SONIC SUBTLETY:

ATTENTIVENESS, CONSCIOUSNESS, UBIQUITY

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Abstract

This research branches from the study of silence in sound studies and musicology. It contributes by theorising 'sonic subtlety', a new category of sound positioned between silence and sound, where the sound is more restrained, but also not completely silent. Sonic subtlety appears in four aspects of sound: amplitude, spectrum, space and time. This study observes how sonic subtlety performs in 20th-century classical music and contemporary film music and answers the following:

- What does sonic subtlety do and in which ways can it perform effects to a listener?
- How does sonic subtlety function in 20th-century classical music and contemporary film music?
- How does sonic subtlety change the act of listening?

In Chapter 1, I explain 'sonic performativity', the ability of a sound to perform an effect to an audience. This thesis considers sonic subtlety in terms of its sonic performativity.

Most 20th-century classical music has no external, extra-musical functions such as illustrating a narrative or accompanying a visual. Sonic subtlety performs effects for the listener's enjoyment only. In Chapter 2, sonic subtlety has four modalities of performativity: sonic clarity, sonic environment, sonic preparation and thematic subtlety.

Film music has a more functional nature than 20th-century classical music with the addition of three cinematic factors: intermediality, narrative and emotion. In Chapter 3, the modalities of sonic subtlety function in film music to enhance these factors. Sonic subtlety in film music also often encourages ubiquitous, inattentive listening.

Sonic subtlety performs effects to the listener on a partially-conscious level; I call this 'subtly conscious performativity'. Sonic subtlety in film music can create a ubiquitous listening experience which can involve a new mode of listening between attentive and inattentive; I term this 'subtly attentive musicking'. Sonic subtlety encompasses both the construction of sonic parameters and the ways of understanding musicking and performativity. This thesis breaks previously opposed categories: silence and sound, conscious and unconscious, attentive

and inattentive. It contributes new perceptive and analytical categories for composers, sound designers and musicologists that can now be explored further.

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I would like to thank Professor Isabella van Elferen for her supervision throughout this project.

Our meetings inspire and motivate me to contribute my ideas to sound studies.

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Introduction

In this thesis, I explain the concept of 'sonic subtlety', a way of considering the more reserved sonic parameters of amplitude, spectrum, space and time. Sonic subtlety blurs the lines between soundlessness and sound, focusing on sound which usually invites inattentive listening.

I apply this framework to 20th-century classical music and contemporary film music, though it can be applied to any type of sound or music. I explain how, in music, sonic subtlety performs effects to the listener. Subtleties can also be combined to enhance effects. In film, these effects function to enhance intermediality as well as narrative and emotional experience. Effects can occur permanently or temporarily or simultaneously, enhancing one primary effect using a secondary effect.

In Chapter 2, the effects of sonic subtlety are explored in 20th-century classical works: *Musiques Nocturnes* (1926), *Telemusik* (1966), *Air* (1968-9), *Étude aux chemins de fer* (1948) and *Poème Électronique* (1968). In Chapter 3, I observe contemporary pre-composed film music and original film scores: focusing on amplitudinal subtlety in *Koyaanisqatsi* (1983) and *Black Swan* (2010), spectral subtlety in *Blade Runner* (1982) and *The Hunger Games* (2012), temporal subtlety in *Gone Girl* (2014) and *Eyes Wide Shut* (1999), and spatial subtlety in *Gravity* (2013), *Insidious* (2010) and *Stoker* (2013).

I have chosen to study 20th-century classical music. Like sonic subtlety, 20th-century classical music defies typical attributes of popular music, which often encouraging physical audience interaction like foot-tapping, dancing and singing. Contemporary compositional approaches, discussed further in Chapter 2, encourage experimentation, unconventional uses of instruments and new technologies. Popular music can sometimes require use of stereotypes in musical code (Tagg, 1979, p. 56-66). Alternatively, 20th-century classical music does not rely on temporal, harmonic, timbral or structural conventions. Sonic experimentation provides a place for sonic subtlety; the sound is not always completely saturated, allowing sonic subtlety to appear and perform. 21st-century popular music, by contrast, is often produced for fixed

media and largely commoditised (Tagg, 1987, p. 4-5). Popular music would provide a very interesting study with sonic subtlety, but it would require more political, social and economic considerations. Popular music can play with recognition in musical memory, creating an attentive listening experience. On the contrary, the works on which I focus, are not highly recognisable in their contexts, and the listening experience is much different, providing an opportunity to explore how sonic subtlety can manipulate attentiveness of listening.

I extend the study of 20th-century classical music into contemporary film music where pre-composed music and originally composed pieces are used. Music is given a new context when it is placed within film. The listening experience becomes more drastic, as listeners are likely to disregard the artist or any attempt to find meaning. The context of the visuals and narrative add new potential meanings to the sound, which the audience is open to interpret, creating new contingent meanings.

Chapter 1 introduces the concept of sonic subtlety, explaining the development of previous research. Then, sonic performativity is theorised with musicological, linguistic and literary approaches to meaning and performance studies. Listening modes are addressed, in order to understand the way to which the works are listened. Combining sonic subtlety with performativity and observations of previous research, the modalities of subtle sonic performativity are explained. Chapter 2 introduces contemporary composing, in order to observe sonic subtlety in 20th-century classical music, exploring how subtlety performs effects to the listener. Chapter 3 introduces film sound and its functions. Cinematic examples are used to illustrate how sonic subtlety performs effects and how it functions to enhance and add value to the visuals, narrative and emotional experience.

My focus is on performance and the listener's interpretation of these works, as opposed to the composer's intentions, though composers can use this study to learn more about how using sonic subtlety can play with the attentiveness of the listener experience. Musicologists as well as listeners may be interested to know how sonic subtlety can change the ways in which audiences listen and potentially perceive sound.

Chapter 1: Sonic Subtlety, Performativity and Musicking

Musical vs. Sonic Parameters

Traditional musicological analysis focuses on notated scores and musical parameters such as tempo, harmony, rhythm, melody, structure and tonality. Sonic parameters, such as the properties of amplitude, spectrum, time and space, have been included in more recent analyses (Smalley, 1997, p. 107; Voegelin, 2010, p. 124; LaBelle, 2010, p. xxi). Sonic parameters are interdependent, but for clarity, it is important to discuss them separately before discussing them together. Rather than focusing on each musical part, sonic parameters consider the overall levels of a given piece of music or any sonic situation. Sonic and musical parameters both contribute to the construction of sound, so they have parallels; spectrum involves timbre and melody, amplitude correlates with dynamics, and temporality is made up of rhythm and structure. In order to understand the listening experience of musical temporality, Denis Smalley developed his concept of spectromorphology, which comprises of "the interaction between sound spectra (spectro-) and the ways they change and are shaped through time (-morphology)" (Smalley, 1997, p. 107). Similarly, space is important to consider, because it cannot usually be analysed using a traditional score. Smalley notes the link between spectral content and temporal shaping, but he too separates these parameters for discursive purposes (Smalley, 1997, p. 107). Smalley also developed *spatiomorphology* to concentrate on the spatialisation created by acousmatic music, arguing that spectromorphological activity forms space (1997, p. 122).

What is Sonic Subtlety?

'Sonic subtlety' describes situations in which sound is present but the sonic material is limited in one or more sonic aspects: amplitude, spectrum, space or time. I first observed sonic subtlety in my research surrounding horror videogame sound, where sound was nearly always present, but not always designed to be prominent, audible or attentively listened to. I

theorised the framework of ‘sonic subtlety’ and explained how it functions to benefit the horror videogame genre.

Soundlessness and sound are not a binary opposition; sound should be considered as a scale. Figure 1 displays the scale and the broad categories of soundlessness, sonic subtlety, sound and sonic cacophony. These categories have blurred lines, but their positioning can help with understanding how sonic subtlety fits with other types of sound. Soundlessness refers to the absence of any intentional sonic material. I avoid using the term ‘silence’, because this enters a debate into which I do not intend to enter. Sound refers to a balanced level of ‘normal’ sound whereby the listener perceives it as not too hectic and not too reserved. Sonic cacophony is where the sound is so saturated in levels that it cannot be perceived or listened to effectively, and separate sounds are not easily separated in listening. Sonic subtlety is the middle ground between soundlessness and sound, where sound is more reserved but not silent. Values or limitations should not be placed on sonic subtlety, as it can be relative in any listener experience. *Just-noticeable-difference* is the smallest discriminable value between two stimuli, which can be different for every listener (Yost, 2007, p. 150). The auditory system is sensitive to slight changes in volume and frequency, for example, the smallest volume level required for sonic detection is known as the threshold of audibility (Yost, 2007, p. 144). Thresholds of perception are responsible for the subjective perception of and differentiation between soundlessness, sonic subtlety, sound or noise in listening.

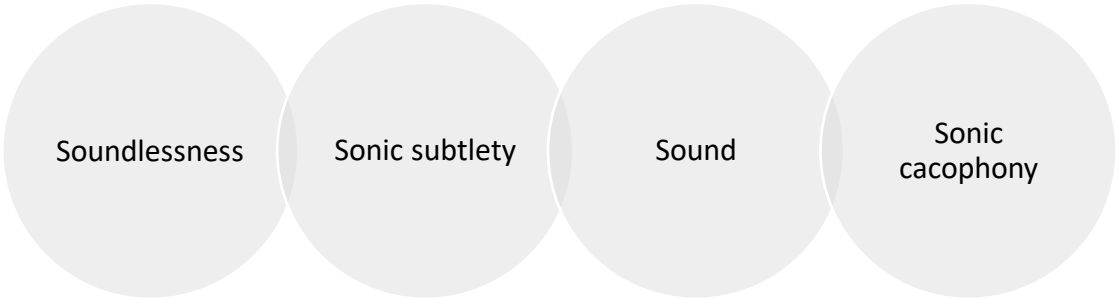

Figure 1 - Scale of sound

Amplitudinal Subtlety

This is likely to be the first category one imagines when considering ‘reserved sound’. Amplitudinal subtlety is the reserved use of loudness; it can simply be quiet sound. It is created in sound design by lowering the volume of tracks, or having musicians play quietly. Amplitude levels are relative to the rest of the sound within the context; actual volume levels must be disregarded. This is because in some sonic contexts, such as videogames, listeners can turn down and manipulate the volume of different sonic components. For example, speech could be very loud, the background music might be quiet, but environmental ambience might be completely disabled.

Spectral Subtlety

Spectral subtlety occurs when the overall sound only occupies a limited range of frequencies. When discussing spectral sonic qualities, narrowband describes a sound with a limited number of frequency components, and broadband describes a sound with a large range of frequency components (Yost, 2007, p. 49). Spectral subtlety can be created with a small number of simultaneous narrowband sounds or one sound with a restricted spectral range. Spectral subtlety is a timbral issue, because it can be created with the use of instruments, acoustic and electronic, which also play with amplitudinal and temporal aspects. Sound designers alter spectral qualities with filters and equalisation. Figure 2 displays a spectrogram, a diagram of the frequencies that a sound occupies over time; where the colour is darker, the frequency is louder at that time.

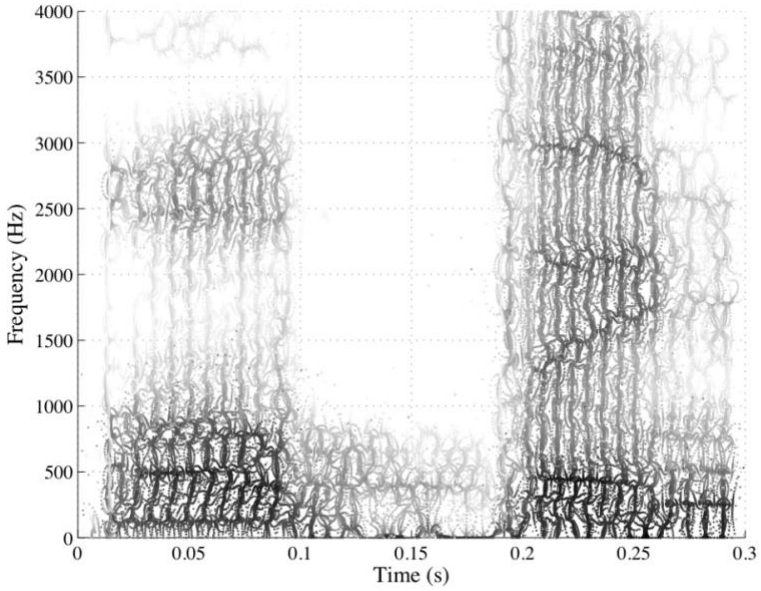

Figure 2 - Spectrogram of speech c/o Tyson Hilmer

Temporal Subtlety

Sounds can be longer and consistent, such as film music or ambience, or a chordal sequence in a musical work. Or, sounds can be shorter and inconsistent, like short melodies, dialogue or a door opening in a film. Figure 3 displays the temporality of three different sounds. The bottom two sound are longer consistent sounds, one with a consistent pitch and another with a melodic line. Listeners generally become accustomed to longer, consistent sounds because they do not require much attention. In Figure 3, the top sounds can be described as short and consecutive, as the next sound does not begin until the last one has finished. Shorter, inconsistent sounds invite more direct attention. Temporal subtlety is created with shorter, inconsistent sounds occurring separately and consecutively, creating sparse textures. Longer sounds can be present at the same time, but their consistency makes them appear more inconspicuous. In sound design, temporal subtlety can be achieved by altering the sound's attack, duration and decay, rate of occurrence and the simultaneous sound layers. In interactive contexts such as videogames, temporal subtlety is manipulated by where the players directly trigger sounds. In order to determine multiple simultaneous sound sources, temporal subtlety requires *auditory stream segregation*, which is the "conditions that lead to

the perception of different sources when there is more than one alternating sound" (Yost, 2007, p. 210).

