure or anything else. The sound is the thing that you recognize.¹

1. The Sound of the Music

In the quote above from an interview with Brian Eno, the musical producer touches on an often neglected aspect in music theory: the way it sounds. Numerous scholars, musicians and producers name “the sound of the music,” as the most important characteristic in popular music, as opposed to structure, melody or rhythm.² In western classical music, too, listeners name general aspects of the music’s sound to be more determinative for their emotional judgment, rather than indicating specific musical moments.³ This vague conception of the “sound of the music,” distinct from structural musical aspects such as melody, harmony and rhythm, is generally referred to as timbre. Yet, even with a more specific term for “the sound of the music,” the concept of timbre remains notoriously vague and holds several issues for both empirical research and philosophical exploration. Firstly, a clear definition of timbre is still lacking in musicological and philosophical studies, which instead often use a definition such as “the quality of tone” or define it negatively by stating that it is “that aspect of music by which you can identify a tone without considering other musical aspects such as pitch, duration and loudness.” Moreover, as “the quality of tone,” timbre is incredibly hard to quantifiably measure. Unlike other musical aspects such as pitch, duration and loudness, timbre cannot be represented on a singular scale. Descriptions of timbre, thus, rely on metaphorical descriptions which may lead to subjective qualifications and/or depictions that are open to multiple interpretations, if not done within a clear system. Finally, there seems to be a gap between research on timbre, which mainly construes timbre empirically as an acoustic phenomenon visualised in spectrographs and tone charts, and the perception of the listener or the expressive means of the performer, in which case timbre should be considered as a subjective aspect of our phenomenal experience.⁴

¹ A. Korner, “Aurora Musicalis,” *Artforum* 24, No. 10 (1986): 76.

² See for example D. Blake, “Timbre as Differentiation in Indie Music,” *Music Theory Online* 18, No. 2 (2012): 1; T. Warner, “Approaches to Analysing Recordings of Popular Music,” in *The Ashgate Research Companion to Popular Musicology*, ed. D. B. Scott, 131–45 (Burlington, VT: Ashgate, 2009).

³ A. Gabrielsson, “Emotions in Strong Experiences with Music,” in *Music and Emotion: Theory and Research*, ed. P. N. Juslin and J. A. Sloboda, 431–449 (Oxford: Oxford University Press, 2001), 443.

⁴ See Chapter 1 for a more elaborate discussion of the several issues in current timbre research.

Most of these issues are caused by the subjective nature of timbre. Timbre is primarily a perceptual quality, and as such a too abstract quality for traditional analysis. In this thesis, I will address these issues by focusing on timbre as it is perceived by the listener and attempt to find some of the essential features of the experience of timbre in order to highlight aspects of timbre that may otherwise go unnoticed. For this description I will adopt a phenomenological method of description and apply theories of previous phenomenological studies, such as Martin Heidegger's *Being and Time*, Maurice Merleau-Ponty's *Phenomenology of Perception*, Don Ihde's *Listening and Voice* and Thomas Clifton's *Music as Heard* to explicate my findings.⁵

However, I will not analyse the concept of timbre to its full extent, but instead I will focus on one particular aspect of timbre, namely the timbral experience of space. This narrowed focus came from the need of constraining the object of research to remain within the bounds of a master's thesis as the concept of timbre seems to be an umbrella term for all aspects that deal with the intuitive notion of "how it sounds." This broad definition of timbre is so large that a master's thesis would not suffice to explore all of its annotations and applications. My aim is to address timbre from a particular, narrowed down system of description and examine the value of this approach. Such a system could, for example, be limited to the metaphorical description of colour, or temperature, as these are metaphors we are familiar with in the description of timbre. I could then evaluate to what extent the parallel with colour, or temperature, reveals essential features of timbre. However, while such an examination of these descriptors may be valuable, with a focus on the spatiality of timbre I am able to describe timbre with a system that is based on the prereflective experience, as the experience of space precedes the aesthetic perception of music. There are no literal perceptions of colour in sound, just as there are no literal perceptions of temperature in sound. There is, however, a perception of literal space in sound as we can hear sounds to be closer or further away. This basic notion of spatiality is one of the most essential features of sound and is, thus, most appropriate to use as the point of departure for a phenomenological description. With the focus on timbral space, I can form a set of descriptors that is placed between purely metaphorical description and literal perceptions of timbre and, by doing so, explore how this spatiality might be essential to the experience of timbre. The phenomenological steps

⁵ M. Heidegger, *Being and Time*, transl. J. Macquarrie and E. Robinson (Cambridge, MA: Blackwell, 1962); M. Merleau-Ponty, *Phenomenology of Perception*, transl. C. Smith (London: Routledge & Kegan Paul, 1962); D. Ihde, *Listening and Voice: Phenomenologies of Sound*, 2nd ed. (Albany, NY: State University of New York Press, 2007); T. Clifton, *Music as Heard: A Study in Applied Phenomenology* (New Haven: Yale University Press, 1983).

involved in making this choice for spatiality will be thoroughly discussed in chapter 2. As this method relies heavily on a reflection on my own experience, an important part of this thesis will consist of evaluating my method and results. Accordingly, the main question of my research is “how can a phenomenological description of timbral space contribute to the existing study of musical timbre?”

2. A Phenomenological Method

Given the focus on the experience of the listener, an adoption of a phenomenological method of description seems to be most appropriate. This is not to say that other approaches, such as cognitive studies or ethnographic research, could not provide valuable insights, but these approaches might direct us to information which is irrelevant for the experience of timbre. As I will argue in Chapter 1, a comprehensive study of timbre *as it is heard* is still lacking from current research and it is exactly such a study that might give us a better understanding of the presence and functionality of timbre. As a phenomenological description focuses on the experience itself by stripping the object of its historical associations and analytic assumptions, the strive for a consideration of timbre as it is heard can be maintained. The stripping of irrelevant associations and assumptions will also improve the conceptual clarity of timbre. Since not only the definition of timbre is problematic, but also any communications about the specific qualities of timbre, a more consistent and clarified description of timbre could be of high significance for the general research on timbre.

Phenomenology is a philosophical movement which originated in the works of Edmund Husserl. Its main premise is that in order to find the essential features of an object as it appears in our perception, an approach to this object through our own experience by means of “pure description” is required. Husserl describes that for this method a completely “new style of attitude” is necessary in which the study is not regarded as an investigation of scientific facts, but of the essences of the objects of experience.⁶ Central to theory is the notion of *intentionality*, referring to an experience’s “aboutness,” and not to another subject’s motives. Our experience is always an experience of *something*, this thing is the intentional object, as contrasted to the real object. The intentional object, then, is an object of consciousness, shaped by our experience, rather than by its real, physical aspects alone. The intentional object should not be confused with an ideal object though. The existence of ideal

⁶ E. Husserl, *Ideas Pertaining to a Pure Phenomenology and to a Phenomenological Philosophy: General Introduction to a Pure Phenomenology*, transl. F. Kersten (The Hague: Martinus Nijhof Publishers, 1983), xix-xx.

objects, such as numbers or mathematical laws, depends on neither a real object or on the consciousness of minds, but instead exists outside of space and time. An intentional object is always derived from a real, or ideal, object. However, a pure focus on the real object, as is often done by the natural sciences, may provide data which is irrelevant to our experience, or miss information which only comes forward from our perception. The aim of phenomenology is not to replace or disregard empirical studies, but instead to provide a fruitful approach to find objective means by which subjective experiences can be understood, aiding empirical research with new input and perspective.

According to Husserl, intentionality is divided by two main components: the noesis and the noema. The noesis refers to the intentional act directed towards an object, which is immanent to the object's presence.⁷ For example, you can remember an object, judge an object, see an object etc. The acts of remembering (or judging, or seeing etc.) are noetic acts to which noema correspond. Noema, then, can be defined as the object as perceived: the remembered object, the judged object, the seen object. This is an important distinction to uphold, as it allows a clear indicating which aspects are essential to the intentional object and which are part of the mental acts towards the object, without explicitly complying to a definite separation between object and subject.

In order to avoid a completely subjective reflection, a "pure description" of the noema is manifested on several important grounds by which our experience can be scrutinised. First of all, since there is no focus on facts, strict definitions, theorisations and interpretations are suspended for as long as possible. This can be accomplished by applying several procedures: the bracketing out the previous assumptions about the object of research (the epoché), incrementally reducing the intentional object to its bare essential features by finding the variations of experience (eidetic reduction/phenomenological variations). The epoché does not necessarily imply a literal use of brackets, but more often refers to an explicit neglect of analytic conclusions and logical suppositions in favour of a description of naïve experience. The real existence of an object is often bracketed, as well as its other objective, physical aspects. The act of hearing a sound, for example, can be qualified as a noetic act, whether the sound is heard during a live performance, on a recording or even in one's imagination. If the sound itself is the intentional object, the producer of the sound, whether real or imagined, can be bracketed, for one should focus on the qualities presented in the experience of the sound itself. The eidetic reduction, on the other hand, consists of diversifying the experience and

⁷ Husserl, *Ideas Pertaining to a Pure Phenomenology*, 213.

observations of an object in order to find its essential features. This can be done by literal variations of approaching the object (you can see an object, smell an object, touch an object etc.), but one should also think of thought experiments and mentally placing the object in different contexts. By doing so, one can strip the features of perception that are irrelevant to the essential nature of the phenomenon.

Finally, within the descriptions of noetic acts and their respective noema, I would like to implement Husserl's distinction between active and passive synthesis.⁸ These syntheses refer to the combination, or unification, of the continuous stream of consciousness and the intentional objects of one's experience. According to Husserl, any active synthesis presupposes a passive synthesis, in which no active involvement of the ego is taking place.⁹ This passivity is twofold: firstly, there is a unification of one's own experiences and the flow of consciousness, and secondly there is a passive synthesis in the intersubjective world around us all. This second notion of passive synthesis accounts for the background of experience which is "always already there," whereas the first involves the particular, unconscious processes of the subject that influence our conscious experience. An active synthesis, then, could be any act in which the ego is explicitly engaged (e.g. the noetic act of remembering, judging or focusing on an object). This does not imply that any noetic act is an act of active synthesis. The mere, passive encountering of an object is already a noetic act in which the intentional object is constituted in the perception. Most often, both passive and active syntheses are involved in the constitution of an object, but making a distinction between the two will afford a clearer indication which aspects belong to the essential experience of the object and which aspects are only included in the active, noetic act of approaching an object in a particular way. Mostly, I will refer to the passive synthesis as the prereflective experience, as this experience includes the conditions on which active perceptions of the phenomena, such as reflection, are built.

⁸ For an overview of Husserl's definitions and usage of active and passive syntheses, see Husserl, *Ideas Pertaining to a Pure Phenomenology*, 103-110.

⁹ In his phenomenology, Husserl introduced the idea of a transcendental ego, which is involved in the active synthesis. According to Husserl, even when all objects are bracketed, it remains certain that there is a subject conscious of his or her bracketing. See Husserl, *Ideas Pertaining to a Pure Phenomenology*, 63-65. Later, Jean-Paul Sartre criticised this "egological" phenomenology and instead proposes a phenomenology which transcends the notion of the conscious ego and finds the ego to be part of the outside world, as a "being in the world." Such a view is in accordance with Heidegger's theory of "being-in-the-world" and this non-egological phenomenology seems to be the most valuable for present purposes. For the concepts of active and passive synthesis, the difference between a transcendental ego or an ego as part of the world does not matter. See J. P. Sartre, *The Transcendence of the Ego*, trans. A. Brown (London: Routledge, 2004), 1; and Heidegger, *Being and Time*, 78.

3. A Phenomenology of Music

There are, however, innumerable other versions of phenomenology, ranging from Martin Heidegger, who used Husserl's notion of intentionality to describe the inherent sense of being in the world, to Maurice Merleau-Ponty, who introduced intentionality as an embodied consciousness, to Roman Ingarden, who argued that phenomenology is only useful for describing the subjective process of aesthetic experience. Instead of considering phenomenology as a demarcated philosophical school, I will consider phenomenology as a certain attitude towards the object of research. Max Scheler defines such an attitude as a suspension from the object's immediate presence to observe the object as it is itself, holding off interpretation and judgment, and it is as such that I wish to apply a phenomenological method to my own description; examining the conditions that presuppose the immediate presence of timbre and maintaining this "phenomenological attitude" without adhering to a single phenomenological method, borrowing concepts from different phenomenologies as I see fit.¹⁰ There have been several phenomenological inquiries on music and sound, but viewed within the total of publications on the philosophy of music, these studies are certainly marginal. It was Husserl himself who introduced music to phenomenology by using the example of a melody to explicate his theory of temporality,¹¹ but the first full-fledged phenomenological studies on music were published by Alfred Schutz in the 1950s and Thomas Clifton two decades later. Schutz, dovetailing with the studies of Husserl, focused on the experience of time and temporality in music and claimed that in listening to music there is a "flux of inner time" in which the sound is experienced outside the regulative "clock time."¹² David Lewin, too, concentrated on the temporal experience of music and applied Husserl's concepts of temporality to music analysis.¹³

Clifton took a different approach and considered not only the experience of time to be essential to the perception of music, but also considered other aspects of music experience. Instead of focusing on the direct act of perceiving music, Clifton expands on the object's features which precede a musical perception and relates that to our experience of musical

¹⁰ M. Scheler, *Selected Philosophical Essays*, trans. D. R. Lachterman (Evanston, IL: Northwestern University Press, 1973), 137.

¹¹ According to Husserl, the experience of the "now" is always accompanied by an inherent sense of what happened right before (which he refers to as "retention") and what is going to happen right after (which he refers to as "protention"). This is exemplified in a melody; one can hear a melody as a whole even though one only hears one note at the time, because one retains the notes one has heard before in the melodic line and anticipate the notes that are to come. See Edmund Husserl, *On the Phenomenology of the Consciousness of Internal Time*, transl. J. B. Brough (Dordrecht: Kluwer Academic Publishers, 1990), 22-25.

¹² A. Schutz, "Fragments on the Phenomenology of Music," *Music and Man* 2, No. 1 (1976): 5-71.

¹³ D. Lewin "Music Theory, Phenomenology, and Modes of Perception," *Music Perception: An Interdisciplinary Journal* 3, No. 4 (1986): 327-392.

works.¹⁴ Clifton refers to these features as the “essential backgrounds of experience,” which he finds to be the experience of time, the experience of space, the element of play and the stratum of feeling. The play element refers here to the heuristic behaviour of the listener and the stratum of feeling indicates a certain inhabiting of the music, yet for present purposes his consideration of the experience of space is the most relevant. A final major work with regard to phenomenology and music was provided by Don Ihde. In his *Listening and Voice*, Ihde gives an extensive phenomenological description of sound, often comparing it to the more often discussed sense of vision.¹⁵ Apart from these seminal publications, there have been a couple of smaller publications on the use of phenomenology as a research tool, such as Alfred Pike’s application of phenomenology to the perception of emotions or Lawrence Ferrara’s plea for an integration of phenomenology into music theory, but within musicology, too, phenomenology has stayed in the fringe of methodologies.¹⁶ One of the most recent studies in the phenomenology of music was conducted by Tiger Roholt, who in his book *Groove: A Phenomenology of Rhythmic Nuance* examines the experience of rhythmic feeling.¹⁷ Roholt adopts the theory of Merleau-Ponty in stating that grasping a groove is not purely taking place in our cognitive perception, but instead in our bodily engagement with the music.

4. Timbre as a Musical Parameter

From a phenomenological point of view, however, using the concept of timbre as the phenomenological object of research could be contentious. Although some philosophers might argue that anything can be part of the noema chosen as phenomenological objects of research (ranging from a musical work to a single melody), to demarcate such an object would be to inevitably make an assumption about its nature. By focusing on timbre I am isolating it as a musical aspect which can be individually perceived, separate from other musical aspects. This would contradict the phenomenological approach of Merleau-Ponty, for example, who argues that we always perceive phenomena in their wholeness and not as encoded “raw sense data” which are then decoded by our cognition, at least not in our phenomenological perception.¹⁸ When we perceive an object, we do not first see its colour and shape only to decipher this information into an intentional object, we immediately see the

¹⁴ Clifton, *Music as Heard*.

¹⁵ Ihde, *Listening and Voice*.

¹⁶ A. Pike, “The Phenomenological Approach to Musical Perception,” *Philosophy and Phenomenological Research* 27, No. 2 (1966): 247-254; L. Ferrara, “Phenomenology as a Tool for Musical Analysis,” *The Musical Quarterly* 70, No. 3 (1984): 355-373.

¹⁷ T. Roholt, *Groove: A Phenomenology of Rhythmic Nuance* (London: Bloomsbury Publishing, 2014).

¹⁸ Merleau-Ponty, *Phenomenology of Perception*, 299-345.

object as whole. Only afterwards, by means of careful analysis, can we break down the phenomenon and perceive the parts that make up the whole. To start with timbre, then, would be to already take an analytic stance and make an assumption about music which would not be apparent from the prereflective experience.

Still, the assumption that timbre is an isolated musical aspect is not made out of the blue. Timbre traditionally has been one of the “musical parameters,” alongside harmony, rhythm, dynamics etc. Although there are small variations found in different writings on which elements are involved in the musical parameters, most music philosophers agree on pitch (or melody), rhythm and timbre to be the principal aspects that constitute music. Regarding a single tone, most often the parameters of pitch, duration, loudness and timbre are named.¹⁹ Leonard Meyer finds that these parameters are determined by how composers traditionally dealt with them. He states that “just as parameters within a culture are distinguished from one another because they are governed by somewhat different constraints, so it is with the parameters of music: melody, harmony, timbre, etc., are more or less independent variables.”²⁰ Meyer is right to state these aspects of music have been discussed throughout the history of western music, including timbre (see chapter 1), so considering timbre as an intuitive quality of music seems to be a viable starting point.