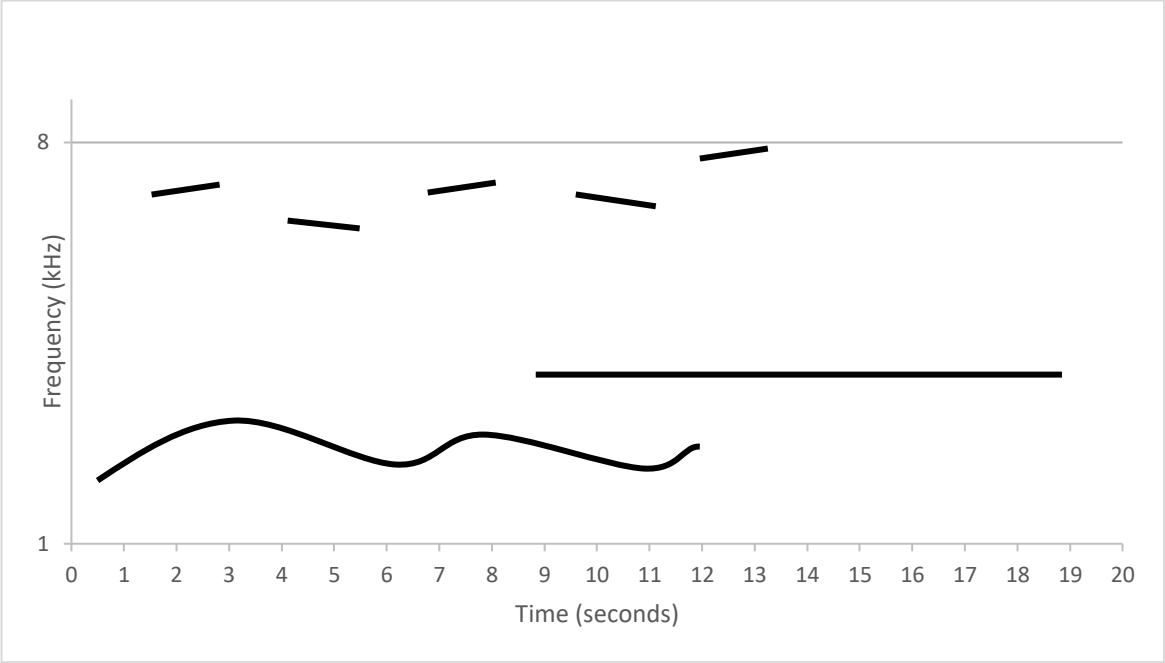

Figure 3 - Diagram of temporality

Spatial Subtlety

Sounds can be spatialised directionally from one place in the stereo or 3D sound system, or omnidirectionally from all directions. Spatial subtlety is the reserved use of directional sound and the listener's ability to distinguish discrete sound sources. Sonic spatialisation is very complex and there are certainly more than two ways that a sound can be spatialised. In order to explain spatial subtlety, I focus on directional and omnidirectional sound, but it must be noted that this is not a binary opposition. The sound designer achieves this by distributing sounds in the stereo, 3D or surround sound system. Musical spatialisation is studied by Smalley, who considers the spatialisation of acousmatic music by focusing on space, formed by spectral and temporal parameters; he calls this *spatiomorphology* (1997, p. 122).

Sonic spatialisation provides the listener with a position in relation to sound and a listening perspective; this is particularly functional in cinematic sonic contexts. There are many cues that interact to communicate spatial positioning; but directionality can signal a sound's source in relation to the listener and amplitude can signal the sound's proximity to the listener. For this reason, in more functional sonic situations like film, listeners require spatial and

amplitudinal subtlety to determine the distance and direction of a sound (Yost, 2007, p. 179). As well as directionality, the brain can estimate the type of space in which a sound is played by the echo and reverberation; in produced recordings, these "hyperrealities" can be created with sound effects (Levitin, 2008, p. 108). Sonic spatiality can create and manipulate the listening perspective, environment and experience.

Previous Research on Sonic Subtlety

I previously studied sonic subtlety within the horror videogames *Amnesia: The Dark Descent* and *Layers of Fear.* Videogames are participatory and interactive, granting players the ability to manipulate the narrative, visuals and sound themselves, focusing on gameplay. Karen Collins explains that 'interactive audio' is a sound event that occurs in relation to gameplay, which can respond to the player directly (2008, p. 123). Adaptive audio' is a sound that reacts to the game itself; for example, the music speeds up when the level is coming to an end. Players can interact with the audio, basing gameplay choices on the audio and the audio reacts to the player's interaction. (Collins, 2007). Isabella van Elferen states that ludic sound, which directs the player's game choice, can steers their navigation through virtual space, functioning as a GPS ("Gaming Positioning System") (2011, p. 33-4).

In these games, sonic subtlety is extremely powerful, functioning in ways which other types of sound cannot to enhance emotions, visuals, gameplay, other sounds and signals. Firstly, sonic subtlety prevents players from being overloaded with sounds, increasing the videogame sound functions and effective gameplay by decreasing distractions. Secondly, sonic subtlety precedes loud sonic moments with less sound to enhance the volume of the barrage. This functions extensively in horror to enhance jump scares. Thirdly, sonic recognition is created by a subtle sonic environment, a stable sound level which the player comes to expect. A change in this environment can indicate a change in the game, evoking terror or horror in the player. Fourth, sonic subtlety occurs similarly to other forms of sound as a theme, reoccurring with a situation, character or visual to create a recognisable sonic theme

associated with something. Finally, sonic subtlety benefits the horror genre function by providing less sonic information, creating an anxious, uncanny emotional experience.

I concluded by explaining that sonic subtleties can simultaneously contribute to four functional categories which enhance the functions of the game and of sonic subtlety itself. These are: sonic localisation, sonic information, sonic layering and diegetic positioning.

- Sonic localisation is achieved with amplitudinal and spatial subtleties. Amplitude can signal the proximity of a sound and spatiality signals the direction of the sound source. This allows players to accurately localise the sound source as they would in real-life situations.
- Sonic information is provided by amplitudinal and spectral subtleties. A lack in sonic information can be uncanny, because the player might be unsettled by the loss of auditory signals. This can be especially impactful when sonic parameters are incongruent with the visual information, designed to shock the player. For example, a quiet sound could signal a larger distance between the in-game character and sound, however the sound source could be visually revealed to be close.
- Sonic layering is created with spectral and temporal subtleties, as these contribute to the fullness of the sound at one moment, avoiding overloading the listener with sonic layers. Temporal subtlety encourages consecutive sound and spectral subtlety decreases the fullness of the spectrum, so sonic layering is generally more reserved with sonic subtlety.
- The sonic diegetic positioning and ludic or narrative function of a sound can be suggested by spatial and temporal subtleties. Diegetic, ludic sounds are generally directional and consecutive, requiring more attention. Non-diegetic, narrative sounds, on the other hand, are generally omnidirectional and consistent and do not require direct attention.

The interactivity of videogames and, in particular, videogame sound, is an interesting study, leading into interesting research surrounding the interactivity of listening. I extend this

research from videogame sound into music and film music, in order to look at listener interactivity with sonic subtlety in music and how sonic subtlety plays with the visual, narrative and emotional aspects of film. Music and film are not physically interactive like video games, but I take the performativity of sonic subtlety and reassess its performance in music and film contexts. In this next section, I bring together academic stances from performance studies, literary studies and linguistics to theorise my approach to studying music as performance.

Sonic Performativity and *Musicking*

When discussing the reception of sound, it is vital to note that each listening experience is subjective; there is never, nor can there ever be a single truth or meaning of sound. Art forms cannot refer to nor signify objects in the world (Porcello and Samuels, 2015). So, although music cannot *mean* anything, it can, however, *do* something.

Richard Schechner explains that performances are actions, which can range from "ritual, play, sports, popular entertainments, the performing arts" to many other acts (2013, p. 2). When studying performances, the object of study is behaviour, interactions with participants, and "what people do in the activity of their doing it" (Schechner, 2013, p. 2-3). In linguistics, a 'performative utterance' is the execution of an action through issuing of an utterance, for example, the action of marriage by saying "I do" (Austin, 1962, p. 6-7). And so, performativity is the ability of speech to afford an action by doing more than just stating or describing. Combining these considerations of performativity, I discuss sonic performativity, which is a sonic performance, creating emergent meanings within the audience; it is the ability of sound to *do* something with an interactive audience.

Nicolas Cook criticises the traditional musicological approach and proposes that "The experience of live or recorded performance is a primary form of music's existence, not less the reflection of a notated text" (Cook, 2013, p. 1). He explains that "Interdisciplinary performance studies […] understands meaning as created in the act of performance, […] it focusses on how performance affords the production of meaning" (Cook, 2013, p. 1). Any factor can contribute to the contingent meanings which manifest in each audience; I embrace these contingent

listener experiences. In literary studies, Roland Barthes argues that “as soon as a fact is narrated… this disconnection occurs, the voice loses its origin, the author enters into his own death, writing begins” (Barthes, 1977, p. 142). Barthes continues “Once the author is removed, the claim to decipher a text becomes quite futile. To give a text an author is to impose a limit on that text, to furnish it with a final signified, to close the writing” (Barthes, 1977, p. 147). Barthes invalidates the composer’s intention and, following his thought, I explore this by positioning myself as one audience, appreciating the subjectivity of every performative experience. Attempting to find art’s meaning is unnecessary because it is impossible. Art manifests multiple meanings within the audience, which can be dependent on any factor including method of playback (speakers, headphones or live instruments), listening circumstances (any prior emotional situation, place, time) and the music that the audience has been involved with throughout their life. Daniel Levitin explains that during childhood, the brain forms the basis of our musical understanding by making connections and adapting to those that are used most frequently (Levitin, 2008, p. 109). For example, Western audiences could become accustomed to the tonality of major and minor scales, and they might be unfamiliar with Eastern microtonal scales.

It is not only the agency of the listener that creates a performance, but the interaction between the sound and the listener within the performance. The presence of sound invites this active mode of listening. I argue that sound’s performativity can achieved through sonic parameters. Discussing musical performances, Christopher Small defines the verb ‘musicking’ as:

> To music is to take part, in any capacity, in a musical performance, whether by performing, by listening, by rehearsing or practicing, by providing material for performance (what is often called composing), or dancing. (Small, 1999, p. 9)

Any engagement of an audience with a musical performance is a form of musicking and Small considers every form of musical interaction to be of equal importance. I take on a form of musicking in order to analyse the works.

Carolyn Abbate discusses two opposed approaches to studying music: the "drastic" method which approaches music as a performance, and the "gnostic", which focuses on meaning through hermeneutics (Abbate, 2004). Abbate acknowledges the established gnostic methods in musicology of textual analysis, hermeneutics, analysis of cultural context and semiotics, but she could not "establish the metaphysical distance represented by such arguments," particularly when presented with real music in time and space (Abbate, 2004, p. 511). The drastic approach encourages knowledge obtained through experiencing real music through physicality, like Barthes' removal of the author, Austin's performativity and Small's musicking.

Sonic subtlety, thus, must be considered as both the construction of sonic parameters, and a way of considering musicking and performativity. Sonic subtlety exists in many forms like polyrhythms, atonality, structure, instrumentation, performance spaces and dynamics. It can be present in any kind of music, and so the musicological context of sonic subtlety is as wide as musicology itself.

Listening Modes

Sonic performativity requires a listener, but the listening act can be made up of different listening modes. Listening modes are important to this study, because they can be affected by the sound. Sonic subtlety plays with the levels of attentiveness in listening. Pauline Oliveros explains the difference between hearing and listening. "The passive basis of listening is hearing. Hearing is involuntary […] We can hear without listening (unconsciousness)" (Oliveros, 2000, p. 39) When we direct attention to heard material, listening takes place; it requires consciousness. Oliveros states "We hear in order to listen. We listen in order to interpret out world our world and experience meaning" (Oliveros, 2000, p. 39).

We do not, however need to experience meaning in every listening situation. In *Guide des Objets Sonores* (1983), Michel Chion explains the four listening modes: listening, perceiving, hearing and comprehending (1983, p. 20). *Listening* is an intentional act of listening to something, with the aim to gain more information about the sound. *Perceiving* is the

unintentional, passive hearing of sounds. *Hearing* is intentional listening to chosen perceived sounds in order to make a description of it. Finally, *comprehending* is grasping a meaning through understanding the sound as a sign, using a language or code (Chion, 1983, p. 20). Listening modes do not necessarily take place independently of each other. For example, listening to a popular song with vocals in the English language requires comprehending to understand the language, but also hearing to intentionally listening to the music. I am particularly interested in *hearing*, because this is the mode by which I listen to the example of 20th-century classical music, in order to make a description of it. Hearing is attentive and conscious, as opposed to perceiving which is inattentive, but can be conscious or unconscious.

Listening modes can be altered by the heard sound, but also the sonic context and the situation in which the sonic performance takes place. Anahid Kassabian explains that "ubiquitous listening" is where "we listen "alongside," or simultaneous with, other activities" (Kassabian, 2013, p. 9). Ubiquitous listening "blends into the environment, taking place without calling conscious attention to itself as an activity in itself" (Kassabian, 2013, p. 10). Ubiquitous listening takes places in situations with omnipresent music, like at home, at work, in restaurants, cars, buses, lifts, aeroplanes, airports, stations, shops (Tagg, 1987, p. 1). As well as in these situations, ubiquitous listening can occur while watching television programmes, films, commercials or playing videogames.

As opposed to inattentive, ubiquitous listening, John Butt explains that "rollercoaster listening" is a listening mode where listeners desire to gain something from the music, their body and consciousness become part of the "continuously attentive" listening experience (Butt, 2010, p. 9). "Rollercoaster" listeners could experience emotional and physical responses such as surprise, soothing, desire or expectation. This attentive listening mode occurs when listening to music, but music can also have this effect when it accompanies film.

Listening, unlike hearing, requires consciousness (Oliveros, 2000, p. 39; Chion, 1983, p. 20). These are both important processes to study, because it is one of the processes between the music itself and the audience; meaning is created in these processes (Shepherd & Wicke,

1997, p. 120). Within this thesis, I discussed how sonic subtlety can create a listening experience between inattentive, ubiquitous listening (Kassabian, 2013, p. 9-10) and attentive musicking. I term this subtly attentive musicking. This mode of listening also plays with the listener's consciousness and unconsciousness of sonic performativity and can an experience between the two, which I term subtly conscious performativity. I return to these terms in Chapters 2 and 3.

Throughout this thesis, I explore examples from 20th-century classical music and film music, which have been chosen to highlight the various types of subtleties and their interactions. I do this through my musicking with the sound in an interactive performance (Small, 1999, p. 9). Removing composer intentions encourages the drastic approach and embraces the subjective performance. From a compositional perspective, sonic subtlety is objective, because sound levels are altered, controlled and measured. Visual representations of sound can provide answers to whether sonic subtlety exists. Sonic subtlety is, however, mostly recognisable without the need to precisely measure. From the perspective of sound reception, sonic subtlety is subjective. Although sonic subtlety is either present or not, each listener has differently experiences of cacophonous sound, sonic performativity and sonic subtlety. All works have performed to myself as being fully or partially sonically subtle which has sonic performativity.

Modalities of Subtle Sonic Performativity

Having theorised sonic performativity and the drastic approach which situates each audience as the destination of multiple, different meanings, it is important to note that all subtleties and performativities are subjective. I describe sonic performativity as the ability of sound to do something to a listener and I summarise these as sonic clarity, subtle sonic environment, thematic subtlety and sonic preparation. These sonic and musical functions enhance the player's emotional and participatory engagement with the game narrative.

Sonic Clarity

My first observation about sonic subtlety was that it can prevent listeners from being overloaded with sound, allowing the important sounds to be more prominent. Sonic clarity is subjective because some listeners cope well with cacophonous sound, but others find clarity with sonic subtlety. Sounds in our environment, and in the music we listen to, usually occur alongside other sounds.

Sonic clarity is created by the listener's ability to differentiate between sound objects; this is known as sound source segregation. The human central nervous system uses spectral, harmonic, temporal and spatial sonic qualities to determine this (Yost, 2007, p. 204). Auditory masking is one sound interfering with the perception of another sound; for example, temporal masking is one sound affecting the perception of a subsequent sound (Yost, 2007, p. 159). Sonic clarity is opposite to auditory masking, as sounds can be perceived clearly and are not negatively affected by other sounds.

Subtle Sonic Environment

A sonic environment is created when a listener becomes accustomed to the sound so that it becomes a sonic backdrop – something that they no longer listen to attentively. And so, a sonic environment is something that manifests differently within each listening experience. My third observation was that sonic subtlety can be established as part of the sonic environment, creating a subtle sonic environment. The listener becomes accustomed to the long-lasting sonic subtlety, and therefore has a sonic expectancy for this to carry on, creating a sense of recognition and familiarity in the listener. Musical long-term memory is required for recognition of a sonic environment, as this forms the basis of recognition, which occurs when something familiar is heard (Snyder, 2000, p. 10).

Sonic Preparation

Secondly, I observed that sonic subtlety could enhance a subsequent barrage of sound; I call this sonic preparation. The most obvious example is with amplitude; subtle, quiet sound and then a loud sound. Within horror, the loud, abrupt sounds that accompany jump scares are

preceded with subtle sound, usually amplitudinally subtle. Paul Théberge explains that relative silence involves “reducing the soundtrack to near silence” (2008, p. 54). In this case, sonic subtlety is relative silence but it can be performative by preparing for a subsequent barrage of sound. Sonic preparation can enhance important moments in songs, soundtracks or works. Short-term memory is important for sonic preparation, because it allows a listener to recollect sound from, on average, the last three to five seconds; this affects the perception of subsequent sound (Snyder, 2000, p. 9).

Thematic Subtlety

My fourth observation was that subtlety itself can function as a recognisable section of a piece, creating a theme. A subtle theme functions like a reoccurring timbre, chord progression, melody, rhythm as a recognisable sonic reoccurrence. Thematic subtlety can be repeated, developed and altered, perhaps by changing the amplitude, duration, frequency or spatialisation, but the consistent returning factor is the recognisable sonic subtlety. Thematic subtlety requires long-term music memory, much like sonic environments, because this is based on the listener’s identification of a sound, where a sound is connected with memories and concepts (Snyder, 2000, p. 10). Where music manipulates recurrences within a work, it exercises the listener's consciousness (Butt, 2010, p. 13). Consciousness can have an effect on the performativity of the sound.

Shift in Area of Study

I previously studied videogames which have both visual and auditory stimuli. Like film and television, videogames are intermedial, meaning that the two sensory mediums affect each other. I have chosen to study 20th-century classical music, because popular music can sometimes require use of stereotypes in musical code (Tagg, 1979, p. 56-66). Alternatively, 20th-century classical music, does not rely on temporal, harmonic, timbral or structural conventions, and contemporary compositional approaches, discussed further in Chapter 2, can encourage experimentation with unconventional uses of instruments and new technologies.

Such experimentation can mean that sound is not saturated in the same ways as popular music can be, providing a place for sonic subtlety to occur and perform.

In Chapter 2, I introduce contemporary thought, music and listening. I utilise the framework from Chapter 1 to explore the modalities of subtle sonic performativity in 20th-century classical music and I explain how these modalities can be combined. This chapter explains the ways that a secondary performative effect can contribute to or strengthen a primary performative effect. In Chapter 3, I extend sonic performativity and musicking into the intermediality of film. I study contemporary film music because the cinematic context means that music functions with the visuals, a narrative and an emotional experience. I explore the ways that sonic subtlety changes and how subtle sonic performativity functions in contemporary film music. I conclude with how sonic subtlety contributes to musicology, performance and film studies, focusing on the how it can create a new mode of attentiveness in musicking, between the attentive and inattentive. The attentiveness of listening can also affect the audience's consciousness of sonic performativity, between the conscious and unconscious.

Chapter 2: 20th-Century Classical Music

In this chapter I discuss the contemporary thought and technological advancements which influenced 20th-century classical music composition and listening approaches. Using the musicking approach discussed in Chapter 1, I observe sonic subtlety in five pieces of 20th-century classical music. I discuss the modalities of subtle performativity: sonic clarity, subtle environment, thematic subtlety and sonic preparation. I conclude by explaining how a secondary performative effect can enhance a primary performative effect.

20th-Century Music: Thought and Composing

New developments in technology and thought create new approaches to listening and compositional methods. Developments in musical thinking and practice inform this discussion: technological advancements, composition approaches and musical thought.

Around the 20th-century, two modes of contemporary thought rose in art, philosophy, and literary theory: postmodernism and post-structuralism. Structuralist thought regards truth as being 'within' a text, or other object such as music or visual art (Sarup, 1988, p. 3). Post-structuralism stresses the importance of the readers and their textual interaction in the production of truth (Sarup, 1988, p. 3). Postmodernism is defined by Brian Duignan as "a late 20th-century movement characterized by broad scepticism, subjectivism, or relativism; a general suspicion of reason; and an acute sensitivity to the role of ideology in asserting and maintaining political and economic power" (Duignan, 2014). Madan Sarup asserts that postmodernism is a new term for post-structuralism in the arts (1988, p. 133).

Jonathan Kramer explained that postmodern music includes "music that is understood in a postmodern manner, or that calls forth postmodern listening strategies, or that provides postmodern listening experiences, or that exhibits postmodern compositional practices" (Kramer, 2002, p. 16-17). Musical works can be labelled as postmodern with changes in their attitude. Kramer asserted that postmodern music can include a "break and an extension" of modernism, irony, non-conformist approaches to form and harmony, challenging elitism, challenging binary oppositions, eclecticism, implementing technology, references to other

music, and, most importantly, it "locates meaning […] in listeners, more than in scores, performances, or composers" (Kramer, 2002, p. 16-17). This phenomenological approach embraces the listener experience and dismisses the potential for objective meaning. Don Ihde refers to phenomenological musical and sonic study as "embodiment relationships", where the technology (like an instrument) becomes a medium for perceiving expression, rather than the object of study (1990, p. 72).

Philip Tagg explains that historical musicology is inclined towards "a methodology slanted by the characteristics of notation"; he terms this *notational centricity* (1979, p. 28-32). Some 20th-century classical and contemporary styles are not notated in the classical method, or sometimes not at all. An example of a non-traditional approach to notation is *4'33"* by John Cage, who produced a score with no written notes than can be played on any instrument. A performer is present with an instrument for four minutes and thirty-three seconds, but plays no musical material[1]. Cage's postmodernist ways are manifested in his unconventional use of the score and his focus on the subjective listener experience; "the audience perceived an event from which neither the composer's intentional procedures nor the performer's intention process could be inferred" (Flynt, 1996). Postmodern listening embraces subjectivity, disregarding performance and compositional intentions, including scores. For this reason, it is useful to study music and musicking through performativity and phenomenology, as opposed to the *notational centricity* of historical musicological analysis.

With new approaches to composition and technological advancements came new instruments, performance materials and performance spaces. In 1877 the phonograph was invented, enabling the recording and reproduction of sound (Feaster, 2015, p. 142). In the 1940s, tape recording technology, led Pierre Schaeffer to develop *musique concrète*, a form of experimental composition made up of recorded sound. Over twenty years later, Schaeffer published his book *Traité des objets musicaux* (Treatise on Musical Objects), which presented

[1] Cage by no means pioneered 'silent music' or utilising the lack of sound as an expressive feature. Preceding *4'33"* by over thirty years, Erwin Schulhoff composed *In Futurum* in 1919; the score consists entirely of rests.

his research with *musique concrete*. In order to assist readers of Schaeffer's work, Michel Chion published the dictionary-like *Guide des Objets Sonores* (Guide to Sound Objects) in 1983.

Recording technologies introduced a new *acousmatic* experience of listening to sound reproduced without its original source; a sound "is heard without the causes from which it originates being seen" (Chion, 1983, p. 11). New technology meant that recordings could be played forwards, backwards and at different speeds, sounds could be extracted from their original time continuum and repeating sound loops could be created (Manning, 2003, p. 7). Magnetic tape technology was developed in the 1950s; cutting and manipulating the tape edited the sound[2]. Music developed to incorporate all new methods of sound recording and production and all compositional tools including 'found sounds' such as leaves rustling and engines, human sounds such as vocals or clapping, traditional (and non-traditional) acoustic instruments and later, digital technology such as synthesizers. Music could be non-tonal, rhythmically free, distorted or of high or low fidelity. This introduced new methods to compose, record, reproduce, arrange and rearrange sound.

Elektronische Musik emerged after *musique concrète*, a genre of synthesized music made entirely from electronically produced signals: all instruments and effects were synthetic, such as oscillators, white noise generators, filters and ring modulators (Poissant, 2001, p. 261). Edgard Varèse, known for describing his own music as 'organised sound', believed that the electronic medium added variety to timbral possibilities, freed music from the tempered system and has brought music up-to-date with science (Varèse, 1966, p. 18). The development of music technologies paved the way for 'sonic art'. Tony Gibbs defines sonic art as

> …a work that seeks to communicate with its audience through sound or be informed by ideas that are based upon sound would be a work of sonic art; by contrast, a work that happens to make sounds as a by-product of another activity (as many kinetic works do) or that has no conceptual reference to sound would not. (2007, p. 10)

[2] This was utilised in Schaeffer's first *musique concrète* composition *Étude aux Chemins de Fer.*

Sonic art can be combined with other mediums such as videography or sculptures; it is the purposeful placement of sound[3] that defines it as a sonic artwork. Installation works are pieces that are organised within a space, often site-specific and sometimes involving visitation and participation. Installation artworks often make use of sound spatialisation.

Composers defied the limitations and social, political and cultural expectations of previous eras, drawing upon previous ideas to create new, exciting musical opportunities. Composers were encouraged to implement new instruments and recording and production technology, having impact on the listening, study and appreciation of music and sonic art. Roland Murray Schafer coined the term 'soundscape' which he described as

> The sonic environment. Technically, any portion of the sonic environment regarded as a field for study. The term may refer to actual environments, or to abstract constructions such as musical compositions and tape montages, particularly considered as an environment (1994, p. 274)

Grouping listening material together allows all sounds to contribute to the environment which can consist of any and every pre-recorded or synthesized sound; there is no preference for the any sound's original source. Schafer proclaimed…

> Today all sounds belong to a continuous field of possibilities lying within the comprehensive dominion of music. Behold the new orchestra: the sonic universe! And the musicians: anyone and anything that sounds! (1994, p. 5)

I implement these all-encompassing approaches into my musicking practice and study.

I will now discuss musical works to provide examples of sonic subtlety and the ways in which it can perform. For the sake of clarity, I will begin by taking four works and focusing on one subtlety per work. Subtleties can overlap in any work, but, in order to first accustom readers to these subtleties and the ways in which they can function, I explain them separately, but discuss them together in the final example of Edgard Varèse's *Poème Électronique.*

[3] By purposeful, I mean that the sound has been deliberately created, organised, arranged, triggered or placed in the work. Aleatoric or chance-based sound is still purposeful in its placement within the work.

Bartok's *Musiques Nocturnes*: Examples of Amplitudinal Subtlety

Bela Bartók composed *Out of Doors* (1926), a suite consisting of five piano pieces titled 'With Drums and Pipes', 'Barcarolla', 'Musettes', 'Musiques Nocturnes' and 'The Chase'. I focus on the amplitudinally subtle *Musiques Nocturnes* (Night Musics). 'Night Music' is, as David Schneider argues, one of Bartók's styles, characterised by "eerie dissonances [which provide] a backdrop to sounds of nature and lonely melodies" (2006, p. 84). I focus on the specific recording *Bartok – Out of Doors* (allarmunumralla, 2012).

The opening appoggiaturas embellish dissonant tone clusters (Figure 4). The amplitudinal subtlety urges me to focus on the tonality of each appoggiatura, obtaining the utmost from the quiet sound. At 0:25 (Bar 2 in Figure 4), right hand notes appear and, even though these prominent notes are two octaves higher, they are played quietly and remain amplitudinally subtle. These notes clash with the sustained, preceding tones, creating beautiful dissonances which never seem to resolve, nor do I want them to resolve. This performance of amplitudinal sonic clarity prevents my listening from being overloaded. I call this clarity, because the subtlety highlights the harmonic complexity of the rhythmic appoggiaturas as the most significant sounds.