Yet, in order to suspend a concrete theorisation about music, it is necessary to adopt these musical parameters as focal areas for our investigation, instead of considering them as essential elements of the musical work. Hence, the assumption that the musical parameters are the essential features by which music is constituted is suspended and the parameters are treated as different approaches to the main phenomenon of music. Similarly, the focuses on spatiality, colour or temperature are focal areas that may reveal essential features, but in themselves are not assumed to be essential features. As such, I am able to maintain an open concept of music and timbre, while still investigating the intuitive assumptions that have shaped our musical concepts for a very long time. Since the concept of timbre is imbedded in the history of western music as a musical parameter, and I view the musical parameters as focal areas, rather than essential features of the musical experience, I can use timbre as my phenomenological object of research.

¹⁹ R. Rasch, and R. Plomp. “The Perception of Musical Tones,” *The Psychology of Music 2* (1999): 89.

²⁰ L. Meyer, *Style and Music: Theory, History, and Ideology. Studies in the Criticism and Theory of Music* (Philadelphia: University of Pennsylvania Press, 1989), 21.

5. A Phenomenology of Timbre

Even though timbre is widely recognised as one of the most decisive parameters for musical expression, the concept remains underexposed in research. The acoustic properties of timbre have been scrutinised in a number of computational studies,²¹ and there have been several empirical and cognitive researches on the effects of timbre on the listener.²² Still, philosophical explorations of the concept of timbre stay behind. With my thesis I hope to contribute to the existing literature by providing a phenomenological approach to this musical feature and address timbre as a subjectively perceived attribute of music, and by doing so, expose the issues in defining and conceptualising the parameter.

While there are various significant studies that apply phenomenology to the perception of music, timbre is often only named in passing. There are, however, several musicologists who have referenced phenomenological philosophers in their search for a good method of analysing timbre. Most notably, David Blake applies theories of Merleau-Ponty and Edward Casey to argue that indie music is largely differentiated by timbre, as opposed to harmony.²³ Furthermore, Patricia Holmes uses a phenomenological method to interview an expert guitarist on his use of timbre in performance.²⁴ In his PhD dissertation, Simon Hofding too, applies a phenomenological interview method to examine expert musicianship.²⁵ Other music-philosophers, such as Mine Doğantan-Dack, call for a new consideration of timbre as a means of expression accessible through listening experience, without directly referring to a phenomenological author.²⁶ These publications are valuable steps towards a new methodology of analysing timbre, but a full-fledged consideration of timbre is still missing. By not only referring to phenomenological aspects of music, but doing a phenomenological study on timbre, I intend to fill this gap in the literature.

²¹ See for example, D. L. Wessel, "Timbre Space as a Musical Control Structure," *Computer Music Journal* 3, No. 3 (1979): 45-52; A. Caclin, et al., "Acoustic Correlates of Timbre Space Dimensions: A Confirmatory Study Using Synthetic Tones," *The Journal of the Acoustical Society of America* 118, No. 1 (2005): 471-482.

²² See for example A. R. Halpern, et al., "Behavioral and Neural Correlates of Perceived and Imagined Musical Timbre," *Neuropsychologia* 42, No. 9 (2004): 1281-1292; F. Bailes, "Timbre as an Elusive Component of Imagery for Music," *Empirical Musicology Review* 2, No. 7 (2007): 21-34.

²³ Blake, "Timbre as Differentiation."

²⁴ P. Holmes, "An Exploration of Musical Communication through Expressive Use of Timbre: The Performer's Perspective," *Psychology of Music* 40, No. 3 (2012): 1-23. The idea of a phenomenological interview may seem contradictory, as a phenomenology is traditionally considered to be an analysis of one's own experience, but the appliances of some of the main premises of phenomenology, such as an open attitude and a suspense of interpretation and conclusion, is often applied in qualitative interview methods. For an example of a phenomenological interview guideline, see S. Kvale, "The Qualitative Research Interview: A Phenomenological and a Hermeneutical Mode of Understanding." *Journal of Phenomenological Psychology* 14, No. 2 (1983): 171-201.

²⁵ S. Hofding, "A Phenomenology of Expert Musicianship" (PhD diss., University of Copenhagen, 2015).

²⁶ M. Doğantan Dack, "Timbre as an Expressive Dimension in Music," in *Spectral World Musics*, ed. R. Reigle and P. Whitehead, 63-74 (Istanbul: Pan Press, 2008).

As stated above, it goes far beyond the scope of this thesis to provide such a description of timbre to its full extent. Even though such an approach may be desirable, it would be infeasible for present purposes, which is why I have chosen to focus on the spatiality of timbre. This demarcation of space, again, may seem atypical for a phenomenological approach, since as a result the assumption is made that this feature is essential to the timbral experience of music. Unlike timbre as a musical parameter, the spatiality of timbre is not imbedded in music's history. It seems to be exactly the kind of assumptions that are ought to be suspended in a phenomenological inquiry, but, as I will argue in chapter 2, my hypothesis is that a spatial experience of timbre presupposes the emotional judgment and reflection on hearing timbre and, as such, forms a valid starting point by which determinate features can be identified. Thus, instead of completely neglecting previous assumptions I will explicitly name the necessary assumed concepts and theories while explicating my choices and reflecting on their implications. Once I have presented the main premises of my concept of spatiality in timbre, I will provide the phenomenological variations of my timbral experience.

In order to answer the main question "how can a phenomenological description of timbral space contribute to the existing study of musical timbre?" this thesis will consist of two main parts. In the first part (chapter 1), I will focus on the gaps in the existing study of musical timbre by both touching on the current issues in timbre research and reconstructing the conceptualisation of timbre through a historical lens. In the second part (chapter 2), I will provide a potential solution to these issues by concentrating on the spatial experience of timbre. In this description of spatiality I will adopt the two main components of bracketing out and eidetic reduction. However, I will not literally use brackets, nor will I completely ignore previous assumptions. Instead, I will explicitly name them and then, by means of reduction, suspend them. Like Thomas Clifton, I will try to focus on the prereflective experience as much as possible. That is, the aspects of perception which precede the reflection and evaluation of the heard timbres. This is not to say that any specific elements within reflection and evaluation could not be essential to the experience of timbre, but a focus on the prereflective experience will afford a consideration of experience which does not (yet) involve emotional judgment. Since most previous descriptions of timbre do involve emotional judgment in some form or another (see chapter 1), by focusing on the experience preceding these judgments I am able to differentiate my descriptions from traditional descriptions and highlight aspects of timbre that previously have been neglected. The chapter will be built up as follows. Firstly, the concept of space in sound and music along with previous phenomenological descriptions of sound and timbre will be discussed. Secondly, I will

provide a phenomenological description of the spatiality in timbre, as an essential feature of the experience of timbre. I will end the chapter by describing the different variations of the experience of space in timbre. At last, in the concluding chapter I will reflect on my findings and compare my results to different approaches of timbre. Here I will critically assess my own description and methodology and answer the main question of this thesis.

Although it is clear in which aspects this study might contribute to the existing literature, pinpointing the exact social relevance of such a philosophical study is much more difficult. The study of timbre as a whole, and consequently my thesis as part of this body of literature, however, can contribute to musical discourse in several ways. For example, a better understanding of the perception of timbre can be helpful for the performances of musical works. Plenty of empirical data on the acoustic characteristics of instruments, ensembles or concert halls are used to make the musical work sound better in performance and a phenomenological understanding of these acoustic features might aid in the application of these studies. In recording, too, the manipulation of timbre plays a vital role. Especially in popular music producers often use various timbres to evoke different moods, so a phenomenological understanding of how these reactions are formed could be paramount. As a musical parameter, timbre appears to be an influential aspect in each of the stages from composition, to sound production, to listening, so a philosophical understanding of this so-far vague concepts could undoubtedly be helpful.

Chapter 1 – Approaching the Concept of Timbre

1. Defining Timbre

Over the last decades, timbre seems to be one of the most underexposed characteristics of music in multiple areas of research. Although there have been numerous studies on timbre, the concept is mostly studied in computational research in order to map its acoustic properties.²⁷ Yet, even in these fields of study the research on timbre is modest in comparison to studies on other musical aspects such as pitch, rhythm and harmony.²⁸ The study of timbre as meaningful sound, and the subjective perception and artistic value of timbre, seems to be largely under-represented in existing literature.²⁹ This is despite results from recent research that show the importance of timbre perception in both our everyday lives and in musical experience. For example, timbral variations in speech are thought of as a key element in communication.³⁰ Even young infants have the ability to recognise and memorise different timbres,³¹ and a study by Alf Gabrielsson and Patrik N. Juslin revealed that expressions of emotions in sound are largely recognised by timbre.³² An expression of anger, for example, is characterised by a high level of noise in timbre and an expression of happiness is found in a timbre which is often characterised as “bright.” For the performer, too, variations in timbre are considered to be one of the main components of musical expression,³³ and for the listener emotional responses to the music are also heavily influenced by the perception of timbre.³⁴

Still, as a philosophical concept timbre has gained little attention. Many philosophers acknowledge that timbre is a powerful feature of the perception and emotional experience of music, yet fail to explore the musical parameter or provide a definition other than “the quality

²⁷ For an overview of different models for computational models and empirical research on timbre, see S. McAdams, et al. “Analyzing Musical Sound,” in *Empirical Musicology: Aims, Methods, Prospects*, 157-196, ed. E. F. Clarke and N. Cook (Oxford: Oxford University Press, 2004).

²⁸ J. M. Hajda et al. “Methodological Issues in Timbre Research,” in *Perception and Cognition of Music*, ed. I. Deliège and J. Sloboda, 253-302 (Hove: Psychology Press, 1997), 253.

²⁹ This underrepresentation has been noted by various authors, see for example P. Boulez, “Timbre and Composition – Timbre and Language,” trans. R. Robertson, *Contemporary Music Review* 2, No. 1 (1987): 161–72; R. Cogan and P. Escot, *Sonic Design: The Nature of Sound and Music* (Englewood Cliffs, NJ: Prentice-Hall, 1976), 327-330; Doğantan Dack, “Timbre as an Expressive Dimension in Music.”

³⁰ A. Patel, *Music, Language and the Brain* (Oxford: Oxford University Press, 2008), 52-53.

³¹ L. J. Trainor et al., “Long-Term Memory for Music: Infants Remember Tempo and Timbre,” *Developmental Science* 7, No. 3 (2004): 289–296.

³² A. Gabrielsson and P. N. Juslin, “Emotional Expression in Music Performance: Between the Performer’s Intentions and the Listener’s Experience,” *Psychology of Music* 24, No. 1 (1996): 68-91.

³³ P. N. Juslin, “Communicating Emotion in Music Performance: A Review and a Theoretical Framework,” in *Music and Emotion: Theory and Research*, ed. P. N. Juslin & J. A. Sloboda, 309-340 (Oxford: Oxford University Press, 2001).

³⁴ J.C. Hailstone et al., “It’s Not What You Play, It’s How You Play It: Timbre Affects Perception of Emotion in Music,” *The Quarterly Journal of Experimental Psychology* 62, No. 11 (2009): 2141-2155.

of sound”³⁵ or “colour of tone” and focus in their musical examples primarily on the more accessible (i.e. easier notable) musical aspects such as harmony, melody and rhythmic structures. For example, Michael Spitzer, in an adoption of Leonard Meyer’s theory of musical expectancy, names timbre as one of the features for emotional expressivity, and uses terms such as “sharp timbre,” “harsh timbre” and “soft timbre,” yet does so without explicating the term.³⁶ Likewise, Jenefer Robinson finds timbre to be one of the musical parameters which composers use as a narrative medium, yet she does not explain what is meant by “timbre.”³⁷ In each of these cases, it is assumed that the reader knows what, for example, a “harsh timbre” is supposed to sound like. Yet, a substantial exploration of the expressive and symbolic functions of timbre in Western music is still lacking in the existing literature.³⁸

The general neglect of timbre culminated in the debate on the question whether the instrumentation of the music should be considered to be an essential part of the musical work. Numerous philosophers regard musical works as “colourless sound structures.”³⁹ Peter Kivy even goes so far as to state that “timbre per se is pretty hard to imagine as being involved in compositional choices very often. Composers tend to think in structure, not color.”⁴⁰ Other authors argue that the general timbre is essential to the identity of a musical work, but that the specific instrumentation of the performance is irrelevant as long as the produced timbre resembles the timbre of the specified instruments in the score.⁴¹ Stephen Davies has argued against this view by claiming that composers, musicians and listeners typically hear the means of production through the musical sounds.⁴² It would go beyond the scope of this thesis to explore this particular debate to its full extent, but it serves as another example of a predominantly naïve treatment of timbre, lacking an inquiry of the essential features of timbre, how it is perceived and what timbre is constituted of.

³⁵ Several authors avoid the term “quality” in their definition and description of timbre, as it seems to imply a form of (aesthetic) judgment. I believe that, in most cases, this does not apply and “quality” should be understood as an attribute or property of a phenomenon.

³⁶ M. Spitzer, “Emotions and Meaning in Music,” *Musica Humana* 1, No. 2 (2009): 155-191.

³⁷ J. Robinson, *Deeper Than Reason: Emotion and its Role in Literature, Music and Art* (Oxford: Oxford University Press, 2005), 410.

³⁸ Doğantan Dack, “Timbre as an Expressive Dimension,” 65.

³⁹ S. Davies, “Musical Works and Orchestral Colour,” *British Journal of Aesthetics* 48, No. 4 (2008): 363-375.

⁴⁰ P. Kivy, “Orchestrating Platonism,” in *Aesthetic Distinction*, ed. T. Anderberg et al. 42-55 (Lund: Lund University Press, 1988), 50.

⁴¹ This position is often referred to as timbral sonicism, and has been defended by Julian Dodd, among others. His argument is built on the analytic premise that music is ontologically defined purely by “how it sounds.” If an imagined synthesiser would be able to produce a sound indistinguishable from a real, physical instrument, the listener would not hear any difference and, thus, one should speak of an authentic performance of this musical work. See J. Dodd, “Sounds, Instruments and Works of Music,” in *Philosophers on Music: Experience, Meaning and Work*, ed. K. Stock (Oxford: Oxford University Press, 2007).

⁴² Davies, “Musical Works and Orchestral Colour,” *The British Journal of Aesthetics* 48 No. 4 (2008): 363-375.

Perhaps the main issue of the concept of timbre lies in its definition. One of the most intuitive definitions was given by Stephen Handel, who considers timbre to be “the perceptual qualities of objects and events; that is, ‘what [it] sounds like.’”⁴³ This definition, however, was quickly refuted for it does not provide the necessary and the sufficient conditions, so a distinction between timbre and other musical characteristics, such as pitch or loudness, becomes impossible. Although there is not one specific formally agreed upon definition, the definition given by Stephen McAdams et al. in Eric Clarke and Nicholas Cook’s *Empirical Musicology* seems to be most commonly used. They define timbre as “the attribute of auditory sensation that distinguishes two sounds that are otherwise equal in terms of pitch, duration and loudness.”⁴⁴ There are multiple issues with this definition. Firstly, as such, timbre is negatively defined by what it is not, i.e. pitch, duration and loudness. Timbre is a “wastebasket” category, it is that which is left when you do not take the other, more distinguishable sound characteristics into account. This is problematic for quantitative research, simply because it is unclear what to look for.⁴⁵ As a phenomenological definition, it becomes even more problematic; it does not include any aspects of the performance or production of timbre, nor does it say anything about the perception of timbre by the listener.

Yet, even if timbre is considered as a residual category, there are still several other issues that lie in the phrasing of this definition. For example, McAdams et al. seem to imply that two different timbres are only distinguishable when the two sounds are equal in pitch, duration and loudness. But, surely, if one were to hear two successive sounds that are dissimilar in timbre, as well as in pitch, duration and loudness, one would still be able to find the difference in timbre. Several authors tried to avoid this issue by cleverly rephrasing the definition to, for example, “the quality of sounds, typically divorced conceptually from pitch and loudness,”⁴⁶ or “[t]hat attribute of auditory sensation whereby a listener can judge that two sounds are dissimilar using any criteria other than pitch, duration or loudness.”⁴⁷ Still, these definitions are reliant on dissimilarity of sounds without taking into account the other, more easily definable features. Each of these definitions fails to consider timbre as an individual, self-contained parameter, perceptible on its own.

⁴³ S. Handel, “Timbre Perception and Auditory Object Identification,” in *Hearing*, ed. B. C. J. Moore, 425-463 (San Diego: Academic Press, 1995), 432-433.

⁴⁴ McAdams et al., “Analyzing Musical Sound,” 190.

⁴⁵ Hajda et al. “Methodological Issues,” 253.

⁴⁶ Wessel, “Timbre Space as a Musical Control Structure,” 45.

⁴⁷ R. L. Pratt and P. E. Doak “A Subjective Rating Scale for Timbre,” *Journal of Sound and Vibration* 5, No. 3 (1976): 317.

For the purpose of quantitatively measuring timbre, it might be helpful to disregard a general definition of timbre, and instead formulate a specific definition including the acoustic properties of the parameter. Such a definition is not uncommon for other musical aspects. Pitch, for example, could be defined as “the speed of vibrations from the source of the sound.” The number of vibrations per second is defined as the *frequency*. Likewise, loudness can be defined by the level of decibels a sound produces, and duration can be defined as the length of a sound in seconds, minutes or any other time measurement. McAdams et al. recognise the limitations of their “official” definition, and opt for such an approach, providing a list of possible influential factors for the perception of timbre. Yet, as is clear from this list, such an approach is not as easy for timbre as it is for pitch, duration or loudness. Our perception of timbre is not determined by a single factor, instead it is influenced by a multitude of aspects, such as the strength and presence of certain overtones, the frequency location of the spectrum, the temporal development of the spectrum, the attack-decay-sustain-release envelope (ADSR-development) and the presence of noise. Many of these factors are also important aspects of our perception of the other musical parameters. For example, the frequency location of the spectrum and the presence of overtones is directly related to our perception of pitch; the ADSR-development to duration and loudness, and so forth. A definition that would sum up all the empirical components of sound acoustics would not only defy the phenomenological essence of timbre (after all, I hear a unity in these sound characteristics by which I hear the timbre of a sound as a whole, hence a phenomenological definition of timbre should include this sense of the wholeness of timbre and not just provide a list of things that are of influence for my sound perception), it would also encroach on other musical parameters’ definitions. This makes isolating timbre hard to do.