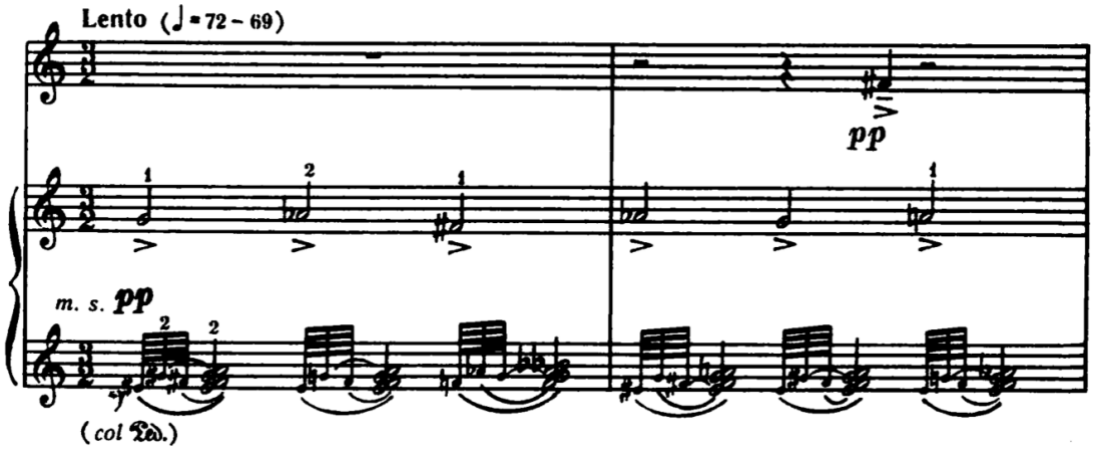

Figure 4 – Score extract of Bartok's *Musiques Nocturnes* (Bar 1-2)

At 0:46 (Bar 7 in Figure 5), the higher notes are louder, then, at 0:59, the lower notes are suddenly amplitudinally emphasised. Crescendos occur throughout the piece, often followed by diminuendos, pushing and pulling at the dynamic levels. Sudden emphases on the

lower piano parts highlights them. Moments of dynamic fluctuation test the amplitudinal subtlety. The emphasised notes cause tension, as they hint towards dynamic build-up and the subtlety might be interrupted by louder dynamics. At 5:13, the upper piano part has a louder melody, anticipating the interruption of the subtlety again. Even in these moments, the dynamics are non-intrusive and I become accustomed to the amplitudinally subtle sonic environment. Although the harmonies and melodies seem unpredictable, the performance of amplitudinal subtlety can provide a familiar sonic environment, by fulfilling the quiet sound levels to which the audience is accustomed, through their music memory. Once I become accustomed to the subtlety, I expect it to resume in the same way that I expect an unstable key and more appoggiatura-embellished chords.

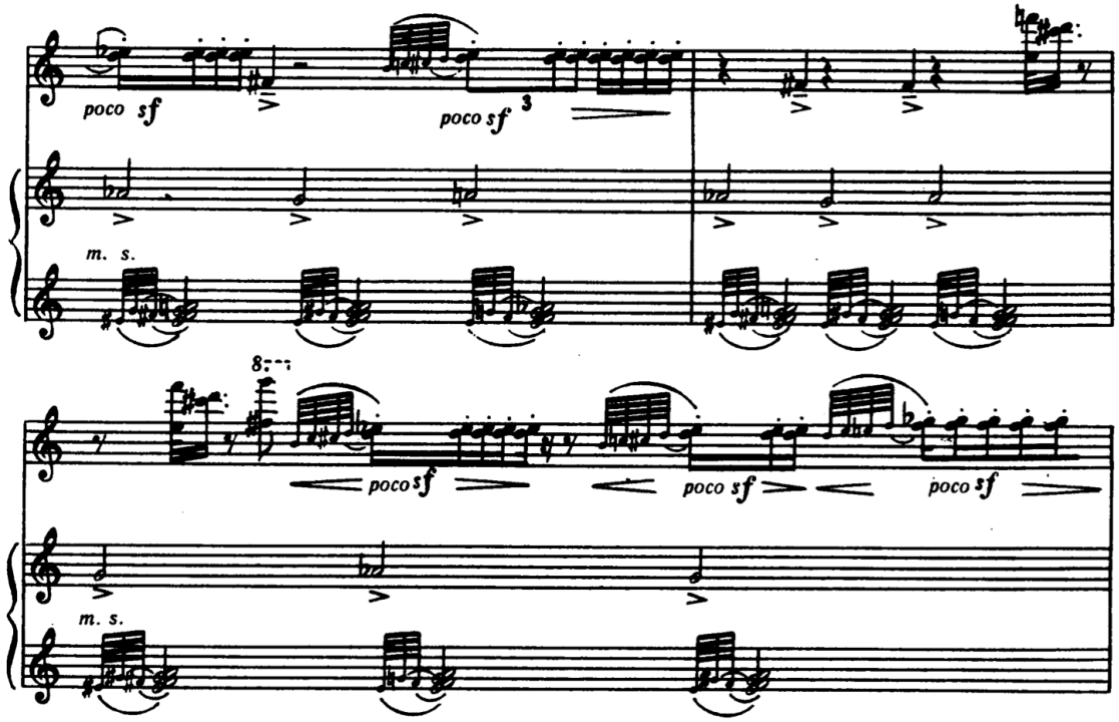

Figure 5 – Score extract of Bartok's Musiques Nocturnes (Bar 7-9)

Overall, *Musiques Nocturnes* remains amplitudinally subtle, performing a consistent amplitudinally subtle sonic environment. I become accustomed to the subtlety, semi-consciously expecting it to resume, because I am not consciously aware of the subtlety that is creating a subtly conscious feeling of tension that it may be interrupted. In every listening experience, there is a point when the amplitudinal subtlety establishes itself to the listener as a subtle sonic environment. In my experience, this happens around 3:10, where the minim

tone clusters from the opening begin to repeat themselves. Through two more melodically developed sections, the amplitudinal subtlety remains. Each listener also experiences sonic clarity differently. Sonic clarity prevents listeners from being overloaded with unimportant sound and allowing important sounds to stand out. The amplitudinal subtlety creates a sonic environment and the sonic clarity is part of this environment, allowing me to focus on the intricate tones for the entire duration.

Stockhausen's *Telemusik:* Examples of Spectral Subtlety

Karlheinz Stockhausen was a German composer of *Elektronische Musik*, known for his aleatory music and *musique concrète*. His work transitioned from modernist ideas to postmodern ideas. *Telemusik* (1966) plays with durations and the integration of electronic and acoustic timbres, containing Japanese instruments. Stockhausen modulates and electronically treats the instrumental parts, so I will state the timing of sounds and describe the general frequency ranges of the timbres I hear. *Telemusik* contains an interesting use of the frequency spectrum. Modulators are used to modify existing music which is integrated with entirely synthesized sounds (Stockhausen, 1966).

Telemusik beings with a clap, and a consistent high-pitched (9,900-12,000Hz) synthetic sound that lasts from 0:02 until 0:14; it is spectrally subtle (Figure 6 – Spectrogram of Stockhausen's *Telemusik* (1-19 seconds). Two high-pitched, glitch-like *sound objects*, to use Schaeffer's terms, interject at 7 seconds and 11 seconds. At 0:14, the spectral subtlety is interrupted by whirling, robotic high-frequency sounds. From 0:18 until 0:26, the sustained, spectrally subtle sound returns, but the high-pitched frequencies are now slightly lower (8,000-10,500Hz) (Figure 6). A clap interjects at 0:22, and the sustained sound returns to spectral subtlety, but this time a much lower frequency (6000-6,500Hz). Thematic subtlety is where the subtlety itself works as a recognisable theme within a piece of music, similarly to a chord, progression or melody. The return of this familiar spectral subtlety performs thematic sonic subtlety, because I recognise it as a regular occurrence. At 0:27, a fluttering, propeller-like sound interrupts again. I hear a high-pitched sound behind it and I subtly-consciously

anticipate the return of thematic spectral subtlety. Subtle consciousness is in-between full consciousness and unconsciousness. Between 0:35 and 0:42, the spectral subtlety returns with the high-pitched thematic sound, while short plucked-like percussive sound objects repeatedly interject, speeding up. At 0:44, the subtlety is broken by a tonal collection of sounds, but the high-pitched consistent sound and speeding up percussion remain. From 0:47, many new sounds of differing frequencies arise, creating an unsubtle texture.

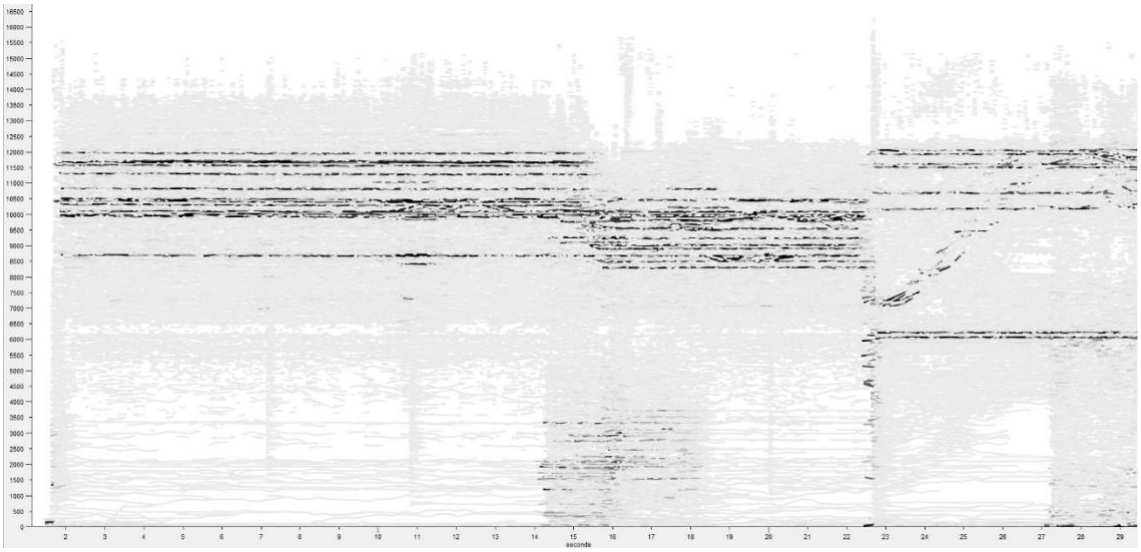

Figure 6 – Spectrogram of Stockhausen's *Telemusik* (1-19 seconds)

From 2:51 until 2:56, a new spectral subtlety appears. This time, it is not just the high-pitched (11-12kHz) consistent sound I hear, but also a low spectral subtlety (under 500Hz) (Figure 7). The spectral subtlety makes them easily distinguishable by separating sounds with a gap in the frequency spectrum. Between 3:00 and 3:06, the new spectral subtlety returns, but the previously mid-range sound is now slightly lower-pitched that before. The repetition of this spectral subtlety establishes it as a theme, which is modulated like melodies can be transposed.

Figure 7 – Spectrogram of Stockhausen's *Telemusik* (165-192 seconds)

At 6:46, a short, two second occurrence of the opening high-pitched spectral subtlety refers to the opening of the piece. This is a shorter repetition of the thematic subtlety compared to the opening; this is a durational thematic development, like how melodies can be augmented, diminished, fragmented or repeated. Similar techniques can be used with non-tonal, non-traditional instruments. The return of this spectral subtlety solidifies this occurrence as a theme and each return of the thematic subtlety exercises a subtly conscious performativity.

In *Telemusik*, thematic spectral subtlety is created with pre-recorded and synthesised sounds. Spectral subtlety is more easily achievable with synthesisers and electronic treatment. The harmonic overtones of acoustic instruments fill the frequency spectrum, making spectral subtlety less frequent. Spectral subtlety might be created with one narrowband sound, like the highest note on a violin, or with multiple narrowband sounds, strengthening the most prominent frequencies.

Like in *Musiques Nocturnes*, I experience a subtly-conscious expectation for sonic subtlety in *Telemusik.* Sonic expectation determines what the listener feels should happen, which can occur whether the sound is subtle or not. If a piece has a bass melody that plays the same root notes for thirty seconds, I subtly-consciously expect these notes to return or resume for the entire piece. It is also important to consider whether this is fulfilled. An established

sonic subtlety can create a sonic expectation for subtlety, which could be fulfilled by a subtle sonic environment, or broken by soundlessness or sonic cacophony. Subtle conscious performativity is important because it is neither the unconscious awareness of performativity, nor the fully conscious performativity; the listener experiences a performative effect, but they are not completely conscious of this. Listening to thematic subtlety can be a form of "rollercoaster listening", because it exercises consciousness of expectation (Butt, 2010, p. 9).

Schaeffer's *Étude aux chemins de fer:* Examples of Temporal Subtlety

In 1948, Pierre Schaeffer composed *Cinq études de bruits* (Five Studies of Noises), the first *musique concrète* works. I focus on *Étude aux chemins de fer* (Study the railroads), a piece constructed from recordings made at the depot of the Gare des Batignolles, Paris (Manning, 2003, p. 7). The extensive use of looping sounds mechanical because the stylus jumps across the groove break of the record, like the mechanical, repeating sounds of the train station (Manning, 2003, p. 7).

There is a consistent crackling in the background[4] with pitched train whistles in the foreground. The inconsistent whistles occur once and never again. Then a rich, crunching train track sound speeding up can be heard; this is a consistent sound because it has a longer duration and only changes rhythmically. At 0:45, the looped sound of a squeak and a crash occurs; due to the looping, this occurs as one long, consistent sound. Michel Chion states that a 'fixed sound' entails no variation as it is heard, such as a hum of a speaker or a telephone dial tone; non-artificial sounds, such as waterfalls, have variation and are slightly irregular (1990, p. 10). I would still describe a waterfall as a consistent sound, because the variation is minor and the general tone remains stable. The effect of a fixed sound can be created by taking a sound and looping it (Chion, 1990, p. 10). Although Chion discusses film sounds, I apply the same terms in music. The looped squeak and crash occurs as a fixed sound because it is regular and consistent. The inconsistent sounds, like the whistles and horns, predominantly contribute to

[4] These sound objects are noisy and of low-fidelity, due to the recording and production equipment used. The noise and crackling sounds are, of course, part of the composition itself, adding to the sonic layering.

the temporal subtlety. Where longer, consistent sounds precede shorter, inconsistent sounds, temporally subtle sonic preparation is performed. The shorter sounds are more prominent, noticeable and could be perceived as more important.

The different structural sections of this piece rapidly change; there are new sounds and combinations of sounds with which to engage. Each time a new consistent sound occurs, there is a short amount of time where I become accustomed to its consistency. Once I have recognised that it is looping, consistent and temporally subtle, the subsequent inconsistent sounds are more prominent. I attentively listen to the inconsistent, irregular sounds and the consecutiveness performs temporal subtlety. In this work, temporally subtle sonic preparation performs by highlighting sound so that I consciously recognise it. The shorter, inconsistent sounds are highlighted using longer, consistent sounds. Once the sound is consistent, I inattentively listen to it and music more attentively with those sounds occurring inconsistently.

This is a very rhythmic piece, with speeding up of trains on the tracks, creating complex rhythms that clash. Inconsistent, short sounds of whistling and train horns create melodies. In my musicking, however, this piece performs temporally subtle sonic preparation. The complex, mechanical rhythms are prepared for by the preceding sections of temporal subtlety. The inconsistent sounds are not always completely consecutive, but they nevertheless perform this effect in my musicking. What a listener considers 'fixed' and consistent or inconsistent can sometimes be subjective. Some listeners might never become accustomed to sounds because they listen to every variation and irregularity. Temporal subtlety and the durations of sound objects exercise subtly attentive musicking; this is because when a new sound begins, I attentively listen to it, but I inattentively listen to it once I have become accustomed. The overall musicking experience of this temporal subtlety fluctuates in attentiveness.

Étude aux chemins de fer performs sonic preparation. In *Musiques Nocturnes,* I explained how sonic clarity could contribute to the prominent effect of the subtle sonic environment. In *Étude aux chemins de fer,* something similar happens where the sonic

preparation creates sonic clarity. Sonic preparation enhances a barrage of sound, by preceding it with sonic subtlety. As I have explained, consistent sounds prepare me for a new, inconsistent sounds. The consistency of sounds determines my attentiveness, and consistent sounds can encourage ubiquitous listening (Kassabian, 2013, p. 10). This is also temporally subtle sonic clarity, because it is clear to me which sounds require attentive musicking through the temporal sonic preparation.

Lachenmann's *Air:* Examples of Spatial Subtlety

Helmut Lachenmann (born 1935) is a German composer of *musique concrète instrumentale*, a branch of *musique concrète* attempting to draw attention to the sound's source and creation, rather than detaching the sound from its source. Lachenmann explains that *musique concrète instrumentale* contains "sound as a message conveyed from its own mechanical origin, and so sound as experience of energy"; he went on to say "it signifies an extensive defamiliarisation of instrumental technique: the musical sound may be bowed, pressed, beaten, torn, maybe choked, rubbed, perforated and so on." (Ryan and Lachenmann, 1999). I study a recorded performance.

Lachenmann's *Air* (1968-9) is a piece for large orchestra and solo percussion, lasting around nineteen minutes. Firstly, there is a wooden scraping in the left ear, which moves rightwards. The loud, highly directional sound makes a prominent transition, creating spatial subtlety. The sounds remain predominantly in the right, apart from another scrape and a high wind note from the left. More wind instruments whistle centrally, but the spatialisation moves and the melody is finalised leftwards with a percussive 'clap'. The stereo motion of sounds draws attention to each sound object, even where they are loud and simultaneous, and I follow the sounds in my listening. Sometimes the piece feels rather hectic but the spatialisation separates the sounds, performing spatially subtle sonic clarity.

At 4:43, the sounds also become temporally subtle. Piano notes in the left are followed by a sound akin to a car tyre screeching. After, a snare drum-like rattle, a plucked cluster of string notes, a high-pitched piano cluster and a descending glockenspiel are heard in the right.

A longer, leftwards crunching sound plays for a couple of seconds, with a short, ascending rightwards glockenspiel sweep and a very high-pitched, ascending, rightwards woodwind passage. Suddenly, a drum roll moving from the left to the right creates a barrage of sound. These instrumental parts all occur over eleven seconds. Lachenmann repeatedly thwarts my expectation with interesting timbres of varying volumes, frequencies and durations. The work performs spatially subtle sonic clarity, by differentiating the sounds. It encourages me to music with and think about each sound. Orchestral pieces usually focus on fuller textures and louder sounds. Interestingly, in *Air,* Lachenmann defies orchestral conventions by enhancing smaller, sparser sounds through dynamics, spatiality and layering.

In *Musiques Nocturnes,* the amplitudinal subtlety prevented sonic overload, much like the spatial subtlety does in *Air.* If all sounds are centralised, they might be difficult to audibly separate, so the stereo division of sound in *Air* allows me to focus on different sounds. In *Air,* I focus on the movement and development of the subtlety as the directional sounds appear or move. A similar occurrence happens in *Musiques Nocturnes,* where I focused on dynamic variation and the anticipation of the interruption of the subtlety. These pieces exercise my consciousness of the developing subtleties, which is a form of subtly attentive "rollercoaster listening" (Butt, 2010, p. 9). This is because I subtly-consciously follow the sounds moving in space, whilst experiencing the unconscious performativity of the spatially subtle sonic clarity.

Varèse's *Poème Électronique: Examples of* Combinations of Sonic Subtleties

I have discussed each sonic subtlety separately, but subtleties can also occur simultaneously and function together. In the following example, the sections of sonic subtlety contrast with the cacophonous sections and other moments of barely any sound. I focus on the simultaneous spectral and temporal subtlety. Edgard Varèse composed *Poème Électronique* (Electronic Poem), in 1968. It is a piece of electronic music which contains pre-recorded sounds like the human voice and does not contain any frequencies over 8000Hz (Figure 8). This piece was designed for playback on a complex setup of 400 speakers (Staff, 2017). This is, of course, not heard in the online recording.

There is a very quiet, constant electronic ‘shh’ until 0:27; this is noise from the low fidelity recording equipment, but is part of the music nonetheless. At 0:27, there are four bell chimes which are not temporally distributed evenly; the loudest tones are 1,500Hz (Figure 8). At 0:39, there is a long fragment of the bell ringing out, but the initial strike is removed. The bell section is temporally subtle, which has the performative effect of sonic clarity, much like the temporal sonic clarity in Schafer’s *Étude aux chemins de fer.* As each sound is consecutive, I attentively listen to the rich timbre of each chime, the uneven timings and I observe that the fifth chime is incomplete; the strike is not present but I recognise it as a bell nonetheless. The sounds are of a moderate volume and the frequency spectrum contains overtone harmonics.

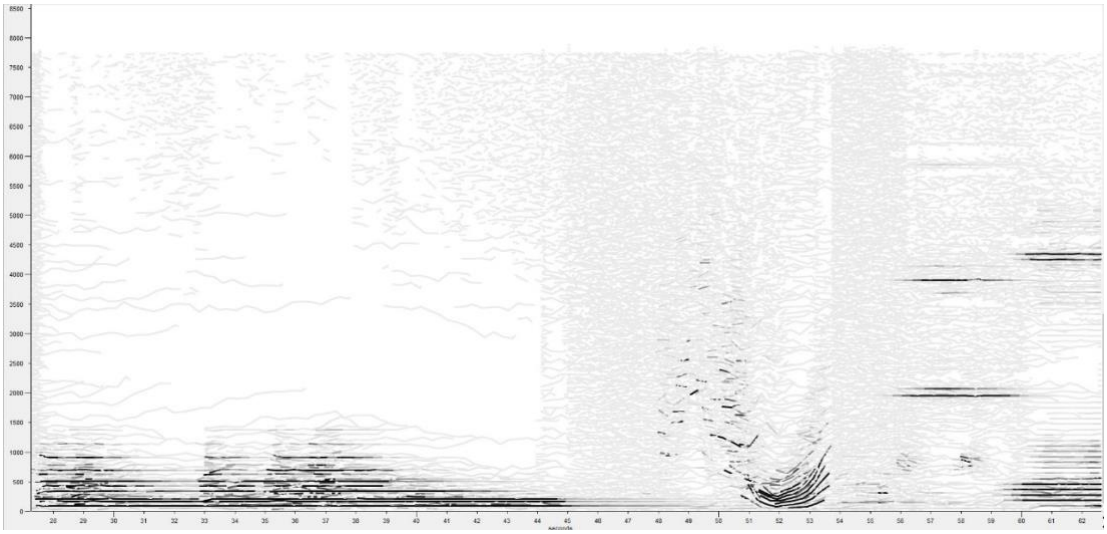

Figure 8 – Spectrogram of Varèse's *Poème Électronique* (27-62 seconds)

At 0:43 the timbre of the piece completely changes; popping, higher pitched synthesised sounds are introduced. Until 0:49, these high frequency, popping sounds, that squeak like children’s toys, are temporally subtle like the bell section. The new sounds occupy mid to high frequencies (1000-8000Hz). From 0:49 to 1:00, the new, high sounds then overlap and interrupt each other, contrasting to the temporal subtlety of the previous section. Not only is this section temporally cacophonous, but it is also spectrally cacophonous, as the synthesised sounds are modulated, sweeping up and down the frequency spectrum.

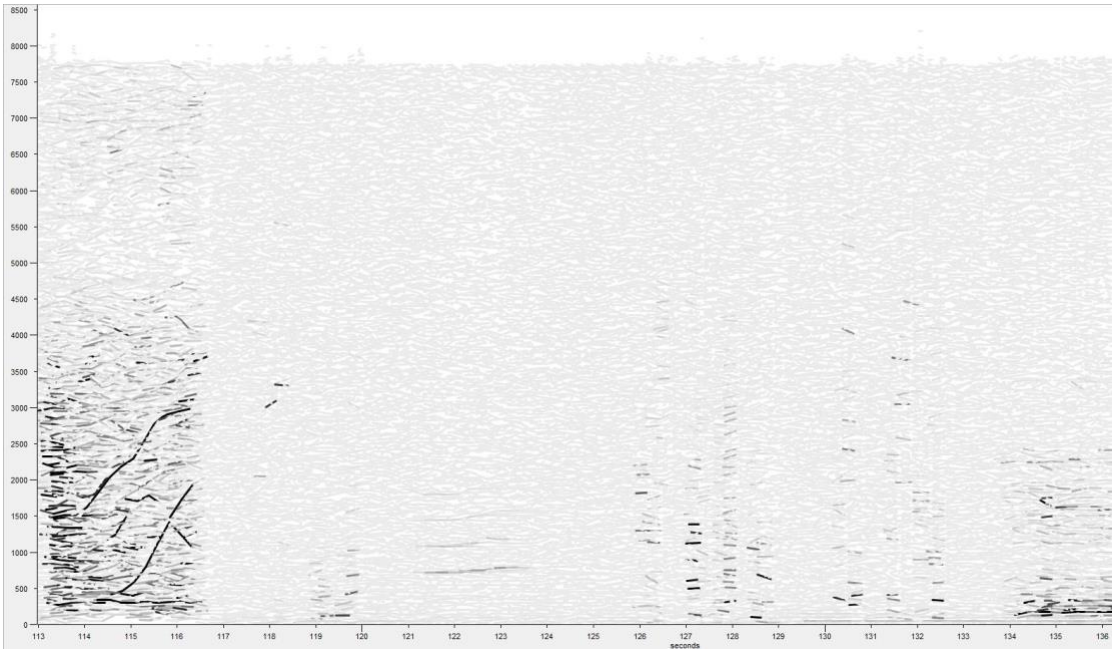

Figure 9 – Spectrogram of Varèse's *Poème Électronique* (113-141 seconds)

At 1:00 there is a long, synthesized drone sound lasting for nine seconds, bridging the gap between the cacophony and the subsequent section. Another instance of spectral and temporal subtlety occurs again until 1:36, which is like the popping, synthesised sounds from 0:43 until 0:49, which function similarly to the spectral thematic subtlety in Stockhausen's *Telemusik*, but is strengthened by the addition of temporal subtlety. Each high-pitched synthesised sound is consecutive, which encourages me to listen attentively to each sound and the slight frequency variations. The return of this spectrally and temporally subtle section establishes a thematic subtlety which performs the effect of sonic clarity. From 1:57 until 2:13, the temporal and spectral subtlety occurs again, performing clarity and reiterating the thematic subtlety (Figure 9). I consciously recognise the return of the thematic subtlety and have an expectation for it to reoccur.

The sections of *Poème Électronique* which contain spectral and temporal subtleties have mostly mid to high-pitched sounds occurring consecutively. This creates sonic clarity because I focus on the small number of sounds that occur, listening to one at a time, appreciating the fine sonic detail. This subtle section repeats, which creates a thematic subtlety through my recognition of the reoccurrence. I do not recognise the return of the sounds themselves, but the combination of the subtleties. This is like the returning thematic

subtlety in *Telemusik* and the sonic environment in *Musiques Nocturnes,* because I subtly-consciously expect the sonic environment or thematic subtlety to return. This creates an experience similar to the attentiveness of Butt's "rollercoaster listening", but where the attentiveness is subtle (Butt, 2010, p. 9). This is because I am not consciously aware of the performative effects occurring, nor am I fully aware of their effects.

Chapter 2 Conclusions

In this chapter, I have explained how the sonic subtlety in five pieces of 20th-century classical music have performed effects. Bartok's *Musiques Nocturnes* performed sonic clarity and a subtle sonic environment[5] with amplitudinal subtlety; I found that I had developed an expectancy for this subtle, clear sonic environment to remain. Stockhausen's *Telemusik* performed spectrally subtle thematic subtlety. Like in *Musiques Nocturnes,* I expect thematic spectral subtlety in the music, because it had occurred before and had returned. Lachenmann's *Air* performed spatially subtle sonic clarity, allowing the separation of sound during listening. Like in *Musiques Nocturnes,* this sonic clarity steers attention towards the beauty of the sounds. Schaeffer's *Étude aux chemins de fer* performed temporally subtle sonic preparation, which then creates sonic clarity.