In the phenomenal experience, too, it is impossible to place timbre on a singular scale, whereas it *is* possible to do that with pitch, duration and loudness. A *c*''' is experienced higher than a *c*", a quaver is experienced longer than a semiquaver, *forte* is experienced louder than *pianissimo*, yet the timbre of a trumpet is not greater, or less, than the timbre of a clarinet. One possibility would be to map the different timbres of the various classical instruments into groups, as is done by multiple computational musicologists,⁴⁸ but one has to keep in mind that within the timbre of an instrument a performer is able to generate variations in timbre. These changes in timbre would go unnoticed in a general classification of timbre per instrument.

⁴⁸ See, for example, B. Kostek and A. Czyzewski, “Representing Musical Instrument Sounds for Their Automatic Classification,” *Journal of the Audio Engineering Society* 49, No. 9 (2001): 768-785; and P. Herrera-Boyer, et al. “Automatic Classification of Musical Instrument Sounds,” *Journal of New Music Research* 32, No. 1 (2003): 3-21.

Moreover, in electronic music the range of different timbres is virtually infinite, rendering the group classification largely useless. Still, even within a group classification the concept of timbre heavily relies on dissimilarity. One could classify a trumpet in one group, because one knows it sounds different than a clarinet. But exactly *how* it sounds different remains undefined.

So, what is timbre then? It evidently is not a term only used by experts to describe some small acoustical feature. In fact, listeners themselves rate timbre as one of the most important factors for their appreciation of music.⁴⁹ Perhaps a closer look at the historical background of the conceptualisation of timbre as a musical parameter might shed some light on our understanding of this abstract phenomenon.

2. The Historical Concept of Timbre

The concept of timbre as an individual parameter dates back to the eighteenth century. The first explicitly musical description of timbre was given by Jean-Jacques Rousseau in the tenth volume of Diderot's *Encyclopédie*:

Tymbre, n. m. A sound's tymbre describes its harshness or softness, its dullness or brightness. Soft sounds, like those of a flute, ordinarily have little harshness; bright sounds are often harsh, like those of the *vielle* or the oboe. There are even instruments, such as the harpsichord, which are both dull and harsh at the same time; this is the worst tymbre. The beautiful tymbre is that which combines softness with brightness of sound; the violin is an example.⁵⁰

Although inevitably composers and musicians must have taken the various sound qualities of instruments and the timbral variations of different playing techniques into consideration for their production of musical works and performances, it was not until the mid-eighteenth century that timbre as an individual concept was discussed. According to Emily Dolan, this encyclopaedia article signifies the start of a new conception of music in aesthetics, in which the previous notion that instrumental music itself was not able to express anything was

⁴⁹ A. Gabrielsson, "Emotions in Strong Experiences with Music," in *Music and Emotion: Theory and Research*, ed. P. N. Juslin and J. A. Sloboda, 431–449 (Oxford: Oxford University Press, 2001), 443.

⁵⁰ "Tymbre, s. m. *en Musique*, on appelle ainsi cette qualité du son par laquelle il est aigre ou doux, sourd ou éclatant. Les sons doux ont ordinairement peu d'éclat comme de la flûte; les sons éclatants sont sujets à l'aigreur, comme les sons de la *vielle* ou du hautbois. Il y a même des instruments, tels que le clavecin, qui sont à-la-fois sourds & aigres, & c'est le plus mauvais *tymbre*. Le beau *tymbre* est celui qui réunit la douceur à l'éclat du son; on en peut donner le violin pour exemple." J-J Rousseau, "Tymbre," in *Encyclopédie* Vol. 16, ed. D. Diderot and J. R. D'Alembert, 775 (Paris, 1751-1765), transl. by E. I. Dolan, *The Orchestral Revolution: Haydn and the Technologies of Timbre* (Cambridge: Cambridge University Press, 2013), 56.

disregarded.⁵¹ Along with the nineteenth-century work concept came a larger focus on the individual quality of musical tones as a musical medium, and, consequently, instrumentation became an increasingly larger part of the musical work.

Even though Rousseau's definition only defines four aspects to rate a musical timbre (softness, harshness, dullness and brightness), this description strikingly resembles modern description of timbre; the definition describes timbre in subjective terms related to human perception. From the birth of timbre, the concept is described with metaphors of experience. Through multiple treatises and the exaltation of the orchestra with its instrumental repertoire in the late eighteenth and nineteenth century, timbre began to reach an important expressive status in composition. This culminated in the large orchestration treatises of Hector Berlioz, less than a hundred years after Rousseau's definition, and Nikolai Rimsky-Korsakov several decades after Berlioz's treatise. Berlioz's descriptions of timbre exceed Rousseau's four categories by a great extent. For example, in his description of the viola he states the instrument is "as agile as the violin, the sound of its lower strings has a particular pungency, its high notes have an especially sad and passionate character and its profoundly melancholy tone makes its general character quite distinct from that of other stringed instruments."⁵² The saxophone, he describes, has a tone which is "rather piercing and painful at the top, while its low notes, on the other hand, are grand and pontifical, so to speak."⁵³ This "so to speak" exemplifies once again the difficulties of expounding timbre. Even though Berlioz makes use of a wide range of imaginative depictions, he occasionally has to clarify his portrayals of the instrumental timbres is metaphorical and in lack of better terminology.

It is interesting to compare Berlioz's accounts to the examples in Rousseau's definition of timbre. Whereas Rousseau describes the oboe as bright and harsh, Berlioz describes the oboe as having "a rustic character, full of tenderness, of bashfulness even."⁵⁴ This seems to be a complete opposite description from "bright" and "harsh." The flute is described by Rousseau as "soft, with little harshness," Berlioz, too, states the sound of the instrument is soft in its middle register, albeit arguing it is "rather piercing at the top and very individual at the bottom."⁵⁵ Rimsky-Korsakov, on the other hand, finds the bottom register of

⁵¹ Dolan, *The Orchestral Revolution*, 57.

⁵² H. Berlioz, *Grande Traité d'instrumentation et d'orchestration modernes* (Paris: Schönerberger, 1844, rev. 1855), transl by H. Macdonald, *Berlioz's Orchestration Treatise: A Translation and Commentary* (Cambridge: Cambridge University Press, 2002), 35.

⁵³ *Ibid.*, 298.

⁵⁴ *Ibid.*, 102.

⁵⁵ *Ibid.*, 137.

the flute “dull” and “whistling,” and its top register “clear” and also “whistling.”⁵⁶ Surely, the sound of the oboe and flute have not changed that much throughout the years, yet each of these descriptions seem to contradict the depictions of the other writers. What of course *has* changed throughout the years is the perception and aesthetic evaluation of these timbres. It was a slight change in taste and preference that altered the oboe from a harsh instrument to a tender one. Rousseau’s definition and Berlioz’s and Rimsky-Korsakov’s timbral descriptions exemplify the human aspect in the apprehension of timbre.

Rousseau is also said to be among the first writers to associate musical sound with colour.⁵⁷ The association between timbre and colour is still found in definitions of timbre today, for example Grove Dictionary defines timbre as “Tone colour; that which distinguishes the quality of tone or voice of one instrument or singer from another,”⁵⁸ and the most common word for timbre in German is *Klangfarbe*. Rousseau did not explicitly apply colour to timbre yet, but did allude to the broader definition of “how it sounds.” He described melody as the equivalent of drawing and representation in painting, of which harmony and sound are merely its colours.⁵⁹ Still, comparisons between visual colour and music have existed for ages. For example, “colour” had a specific meaning in fourteenth-century motets: Girolamo Cardano declared that the seven consonant intervals relate to seven colours,⁶⁰ Louis-Bertrand Castel, in his invention of the ocular harpsichord, related pitch to specific colours,⁶¹ just to name a few. Rousseau’s description of colour, though, is striking, for it reveals a stance on timbre which has been prevalent throughout the eighteenth and nineteenth century. Rousseau considers colour to be merely a decorative aspect of a painting. Its strokes and figures, the shapes and structure, are what constitutes a painting and brings the colours to life. Without the structure, the colours themselves do not express anything. Such a remark was made earlier by Noël-Antoine Pluche, who argued that colours only please the mind if they are attached to something. The mind searches for coloured objects, not colours themselves.⁶²

With such a conception of timbre, a consideration of timbre as a quale comes to mind. Particularly in the philosophy of mind, the term qualia is used to refer to the subjective,

⁵⁶ N. Rimsky-Korsakov, *Principles of Orchestration*, ed. M. Steinberg, transl. E. Agate (Berlin: Edition Russe de Musique, 1923), 16.

⁵⁷ Dolan, *The Orchestral Revolution*, 41.

⁵⁸ *The Oxford Dictionary of Music*, s.v. “Timbre.”

⁵⁹ J-J Rousseau, *Essai sur l’origine des langues*, trans. in *Two Essays on the Origin of Language: Jean-Jacques Rousseau and Johann Gottfried Herder*, trans. J. H. Moran and A. Gode (Chicago: University of Chicago Press, 1966), 53.

⁶⁰ M. Spitzer, *Metaphor and Musical Thought* (Chicago: University of Chicago Press, 2004), 155.

⁶¹ K. Peacock, “Instruments to Perform Color-Music: Two Centuries of Technological Experimentation,” *Leonardo* 21, No. 4 (1988): 397-406.

⁶² Dolan, *The Orchestral Revolution*, 40.

individual phenomena of our experience.⁶³ Qualia are the sensations of our experience: the smell of a blossoming tulip, the taste of red wine, the feeling of hunger, the cold sensation of touching ice, etc. The determining factor is that qualia are non-representational and non-structural aspects of our perception. Colours typically fall in this category, as aspects of our experience separate from the object of perception. Unlike previous comparisons between musical aspects and colours, such as the pitch-colour instrument of Castel, Rousseau and Pluche compare sound with colour for the correspondence in its perceptual functionality.

Rousseau's definition of timbre, even with his analogy of colour in mind, does not refer to the full range of timbral variety that Berlioz and Rimsky-Korsakov would use. If Rousseau's timbre should indeed be considered as colour, it was only to explain that a melody is an arrangement of sounds, just like a painting is an arrangement of colours. This conception changed in the nineteenth century when the term *Klangfarbe* became more common and timbre became an aspect of beauty as a result of the flourishing orchestral practice.⁶⁴ Each instrument could be considered as a colour in a beautiful palette. The notion that a sound in and of itself could be beautiful was an important development in the conception of timbre.

3. Timbre as an Acoustic Feature

The first scientific study of timbre was conducted by Hermann von Helmholtz. In 1863, Von Helmholtz published his *On the Sensations of Tone*, in which he presented an extensive research on the acoustic properties of sound and musical tones. Von Helmholtz defined timbre as the quality of the tone that is defined by the presence of certain overtones and their strength in the spectrum. This view was upheld within musicology until well into the twentieth century. He initially brings forward the dissimilarity definition of timbre, as one is able to distinguish between instruments with the greatest ease.⁶⁵ According to Von Helmholtz, as the quantity of vibrations decides the pitch of a tone, and the amplitude the loudness, the only hypothesis left is that the timbre of a tone is determined by "the manner in which the motion

⁶³ In the philosophy of mind, there has been a long debate on the existence of qualia. Although there is a general consensus on the existence of qualia as instances of our subjective experience, there have been numerous philosophers that find the notion of qualia problematic. These criticisms are, however, mostly based on hard empirical claims. Since qualia do not have empirical causality they are ontologically unstable. From a phenomenological perspective, this issue is largely irrelevant. The object of study is addressed through our own experience; a complete denial of qualia would render a phenomenological study useless. The question whether timbre should be considered as a quale, however, *is* relevant. Is timbre a non-representational and non-structural aspect of our experience? Or, should timbre be considered as an essential feature for our perception of musical sounds and musical works? What would the implications be for either conception? These issues will be addressed in the concluding chapter.

⁶⁴ Dolan, *The Orchestral Revolution*, 71.

⁶⁵ H. Von Helmholtz, *Sensations of Tone: As a Physiological Basis for the Theory of Music* 4th ed. (1877), transl. & ed. A. J. Ellis (New York: Dover Publications, 1954), 19.

is performed within each vibration.”⁶⁶ Since a vibration can be made in infinite ways, there is an endless variety of musical timbres; a difference in phase will lead to a different number and strength of partial tones as consequence of the different wave formed by the vibration. Von Helmholtz examined this theory at length, taking into consideration both the physiology of the ear and the physics of sound waves. Even though the attack and release of a tone received little attention for the perception of timbre until the twentieth century, Von Helmholtz did note that “very slight consideration will suffice to show that many of these peculiarities of musical tones depend upon the way in which they begin and end,”⁶⁷ referring to the quality of tones. He also noted that the presence of noise, in particular bow noise, wind noise and other noises produced by the playing of the instrument, influence the timbre. Yet, he decided to neglect these sounds in his studies on tones, for he wanted to focus on pure musical tones alone.⁶⁸

Alongside his extensive investigation of the acoustic properties of music, however, Von Helmholtz is the first to admit that these studies do not suffice in expounding music theory and the aesthetics of beauty. He argues that “the system of Scales, Modes and Harmonic Tissues does not rest solely upon inalterable natural laws, but is also, at least partly, the result of esthetical principles, which have already changed, and will still further change, with the progressive development of humanity.”⁶⁹ In the final chapter of his seminal book, he addresses the aesthetic influences on musical laws and conceptions of beauty. It should be noted, though, that here he does not address timbre, so it remains unclear whether Helmholtz found the perception and evaluation of timbre belonging to the field of aesthetics as well.

Building on von Helmholtz, psychologist Carl Seashore argues that timbre can be measured by breaking down the complex wave form. However, he is one of the first to state that timbre is one of the attributes for emotional expression.⁷⁰ He gave the following definition of timbre: “In general, we may say that, aside from accessory noises and inharmonic elements, the timbre of a tone depends upon (1) the number of harmonic partials present, (2) the relative location or locations of these partials in the range from the lowest to the highest, and (3) the relative strength or dominance of each partial.”⁷¹ This definition is

⁶⁶ Ibid., 19.

⁶⁷ Von Helmholtz, *Sensations of Tone*, 66.

⁶⁸ For present purposes, such a consideration of timbre would be problematic, as there are plenty non-pitched noise sounds, without a clear set of overtones, which we would still consider musical. The cymbal, for example, has an arguably distinctive timbre, yet an undistinguishable series of overtones.

⁶⁹ Ibid., 235.

⁷⁰ C. E. Seashore, “Measurements on the Expression of Emotion in Music,” *Proceedings of the National Academy of Sciences of the United States of America* 9, No. 9 (1923): 324.

⁷¹ C. E. Seashore, *The Psychology of Music* (New York: McGraw-Hill, 1938), 96-97.

almost identical to Von Helmholtz's explication of timbre, yet Seashore specifically notes that timbre is only the perceptual sound quality of *one* instance of a sound, comparable to a single shot in a motion picture. The time development of tones, on the other hand, is indicated as "sonance," which he later defines as "that aspect of tone quality which results from fluctuations in pitch, intensity, time, and timbre within a tone,"⁷² in order to provide a term for "the successive changes and fusions which take place within a tone from moment to moment."⁷³ A tone, therefore, consists of two main components: the instantaneous quality of sound (timbre) and the continuous sound quality of sonance.

Such a differentiation between a single timbre and the combination of multiple timbral inputs has been adopted by several authors after Seashore's publications. For example, Leo Beranek, in his *Music, Acoustics and Architecture*, distinguishes between timbre and tone colour, in which the latter consists of the combinations of singular timbres.⁷⁴ The combination of timbres here is not in time, but rather describes the blending of multiple instruments and voices into one sound during performance. Later, McAdams et al. include both the timbral blending and the overall time development of timbre, referred to as the "evolution of timbre," in their quantitative analysis of the musical parameter.⁷⁵

With his concept of sonance, Seashore intended to account for the experienced sameness within timbral variety. Listening to the range of timbres of an instrument, a voice, or any other sound, the ear is able to hear an "average," which Seashore coined as sonance. The sound of a voice, for example, is experienced as one, even if there are considerable variations in timbre in different parts of the song. Likewise, a piano can be recognised as such throughout all of its registers, even though the strength and presence of overtones varies greatly between them. This seems to be an important aspect of our perception of timbre. In a recent essay on the expressivity of timbre, Mine Doğantan Dack refers to the notion of "hearing an average" as "subjective constancy and permanence of sound-sources."⁷⁶ Indeed, more than any other musical aspect, timbre directs our attention to the sound source. Doğantan Dack even states that timbre, metaphorically speaking, is the voice of *matter* (i.e. the material sound source) as it converses with *force* (the initiation and sustaining of a sound and the responding sound-body). In electro-acoustic music the (im)possibility to recognise the sound source can be an aesthetic feature of the musical work. Conversely, within Western

⁷² Ibid., 108.

⁷³ Ibid., 103.

⁷⁴ L. Beranek, *Music, Acoustics and Architecture* (New York: John Wiley and Sons, 1962), 42.

⁷⁵ McAdams et al., "Analyzing Musical Sound."

⁷⁶ Doğantan Dack, "Timbre as an Expressive Dimension," 69.

traditional orchestral music, the permanence of the familiar sound sources allows the listener to focus on non-timbral sound structures, such as the harmonic development or the melodies involved in a musical piece. The timbral structure is already taken for granted. An interesting take on this sound permanence is provided by Eric Clarke, who applied J. J. Gibson's theory of perception to an analysis of two popular songs by Frank Zappa and P. J. Harvey respectively.⁷⁷ According to Gibson, a central part of our perception is determined by invariants, which refers to the constancies of our environment, both naturally and culturally. Clarke states that "the sounds of a muffled drum being struck with wooden sticks specify the materials (wood, skin) and physical characteristics (hollowness, damped vibration) of the material source - the drum; and they also specify the social event (for instance a military funeral) of which they are a part." Within hearing the timbre, there is a constancy in both its perceived acoustic sound as its perceived social meaning.

Phenomenologist Don Ihde, in a similar sense, argues that unlike non-musical sounds, music has the ability to steer our attention away from the sound source to the sound itself. Not the violin, but the music it plays becomes the object of our perception when listening to music. If music is badly performed, for example when the violin starts squeaking, one is drawn out of his listening experience and the materiality of the sound source becomes foregrounded.⁷⁸ However, it is questionable whether our redirection of focus from the source to the music itself is caused by our familiarity and subjective constancy of the presented timbres. It is more probable that Ihde assumes an aesthetic attitude in which sound is identified as music and the source itself is neglected. Such a view is in accordance with Doğantan Dack as she states that the source permanence (as a permanence-through-change) is essential for timbral structures to "express selfhood or personality."⁷⁹ Timbre is not merely the taken for granted background of the expression in music, but is the *voice* of expression.⁸⁰

Still, timbre is not only an aspect of expressivity. In the second half of the twentieth century several composers started to use timbre as a structural aspect for composition. For example, John Cage stated in 1957 that new technological developments in recording, sound alteration and mixing allow composers to create a "total sound space" which is ear-

⁷⁷ E. Clarke, "Subject-Position and the Specification of Invariants in Music by Frank Zappa and P. J. Harvey," *Music Analysis* 18, No. 3 (1999): 347-374. For an overview of Gibson's theory of perception and his use invariants, see J. J. Gibson, *The Perception of the Visual World* (Cambridge: The Riverside Press, 1966), 145-162.

⁷⁸ D. Ihde, *Listening and Voice*, 155.

⁷⁹ Doğantan Dack, "Timbre as an Expressive Dimension," 69.

⁸⁰ The first thing that comes to mind with the notion of musical expression is an expression of emotions. However, with expressivity I do not intend to necessarily imply emotional expressivity. Rather, it refers to any intentional direction of musical sounds.

determined by timbre among other musical aspects.⁸¹ The aesthetic value of listening to “the sound itself” became increasingly important in Cage’s compositions. Moreover, Arnold Schoenberg and Anton Webern intended to create “timbre structures,” as opposed to melodic or harmonic structures, in their compositions. One notable example of this is the use of the so-called *Klangfarbenmelodie*, in which the notes of the melody are divided among different instruments to create an effect of timbral development. One example of this is Webern’s Concerto for Nine Instruments (Op. 24), in which in the opening measures each motive is started by one instrument and finished by another, making the timbre of the different instruments unusually stand out above the other musical parameters. In his *Theory of Harmony*, Schoenberg states that a tone consists of pitch, volume and timbre. Up to then, only pitch had been considered a structural element of composition and especially the evaluation of timbre was less cultivated. Schoenberg provides the following description timbre:

The distinction between color and pitch, as it is usually expressed, I cannot accept without reservations. I think the tone becomes perceptible by virtue of tone color, of which one dimension is pitch. [...] Pitch is nothing else but tone color measured in one direction. Now, if it is possible to create patterns out of tone colors that are differentiated according to pitch, patterns we call ‘melodies,’ progressions, whose coherence (Zusammenhang) evokes an effect analogous to thought processes, then it must also be possible to make such progressions out of the tone colors of the other dimension, out of that which we call simply ‘tone color,’ progressions whose relations with one another work with a kind of logic entirely equivalent to that logic which satisfies us in the melody of pitches.⁸²

Other composers that discussed the practical applications of timbre to music included Wayne Slawson,⁸³ and Pierre Boulez,⁸⁴ the latter of which stated that timbre should be viewed as the identity of sound. In the nineteenth century, this identity was the main basis for a musical language, but from the twentieth century onwards the identity is formed from the “needs” of the language. What Boulez refers to here is a gradual shift from the conception of timbre as

⁸¹ J. Cage, “Experimental Music,” (paper presented at the Convention of the Music Teachers National Association, Chicago, 1957).

⁸² A. Schoenberg, *Theory of Harmony*, trans. R. E. Carter (Berkeley: University of California Press, 1978), 421.

⁸³ W. Slawson, “The Color of Sound: A Theoretical Study in Musical Timbre,” *Music Theory Spectrum* 3 (1981): 132–141.

⁸⁴ P. Boulez, “Timbre and Composition – Timbre and Language,” trans. R. Robertson, *Contemporary Music Review* 2, No. 1 (1987): 161–72.

the basic background for melody and rhythm to a conceptualisation of melody and rhythm being the background for timbre. Composers felt that the traditional background for a musical language was insufficient for their new music, hence, as a result of their search for new sounds, timbre itself became the musical subject of their compositions. Increasingly more timbres were introduced into the orchestra and musical ensembles to facilitate this need for new musical sound structures.⁸⁵

Perhaps the clearest examples of timbre used as a structural element in composition can be found in spectral music. As the term “spectral music” suggests, the spectrum of overtones is often centralised in spectral music. Not only is timbre explored as an effect for different expressivity, it is the defining feature of the musical work. Timbre, so to speak, is the subject of these works.⁸⁶ For example, in Gérard Grisey’s *Périodes* the overtone spectrum on the frequency of 41.2 Hz is used as a model, in which each partial tone is introduced to create an amplified, musically enhanced exploration of the timbre of a single tone.⁸⁷ One important consideration is that Grisey, among other spectral music composers, considers the time development to be of essential importance for the perception of timbre, both in the sense of sonance/timbral unity as in their representation of the ADSR-development of certain specific timbres. The purpose of these compositions is to alter and manipulate sound over time so that different timbres can be sculpted. According to Grisey, his compositional techniques lead to: “[a] more ecological approach to timbres, noises, and intervals, [b] integration of harmony and timbre within a single entity [and c] integration of all sounds (from white noise to sinusoidal sounds)” among various other positive effects.⁸⁸

Of course, not all music treats timbre as one of its main structural components. Spectral music certainly has never been more than a marginal genre within Western music. However, it does serve to show that the traditional conception of timbre as a purely decorative element of music does not suffice. A possible outcome might be offered by ethnomusicology. Several ethnomusicologists have not defined timbre in their studies, but instead focused on the relations between timbre and its relative social meaning. One example is found in Grant Olwage’s research on the timbral difference between the vowels in Xhosa language and European vowels, as found in South African black choral music. Olwage concludes that these

⁸⁵ Ibid., 165.

⁸⁶ J. Fineberg, “Spectral Music,” *Contemporary Music Review* 19, No. 2 (2009): 2.

⁸⁷ F-X Féron, “The Emergence of Spectra in Gérard Grisey’s Compositional Process: From *Dérives* (1973–74) to *Les espaces acoustiques* (1974–85),” *Contemporary Music Review* 30, No. 5 (2012): 345.

⁸⁸ G. Grisey, “Did You Say Spectral?” trans. J. Fineberg, *Contemporary Music Review* 19, No. 3 (2009): 2.

differences exemplify a connoted “blackness” in the music.⁸⁹ Another example of a study on the social meaning of timbre is Yvon Bonenfant’s consideration of queer vocal timbres.⁹⁰ In this essay, she explores what it means to perceive timbres as queer vocal timbres and how these might be differentiated from other vocal timbres. According to Bonenfant, this queer listening is constituted in a search for otherness: “Queer listening listens out for, reaches toward, the disoriented or differently oriented other.”⁹¹ But Bonenfant, too, has trouble describing the specifics of these timbres as she states that “Hearing – listening out for queer needs and desires – requires a sensitivity to certain qualities of timbre which I cannot name, at least in the languages I speak: only metaphor can describe them.”⁹² Even though these approaches are extremely fruitful for our understanding of the functions of timbre, they fall short for a philosophical consideration of the concept. The question how, then, an experience of timbre comes into being (what timbre is constituted of, how it relates to our perception of other musical aspects etc.) remains unanswered.

4. Towards a Meaningful Description of Timbre

In his research on timbral differentiation in South African Choral music, Grant Olwage applies Roland Barthes’s notion of the “grain” of voice, in order to foreground the social function of timbre.⁹³ Barthes attempted to find a more accurate way of describing subjective aspects of listening, which previously was done mostly by the use of adjectives.⁹⁴ We have seen this in descriptions of timbre too: “warm,” “bright,” “clear,” and “sharp” are among countless of other adjectives to describe timbre. Barthes, however, argues that not the language about music should be changed, but the object of our studies. Barthes opts for a consideration of the grain in a voice, which he defines as “the encounter between language and a voice. [...] when [the voice] is in a dual posture, a dual production – of language and of music.”⁹⁵ This grain is the abstract experience of a voice, the “individual thrill” one experiences when listening to singing. Operatic voice, for example, has been flooded with dramatic expressivity resulting in a grain that signifies little. A singer of a song in his mother tongue, instead, might reveal a personality and individuality and, thus, a highly significant

⁸⁹ G. Olwage, “The Class and Colour of Tone: An Essay on the Social History of Vocal Timbre,” *Ethnomusicology Forum* 13, No. 2 (2004): 203–26.

⁹⁰ Y. Bonenfant, “Queer Listening to Queer Vocal Timbres,” *Performance Research* 15, No. 3 (2010): 74–80.

⁹¹ *Ibid.*, 78.

⁹² *Ibid.*, 78.

⁹³ Olwage, “The Class and Colour of Tone,” 212.

⁹⁴ R. Barthes, “The Grain of the Voice,” in *Image, Music, Text*, transl. S. Heath (London: Fontana, 1977), 179–189.

⁹⁵ *Ibid.*, 181.

grain. According to Barthes, this approach would get rid of the need for adjectives, since instead of focusing on a judgment of the heard timbre, it allows for a focus on the relation between the timbre and its cultural context.

However, this will not fit for our purpose of coming closer to an understanding of timbre as a phenomenological concept and translating this to a description of timbre(s). As David Blake pointed out, “the adjective, by its very definition, is *descriptive*; the problem is in its lack of *objectivity*, *substance* and *fixity* [emphasis original].”⁹⁶ Hence, Blake tried to find a method for describing timbre with appropriate adjectives. For this, he refers to Edward Casey’s metaphors of space. Casey states that our spatial perception in the world is largely decided by constant application of perceptual dyads, such as near-far or big-small. These binaries have two important features that would make them applicable for phenomenological description: (a) they exemplify the outlines of a gradual axis; “near” and “far” are opposites of each other “within the continuum of distance.” An object is *not* either near or far, it can be anything in between of these extremes. The dyad presents one aspect of our spatial experience by which the experience can be unfolded. And (b), these dyads can only be understood qualitatively and relative to each other. An object is not empirically near or far, these are subjective terms based on our experience. We can apprehend something is near, for we know it is *not* far. Following these premises, it is not hard to think of musical dyads applicable to music (e.g. high/low, loud/soft, long/short) that can only be understood relatively. Blake claims that even adjectives without concrete opposites would be applicable. For example, we can recognise a timbre as sounding “nasal,” for we know what it is for a timbre *not* to sound nasal.

Blake specifically investigates timbre in indie music, as he argues that timbre is one of the main factors for differentiation in this genre. For his description, he chooses the four adjectives “full,” “distorted,” “digestible,” and “homogenous” to assess several musical examples. Yet, although these adjectives reveal some important aspects of our perception of timbre, they are also limiting. With such a method, there is a danger of focusing on a particular part of our perception which may not be essential at all. For example, the distortedness (by which Blake means the degree of overdrive on the guitar) is highlighted, making it an aspect of judgment of these timbres. However, it is questionable whether our perception of timbre in these songs is defined by exactly these four aspects. This specific focus on the distortion of the guitar might influence our observation before our actual

⁹⁶ Blake, “Timbre as Differentiation,” 4.

perception. Blake himself also has trouble sticking to these four adjectives and cannot help himself from adding more adjectives to his descriptions to escape the general four categories. Most notably, Blake uses the traditional terms “warm” and “bright” multiple times to argue one timbre belong to one of his categories or the other. By introducing these terms without explication, Blake adopts the kind of language he specifically wished to avoid, namely subjective, non-substantial and, most importantly, non-fixed adjectives.

A more open approach is offered by Patricia Holmes. Through multiple themes, Holmes discusses timbre as an expressive means in a phenomenological interview with an expert performer. The results are interesting and might offer some starting points for further phenomenological exploration. For example, the performer, a guitarist, notes that: “when you do a warm sound, it’s not dissimilar to – like I’ve said to my students – stroking a cat, or picking up something gently ... it’s a hard thing to describe, but with a thinner sound – if I’m trying to create a thin tone - there’s a certain gesture that’s a little bit more claw, it’s almost like the upper spectrum – the frequency has a gesture that I associate with it.”⁹⁷ The cited expert guitarist is describing his performance as an embodiment of the sound. A specific gesture in a performance may affect the produced sound, so that, for example, an aggressively played note will sound harsher than a gently played note. This phenomenon has been examined in multiple studies.⁹⁸ Next to his embodiment with the sound of the music, another example is his remark on the expressive nature of timbre: “the musical objective in a particular piece is sometimes to produce a sound that’s unexpected or maybe even shocking or surprising – that’s the nature of what I’m sometimes trying to do.”⁹⁹ Ultimately though, he has trouble expressing his thoughts on timbre and expressivity to a satisfactory extent: “It’s just something you feel in the end – that you want to say in the music – you can’t articulate it.”¹⁰⁰ These remarks are insightful, but focus mainly on the perspective of the performer, that is, not how timbre is perceived by the performer, but instead how timbre is produced and manipulated. I am interested in the perception of timbre of the listener, which might highlight different aspects. A further exploration is necessary.

In this chapter I have taken a look at the issues surrounding the concept of timbre first from a present-day, quantitative perspective and secondly by examining the integration and historical

⁹⁷ P. Holmes, “An Exploration of Musical Communication,” 312.

⁹⁸ For an overview of the recent research on the perceptual impact of performance gestures, see J.W. Davidson, “Movement and Collaboration in Musical Performance,” in *The Oxford Handbook of Music Psychology*, ed. S. Hallam et al., 364-376 (Oxford: Oxford University Press, 2009).

⁹⁹ Holmes, “An Exploration of Musical Communication,” 315.

¹⁰⁰ *Ibid.*, 314.

discourse of the concept. This brief inquiry has revealed that even though terms like “timbre,” “tone colour,” or even something as general as “the sound of the music,” are used regularly, it is often unclear what exactly is meant. Official definitions are problematic, for they only define what timbre is *not*. Measuring timbre is difficult, for our perception relies on a multitude of acoustic factors and, more importantly, our subjective appreciation. Notating timbre is hardly possible, for there is no quantifiable systemisation of timbre possible. And describing timbre is just as challenging, for all of the reasons named above.

There are some notable trends throughout the history of the concept of timbre which may help in our understanding of the term. Comparing various historical descriptions of specific timbres reveal the human aspect in the constitution of timbre. Although each writer uses terms with which we are familiar today (e.g. a warm timbre, a bright timbre, a sharp timbre etc.), the attribution of these adjectives per timbre differs among the individual accounts. For a long time, timbre has been considered as a decorative aspect of musical tones. Musical tones were thought to be constituted by pitch (and perhaps duration), of which the timbre is a non-essential feature. The comparison with colour is striking: a chair can be in any colour, but the colour is not in any way a defining property for the chair. Descriptions of these tone colours, for lack of a better terminology, then focus on the judgment of these timbres, which tends to change over time. During the twentieth century, the conception of timbre changed, at least to some extent. In some music, timbre became a structural aspect of the music and timbre was increasingly identified as an important factor for the expressions in music. Olwage turned to Barthes for a more natural description of timbre and Blake to Casey. Holmes, instead, focused on the performer’s consideration of timbre in a phenomenological interview. Each of these researches are highly valuable, but a comprehensive study of the phenomenological perception of timbre is still missing. It is now time to start my own investigation and explore this musical parameter as it is experienced.

Chapter 2 – A Phenomenological Description of Timbral Space

1. The Spatiality of Timbre

As can be concluded from Chapter 1, providing a solid definition for the concept of timbre is quite difficult. Previous definitions either focus on what timbre is not, or ignore the phenomenal experience of timbre altogether. A phenomenological approach offers an outcome: by suspending an explicit, concrete definition of timbre, withholding an analytic study of the implications of a specific theorisation, and instead focusing on description and exploration, it is possible to find aspects of timbre that might otherwise go unnoticed and bring us closer to an understanding of our perception of this parameter. However, even with such an approach, it is necessary to outline *some* kind of object of study. For this, Handel's intuitive definition of "the perceptual qualities of objects and events; that is, 'what [it] sounds like'" will suffice.¹⁰¹ Even though this definition is inconclusive for quantitative research, it does provide a broad idea of how timbre is generally conceived. Yet, it is necessary to confine the study a bit further in other ways. A completely open approach would be desirable, but such a full consideration of timbre would exceed the scope of this thesis. Instead, I will focus on (the potential) spatial experience of timbre. This demarcation may seem atypical for a phenomenological method, since to start with *a* feature of a phenomenon is already to assume this feature is, at the very least, relevant and, at the most, perhaps even essential, to the nature of the overarching phenomenon. It is exactly these kind of assumptions that phenomenology asks us to avoid at the start of our study. Still, as was shown in the introduction, one could argue that the usage of the concept of timbre itself is already to make an assumption about music. It seems impossible to start any description of a phenomenon without assuming the very broad, general demarcations of this phenomenon. Accordingly, I rely on recognising my assumptions and reflecting on their implications, rather than avoiding them altogether.