Multiple subtle sonic parameters can function together to enhance multiple performative effects. In Varèse's *Poème Électronique*, I explored how spectral and temporal subtleties functioned together to enhance the performative effects of thematic subtlety and sonic clarity. As both subtleties provide sonic clarity, this performative effect is enhanced. The repetition of both subtleties occurring simultaneously creates a recognisable thematic subtlety. I developed a subtly conscious expectation for this recurring thematic subtlety, like other subtle themes in *Telemusik* and the stable sonic environment in *Musiques Nocturnes.* Combining sonic parameters is important because they can be interdependent, and also can affect the perception of each other.

[5] Sonic artworks can perform more than one type of sonic subtlety and more than one modality of subtle performativity.

The performative effects of sonic subtlety can create a listening experience that is between attentive and inattentive, conscious and unconscious. Listening to sonic subtlety introduces a new level of attentiveness, because it is between the attentive listening to sound and inattentive listening to soundlessness. I intentionally listen to this music, but do not attentively listening to each sound. I am not consciously aware of the sonic subtlety, but I am sometimes conscious of its performative effects.

In *Musiques Nocturnes, Étude aux chemins de fer* and *Poème Électronique,* modalities of subtle performativity perform together. The grid in Figure 10 shows combinations of the modalities with other modalities to create different effects. The primary effect is the most important or prominent effect and the secondary effect strengthens or builds upon the primary effect. In each cell, I explain how the two modalities that cross over can be connected.

	Secondary Sonic Clarity	**Secondary** Sonic Preparation	**Secondary** Sonic Environment	**Secondary** Thematic Subtlety
Primary Sonic Clarity		Sonic clarity is created by a sonic preparation	Sonic clarity is part of the sonic environment	Sonic clarity is the thematic subtlety
Primary Sonic Preparation	Sonic preparation is achieved with sonic clarity		Sonic preparation is achieved with the sonic environment	Sonic preparation is the thematic subtlety
Primary Sonic Environment	Sonic environment has sonic clarity	Sonic environment is broken with a prepared barrage		Sonic environment has thematic subtlety
Primary Thematic Subtlety	Thematic subtlety has sonic clarity	Thematic subtlety contains sonic preparation	Sonic environment is a thematic subtlety	

Figure 10 – Combinations of modalities of subtle performativities

These musical works, having no external, extra-musical functionality, can be enjoyed as music independent of any other factors. They, however, do have performative effects without other sensory input. From this observation, I have created a diagram (Figure 11) which explains the overlap between the effect, the function and the purpose of a piece of music. Effect considers what the sound performs and what it does to the listener. Function is refers to how the sound performs an effect, which grounded in the subjective musicking experience.

Purpose is grounded in composer intentions: why the sound was composed, what the composer was trying to achieve and why the sound was selected. Sonic subtlety can incorporate all three of these areas. I, however, am interested in the effects and functions of sonic performativity, steering away from composer intentions and towards the listener experience.

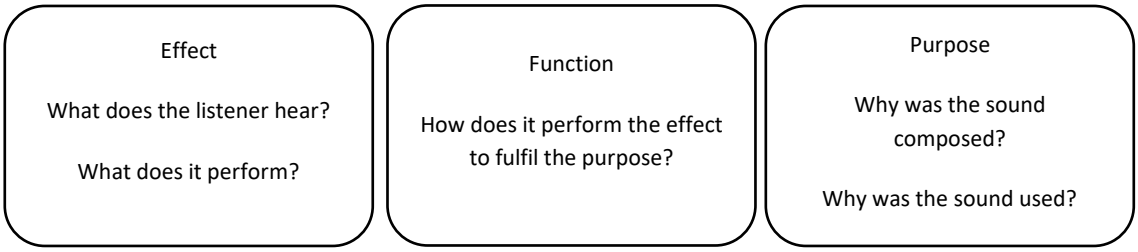

Figure 11 - Sonic functionality model

Studying the sonic parameters and sonic subtlety, encourages musicologists to study the overall sound and all musical parts as one, rather than focusing on musical parameters such as melodies, chords or rhythms. Smalley moved in this direction with *spectromorphology,* discussed in Chapter 1, in order to focus on spectral aspects and how they change over time (Smalley, 1997, p. 107). Considering musical and sonic parameters is far more useful than solely studying musical parts, because electronic instruments and synthetic treatments often deal directly with sonic parameters by using equalisation filters, amplitude dials and spatialisation. Studying sonic parameters can be useful alongside other analytical methods such as score analysis and hermeneutics.

Through the audience's musicking, the performativity of the overall sonic parameters can be considered, rather than these individual musical parts. Musicology and sound studies are strengthened by considering sonic and musical parameters alongside each other and by considering the blurred line between soundlessness and sound, considering how less present sound or music can perform in ways similar to sound. This chapter contains new knowledge of sonic performativity about how music can perform to an audience through musicking, but in a way which is not always fully consciously recognised by the listeners. Music can sometimes be present, yet inattentively heard, because of sonic subtlety. Sonic subtlety can perform effects in ways which, previously, may have not been consciously recognised.

From observing the effects of sonic subtlety in non-functional music, it is interesting to study how it can perform in a more functional musical and sonic context, such as film. In the next chapter, I observe sonic subtlety in examples of contemporary music in films, explaining the modalities of subtle performativity which occur and how they *function* in the cinematic context. I discuss theories surrounding the audio-visual nature of films and how one medium affects another. This differs from Chapter 2, because I discuss what I see and feel emotionally, as well as what I hear. I have discussed performative effects in this chapter, but I will focus on functionality in Chapter 3; film music is more "utilitarian" in nature than music. I conclude by explaining how the performativity of sonic subtlety occurs differently in film music. I look at how sonic subtlety introduces a new level of sonic performativity between the conscious and unconscious, and a new level of musicking between the attentive and inattentive.

Chapter 3: Contemporary Music in Film

In this chapter, I explore the functionality of sonic subtlety in film music and the ways in which this differs to the functions in 20th-century classical music. I use examples from different films and composers, including composite and composed film scores. This chapter addresses some issues that were not present in the previous chapter. The multimedial nature of cinema introduces the need to discuss auditory and visual material and the longer, narrative nature of film introduces the discussion of plot and emotional experience. I explore how sonic subtlety functions to enhance or manipulate these parameters.

This chapter expands upon Chapter 1 by also discussing the visual aspect alongside the auditory, because of film's multimediality. I music with these films while also viewing them and observing how the sound and visuals correlate, so musicking in this chapter is understood as a multimedial activity. Film is also intermedial, meaning that the auditory and visual parameters affect each other. Michel Chion argues that sound provides 'added value' in films. He defines this as:

> The expressive and informative value with which a sound enriches a given image so as to create the definite impression, in the immediate or expression "naturally" comes from what is seen, as is already contained in the image itself (Chion, 1994, p. 5)

Although auditory and visual parameters are both important to consider, I will focus on the auditory material, foregrounding the 'added value' which sound and sonic subtlety can provide.

Most films involve characters and a story. This narrativity of film brings forward the concept of diegesis, defined by Gerald Prince as the "(fictional) world in which the situations and events narrated occur" (Prince, 2003, p. 20). This 'world' can be both visual and auditory. Diegetic sounds are part of, or are implied to be part of, the film world; they may or may not have the sound source visually depicted on the screen, like the speech of a character, footsteps or a piano being played in a character's home. Michel Chion uses the term 'non-diegetic sound' to refer to sound "whose supposed source is not only absent from the image

but is also external to the story world" (Chion, 1994, p. 73). Examples of non-diegetic sound could be orchestral background music or the speech of a narrator who is external to the scene. Chion borrows the term "acousmatic sound" from Jérôme Peignot and Pierre Schaeffer to describe sounds in film which do not have a visual source (Chion, 1994, p. 72). Diegetic, acousmatic sounds are 'offscreen', but are still within the diegesis, such as a character calling from an unseen location, but implied to exist. The viewers' ability to see the sound source is important, as it can contribute to their perception of the sonic diegetic positioning.

Film Scoring

There are two main approaches to film scoring: classical and composite. Classical film scores are constructed for each film, compromising "dramatic and dynamic underscoring based on orchestral concert music and having an essentially non-diegetic status." (Donnelly, 2001, p. 9). These scores sonically highlight action, emotion and the narrative. For early classical scores, musicians were assigned to a film after it had been shot, were asked to pick moments for music, and then write music precisely matching the action in the film (Donnelly, 2001, p. 9). In the 1950s and 1960s, composers drew influence from jazz music; Donnelly argues that "this led to the widening of musical vocabularies to include not only the jazz idiom, but also the unresolved dissonance of twentieth-century concert hall music" (Donnelly, 2001, p. 10). The postmodernist approach encouraged film composers to experiment more with unusual harmony and timbres. Electronic instruments like the theremin were used in sci-fi film scores (Donnelly, 2001, p. 11).

Composite film scoring is the method of using a collection of pre-existing music from different sources in a new film (Donnelly, 2001, p. 152-3). In the 1970s and 1980s, popular music composites replaced classical film scores (Donnelly, 2001, p. 12-3). *Performance* (1970) contains rock-style popular music by Mick Jagger, Keith Richards, Merry Clayton and Ry Cooder. The audience's recognition of music can create a more aware and attentive listening experience, perhaps with physical participation like singing or tapping along. This is different to the inattentive, ubiquitous listening which can be more frequent in classical film scores that

are sometimes considered part of the background. This is, however, not always the case. For example, Quentin Tarantino's *Pulp Fiction,* contains composites of pre-existing songs to create the idea of a time and location; this functions through the listener's musical recognition and enculturation. Stanley Kubrick's *2001: A Space Odyssey* (1968) famously uses a composite score of contemporary classical pieces, such as Richard Strauss' *Also Sprach Zarathustra*, which does not function through recognition and functions more like a classical film score.

The Functions of Sound and Music in Film

Classical scores and composite soundtracks can function very differently. I focus on both pre-existing composite and especially composed scores, which are more contemporary, as opposed to recognisable popular music. Much of the film music which I study encourages Anahid Kassabian's "ubiquitous listening", addressed in Chapter 1, where listening takes places alongside other activities (Kassabian, 2013, p. 9). It is an inattentive listening mode which is unobtrusive and sometimes subtle. Film music sometimes encourages ubiquitous listening because the viewer simultaneously watches, listens to other film sound and listens to other sounds in their home or cinema. Claudia Gorbman likens film music to Muzak, an easy-listening form of music; "neither is designed to be closely listened to" (Gorbman, 1987, p. 5). In other words, both require Kassabian's ubiquitous listening. Kassabian argues that this mode of listening requires the music to have a kind of "sourcelessness", like "it comes from everywhere and nowhere" (Kassabian, 2013, p. 9). I argue that for music to feel "sourceless", it must be omnidirectional; directional sound suggests a source which distracting from this ubiquity. I also argue that "sourcelessness" requires the music to be acousmatic; if a viewer can see the sound source, they might attentively listen. Directional music is likely to be diegetic source music. If the musical source can be seen, such as a character playing a piano, it is also diegetic. Diegetic music is not ubiquitous because it has an identifiable source, and can function differently to film background music, depending on whether the spectator should attentively listen to it. For the purposes of this research, I adopt a more attentive listening approach, consciously

mapping out my listening experience, where for in other situations the same music may create an inattentive, ubiquitous listening experience for other listeners.

Sound

Film sound can consist of dialogue and sound effects, which function differently to music. First and foremost, sound is used to "add life to images that might otherwise be interpreted as disembodied" (Wierzbicki, 2009, p. 13). Sound completes a synchronised sensory experience by uniting the visual and sonic material as one; "If a sound and image occur at the same moment, they tend to be perceived as one event" (Bordwell, Thompson & Smith, 2017, p. 265). Chion describes this "spontaneous and irresistible weld between a particular auditory phenomenon and visual phenomenon when they occur at the same time" as "synchresis" (Chion, 1994, p. 63).

Secondly, sound provides information. Visuals often provide explicit information, whereas sound implies. "A simple sound can prod us to form expectations"; if a viewer hears keys being turned in a door, they expect to see a new character become part of the diegetic scene (Bordwell, Thompson & Smith, 2017, p. 265). The viewer can understand information from hearing acousmatic sounds, rather than needing to see it.

Thirdly, sound is used to manipulate the viewer's psychological perception of an image. A differing sound or narrative commentary with the same image might imply different information about the image and a different emotion or feeling (Bordwell, Thompson & Smith, 2017, p. 265). Types of sound are vital to this study, because different types of sound can be more or less important, can encourage different listening modes and invite different levels of attentiveness.

Music

The first function of film music is to guide the viewer to perceiving the 'correct' meaning of the image. Roland Barthes first used the term *ancrage* to explain that a caption anchors an image to a meaning (Barthes, 1977b). Gorbman argues that music "anchors the image in meaning, throws a net around the floating visual signifier, assures the viewer of a safely channeled

signified" (Gorbman, 1987, p. 58). It is musical *ancrage* that encourages us to make the 'correct' assumptions about the visuals.

The second utilitarian function of film background music is to disguise the materiality and technicality of films: the scene cuts, the frame and silences in the soundtrack (Gorbman, 1987, p. 58). Music creates a temporal coherence by connecting the crosscutting clips with a consistent musical underscore. Chion also describes this as "unification"; sound and music can "unify" with the image by "bridging the visual breaks through sound overlaps" and by "establishing atmosphere (e.g., birdsongs or traffic sounds) as a framework that seems to contain the image" (Chion, 1994, p. 47).