The attentive reader might ask then, *why* focus on this particular aspect, the spatial experience of timbre, as the chosen object of study? My hypothesis is that "hearing space" is an essential feature of timbre and a focus on this aspect can be fruitful for multiple reasons. Firstly, this approach affords an open system of descriptive metaphors. This means a description is not tied to one singular dyad, such as the clean/distorted axis, or a set of various dyads which among themselves are unrelated to each other. Each description can be viewed

¹⁰¹ Handel, "Timbre Perception," 432-433.

relative to other spatial descriptions and, even though the system is still to some extent restrictive, there is a whole range of spatial descriptions conceivable outside the realm of binaries. For example, a spatial description such as “far away” can be understood in relation to a description such as “enclosing” even though these two descriptions are not on the same gradual axis. Secondly, with a focus on the spatial perception of timbre it is easier to exclude the emotional judgment of the timbre from description. As can be seen from the different descriptions of Rousseau, Berlioz and Rimsky-Korsakov, traditional descriptions like “warm” and “bright” inevitably reveal more about the author’s taste than the nature of the timbre. It might be argued that the emotional judgment of a timbre is inherently part of the perception of timbre, but for the purpose of phenomenologically describing the concept it might be worth to initially start with a consideration of timbre as it is perceived before it is reflected upon. As I will argue below, a spatial experience of timbre precedes the emotional judgment and reflection on the perceived timbres. After these descriptions, a reflection on the implications of this model (for example on the understanding of the emotional judgment of timbre) can be considered.

Finally, music has largely been considered as an art form presented in the medium of time, as opposed to other art forms such as paintings or sculptures which are thought to be primarily constituted in the medium of space.¹⁰² Consequently, phenomenologies of music have elaborately discussed the perception of time in the experience of music.¹⁰³ A particular focus on space might shed some new light within the phenomenology of music as a whole. One of the main reasons to focus on space, however, is because Don Ihde named the perception of space as an essential feature of sound in his phenomenology of listening. Since Handel’s intuitive definition of timbre (i.e. “what it sounds like”) is used as our starting point, to take an essential quality of sound itself seems like a valid demarcation. Ihde, too, notes that the sense of hearing has traditionally been linked with the experience of time and temporality,

¹⁰² Often, philosophers make a distinction between media which is “time-based” (e.g. film, theatre, music) and media which is not (e.g. paintings, sculptures). Most notably, Arthur Schopenhauer found that music is based in time, but does not involve any of the other cognitive conditions such as space. However, the term has been criticised for it could be argued that any phenomenon is experienced in time, and therefore time-based. The distinction is also problematic for literature, since the reading of a book certainly develops in time, but this time span is not fixed and varies from reader to reader. On the other hand, it can also be argued that each phenomenon is experienced in space as well, and that both the perception of time and space should always be taken into consideration. Although I acknowledge that the definitions of - and the distinction between - time and space are difficult, I do believe it is possible to focus on elements of our perceptions that we associate with the perception of time or space, and that each of these foci will lead to different results. See A. Schopenhauer, *The World as Will and Representation*, vol. I, ed. by J. Norman et al. (Cambridge: Cambridge University Press, 2011), 287.

¹⁰³ Schutz, “Fragments on the Phenomenology of Music”; Lewin “Music Theory, Phenomenology, and Modes of Perception.”

causing a general neglect of spatiality in hearing.¹⁰⁴ Yet, the experience of space through hearing seems obvious, albeit in a weaker sense than through vision. For example, with an auditory game in which one puts an object in a box and shakes it, and the other one has to guess what it is, I can find it is possible to identify shape aspects by hearing the sound alone. I am able to distinguish between, say, the shape of a die and a marble by listening to the sound that is produced when the box is moved around. Another example is that it is possible to hear surfaces. For example, while driving a car you can hear the bumpy surface of a gravel road, or the flush surface of a new asphalt road.¹⁰⁵ This materiality of surfaces may not seem to be a spatial feature at first, but its spatiality is particularly revealed in the smoothness or roughness of a surface. For example, you can feel the coarseness of sand paper by stroking it, but you can also see its roughness as the grains stick out of the paper. On a larger scale, you can see relief in a field or in a view of a landscape. Surface, then, should be viewed as a spatial field which as it is filled becomes rougher. Within the audibility of surfaces, I find it is possible to hear different materials in general. One example could be the difference between a knock on a concrete wall and a similar knock on drywall. The two knocks will have a distinctively different sound as the former knock is on a much denser material than the latter. Likewise, I can distinguish glass, wood, metal and many other materials from each other since each material has its own resonating features.

These remarks may seem fairly obvious, but as the perceptions of shape and surface are largely linked with vision, rather than our auditory sense, aspects of shape and surface can easily be overlooked in other studies of sound, such as the study of music in general, or the study of timbre in particular. Furthermore, Ihde rightfully notes that by listening to echo and reverberation we are able to sense the space around us. The large space of a cathedral is emphasised by its long delay in the returning echo; the smallness of a bedroom by its dry acoustics.¹⁰⁶ Again, these listed observations are not to debunk the importance of vision in our spatial perception, but instead show how our perception of space is multimodal.

In order to keep the phenomenological description as comprehensible as possible, I

¹⁰⁴ Ihde, *Listening and Voice*, 59-71.

¹⁰⁵ The experience of a bumpy gravel road while driving a car is, of course, also largely influenced by our tactile senses, but it is interesting to examine at what the reach of these senses overlap. In his phenomenology of listening, Ihde argues that while one's ears are the focal origins, one hears with the entire body. An example of this is the deep bass you can hear at rock concerts, which can sometimes be felt in the stomach. See Ihde, *Listening and Voice*, 45.

¹⁰⁶ This example, too, shows the issues of a concrete distinction between the perception of time and temporality on the one hand, and the experience of spatiality on the other. The perception of space, in this case, is constituted by the temporality of the sound. By hearing the timely length of the reverberation I experience the magnitude of the space around me.

will make use of the same terms throughout my description. To refer to the notion of perceiving space in sound I will use the terms “literal space” to describe a perception of physical, geometrical features, and “spatiality” to describe any aspect associated with the perception of space. Two models will be provided as representations of the phenomenon of timbre; one in which the noematic content of timbre is centralised, and one in which the listener is centralised. I will use the term “noematic model” to refer to the first model as schematised representation of the spatiality of timbre as it is perceived, and I will refer to the second as “noetic model” as the representation of the experience of the spatiality of timbre itself. Finally, as I have announced in the introduction, I will distinguish between the parts of experience that precede reflection and interpretation and the aspects of experience that follow from this. By suspending the experience which is shaped in reflection, I can find some of the bare essential features of the perception of timbre. Any activity in which I am consciously involved should be considered as part of the reflection. Other jargon shall be explicated throughout the text.

2. Timbre and Sound Space

So what does it mean to hear space in timbre? An obvious start would be to consider the perception of literal space in musical sounds. A clear example of spatiality can be found in the third movement of Gustav Mahler’s Third Symphony. As the orchestra starts the scherzo with a joyful theme repeated by various instruments the music builds up to a playful climax only to be interrupted by a “far-away” post horn. The flugelhorn is set off-stage and is contrasted against the orchestra by an actual, literal distance. Of course, the contrast is found in the composition as well, the horn plays a soloistic signal accompanied by the violins and with the introduction of the post horn the section as a whole is contrasted against the previous section with a slower, lilting rhythm. Yet, the sound of the horn *itself* is distinctively “far away.” It bears a softness that is unlike the pianissimo of the trumpets in the orchestra, just like an outcry from far away can be heard quietly, but perceived as a shout nonetheless.

This spatial perception is not limited to a feeling of nearness or farness. By listening I am able to have a sense of the location of sound sources surrounding me. While listening to an orchestra in a concert hall, I am able to hear that the double basses are positioned on the right side of the stage and the flutes more to the left. Going further, our auditory experience is circumferential. I am able to locate sound sources whether they are behind me, in front of me, or anywhere else around me. In a performance of Benjamin Britten’s *Fanfare for St Edmundsbury* this surrounding experience is clearly exemplified. The piece opens with three

separate trumpet signals, positioned as far away from each other as possible, even when the Fanfare is played indoors. During one particular performance, I heard the first trumpet left behind me, the second one right in front of me and the last one to the far right. Once each signal has been played separately, the three trumpets play their respective melody all at the same time, causing a harmonic and melodic blur. Yet, because of the distance between the trumpets, each signal could still be heard individually and each of the trumpets could be located. In another performance, in which the three trumpet players were positioned right next to each other, this was not the case and the sound of the three trumpets merged into one. It was my perception of distance in the first performance that created a timbral variety, by which I could distinguish each of the trumpets.¹⁰⁷ These observations might seem to contradict the earlier remark that a musical timbre is able to steer our attention away from the sound source to the music itself. Not the violin, but the sound it produces becomes the object of our experience, confusing our sense of directionality. However, one should be aware that this alludes to the materiality of the sound sources. Although during the listening experience, a certain immersion can occur in which I forget the physicality of the instruments, the sounds themselves are still positioned within our auditory field. Composers, musicians and producers are well aware of this and have experimented with different orchestral seating plans, stereophonic effects and even 3D-sound.¹⁰⁸

The notion of an auditory field has been explicated by Don Ihde, in which he combines the Husserlian concepts of “focus” and “fringe” of our perception and the Heideggerian concepts of “field” and “horizon” of our perception into one model. Just as our visual field has a focus in the middle and a fringe area on the sides, so too are sounds presented in either the foreground of our auditory perception, or in the background. The “field” refers to the complete area in which objects can be perceived and the “horizon”

¹⁰⁷ Of course, my spatial perception of the three trumpets could be influenced by a number of factors, and not just the distance of each of the trumpets alone. For example, one signal could come from behind a pillar, another from an area in the hall in which curtains are drawn. These are, however, are spatial actors that influence my personal placing of the trumpets in a sound space. The only thing that should be noted is that a large part of this spatial orientation is due to the fact that we have two ears and we can distinguish which sound comes from our right and which from our left. Yet, even when two sounds are in front of us, we are able to hear the distance between them if one is further to the back. The example of the three trumpets exemplifies how such a literal distance can be heard in timbre.

¹⁰⁸ The new developments in 3D audio effects heard with stereophonic headphones are fascinating for the research on the spatiality of music. The presented sound waves can be manipulated to mimic a sound wave emanating from a specific point in a 3D space, resulting in an illusionary perception of hearing sounds above, below or behind the listener, even though the sound only reaches him through the right and left ears of his headphones. A virtual space is created in which sounds can be heard in any location relative to the listener. So far, however, only a few artists have used these techniques for the production of musical records. For an overview of recent developments, see J. Herre et al. “MPEG-H Audio — The New Standard for Universal Spatial/3D Audio Coding,” *Journal of the Audio Engineering Society* 62, No. 12 (2015): 821-830.

indicates the absolute boundaries of this field. Regarding our visual perception, Ihde presents the following diagram, yet since our auditory field is omnidirectional, this model could be well applied to sound perception by considering the structure as an imaginary sound space:

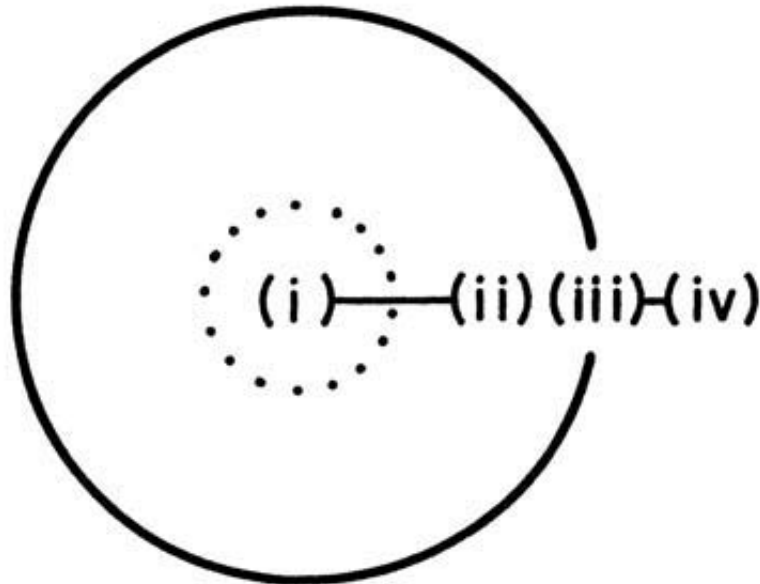


Figure 1. Core-Horizon Structure (Ihde, *Listening and Voice*, 39)

In this schematic overview, there is a focal core (i), which is foregrounded against an ever present peripheral background: the fringe (ii). The Fringe then shades off to a horizon (iii) beyond which there is a void (iv), an absence of audible sound. The focal core (i) and the fringe (ii) together form the auditory field, or the auditory presence of the sound. This is, of course, a completely noetic overview of the appearances of sound in our perception, and the first thing that should be noted is that it is possible to steer this perception. In our visual perception, the focal core can easily be shifted by moving our eyes, but in our auditory perception, too, I can change my attention to specific sounds. I find that, in listening to Britten's *Fanfare of St Edmundsbury*, I am able to hear one particular trumpet while zoning out the other two to the fringe of my perception by concentrating on the fine timbral variety.

The ratio of our focal core can also be altered from a very fine, specific focus to a broader, open attitude. I can also let go of this one trumpet and focus on the harmonious effects of the three trumpets playing together. I am also able to lose my focus completely. I recall a different performance of an orchestra (which shall remain undisclosed), which had me

at a blank state of boredom; I lost all attention to the music and as the sound stayed in the peripheral fringe of my perception, my mind drifted to other, non-auditory related matters. In his book *Music, Imagination, and Culture*, Nicholas Cook explores this difference between attentive, musical listening and a passive, non-musical listening, in which he concludes that the former consists of a re-creative, imaginative participation of the listener.¹⁰⁹ Such a view was already present in Theodor Adorno's sociology of music, in which he describes several ways of listening to music. According to Adorno, only the attentive musicological method of listening can lead to a true understanding of the musical work.¹¹⁰ More recent authors, however, have argued that an inattentive listening attitude can be part of a musical aesthetic. For example, Peter Kivy argues that in listening to minimal music a certain zoning out, trance state is pursued.¹¹¹ However, minimalist composer Steve Reich rejects this idea of trance-inducing music stating that "there's no intent on my part to create anything like a trance. A lulling into unconsciousness would be the worst possible result. What I hope my music summons up is more attention to detail..."¹¹² Although I do not intend to make any judgments on the aesthetics of minimal music, what becomes clear from all these descriptions is that the perception of the listener is a constructive and active process. Whether or not a trance-like state is designed or not, it certainly is a possible way of perceiving the music that I have engaged in, revealing a vanishing of the focal area to an enlarged fringe area. A larger focus on details demands a more attentive listening attitude; a shift from passive to active synthesis. It should be noted though, that even while the noetic act of listening can be steered in that way, the room for variations is limited. For example, we would never be able to extend our horizon. It is certainly possible to move our horizon, just like we can move the horizon of our visual sense by moving our eyes or turning our heads, but the horizon itself will always be there.

This also implies that the variations in our perception are constrained by the noematic content. For the general listener, a quiet instrument with a soft timbre, such as the harp, when heard in the midst of a blasting orchestra will always appear in the fringe of the perception. This inherent backgroundedness of the harp determines that an active synthesis is necessary to foreground the harp in our perception. Noematic content and its relative noetic act, thus, should always be considered together. The noematic content determines the constraints of the

¹⁰⁹ N. Cook, *Music, Imagination, and Culture* (Oxford: Clarendon Press, 1990), 10-22.

¹¹⁰ T. W. Adorno, *Introduction to the Sociology of Music*, transl. E. B. Ashton (New York: Seabury, 1976), 1-20.

¹¹¹ P. Kivy, "Making the Codes and Breaking the Codes: Two Revolutions in Twentieth-Century Music," In *New Essays in Musical Understanding*, 44 – 67 (Oxford: Clarendon Press, 2001), 56.

¹¹² D. Sterritt, "Tradition Reseen: Composer Steve Reich," *Christian Science Monitor* 23 (1980): 21.

noetic act and vice versa. Hence, it is interesting to compare the noetic structure of our perception provided by Ihde to a noematic model of sound production, such as the one based on Merleau-Ponty's concept of motility used by David Blake in his research on timbre differentiation in indie music. Blake presents the following model:

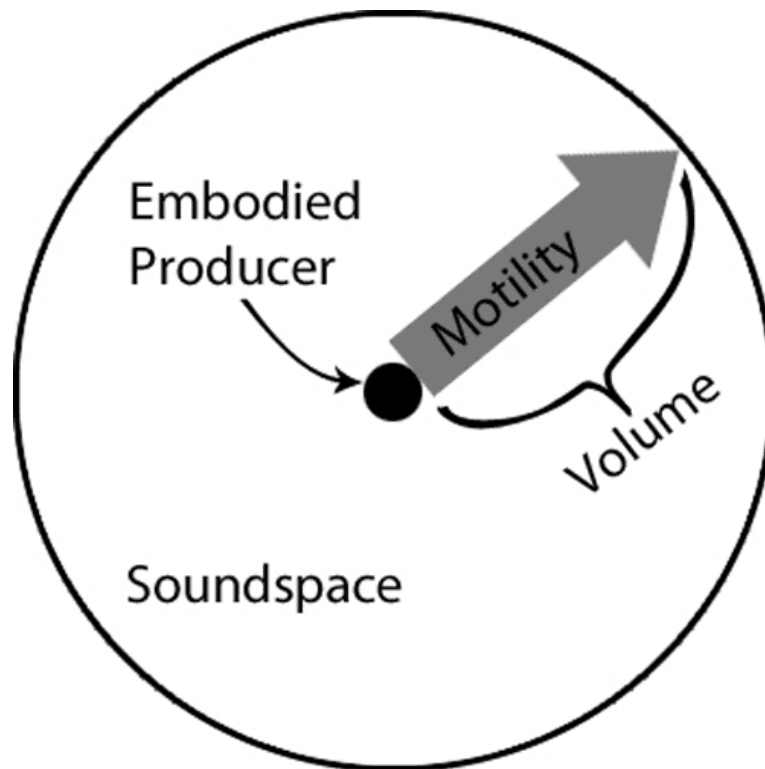


Figure 2. Diagram of motility within a sound space (Blake, "Timbre as Differentiation," 4)

In this diagram, the sound source is placed in the middle, directing the sound into a sound space around the sound source. The source is identified by Blake as the embodied producer of sound. Blake borrowed the term motility from Merleau-Ponty, who defines the concept as a structure of bodily movement. According to Merleau-Ponty, our conscious experience is an embodied experience and our basic intentionality is foremost an embodied directedness.¹¹³ Motility, then, is the direction of the embodied self outwards. Blake adopts this concept primarily to account for the perceptibility of an embodied sound producer. In the case of music, the musician, or sound producer, projects musical sounds intentionally into the space around him or her. This diagram does not only apply to live performances, in which the

¹¹³ Merleau-Ponty, *Phenomenology of Perception*, 137.

performer is the embodied producer projecting musical sounds in the sound space around him, but also applies to recorded music, in which case the embodied producer resembles a number of influencing actors and the sound space is a virtual one. His model primarily shows how timbre can be viewed as a means of expression, manipulated by a performer or producer, as Blake finds the expressive features of timbre to be mostly found in this musical motility:

We can describe the characteristics of the arrow through recourse to visual terms by discussing its color, shape, length, and border. If we imagine the arrow as a sound, we can describe its characteristics through timbre (except for length, which correlates to volume). Timbre should therefore be understood as the parameter most directly expressing musical motility.¹¹⁴

Still, it is questionable to what extent the perceptibility of the embodied producer as a source for meaningful timbre is essential to the perception of this timbre. As Barthes showed with his concept of grain, it may be true that in music certain timbres are adopted as an expression of identity and personality, but in order to give a prereflective account of timbre this embodied producer needs to be suspended. Since the sound itself is my intentional object, the manner in which this is produced is irrelevant for our direct experience. As was described by Ihde, when listening to music an aesthetic attitude is adopted in which the sound itself is divorced from the sound source.¹¹⁵ It is possible to reflectively hear the sound producer in a timbre. For example, when listening to a work for classical guitar I am able to hear the guitarist in the music; based on the timbre alone, I know whether he or she is playing close to the bridge, or closer to the neck of the guitar and I can hear whether he or she is strumming the strings with his or her nails or with the flesh of his or her fingers. Yet, these observations come from my own knowledge and experience as a guitarist. When I am listening to, say, a flute sonata, I am much more divorced from the performer and when I am listening to Stockhausen's *Mittwoch's Gruß* I do not hear an embodied producer at all. Hence, instead of centralising the embodied producer in a noematic model, I propose the following noematic model, in which the sound itself, as the intentional object, is placed in the middle:

¹¹⁴ Blake, "Timbre as Differentiation," 4.