Third, Gorbman argues that "Music removes barriers to belief; it bonds spectator and spectacle; it envelops spectator and spectacle in harmonious space"; she terms this 'suture' (Gorbman, 1987, p. 55). Musical bonding, Gorbman argues, can function through identification, such as the emotive, affective background music that is of secondary importance to the dialogue and narrative. This can make a scene feel epic, joyous, romantic or tense, which relies on semiotic musical codes, the listener's enculturation and knowledge of musical stereotypes. Listeners associate these conventions with an emotion or circumstance after hearing them time and time again in films. Gorbman argues that film music uses not only musical codes, but cinematic and cultural musical codes, such as knowing what battle music sounds like, or recognising title music placement (Gorbman, 1987, p. 3). Bonding music can provide geographical, cultural or historical identification by utilising instruments, tones, harmonies and melodies that are archetypal of certain people, places and times.

Finally, Gorbman's bonding music functions through the spectacle. This type is more noticeable because it "punctuates a pause in narrative movement in order to externalize, make a commentary on it, and bond the spectator […] to his/her fellow spectators" (Gorbman, 1987, p. 68). The *leitmotif* is "a functional theme usually associated with a character on screen, […] consolidating the relationship between the music and the action on the screen and its narrative development." (Donnelly, 2001, p. 9). *Leitmotifs* enhance the visuals with the

metaphorical characterisation of people, locations or emotions. These were used in Wagner's operas and continue to be used in film, television and videogames.

Sound functions and musical functions can be very similar. Both 'bring life' to the visuals and make them more convincing through the multi-sensory experience. Both manipulate a viewer's perception of the visuals, perhaps giving connotations of different emotions. Sound and music can both provide other cultural, social and geographical information. There is not always a clear difference in film between sound and music. Some sounds, such as percussion and ambience, can fall into the categories of music and sound. The line between music and sound is blurred but, with many similar functions, there is no need to always distinguish between the two. These functions create, enhance and manipulate the film's narrative, visuals and emotional experience.

Considering the issues of intermediality, narrative and emotional experience, I explain how subtle sonic performativity differs in contemporary film music compared to 20th-century classical music. I look at classical film scoring and composite scores where I am unfamiliar with the music and other listeners are also likely unfamiliar. The aspect of unfamiliarity is important because once a listener recognises a piece of music, they could pay more attention to it, perhaps singing along or even just mentally following the music. This introduces an attentive "rollercoaster listening" experience much different to the ubiquitous, non-attentive listening which I am concerned with. The four modalities of subtle sonic performativity are discussed further in this chapter. Once again, I separate the sonic subtleties for the sake of clarity. I also discuss the context of the music within the narrative, diegesis and scene. I study how the music functions with the sound effects and dialogue to create sonic subtlety and how the subtleties can perform effects and have functions.

Amplitudinal Subtlety

In the previous chapter, amplitudinal subtlety in 20th-century classical music had the performative effects of sonic clarity and a subtle sonic environment in Bartok's *Musiques Nocturnes*. The amplitudinal sonic clarity urged me to focus on the low volume dissonances

because I wasn't overloaded with loud sound. The clarity became part of the sonic environment, because it remained for the entire duration and I could hear all sounds clearly. In film sound, however, music is combined with sound effects and dialogue. This means that simultaneous sounds can have varying amplitude levels. The music could be amplitudinally subtle while the sound effects are loud, or all the sound could be amplitudinally subtle.

Koyaanisqatsi (1983)

In *Koyaanisqatsi* (1983), directed by Godfrey Reggio, there are no characters, plot or a narrative structure; this documentary film is entirely environmental cinematography. There is very little diegetic sound and Philip Glass' non-diegetic music fills most of the soundtrack.

In this example, amplitudinal subtlety enhances the visuals because it is non-intrusive and can encourage the viewer to ubiquitously listen and focus on the visuals. The amplitudinal subtlety, created with quiet music and a lack of dialogue or sound effects, provides a sonic environment that encourages ubiquitous listening. At 20:23, the only sound is the amplitudinally subtle music of descending sustained viola notes, so this creates a subtle sonic environment. At 20:44 and again at 21:14, the note D, one octave lower, is introduced to the melody, which then fades out. This sonic environment continues until 21:18, functioning to encourage the viewer to ubiquitously listen and to direct attention to the visuals of a factory, the orange desert and large areas of concrete and water.

This subtle sonic environment has a secondary function of preparing for a subsequent sonic barrage. At 21:18, the music suddenly becomes much louder and many new parts are introduced. The previous subtle sonic environment, which encouraged ubiquitous listening, is now broken. The new sonic environment is unsubtle and the sudden volume increase causes the listener to attentively listen to the music. The amplitudinal subtlety functions to create a sonic environment that encourages ubiquitous listening, as well as having the secondary function of sonic preparation for this barrage of loud sound. The music in the majority of this film is quite unsubtle, so this section of subtlety contrasts with what the listener has heard previously.

Black Swan (2010)

In *Black Swan* (2010), a psychological thriller film directed by Darren Aronofsky, Nina (Natalie Portman) is part of a ballet dance company and wins the part of the Swan in Swan Lake. The film portrays Nina slipping into insanity as she strives for artistic perfection and commits every aspect of her life to the role. The music of the ballet *Swan Lake* is mixed with music composed by Clint Mansell.

In this example, amplitudinal subtlety functions to frame and enhance the diegetic sounds that contribute to the narrative of the film. These sounds are more explicit to the audience than the amplitudinally subtle non-diegetic music. At 32:18, Nina is washing her hands at a sink. Water trickling can be heard alongside quiet piano music of notes moving up and down the piano. Nina notices a hangnail on her finger and washes the blood away. At 32:30, someone bangs on the door and Nina calls "Just a second." There is a sense of urgency and she peels the skin away from her hand; the tearing sound and her sharp inhales can be heard over the quiet piano music. At 32:48, Nina's short but louder inhales are enhanced by the amplitudinally subtle music. Metallic, dissonant, louder music plays over the piano to highlight this distressing moment, breaking the subtlety for a moment. At 32:52, the wound on Nina's hand disappears and it can be assumed that she imagined it. The piano and metallic, dissonant music fades out and a whirling, metallic ambience dominates. Nina carries on as though the hallucination had not occurred. The sonic clarity has the secondary function of sonic preparation for the increase in the loudness of the music.

The narrative sounds of Nina's hand wound and wincing gasps were enhanced by the amplitudinal subtlety, highlighting Nina's discomfort and the discomfort reciprocated by the viewer, who could experience "rollercoaster listening" (Butt, 2010, p. 9). It is important that these sounds are enhanced, because Nina's hallucinations become more frequent throughout the film; she grows wings, sprouts feathers and develops webbed feet like a swan. The hallucinations are a large part of the narrative; the sounds and amplitudinal subtlety contribute to the enhancement of the uncomfortable narrative.

Amplitudinal Subtlety Conclusions

In *Koyaanisqatsi*, the amplitudinal subtlety of the overall sound created a non-intrusive sonic environment, encouraging ubiquitous listening while the spectator focuses on the visuals. The subtlety creates sonic preparation, building up to the sonic barrage which interrupts the subtlety and enhances the introduction of the new visual. In *Black Swan,* the amplitudinally subtle music creates sonic clarity, which enhances the diegetic, narrative sounds. Sonic preparation enhances an emotionally intense moment that is vital to the narrative, which can create a rollercoaster listening experience. This rollercoaster listening experience is subtly attentive, because the listener experiences a conscious emotional response from the sound effects, but inattentively listens to the sonic subtlety of the music.

Amplitudinal subtlety is the most frequent subtlety used for a sonic preparation. Both examples contain sonic preparation which accompanies a visual, narrative or emotional moment that must stand out. Amplitudinal sonic clarity encourages the viewer to listen to important sounds that contribute to narrative or emotional moment, even if the sounds are not visualised. Subtle sonic environments are less intrusive and encourage ubiquitous listening, enhancing other important factors such as the visuals or narrative. The overall sound can be amplitudinally subtle to decrease the chaos of simultaneous dialogue, sound effects and music. Or, the music can be amplitudinally subtle, decreasing its presence to enhance the sound effects and dialogue which make up the visuals, narrative and emotional experience.

Spectral Subtlety

Spectral subtlety is a restrained use of the frequency spectrum. There may be only one narrowband sound, or perhaps multiple narrowband sounds that are separated in the spectrum, such as bass frequencies, mid frequencies and treble frequencies.

In the previous chapter, spectral subtlety in 20th-century classical music had the performative effects of sonic clarity and thematic subtlety. The thematic subtlety in *Telemusik* provided a return to a familiar spectral subtlety after hearing many different frequencies and timbres. Once this spectral subtlety had been established as a theme, the listener could expect

it to return. *Poème Électronique* also performed sonic clarity and thematic subtlety through spectral and temporal subtleties. Sonic clarity was created with each narrowband sound, and the repetition of this spectral subtlety creates a recognisable thematic subtlety. In both pieces, there is a sonic expectation for the thematic subtlety.

Spectral subtlety performs effects in 20th-century classical music, but in film sound, subtlety can be more functional. With the introduction of dialogue and sound effects, spectral subtlety can separate these sounds. Spectral qualities can depict a sound in the realistic part of the spectrum and make some sounds more prominent, which can sonically *suture* the spectator to the narrative or emotional experience (Gorbman, 1987, p. 55).

Blade Runner (1982)

Spectral subtlety can function to enhance sound effects and dialogue that occur as part of the narrative and diegesis. Bordwell, Thompson & Smith explain that "Pitch helps us distinguish music and speech from background noise" and it "helps our ear sort out the sounds" (Bordwell, Thompson & Smith, 2017, p. 268). I describe the separation of simultaneous narrowband sounds in the frequency spectrum as spectral sonic clarity.

An example of spectral sonic clarity occurs in *Blade Runner* (1982), directed by Ridley Scott. From 10:10, Rick (Harrison Ford) can be seen in the flying car. The sonic environment is spectrally subtle with non-diegetic music, composed by Vangelis, occupying mid to high frequencies, but no bass frequencies. There is shimmery semitonal movement in the extremely high register, but no bass sounds. Mid-frequency whirling sounds create an ambience, which I connect with the car engine. A spectrally subtle sonic environment is created in this establishing scene, enhancing the futuristic nature of the world. This sonic environment lasts until 10:38, when two spaceships move past the camera. Low-frequency sounds of spaceships accompany the visuals as one flies to the right and one to the left. The narrowband low-frequency sounds stand out, because the subtle sonic environment was dominated by high-frequencies. At 10:54, another space ship flies from the left of the screen over to the right with another lower frequency sound that, again, is made much more prominent through this

spectrally subtle sonic environment. At 11:11, an announcer speaks in a low-mid frequency, which is, once more, enhanced by the spectral sonic clarity.

This spectral subtlety has the secondary function of sonic clarity, allowing each sound to stand out, and enhancing the primary function of the sonic environment. This spectrally subtle sonic environment enhances the narrative of the film, by highlighting the spaceships and flying car engine, which depict the futuristic nature of the setting. This is *ancrage*, leading the viewer to assume a futuristic setting through the harmonious sound and image (Gorbman, 1987, p. 58). The listener might experience ubiquitous listening due to this sonic subtlety, which is subtly attentive, because the inattentive musical listening encourages the listener to more attentively listen to the sound effects.

The Hunger Games (2012)

The Hunger Games (2012) is an adventure film directed by Gary Ross, based on Suzanne Collins' 2008 book of the same name. It is set in a science fictional dystopia in which the protagonist, Katniss Everdeen (Jennifer Lawrence), and her ally, Peeta Mellark (Josh Hutcherson), compete in a game. They must fight to the death against their competitors, also in pairs, with limited resources. *Sediment,* a nine-minute-long piece using an analogue synthesiser and tape machines, was used in this film. It was composed by Laurie Spiegel in 1972, is entirely electronic and consists of long distorted and non-distorted tones, oscillating in pitch and wavering in dynamic levels. *Sediment* is used as non-diegetic music in the 'cornucopia' scene; the competitors arrive on a pod, then after a gunshot, they must quickly make the choice to fight or flee the area, gather resources or they risk death. The distressing visuals show brutal violence and death. At the end of this scene, *Sediment* fades out and *Three Movements for Orchestra, Mvt. 1*, composed by Steve Reich, fades in.

In this example, spectral subtlety in film enhances the emotional experience created by the sound. The frequency spectrum can be effective at enhancing discomfort by using areas of the spectrum to which the audience may not be accustomed. For example, a narrowband

low rumble with no visual or suggested source could be unnerving because the audience is not accustomed to hearing this frequency.

At 1:08:23, *Sediment* quickly increases in amplitude, while one of the tech personnel states “Okay they’re in the tubes”. *Sediment* creates spectral subtlety which creates clarity in the reception of sounds. A consistent, distorted, mid-range propeller-like note, becomes louder until it completely dominates the sound and nothing else can be head. From 1:08:26 until 1:09:03, the visuals cross-cut from Katniss’ first-person perspective to third-person views of the competitors. At 1:08:51, Katniss’ inhale is heard over the pitch-oscillating consistent tone and creates spectral subtlety until 1:33. From 1:08:29 until 1:09:02, *Sediment* dominates the sound. This scene leads up to the violent games, and the uncanny spectrally subtle clarity functions by causing auditory discomfort, heightening the emotional experience.

At 1:09:02, the location changes to the broadcast control room. There is high-pitched, narrowband squeaking, clicking and buzzing of the electronic equipment. I also hear the mid-range, non-diegetic sounds from *Sediment* and the lower-frequency sound of the diegetic announcer, who counts down from fifty. The spectral clarity creates a clear listening experience because I only hear one type of sound in three distinct sections of the frequency spectrum: high, mid and low. In my experience of this emotionally tense scene, the spectral subtlety brings an overall sense of clarity to my viewing and listening. *Sediment* functions to divide the higher and lower frequency sounds.

At 1:09:45, *Sediment* stops and diegetic beats count down to the beginning of the battle. The visuals cut back to the arena and the competitors at their podiums. Instead of hearing a final beat to commence the games, *Sediment* resumes, quickly increasing in amplitude with diegetic soundlessness as the competitors sprint across the field. *Sediment* begins with a narrowband, mid-frequency D#. At 1:10:09, a higher D# harmonic plays, broadening the frequency range, but this spectral subtlety contains no lower frequencies. At 1:10:16, low-mid frequencies are introduced, and then at 1:10:18, some even lower frequencies occur, creating spectral cacophony. The previous spectral subtlety sonically

prepared for this barrage of the frequency spectrum, making it seem more prominent. This spectral cacophony reiterates the stressfulness of the fight scene. The primary function of the spectral subtlety is sonic preparation; the secondary function of sonic clarity further enhances the preparation for this spectral barrage. These performative effects create *suture* because the music bonds the viewer closer to the film's narrative to heighten the emotional experience (Gorbman, 1987, p. 55). The creation of an emotional or physical response is attentive, rollercoaster listening (Butt, 2010, p. 9).