¹¹⁵ Ihde, *Listening and Voice*, 155.

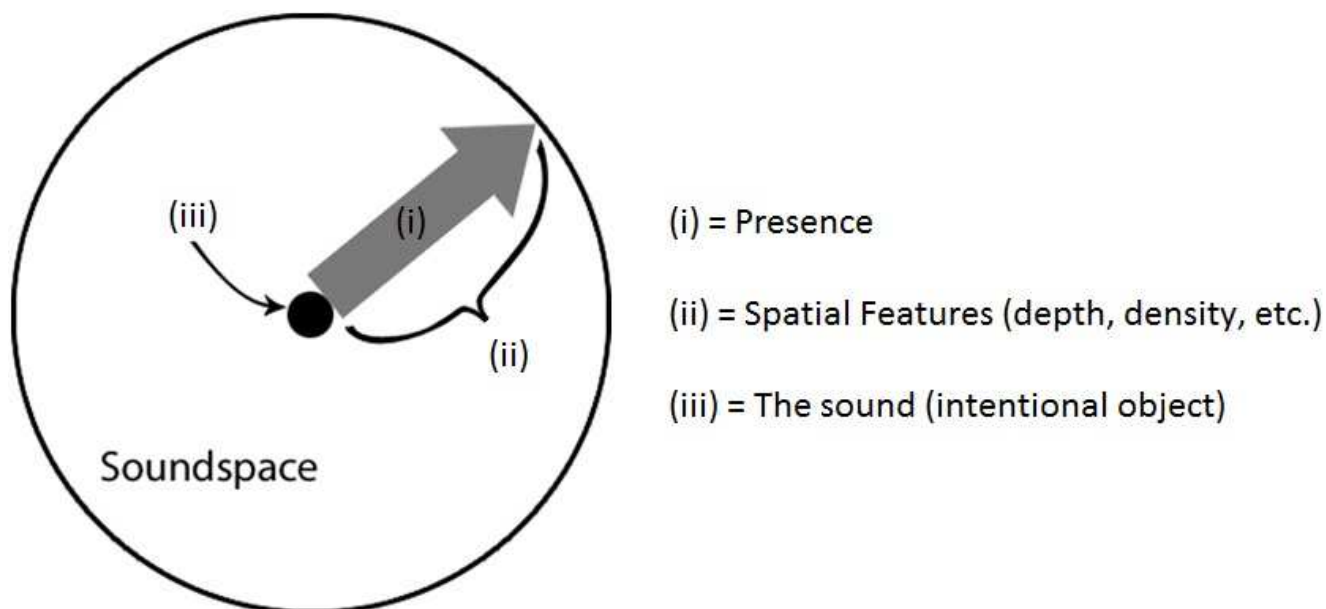


Figure 3. Noematic model of timbral spatiality

For present purposes, the sound itself can be considered as the timbre of a musical sound, but this model would work for the other musical parameters as well, in which case the shape of the arrow might also be formed by pitch, duration and loudness. The direction of the sound outwards can then be considered as its presence and the way this presence is appearing is found in its spatial features, such as depth, density and other variations of space, which will be described below.¹¹⁶ With this adapted model, a centralisation of the noematic content can still be maintained and juxtaposed with the noetic model, without including aspects that are not apparent in the direct experience of the intentional object (the sound/timbre itself), such as the position and influence of an embodied producer.

By combining this new noematic model with Ihde's noetic model of sound perception, it is possible to get an understanding of the experience of musical timbre: a sound with a certain presence and spatiality will appear in the listener's noetic sound space. The sound can be presented in the sound space in multiple ways, all of which may direct our focus, but the listener self can also steer his perception in one way or another. This perceptual framework is not necessarily related to the spatiality of timbre. Even though we speak of a "sound space" and an "auditory field" in descriptions of music, these should not be viewed as a literal sound bubbles around us. It is, however, possible to translate these models to the perception of spatiality of music, but for that I first need to further investigate the perceptions of space in timbre.

¹¹⁶ This is not to say that there are no other features determining the appearance of the timbres presence than spatial features; for the present purposes of this thesis, this model only focuses on the spatiality of timbre.

So far, I have discussed the perception of so-called literal, physical space. I can hear a sound source as far, or as near, as being left of me, or being right of me, by “what it sounds like.” However, a spatiality can also be presented in music without a literal space. I can think of a sound that might evoke a feeling of nearness, and another sound which I may perceive as far away, even though the two sound sources could be positioned next to each other. Yet, even beyond the illusionary evocations of space, I can speak of a spatiality in music. In fact, to think of musical space as related to a geometrical space at all might be an assumption that should be suspended for now.

3. Timbre and Musical Space

In Thomas Clifton’s phenomenological description of music, he names space as one of the essential backgrounds for the experience of music, next to time, the element of play and the stratum of feeling. Although Clifton does not explicitly talk about the spatiality of timbre, he does give several remarks about the perception of space in music which are helpful for our own phenomenological inquiry. Firstly, like Don Ihde, Clifton remarks that our perception is multimodal and particularly links this to the perception of space. He refers to this as “synaesthetic experience.” Just like we can *see* the juiciness of an orange, and we can *see* the coarseness of sandpaper, so too can we hear aspects of our experience which we typically associate with other senses. This is an important notion since it implies that a perception of space, albeit not relating to physical space, is *not* metaphorical: “it is a movement of the body, not a product of deductive thinking.”¹¹⁷ Roger Scruton refers to this as the aesthetic understanding of music, in which a listener is able to identify non-physical aspects of music, which are quite distinct from empirical data that can be scientifically abstracted.¹¹⁸ This aesthetic understanding is described in a language often portrayed as metaphorical description. Among these descriptions, we find many spatial metaphors as well. Most notably, pitch can be described as either “high” or “low,” often referred to as pitch space. There are philosophers who argue that these descriptions are only used in lack of better terminology and claim that there is not an actual high- or lowness in sound. Nick Zangwill, for example, argues that these descriptions are only there for lack of better terminology.¹¹⁹ The reason the terminology of pitch space has become indispensable is purely one out of habit: we are so

¹¹⁷ Clifton, *Music as Heard*, 66.

¹¹⁸ R. Scruton, *The Aesthetic Understanding: Essays in the Philosophy of Art and Culture* (London: Methuen, 1983), 88.

¹¹⁹ N. Zangwill “Music, Metaphor and Emotion,” *The Journal of Aesthetics and Art Criticism* 65, No. 4 (2007): 391-400.

accustomed to these terms that we cannot think of another way to describe the phenomena. Yet, according to Zangwill, this ultimately is a translation of an audible phenomenon to text, which in and of itself must be purely metaphorical. Scruton, on the other hand, finds that these descriptions reveal an intentional understanding of music, which: “considers the world as intentional object (or to use the Husserlian idiom: *Lebenswelt*): it therefore uses the concepts through which we perceive the world, and makes no connections or observations that are not in some way already implicit in them.”¹²⁰ The notion that music (and by extension art in general) by its very definition should be considered solely as an intentional object, and not a material object, is found in many phenomenological studies.¹²¹ There is not an empirical high- or lowness in music, but for the listener these properties constitute meaning. According to Scruton, the two attributes which constitute the intentional object of music are space and motion. Given that these attributes do not refer to a physical spatial property, they can be understood by looking at the processes which create the musical categories of space and motion.

Since the spatial attributes are part of the intentional object, they cannot be substituted by scientific terminology. The spatial metaphors of pitch (i.e. high or low), for example, are indispensable for we have no other way of conceptualising pitch in our experience than by relating it to space. This does not imply that these terms are worthless. In fact, they exemplify a part of our musical experience that is not in any other way graspable. According to Scruton, the clearest example of the experience of space and motion is found in a melody, which he describes as the movement of tone through a musical space.¹²² One feature that would imply a spatial dimension is orientation. For example, in a progression of chords I can hear the movements of the separate tones travelling upwards or downwards. Between these notes, there is an imagined distance which reveals an orientation of the chord progression. This orientation is produced artificially; by themselves these sounds do not suggest any direction at all. Still, a single chord can also be heard as occupying an area, as long as it is construed by the listener as an object in musical space. “It is a phenomenal fact about auditory space that it possesses the topological feature of orientation; but it is not a fact about sound, construed independently of the musical experiences of which it is the (material) object.”¹²³ We have these conceptions because our innate sense of space is constantly guiding our auditory experience. Referring to Kant, Scruton argues that, as there needs to be a concept of space in

¹²⁰ Scruton, *The Aesthetic Understanding*, 89.

¹²¹ See, for example, Schutz, “Fragments on the Phenomenology of Music,” 28-30; Clifton, *Music as Heard*, 1-7.

¹²² Scruton, *The Aesthetic Understanding*, 91.

¹²³ Scruton, *The Aesthetic Understanding*, 95.

the mind for a perception of space in the world around us, so too is the capacity of music to transfer spatial metaphors to non-spatial sound (in the literal sense) essential to the intentional object of music.

It is worth noting that in one of the few published phenomenological descriptions of a musical work, Lawrence Ferrara often refers to a certain space in the music. As a plea for the use of phenomenology as a tool for music theory, Ferrara analyses Edgard Varèse's *Poème électronique* by means of thirteen separate listenings, each with its own reflection afterwards, starting with an open listening attitude and then throughout his listenings changing his focus in order to vary his experience.¹²⁴ In his reflections, he often names space, yet unlike describing the spatiality of the sound themselves, he depicts how the sounds travel through space. For example, in his description of the first section he states that "Five low-pitched sounds push and then dissipate through space with high-pitched overtones cascading down above the dominating low-pitched surge."¹²⁵ For the second section, he describes that "loud, sizzling sounds seem to be shot through space."¹²⁶ And in his analysis of section 4 he finds that "the tone has a substantial amount of echo, but as these sounds travel through space they seem to flatten out. The echo consequently becomes less distinguishable. Three deep, sonorous tones, then resonant in overtones, emanate from an initial hit and diffuse into space."¹²⁷ Each of these descriptions suggest a space in which the sound travels, most likely referring to an imaginary sound space similar to Ihde's noetic model, yet Ferrara describes these perceptions of space in his sixth, seventh and eighth reflections of the musical work. It is only after his initial open listenings that he starts to recognise spatial elements. Within Clifton's phenomenology, we might find a spatiality which brings us closer to a prereflective experience of timbre.

4. Spatiality as prereflective experience

According to Clifton, one essential feature of the spatial background of music is the sense of a closeness with the music. This closeness is not a mere being in the vicinity of sound, but a subjective directionality towards the sound. Whereas Ihde might speak of directing our focal core towards the music, Clifton suggests that in doing so we inhabit the music, as being-in-musical-space. This closeness is a felt proximity; by directing the self towards the music we bring ourselves closer. Other authors might refer to this as "the surrounding presence" of

¹²⁴ Ferrara, "Phenomenology as a Tool."

¹²⁵ Ibid., 364.

¹²⁶ Ibid., 364.

¹²⁷ Ibid., 365.

music. What should be taken from this, is that (musical) sounds always interact with our own subjective space and that this spatiality is key in our perception of music. One of the most important remarks of Clifton, though, is on the nature of space. The spatiality of music is not a property of the object, but rather a field of action in which the object is presented to the subject. Clifton refers to Merleau-Ponty's notion of space for this description. Merleau-Ponty describes space as the universal power enabling things to be connected.¹²⁸ Space is not the abstract ether in which things float and occupy place, nor is it a characteristic which objects all have in common. Perceived space is not the setting in which things are physically placed, but the interaction between object and subject in which the positing of the object becomes possible. This field of action is a field of interaction above all. As Clifton states: "the blue of the sky is not just the blue caused by certain vibrations of wavicles. It is a restful blue, because my body has adopted, as a mode of motor behavior, an attitude of restfulness."¹²⁹ In the case of music, the object of our perception is the sound which is placed in a virtual sound space between the listener and the object.

The idea of closeness, as described by Clifton, is also found in the descriptions of space by Heidegger. Heidegger defines three separate concepts of space: world-space regions and the spatiality of Dasein, which in turn is divided into de-severance and directionality.¹³⁰ World-space is the common conception of space as "container" for objects. This is the scientific, abstract space which objects occupy. This world-space is space conceived as present-at-hand, meaning it only reflects the bare facts of the concept.¹³¹ Regions, conversely, include the sort of referential space in our daily lives. Regions consist of the spaces conceived as ready-to-hand, which foregrounds the context and functionality of particular spaces. The space of a kitchen, for example, is organised and conceived differently than the space of an office and these functionalities are, according to Heidegger, essential to our experience of space. These regions can be thought of as mental demarcations of literal spaces, but these demarcations themselves do not have to be within literal space. For example, the region of a

¹²⁸ Merleau-Ponty, *Phenomenology of Perception*, 243.

¹²⁹ Clifton, *Music as Heard*, 70.

¹³⁰ Heidegger, *Being and Time*, 134-148. Dasein can be defined as the subjects being-in-the-world, as opposed to the other forms of being which refer to the presence of objects and phenomena. An overview of the exact meaning and implications of Dasein can be found in Heidegger, *Being and Time*, 67-78.

¹³¹ Heidegger's concept of world-space is not necessarily the same as my concept of the experience of literal space. World-space refers to the scientific concept of the space around us, which can be occupied by objects. Literal space, however, is not limited to this bare factual consideration, but includes all perception of space that deal with an actual space. For example, the noetic experience of hearing distance in the trumpet signals of the *Fanfare for St Edmundsbury* are classified as an experience of literal space, whereas in Heideggerian terms, this would not be an experience of world-space, but instead an act of de-severance and directionality within the world-space. Regions, then, would also be considered to be part of literal space, as long as they are based on an specific area in world-space.

kitchen can be demarcated by its walls and its door, but there are also houses in which the kitchen and the dining area are in the same room, in which case the region of the kitchen is demarcated by the area that would still be functional for cooking, dishwashing or other activities that we would typically consider as kitchen behaviour. A region can also be a lot smaller, or bigger. For example, a table or even the keyboard of my computer can have its own region, but it is also possible to think of the region of a football field or city square. The perception of regions is not a feature added to the experience of world-space, it is inherent in our perception of space. Yet, the perception of space goes even beyond the present-at-hand and ready-to-hand attitudes towards space. There is a spatiality in Dasein, and this spatiality is most relevant for our present purposes.

An essential part of our Being-in-the-World consists of making things available to ourselves. By directing ourselves towards an object we make the remoteness disappear. This constant state of spatial interaction with the world around us is referred to as “de-severance.” Making the remoteness disappear does not necessarily relate to a decrease in distance in literal space. For example, when wearing glasses, the object is distantly close, it is literally “sitting on the nose,” yet since we are not directed towards our glasses these bear a remoteness to our being-in-the-world. However, as Yoko Arisaka stressed in a discussion on Heidegger’s theory of space, de-severance is *not* the subjective notion of the closeness of an object, which is at the same time present at an objectively measurable distance.¹³² Such a notion would presuppose a) an objective space in which things are given and b) a self which, secondly, judges the things to be near or far. Instead, through de-severance I find that an essential feature of objects is their being of availability and closeness. *Directionality*, then, is the directing of the self towards a region in which what is de-severed is brought close.¹³³

As such, the experience of spatiality comes before the reflective experience of hearing a timbre as “warm,” “sharp” or in any other, reflective way. This becomes clearer when we take a closer look at the full-fledged aesthetic experience of music. In his *Phenomenology of Aesthetic Experience*, Mikel Dufrenne states that the aesthetic experience starts with a first perception after which a reflection and evaluation follow.¹³⁴ This first perception has an affective nature and can be best described as stumbling upon an aesthetic object, causing a change in attitude and an initial grasp of the intentional object. Roman Ingarden refers to this

¹³² A. Yoko, “Heidegger’s Theory of Space: A Critique of Dreyfus,” *Inquiry* 38, No. 4 (1995): 459.

¹³³ Heidegger, *Being and Time*, 143.

¹³⁴ M. Dufrenne, *The Phenomenology of Aesthetic Experience*, trans. by E. S. Casey and A. A. Anderson (Evanston, IL: Northwestern University Press, 1973), 423.

first perception as “the preliminary emotion.”¹³⁵ The term “emotion” in this sense may be confusing. Ingarden is not alluding to an aroused emotion that is consciously experienced, but instead states that the preliminary emotion “merely ‘touches’ us, excites us, and stirs us in a peculiar way.”¹³⁶ It is a passive perception of a quality, in which we are not yet able to understand what kind of quality the object imposes on us. It is not a “being pleased with,” the object only “allured us to itself, impelled us to give attention to it, to possess it in a direct, intuitive contact.”¹³⁷ Even though there is some excitement in the initial recognition of the quality in the real object, the preliminary emotion should not be viewed as a reflective emotional judgment, but merely as an initial affective encounter with the object. According to Ingarden, after this first encounter several stages of reflection and evaluation follow which may yield a negative, neutral or positive emotional judgment. This preliminary emotion, thus, is a prereflective experience. What Ingarden calls the preliminary emotion, Heidegger would call the act of de-severance and Clifton would call the sense of closeness and the stratum of feeling. The initial encounter is the intentional directedness towards the object as it enters our own sound space. The spatiality of timbre, then, is found in this initial closeness and the spatial relation of the object to ourselves. I first hear a timbre as close, then after this closeness is established I reflect upon the timbre and judge it as comfortable (warm) or uncomfortable (sharp).

This description of the inherent experience of space as part of intentionality can be enhanced with Merleau-Ponty’s concept of motility. In his noematic model of embodied sound production (see figure 2), Blake uses the notion of motility to describe the direction of sound outwards as formed by an embodied sound producer. In his model, the motility was an intentionality of the sound producer, which is why I chose to suspend it. The concept of motility, however, can be highly relevant as a description of intentionality of the listener, as Merleau-Ponty also describes motility as an inhabiting of space:

Motility [...] is not, as it were, a handmaid of consciousness, transporting the body to that point in space of which we have formed a representation beforehand. In order that we may be able to move our body towards an object, the object must first exist

¹³⁵ R. Ingarden, “Aesthetic Experience and Aesthetic Object,” in *Selected Papers in Aesthetics*, ed. P. J. Cormick (Washington D.C.: The Catholic University of America Press, 1985), 107.

¹³⁶ *Ibid.*, 107.

¹³⁷ Ingarden, *Aesthetic Experience*, 114

for it, our body must not belong to the realm of the “in-itself.” [...] I am not in space and time; I belong to them, my body combines with them and includes them.¹³⁸

This is an interesting view to consider for the spatiality of sounds and timbres. Sounds are not merely perceived in a literal sound space around me, but the experience of space in sound is inherent to my noetic perception of the sound. By stating that the body does not belong to realm of the “in-itself,” Merleau-Ponty argues that our spatial being in the world is not a mere existence in an objective world, but instead involves an embodied experience of intentionality and directedness. Space, then, is not experienced as an external dimension, but instead reveals itself through the spatiality of objects and phenomena. Just like a movement through air reveals space as it presupposes a space to move in, so too does our spatial awareness of timbre come from the sound itself, rather than from an imagined emptiness which it occupies. This motility goes hand in hand with the concept of motor intentionality. According to Merleau-Ponty, there are two distinct ways of apprehending the spatiality of an object as it appears to us. First of all, there is a cognitive conception of the intentional object’s place and secondly there is a bodily preparation to deal with the object. The latter is referred to as motor intentionality.¹³⁹ The concept of motility is important if we take Ihde’s theory into account that we listen with our whole body. Even though our ears are the focal organs, the entire body is involved in our perception of sound, but even more so, our body is involved in the conceptualisation of sound. Not only am I able to feel the sound of a low bass at a rock concert in my lived body, I hear this sound as surrounding and permeating my body.

Taking this notion of spatiality into account, we can relate the spatiality of timbre to the inherent feeling of closeness and our own spatial being-in-the-world, or to use Clifton’s words: *being-in-the-music*, using Heidegger’s concept of de-severance and Merleau-Ponty’s concept of motility. Looking back at the noetic model (figure 1), the sound space around us does not present the literal sound bubble in which sound locations can be perceived, but instead reflects an imaginary sound space in which things are *felt* close and in which things can be presented to us in a number of *imagined* spatial ways. If timbre is viewed as the quality of “what it sounds like,” the perception of this takes place in this medium between object and subject, or between the presence of the intentional object and the noetic act of the subject (see figure 3). Hence, a closer look at how timbre is perceived spatially will give us an understanding of how timbre is presented to us as a property of musical sound, which ultimately will benefit our descriptions and analyses of timbre as a musical parameter. The

¹³⁸ Merleau-Ponty, *Phenomenology of Perception*, 139-140.

¹³⁹ *Ibid.*, 98-104.

next step of our description will be to systematically describe all of the varieties of spatiality in timbre, using a wide range of compositions as musical examples. I have already used Mahler's Third Symphony and Britten's *Fanfare for St. Edmundsbury* to describe the perception of literal space, now it is time to go further and explore other aspects of spatiality in hearing timbre.

5. Varieties of Spatiality in Timbre Perception

Closeness

Although I have already touched upon the notion of closeness in the perception of space, it is still necessary to explore this aspect of spatiality to its full extent as one aspect of timbre as space. The notion of closeness seems to be the most pertinent feature of spatiality. Heidegger argues that a sense of closeness is essential to our being-in-the-world and Clifton states that in order to perceive music *as music* a directionality and de-severance is necessary. However, within different timbres I can find that some timbres appear closer to me than others. This is easily found within orchestral music, in which some sounds appear in the foreground of perception, and some in the background. For example, in the final Libera Me of Verdi's *Messa da Requiem* in measures 112 to 128, the basses of the choir sing a low melody accompanied only by a soft bass drum roll. As the drum is played softly, it creates a low rumble barely noticeable within the low resonance of the basses. Although in volume the bass drum has a strong presence even when it's played pianissimo, it is not felt as close as the basses, but instead as a far background noise. The sound almost resembles a far away thunder roll, which is a sound I would perceive as loud, but very far away. This example reveals a feature about closeness which has already been discussed by Clifton. Musical depth, which according to Clifton is the process of foregrounding and backgrounding musical sounds, is in several regards unlike visual depth. Whereas visual depth is related to our perception of magnitude (bigger suggests closer), in musical depth a foregrounded timbre is not louder per se. In visual depth, two objects cannot be in the same location, whereas in musical depth there is a suggestion of overlap in intersecting melodies. Even without the presence of multiple timbres at the same time, it is possible to perceive timbre as remarkably close or as more distant. The timbres which are usually described as "warm" might include such closeness. This term often alludes to a feeling of comfort and, thus, a "warm" acoustic guitar can be felt close.¹⁴⁰ Not all timbres that bear a strong closeness evoke a feeling of comfort though.

¹⁴⁰ This closeness might also be caused by our spatial concepts of literal space. In popular music, acoustic guitars are often recorded with the microphone as close to the strings as possible. In production, the sound is likely to be

Heidegger states that the feeling of fear entails the inherent feeling of something coming *too* close.¹⁴¹ A fear of spiders, for example, is only felt when a spider is in close proximity. When the spider is removed from the personal space, the arachnophobic would no longer be fearful. Likewise, in music we can describe unpleasant timbres as coming too close. Think, for example, of the screeching sound of nails scratching on chalkboard. The timbre penetrates our sound space as an unwelcome sound coming too close. In music, such an unpleasant experience is less common, but I recall, for example, hearing Györgi Ligeti's String Quartet No. 2 for the first and experiencing the opening measures as having an unpleasant, eerie timbre. The first notes of the piece, before the violins abruptly appear, already bring the music unnervingly close. After listening to the piece more often, the timbre found its way into familiarity and it no longer possessed the same, intense presence as it did before.

Perhaps surprisingly, but via a completely different philosophical route, the sense of closeness found its way into the musicological debate in studies on popular music. In particular, Dale Chapman refers to evocations of sonic, spatial closeness in rap and R&B productions created by Timbaland and Pharrell Williams as manifestations of Paul Virilio's "telepresence."¹⁴² Telepresence, in this case, is the technology of making the listener feel present in the music. By manipulating the sound (i.e. the different timbres), Timbaland and Pharrell Williams are able to create a sense of being there with them in the moment. Chapman contrasts the modern, two-dimensional aesthetics of rap music to the aesthetic of the 1970s in which a more distant feeling is created with a "live" sound, adding grit and crackles, and reverberation, as if it was recorded during a live performance, evoking a feeling the listener was there in the audience. Again, these sonic distances are followed by emotional judgments, but it starts with an initial encounter of spatiality.

Surrounding

Imagining the comfort of a close timbre, I can imagine a feeling of being surrounded by the sound, instead of having the sound right in front of you. This is different from a close timbre, since a close timbre can be perceived both as surrounding you, and in front of you. With a timbre that would appear in front of the imagined auditory space, I think of a distinctive, demarcated timbre. Traditional terms that come to mind would be "bright" or "clear,"

compressed to reduce noise and balance the high and low frequencies. This results in a sound which is unlike hearing an acoustic guitar live in an actual space. An illusion is created in which the listener feels as though his ear is right on the strings or even within the guitar.

¹⁴¹ Heidegger, *Being and Time*, 227.

¹⁴² D. Chapman, "'That Ill, Tight Sound': Telepresence and Biopolitics in Post-Timbaland Rap Production," *Journal of the Society for American Music* 2, No. 2 (2008): 155–175

although I do prefer the notion of distinctiveness. A single snare drum hit, for example, has a clearer spatial location than the wide spread timbre of a similar bass drum hit. Even more so, the snare drum appears in a clearer spatial location than a tambourine, even though the latter might be higher in pitch. Typical timbres that do not surround me are the timbres of a flute and that of an oboe. Instruments which produce multiple pitches, such as the piano and the acoustic guitar, often give a more surrounding feeling, but this is not necessarily so. The harpsichord, while producing multiple pitches, remains spatially in front of me with its clear attack and sharp intonation. The main feature of this auditory embrace is a slight loss in directionality towards the sound source. The larger the focus on the sound itself as the object of our experience, the more a feeling of inhabiting the music and being-in-the-music arises. Other descriptions of a surrounding timbre might be a *wide* timbre, although this description suggests a stretched sound in front of the listener and disregards the noetic sensation of being in the music. Conversely, for a timbre that is not surrounding, a description of *narrow* could suffice. In the case of narrowness, the notion of (non-)surroundedness is still maintained, as a feeling of something being *too* narrow can be considered as a space in front of us which is not inhabitable. As Tiger Rohort describes the feeling of groove and rhythmic attunement to be an embodied experience,¹⁴³ so too do I believe the feeling of being surrounded by a timbre, as a being-in-the-music, to be a bodily engagement. This becomes most clear from dance, in which a literal bodily engagement can immediately evoke a spatial surroundedness,¹⁴⁴ but even when sitting still in my chair at the concert hall I am sometimes able to, as it were, step into the sonic realm and experience the music all around me. This seems to be the intuitive “motor intentionality” as described by Merleau-Ponty. Unlike Heidegger’s notion of de-severance and directionality, the spatiality of our own body (as being in the centre of the sound) is immanently involved.

Density

Following from this feeling of surrounding sound, I wondered whether this sense could be amplified so that a complete spatial directionality would disappear. Looking back at Ihde’s noetic model, this might seem like a dissipation of the focus with an enlarged fringe area. However, the resulting perceptions are not found in a blank state of boredom. Instead, we might speak of an enlarged focal area, inevitably making the focus “less sharp.” The spatial

¹⁴³ Rohort, *Groove*.

¹⁴⁴ The relation between dance and the experience of spatiality in music would be very interesting to investigate in further research. Could the spatiality of sound be found as (intuitively) represented movements in literal space, or are does the spatiality of bodily movement belong to a different experience of space?

aspect of timbre that occurred is density. This density refers to our imagined sound space, which in silence is completely empty and with each perceived sound gradually fills. We can consider a general timbre as full when there are lots of different sound sources. A good example is the fortissimo parts in Mahler's Fifth Symphony, in which the full orchestra blasts towards you. The different instruments of strings, brass and woodwind combined blend into a familiar, general timbre. It is at this point that the parameter of timbre might overlap with a parameter that is often referred to as texture. The texture of a musical work simply states the number of instruments and voices in a piece, meaning you can have a dense texture or an open texture. Yet, as we have seen from *Seashore*, we do perceive timbral blending when multiple instruments play and when a full orchestra is producing a loud sound there is a typical, general timbre that fills our sound space. I would argue that the difference between timbre and texture is not a phenomenological one, but an analytic difference useful for composition, not for an understanding of perception.

But density can also be accomplished by a single instrument. Most notably, in Ligeti's *Volumina*, the sound of the organ is explored, and presented within its fortissimo passages is a sound consisting of so many pitches that a buzzing whirl appears. The sound space becomes so full that a sense of directionality is lost and a timbral cacophony is left. Yet, even in smaller instruments such as the piano or guitar, density can be experienced. In piano passages in which the pedal is frequently used, the resulting mix of overtones assures a perception of fullness. But even within one tone, I can experience timbral density. The crashing sound of cymbals, for example, form a denser sound than equally loud hits on woodblocks or triangles. Likewise, the timbre of a banjo may sound denser than that of a guitar, even though the latter appears closer and more surrounding. Central to full timbre is a certain sense of disorientation. There is no longer one single timbral point of orientation that presents itself in front of our auditory space, but instead our space is filled. The fuller this space becomes, the harder it becomes to focus on a single sound source. This filling of the sound space is, of course, alongside a filling of pitch space. At these overlaps, I can only artificially decide whether the sensation of density is caused by the high number of pitches or by the high number of different timbres that each of these pitches produce. Phenomenologically, this would not matter though. In listening I hear a fullness whether this a timbral density or a pitch fullness. I will suspend a conclusive interpretation and move on to other interactions with sound space.

Movement in Space

I decide to stick with the noetic model of an imaginary sound space and wonder how different sounds can appear and disappear within this space. A timbre, for example, can slowly change into another, thus resulting into a fading out of one timbre and a fading in of another. A good example of this phenomenon is found in Grisey's *Solo pour Deux*, in which after a series of short notes the clarinet and the trombone play a long note in unison and ever so slightly shift the timbre from a soft open sound to an intense, full timbre. At first, the two instruments playing in a perfect unison sound as one, but as the long note progresses the timbre of the clarinet and trombone ever so slightly start to drift apart. A similar timbral development can be found in Pink Floyd's "Sheep" from the 1977 record *Animals*. As Roger Waters sings the words "harmlessly passing your time in the grasslands away" he maintains a long note on the final word in which his voice gradually changes to a synthesised tone. The transition between the singer's voice and the synthesiser is incredibly smooth and shows a gradual movement in timbre. These movements can be described as a spatial movements as well; in both Grisey's *Solo pour Deux* as Pink Floyd's "Sheep," the general timbre slowly moves from a clear point in front of me, to a surrounding presence. Another variation of appearance of a timbre is a sudden, piercing entrance in the auditory space. In film music, this phenomenon is often applied in stinger chords. In this case, the suddenness is stressed by a sudden musical event, often loud and sometimes quite dissonant. However, it also exemplifies a sudden change in timbre, as we speak of a "sharp" musical event. It is possible to think of a piercing timbre that is not accompanied by dissonance and sudden dynamics. For example, in Bruckner's Seventh Symphony, the triangle hits clearly stand out above the orchestra in the climax of the Adagio. The timbre of a triangle, as it appears, is not another dot in the otherwise already full sound space, it pierces through the timbre of the full orchestra into our ears, no matter how soft the instrument is played. There are numerous cases imaginable in which timbres are changed over time, appear in different orders or have another notable time development. Each of these appearances suggest motion in sound and any motion presupposes a space.

Depth

Not all spatial perceptions are reliant on a direct interaction with our imagined sound space. The musical sound itself might have spatial aspects that are perceptible for the listener. It is at this point that I leave the exploration of the noetic process and its relative imagined sound space, and instead focus on the spatial nature of the noematic content. One spatial aspect of a material object is its depth. Although Clifton describes musical depth solely as the appearance

of sound in motion, I find there can be a characteristic depth in a single tone or timbre as well. This depth is not the difference in perceived closeness as discussed above, but instead a sense of deepness within one timbre, similarly to the depth in a dark colour, as if one is staring into a deep abyss. Depth in musical tones is often either associated with long resonance and reverberation; the sound of a choir, for example, can be described as deep as their singing is echoed in the large spaces in which they perform. Or, musical depth is associated with low pitch. For example, the voice of a bass is often characterised as deep. The length of a tone might also evoke a feeling of depth. A longer sound feels deeper, as if a longer distance needs to be bridged. A logical opposite of depth would seem to be shallowness, and although this is a less common term to describe timbres, it is not unthinkable to imagine shallow timbres. For example, the vocal timbres of the two singers of CocoRosie on their first album sound coy and wracked. Their crooning resembles a shallowness not in the sense of superficiality, but of little acoustic depth and fragility. Another example might be the shrill timbre of a whistle. Although this sound is often loud and piercing, its high spectrum resembles little depth. It is interesting to consider the difference in connotations with the similar spatial description of thickness and thinness, instead of using the adjectives “deep” and “shallow.” In reflection, I would consider a thin timbre to be similar to a shallow timbre. Both resemble a lack of resonance and depth. Thinness, however, does not imply superficiality. A comparison between thickness and depth become more problematic. Whereas a deep sound would refer to a profound resonating timbre, thickness would refer to the fullness of a sound. Thinking of a thick guitar sound, I imagine an amplified electric guitar, modulated with lots of gain and distortion. Thickness might refer to a wall of sound, a certain denseness. At this point, I am not sure whether these observations can still be considered to be part of the prereflective experience. Is the sense of depth in the presented timbre heard immediately, or do I first perceive its spatial presence in closeness and do I then make a reflection on its depth as a sonic object in front of me? Both theories could be accepted with the right argumentation, but by doing so I am no longer suspending interpretation. For now, any conclusive remarks will be held in abeyance. The issue of to what extent all timbral spatiality should be considered prereflective shall be addressed later.

I also find that each of these observations, again, reveal the difficulty of describing timbre as an individual parameter. The lowness of a bass has a deep timbre, which is also found in other low sounds. A similar timbre simply cannot be recreated by a high pitched voice or instrument. Likewise, the length of a tone influences our timbre perception. A short, sudden note might be heard as the piercing stinger, whereas the same note lengthened over

several measures would be heard as having a full, intense timbre. For now I will acknowledge this issue, but move on with the variations and come back to this in the conclusion.

Surface

In his phenomenology of sound, Ihde describes the perception of surface as one of the essential features of hearing space, such as the surface of a chalk board when it is scratched or the surface of a wooden floor when it is walked upon. Clifton describes musical surface in other terms, namely in the movement of melodies or the development of harmonies, in which case not a material surface is heard, but an imagined landscape carved in musical sound over the course of a musical work. The perceived surface in musical timbre is neither; this surface refers to the smoothness or roughness of a musical sound. These terms are regularly used outside of spatial descriptions (for example, one can speak of “a smooth journey,” a “rough guy” or a “smooth introduction”), revealing the emotional judgments following these terms. Roughness, then, refers to the amount of resistance or friction. A rough timbre, then, could be a timbre with a lot of noise or a particularly hard attack. Violins playing close to the bridge, or perhaps violins playing with a *col legno* technique, are able to evoke such a feeling of roughness. The basic, digital tone of a synthesised sine wave, on the other hand, lacking any additional overtones, noise and natural ADSR development entails a perceived smoothness. On almost any instrument, however, both a smooth and a rough surface can be presented. A saxophone, for example, can have a gentle smoothness in its natural register, and a striking coarseness when played with a growling technique. Sometimes, musical timbres reflect the surface of a literal space. For example, an amplified guitar may sound metallic. The metal of the strings is enhanced by its amplification and gain. Likewise, certain percussion instruments can sound wooden, or glassy depending on the surface that is hit.

Shape

A final spatial aspect that should be considered is the notion of shape. Shape certainly is an essential part of our visual spatial experience. The shapes of objects around us can easily be identified by looking at them. In sound too, we are able to identify shape, as exemplified by Ihde’s objects-in-a-box game. However, within musical timbre this part of spatiality seems to be absent. Although the term “round timbre” this timbre can be better described using the spatial terms of *surroundedness*, *density*, or *depth* considering the lack of “square,” “triangular” or “hexagonal” timbres. Most notably, the term “roundedness” is used as a contrasting term against “sharp,” in order to describe a smoother timbre. A certain roundness

can also be perceived in the sound of a flutter-tonguing technique, in a drum roll or in a classical guitar tremolo. However, again other spatial shapes cannot be found in similar techniques so it is questionable whether this category of shape should be used, especially considering that the other spatial terms might suffice better in giving a clear description of the perceived sound, such as “smooth” for a “rounded” timbre). In general, the perception of shape seems to be the aspect of spatiality that differs most from our visual perception of space. Whereas recognising shapes and forms is an essential part of our visual experience of space, in our auditory spatiality this is only a minor facet, if any at all.

With Heidegger’s concepts of de-severance and directionality, and Merleau-Ponty’s concept of motility, the variations described above can be understood as availabilities in the musical objects. Perhaps there are even more spatial aspects within the perception of timbre conceivable, but this set already provides versatile jargon for describing different timbres. Each of these descriptions is based on the spatial perception from the listener. As such, these are not objective, empirical data points, but instead referential descriptions of experience. While some categories appear to have some overlap with each other (for example, a *full* timbre is often also a *surrounding* timbre), each of these descriptions can be understood relative to the other descriptions, as each description relies on the spatial being-in-the-world, the de-severance and the directionality of the listener. Even the descriptions which do not focus on the imagined sound space (depth, surface) come forward from the perception of spatiality. This interrelatedness of possible descriptions is not found in previous terminology. For example, the terms “warm” and “smooth” are on different phenomenological levels, since the former term describes the judgment of comfort along with a sense of closeness, and the latter describes the perceived surface of the sound. Now it is time to reflect on this initial exploration and evaluate the specific applications and implications of this model compared to other approaches to the phenomenon of timbre.

Reflections and Conclusions

In the first chapter of this thesis, I have tried to grasp the concept of timbre as it is embedded in history and music(-ological) discourse. Even though the term has been used frequently by both composers and scholars, multiple issues arose regarding the description of timbre. Most researchers approached timbre as an acoustic component and attempted to visualise its features with data on overtones and ADSR-envelopes. Composers and music philosophers, on the other hand, generally consider timbre as the quality of sound and, hence, describe timbre as a qualitative, subjective aspect of music. Both of these approaches are problematic for a phenomenological understanding of timbre: the empirical approach of researchers often reveals little about the experience of listeners and the subjective description reveals too much about the listener's aesthetic judgment, blurring the essential features of the experience of timbre that precede evaluation. In the second chapter I addressed this issue by focusing on a feature of timbre that seems essential to its initial perception, rather than to the full-fledged experience of timbre, namely the experience of spatiality. In my description I tried to suspend any conclusions for as long as possible, but now that the premises of spatiality in timbre have been laid out, it is necessary to reflect upon the efficacy and value of this phenomenological experiment.

1. Reflecting on the Prereflective Experience

First of all, the specific focus on the experience of space in hearing timbre brought forward some interesting results. In the initial perception of sound, which Ingarden refers to as the “preliminary emotion,” and Heidegger refers to as the directionality in our intentionality, there is an intrinsic experience of space; namely in placing the sound in our own sense of space and bringing the intentional object closer. Extrapolating from this sense of closeness, I found that some timbres appear closer than others and that, going further, other dimensions of space, such as depth, density and movement in space are found in the perception of timbre as well. Yet, the focus on spatiality may have also obscured other essential qualities of timbre. One can imagine that the experience of space is not the only prereflective experience that precedes the full perception of timbre. The first other potential feature that comes to mind is the experience of time. Just as a perception of movement in timbres (timbres appearing and disappearing) presupposes a space in which they move, so too does it presuppose a time in which the movement takes place. As was discussed in chapter 1, the ADSR-development is of vital importance for perceiving timbre, but even timbres that are

constant over time appear and disappear at some point. Another aspect which might be considered to be essential to the prereflective experience is the element of play, as described by Thomas Clifton. Clifton describes this sense of play as the heuristic behaviour which music elicits, as well as the rituals that come with the experience of the musical work. The essential background of musical experience, then, is not found in the materiality of the musical object, but rather in the contributions of the participating listener.¹⁴⁵ Although a phenomenological study may seem to strip the layers of historical association, the rituals of the listener and the interactive play with the heard music can still be essential to the experience of music as they are related to our sense of being-in-the-world in general, and our listening noetic acts in general. Regarding timbre, one example could be the timbres which of church bells, which one would associate with the rituals of the church. One could go even further and consider the possibility of other aspects, like colour, similarity/contrast or balance/unity, to be essential facets of the experience of timbre. It is not my intention to argue whether any of these elements other than space, such as time, play, colour etc., are essential to the experience of timbre. The aim of this thesis was not to provide a complete dissection of the concept of timbre and all of its essential features for experience, nor do I suggest that the experience of space is on a higher hierarchical level than other aspects of experience, such as time or play. Instead, my intention was to see whether by focusing on a previously undiscussed element of the perception of timbre I would be able to add new information to the existing literature and, by doing so, investigate in what ways this phenomenological methodology can contribute to academic studies.

One of the main components of my methodology was the focus on the prereflective experience. Most previous descriptions of timbre involve some kind of evaluative depiction. For example, a description such as “a warm timbre” implies an emotional judgment of the timbre as comforting. While it is already relevant to know that timbre is something which can be experienced as comforting, it would be more revealing to analyse how a timbre can be heard as such, for which a closer look on the precursory elements of experience is necessary. Yet, this focus is of course a constructed method of reflection. The ambitious attempt to reflect on those elements that constitute the “unreflective life of consciousness,” as Merleau-Ponty puts it, is in essence impossible.¹⁴⁶ The only way to write down the prereflective experience is by reflecting upon the experience and carefully consider what is, and what is not, essential before the full experience, which makes the description of the prereflective

¹⁴⁵ Clifton, *Music as Heard*, 71.

¹⁴⁶ Merleau-Ponty, *Phenomenology of Perception*, xvi.

experience itself by definition *not* prereflective. This issue becomes especially apparent in the second step of my phenomenological description: the variations of my experience. The purpose of these variations was twofold. On the one hand, I intended to give an overview of all the possible terminology for describing spatial effects in the perception of timbre. On the other hand, by exploring all the variations of spatiality in timbre I tried to find how far this dimension reaches and to what extent our timbral experience of space corresponds with our visual perception of space. In doing so, some variations, such as the experience of closeness, remain within our initial consideration of the prereflective experience of space but others, such as the perception of surface, seems to refer to a different kind of perception of space, which takes place in, or after, the reflection on the heard timbre. The perception of roughness seems not to be related to a sense of closeness, directionality towards the object or the de-severance of sound in general. Rather, it is a feature which is associated with space after the timbre itself is heard as a presence in our imagined sound space. The perception of surface might be on the reflective end of the spectrum, and the initial sense of closeness of the prereflective end, but most variations are much harder to determine. This seems to be one of the weaknesses of this particular phenomenological method, and it certainly was not the only one.

2. Issues of a Phenomenological Methodology

One of the main issues I found in the phenomenological description is the separation between noematic content and the noetic process. The two concepts were presented in order to make a distinction between the process of experiencing, the noesis, and the (intentional) object of our experience (noema), without complying to an explicit separation between object and subject. After all, the noematic content is still an intentional object in the experience of the subject. The issue with this separation becomes apparent once one tries to generalise the findings of the noetic act to general noematic content. One example is found in the perception of the harp, as described in chapter 2. In chapter 2, I stated that the presence of the harp would always appear in the background of perception when it is heard in the midst of a full orchestra playing at the same time. For the non-harp playing listener, this would certainly be the case, but for the listener in the audience that has experience in playing the harp, perhaps in his or her spare time, the harp may stand out and place itself in the foreground of the perception. One could argue that in this case there is a change in the noetic process; for the first listener, the noetic act is one of open listening, whereas the second listener adopts a more focused listening on the instrument he, or she, is familiar with. However, one could also

argue there is a change in noematic content. The first listener, in this case, has a different intentional object, namely one in which all the harp appears in the background, while for the second, the harp appears in the foreground of his, or her, perception. Once one would try to abstract a general conclusion from his description, this issue becomes crucial. For example, in the case that the change in appearance of the harp from the background to the foreground is accepted as purely a noetic difference, one could conclude that the spatiality of this particular timbre is non-essential to its intentional object. However, if it is viewed as a noematic difference, one could conclude the appearance of the harp in the background *is* essential to the phenomenon, and the foregrounded harp is a completely different phenomenon altogether. One could argue that as long as the feature is part of the passive synthesis, it can be considered as an essential feature of this phenomenon, but this only shifts the problem to finding which features of experience are purely passive and which are the result of active synthesis. Furthermore, it is not inconceivable that an essential feature of a phenomenon becomes apparent only in an active synthesis. For example, Clifton describes the heuristic behaviour of the listener to be essential to the experience of music. In order to avoid this issue, I have used the passive synthesis of the prereflective experience of space as a starting point and in the further exploration and the phenomenological variations I have tried to view the noematic content and noetic acts as much as possible as a whole, meaning that when one changes, the other changes as well. In the case of the harp player, I would thus speak of both different noematic content and a different noetic act, leading to a new phenomenon. However, even though the experience of the harpist and the one from the regular listener may differ, the variations of spatiality in timbre can still be applied to both the experiences. The exact existential considerations of each of these experiences would go beyond the scope of this thesis.

Another issue I found in the phenomenological description is in the suspension of theorisation and interpretation. This suspension was brought forward in order to maintain a pure focus on the object as it is experienced, avoiding any assumptions based on analytic abstractions or subjective qualifications. The distinction between interpretation of experience and a non-theorised, non-interpretive description of experience, though, is also a constructed one, becoming increasingly blurry in the in-depth discussions of phenomena. It seems that, as my phenomenological description is a reflection on the prereflective experience, a complete neglect of interpretation is impossible. Should the perception of surface, for example, be considered to be an indispensable description of a particular timbral phenomenon, or is this the result of an interpretive act of describing a phenomenon which otherwise only occurs in

our non-verbalised perception? I, of course, would argue for the former, but nonetheless the distinction remains ambiguous. Taking this consideration to its extreme would lead to a relativist account in which any statement is viewed as an interpretation and any interpretation is equally valuable. For a phenomenological method, one has to assume there are general conditions for everyone's experience and that by examining one's own experience carefully, it is possible to find the essential features on which experiences are built. In this thesis, I have tried to explicitly identify my assumptions and interpretations and suspend them until this concluding chapter.

3. Final Conclusions

Despite these issues, this research has yielded some interesting results. The most important find is that although the exact demarcations of the prereflective experience are vague, the perception of timbre can certainly be considered to be in the initial, direct experience of music. Although the distinction between noesis and noema has proved to be problematic, it did reveal a lot about the prereflective nature of timbre. As described above the sense of closeness and the spatial placement of the sound in our imagined sound space is essential to the prereflective experience of timbre, whereas the spatial features such as surface and depth are constructed in the reflection and evaluation of timbre. It could be argued that this sense of closeness is inherent to the noetic act of hearing timbre, whereas the other spatial features are qualitative aspects of the noematic content found in reflection. It was in the eidetic reduction of the noesis that this prereflective essence was found. The experience of timbre is inherently related to the de-severance of music, bringing the object closer as the sound's presence becomes apparent. Perhaps this is why Brian Eno stated that "the sound is the thing you recognise,"¹⁴⁷ as it is the initial sound of the music which precedes perceptions of melody, harmony and rhythm. This, too, might be why the concept is so ungraspable. It is a qualitative, spatial perception preceding reflection on what is actually heard. Explorations of timbre often go beyond this fundamental nature of "the sound." Of course, one could argue that "the sound" involves more musical aspects than just timbre. For example, "the sound of Miles Davis" is also characterised by his specific manner of phrasing and handling rhythmic motives. Yet, many of these aspects are involved in the perception of timbre. As was discussed in chapter 1, if the attack of a tone is taken away, the timbre becomes unrecognisable. Furthermore, as can be concluded from chapter 2, the only viable

¹⁴⁷ Korner, "Aurora Musicalis," 76.

phenomenological definition of timbre is “the way it sounds.” With this definition, we can consider timbre to be this overarching sound of the music, since any other abstraction would defy the phenomenological experience of timbre.

These conclusions are closely related to the notion that more than for pitch/melody, duration/rhythm and loudness/dynamics, the perception of timbre seems to be relative to each of these musical aspects named above. This was already found in a non-spatial consideration of timbre, for example the low-pitched double bass has a distinctive different timbre than a high pitched violin, but this was again confirmed by my description of timbral space. For example, the experience of timbral density goes hand in hand with either a density in texture or in pitch, foregroundedness goes hand in hand with loudness, etc. Regarding “the sound of Miles Davis,” even his phrasing and rhythmic motives might influence the perceived timbre of his trumpet. This, on its own, might suggest a compliance with the conceptualisation of timbre as a *quale*, as presented in chapter 1, but with our previous conclusion of the direct perceptibility of timbre, such a concept is too constraining. Instead, one could consider timbre as an overarching musical impression, constituted on a completely different level than the other traditional parameters, but once again I am entering the realm of interpretations and such a radical position would need a far more extensive exploration.

Finally, with this thesis I have provided a new system of descriptive metaphors for the discussion of timbre. Whereas previous descriptions varied from temperature (e.g. a warm timbre), to light, vivid colours (e.g. a bright timbre) to bodily associations (e.g. a nasal timbre), this system affords a large set of descriptive adjectives which are all relative to each in the same metaphorical disposition. Even though individual experiences may still vary from listener to listener, this model of spatiality provides a method to communicate our experiences more clearly and understand the basis for our perception and experience.

With these results in mind, returning to the main question “how can a phenomenological description of timbral space contribute to the existing study of musical timbre?” I can conclude that with this specific focus several aspects of timbre have come to light that have previously been neglected by other qualitative studies on timbre, such as the studies conducted by Holmes, Blake and Doğantan Dack. Patricia Holmes mainly tried to grasp the expressive manipulation of timbre in performance, Blake examined the use of timbre as differentiation in popular music and Doğantan Dack proposed a consideration of timbre as the mediation between voice and matter. My study mainly focused on the conditions on which these experiences are built, and it is as such that a phenomenological method can be of value for academic research. More than anything, phenomenology is a

study of exploration, not dealing with pure facts but with experiences that constitute meaning for the subject.

Further research is absolutely necessary to enhance this explorative study. Primarily, the ongoing research on timbre would benefit from a phenomenological study on timbre in all of its aspects, and not just the experience of space. Starting with an open attitude, more essential features of the prereflective experience could be found, explored and discussed relative to each other in order to account for all the variations of timbral experience. Secondly, further research on the specific application of these results would be valuable for the integration of the new findings of such a phenomenological study. In analytic reflections, the pitfalls of the phenomenological method can be avoided and results can be tested and evaluated. One example could be a series of analyses of musical works from different styles and genres, but one could also think of an investigation on the different implications this view on timbre would have for performance, music production and composition. In this thesis I have touched on timbre as it is heard. As I have shown, the notion that the perception of timbre is incredibly important in the experience of music is indisputable, but a consideration of the exact function of timbre within the full experience of music stays, at this point, inconceivable. To investigate how and why we experience timbre in a particular way remains a fascinating challenge.

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