Spectral Subtlety Conclusions

In *Blade Runner,* the spectral sonic clarity separates the sounds in the frequency spectrum, highlighting the particular sounds which have futuristic connotations. This creates a sonic environment that enhances the narrative setting. In *The Hunger Games,* the uncanny spectral subtlety enhances the distress of the scene. The spectral subtlety provides clarity in the reception of the sounds in this stressful section. It also sonically prepares for a barrage of spectrally cacophonous sound and mirrors the intense emotion of the scene, which encourages rollercoaster listening.

Spectral subtlety creates sonic clarity in both examples, functioning to enhance the visuals, narrative or emotional moment. Sonic clarity is mostly important for the reception of sonic information, because it separates sounds and makes them stand out. Spectral subtlety reduces the sense of chaos where the dialogue, sound effects and music is simultaneous, sometimes encouraging ubiquitous listening to the music and drawing attention to sound effects and dialogue. Spectral subtlety sonically prepares for a barrage of the frequency spectrum which correlate with a visual or narrative moment. Spectrally subtle sonic environments can establish certain sounds in the spectrum. Overall, spectral subtlety enhances the prominence of certain sounds which correlate with and enhance the visuals, narrative and emotional experience to encourage rollercoaster listening.

Temporal Subtlety

Sounds can be consistent or inconsistent. Consistent sounds are longer-lasting, such as ambience, structured non-diegetic music and or a crackling fire. The listener becomes accustomed to these longer sounds and listens to them less attentively. The consistency can fulfil the listener's expectations. Inconsistent sounds could be dialogue, a door slamming, or a gunshot. Temporal subtlety is where these inconsistent sounds occur more consecutively. Consistent sounds overlapping does not stop temporal subtlety from functioning. This form of subtlety plays with the listener's expectations of sounds being continuous or non-continuous.

In Chapter 2, I explained how temporal subtlety had the performative effects of sonic preparation, sonic clarity and thematic subtlety in 20th-century classical music. *Étude aux chemins de fer* performed temporally subtle sonic preparation; once I recognised a sound as being consistent, it prepared me for a new inconsistent sound. Once sounds established themselves as being consistent, I did not pay direct attention to them as much as the new inconsistent sounds; this created sonic clarity. *Poème Électronique* performed sonic clarity because I focus on consecutive sounds. The repetition of this subtle temporality created a recognisable thematic subtlety. Temporality changes in film, because the narrative introduces more inconsistent sounds of dialogue and sound effects. The sound designer can achieve temporal subtlety by avoiding overlapping sounds and organising inconsistent sounds consecutively.

Music in film can be a consistent factor if it fulfils the listener's expectation. Music which does not fulfil the listener's expectation is an inconsistent factor. A consistent piece of music might have a regular rhythm or a consistent free rhythm that is not particularly prominent, such as rubato piano melodies. An inconsistent piece of music might have strong rhythmic beats, but the beats might not follow a pattern nor fulfil a listener's expectation.

Gone Girl (2014)

Sonic temporality must correlate with the realistic timing of visual and implied sound objects. Non-diegetic music is not visual, but it does function with the intermedial sounds. Temporal

subtlety can enhance the visualised sound objects when the inconsistent sounds are consecutive. An example of this is in the film *Gone Girl* (2014), directed by David Fincher, based on the 2012 book of the same name by Gillian Flynn. In this psychological thriller film, Amy (Rosamund Pike) frames her husband (Ben Affleck) for her own murder, after being the victim of years of emotional and physical domestic abuse. In this example, the temporal subtlety of the music creates sonic clarity, which allows the visual and implied diegetic sounds to stand out. The temporally subtle music connects all these clips together with a sonic environment that is consistent and non-intrusive.

Consonant, minimalist-style music begins at 38:32; electronic arpeggios overlap while the bass note changes. This music accompanies clips and sounds of the police investigation in and around Amy and Nick's home. The viewer gains information about the deep investigation through the visuals and sound, so the clarity is beneficial. Firstly, there is a six second scene of civilians walking through a field, looking for information. There is the sound of water dripping and an ambient, consistent 'shh' sound of the wind blowing through the long grass. The consistent sound is non-intrusive, much like the music, and this allows the inconsistent water to stand out. The second scene depicts officers leaving a police vehicle. Police radios can be heard exchanging information over the faint sounds of birds chirping. Civilians are sitting outside, but they cannot be heard. The consistent music and consistent birds allow the radio sounds to be prominent, which is the sound providing the important information.

Third, the longest clip depicts the lead detective, questioning Nick in his home about his spending habits and shuffling his bills. There are more shuffling and stepping sounds from officers investigating other rooms in the background. Involving the most important characters, this scene contains information about Nick denying making purchases shown on his bills. The viewer begins to doubt Nick once they hear this information. The doorbell rings and Miss Hawthorne's voice can be heard from outside, she is claiming to be friends with Amy. Nick knows nothing of the friendship, so the viewer starts to doubt Nick once again.

Fourth, at 39:26, a man blows a whistle and waves at blurred people with torches in a field. The sonic environment of temporally subtle music ensures that short visual clips and cross-cutting have a consistent, sonic underlay. This encourages ubiquitous listening, as the music is non-intrusive, allowing the listener to focus on the visuals. Finally, at 39:30, people can be seen walking and cycling along a road. The prominent sounds are voices and wheels and feet on the crunching road. There is no clear dialogue. The music fades out at 39:46 and the scene changes.

These investigation scenes are hectic, depicting many locations and situations with different people. The temporal subtlety has a primary function of sonic clarity, allowing the diegetic sounds to stand out and enhancing the on-screen situations. Secondarily, the temporally subtle sonic environment provides the scenes with a coherent, non-diegetic sonic underlay, while diegetic sounds change to correlate with the cross-cutting visual situations. The sonic clarity encourages ubiquitous, inattentive musical listening, and attentive listening to the inconsistent sounds and the visuals.

Eyes Wide Shut (1999)

Temporality manipulates the perception of sounds, enhancing the emotional cinematic experience. An example of this is in *Eyes Wide Shut* (1999), a film directed by Stanley Kubrick, which contains a composite soundtrack of classical music and original music by Jocelyn Pook. Bill (Tom Cruise) attends a secret society masked ball uninvited. At 1:24:20, when Bill enters the hall, the pianist plays *Musica Ricercata: II. Mesto, Rigido e Cerimoniale,* composed by Ligeti and performed by Dominic Harlan. This piano music consists of semi-tonal movement between two main tones. A pianist is seen in the film previously, but he is not visualised within this scene; the viewer cannot be sure whether this music is diegetic or not.

In this scene, the temporally subtle sonic clarity of the music enhances the dialogue, which increases the tense emotional experience. Bill enters the hall and masked attendees in black capes surround three authoritative members. Rhythmic piano notes alternate between an F# and a G and Bill is asked by the main authority to step forward. He asks “May I have the

password please?" and Bill replies "Fidelio". Among the melodies, the leader says "That's right! That is the password for admittance. But may I ask," the melodies stop "what is the password for the house?" The melody can be heard again simultaneously in a higher and a lower octave. It plays four times before it stops and Bill says "I seem to have forgotten it." "That's unfortunate", a loud single note plays, "because here it doesn't matter whether you have forgotten it." The loud note plays again, "or if you never knew it!" The single loud becomes more frequent, "you will kindly remove your mask." These very loud notes on the same piano key play during this utterance. The only sounds are the equally loud dialogue and piano melodies. This creates temporal subtlety and the sounds do not feel as though they compete for attention, which functions to perform sonic clarity. The piano and dialogue mostly sound separately. When, however, they do play simultaneously, my attention in still on the dialogue and the piano does not interrupt nor require my attention. The melodies themselves seem out of place, because usually piano music is in the background and consistent, rather than these foregrounded, fragmented melodies.

The temporal subtlety of sparse piano melodies and dialogue create a sonic clarity that allows me to hear each tense utterance uninterrupted. The melodic inconsistency of the piano sonically frames the dialogue to make it more prominent in a heightened, more unnerving way. The temporal sonic clarity creates a "rollercoaster listening" experience, by enhancing the sounds that could spark an emotional response for the listener (Butt, 2010, p. 9).

Temporal Subtlety Conclusions

In *Gone Girl,* temporally subtle sonic clarity enhances the visuals by making the diegetic and visual sounds stand out. The secondary function of the temporally subtle sonic environment assists this by creating a consistent musical layer. This encourages ubiquitous musical listening and helps the viewer focus on the visuals and visualised sounds. In *Eyes Wide Shut,* temporal subtlety enhances the diegetic dialogue with non-diegetic piano notes. This functions to perform sonic clarity, because none of the sounds feel interrupted and the viewer is

encouraged to focus on the tense dialogue. Temporal sonic clarity can create ubiquitous listening, because the subtle music does not require direct attention (Kassabian, 2013, p. 10).

Temporal subtlety creates sonic clarity in both examples, because it separates sounds over time to enhance the visual, narrative or emotions. This is a form of *ancrage*, because it enhances the important sound that encourages the viewer to feel a certain way or make assumptions about the narrative (Gorbman, 1987, p. 58). Temporal subtlety creates a sonic environment which encourages ubiquitous musical listening and urges the spectator to focus on inconsistent sounds, the visuals or the narrative. Where dialogue, sound effects and music seems chaotic, temporal subtlety can reduce this. Overall, temporal subtlety can enhance certain sounds in the music or diegesis to enhance an intermedial occurrence, a narrative moment or the emotional experience, which creates a "rollercoaster listening" experience (Butt, 2010, p. 9). This is a subtly attentive listening experience, because the music can encourage both attentive listening to inconsistent sounds, but inattentive, ubiquitous listening to the consistent musical parts.

Spatial Subtlety

Sounds can be spatialised directionally and omnidirectionally in a stereo or surround sound system. Directional sounds can be traced to a direction, whereas omnidirectional sounds come from all directions. Spatial subtlety is where separate sounds come from different directions, allowing the perception Generally, directional sounds signal a source with a location, requiring more attention. Most directional sounds, therefore, are diegetic and most omnidirectional sounds are non-diegetic.

In 20th-century classical music, *Air* performed spatial sonic clarity by separating each sound in my listening, allowing me to focus on the sound's spatialisation and motion. In film, spatialisation can be more functional to enhance intermediality and emotion. Film sound is also usually produced with 3D surround sound, which can technologically create the auditory illusion of a diegetic space.

Gravity (2013)

The spatialisation of sound creates a listening perspective that correlates with the visual perspective. An example of this is in *Gravity* (2013), directed by Alfonso Cuarón, which has a large use of surround sound and spatial subtlety. The opening scene is a long continuous shot of the astronauts preparing for debris. The scene becomes increasingly stressful, as the level of danger onscreen increases. In this scene, spatial subtlety creates sonic clarity, allowing the viewer to hear every sound clearly and enhancing the visual first-person perspective. The non-diegetic music, composed by Steven Price, is not always omnidirectional.

At 9:55, Lieutenant Matt Kowalski (George Clooney) and Dr. Ryan Stone (Sandra Bullock) are conversing at their station. They are informed by a male and a female on their radio that there is to be an emergency evacuation. Non-diegetic music begins with bass-heavy consistent synthesizer sounds. At 9:56, when the male commands from the right "Mission abort" and the female voice is spatialised leftwards. Where dialogue is heard from the left, the non-diegetic music or an instrument is panned towards the right, and vice versa. An example of this is at 11:41, when Kowalski asserts "Explorer, this is Kowalski confirming visual contact with debris; debris is from a BSE sat." The debris shot is the first time that the viewer sees the danger as well as hearing it. Kowalski's speech moves from the right side to the left with the character, in line with the camera following the debris movement across to the right. The music moves towards the opposite side to Kowalski's speech, but is not completely directional. This directional dialogue movement enhances the onscreen positioning of the character and his important speech, which creates sonic clarity because attention is not drawn to the music.

The correlation of the sound and visuals enhance the first-person viewing perspective. The sonic clarity is vital for locating characters onscreen, tracking their movement as the camera travels and enhancing the emotion-intensifying speech, which can encourage "rollercoaster listening" (Butt, 2010, p. 9). The sonic clarity creates a realistic viewing situation, with the speech changing direction as if the viewer is situated at the camera. This *sutures,*

bonding the spectator to the spectacle by sonically positioning the spectator in the diegesis (Gorbman, 1987, p. 55).

Insidious (2010)

In film, spatiality often represents the angle and perspective depicted by the camera. Where this occurs, spatial subtlety can enhance or manipulate the narrative of a film scene, because it sonically positions the listener at the camera position. This happens in *Insidious* (2010), a supernatural horror film directed by James Wan, where a young family move into a new home in which haunting affairs take place, and one child goes into a long coma. *Nuvole Bianche* (2004), by Ludovico Einaudi, plays as diegetic music; its soothing piano melodies are accompanied by diatonic harmonies.

Renai (Rose Byrne) is in her kitchen with her mother-in-law. The sonic environment is amplitudinally subtle, so even quiet shuffling sounds and footsteps are very prominent. At 39:17, Renai plays *Nuvole Bianche* on the record player; which is diegetic music. The needle on the record is an extremely prominent sound in this subtle environment, but remains amplitudinally subtle. The introduction of the music increases the dynamic level and the previous amplitudinally subtle environment prepares for this increase in volume. The needle sound and the music are not directional, because they do not require direct attention; I can, however, see the sources of these diegetic sounds.

While *Nuvole Bianche* plays, Renai walks through the hallways, shuffling and stepping around the house while interacting with objects. As Renai enters a bedroom at 39:31, the door squeaks open, spatialised rightwards. There are quiet, omnidirectional squeaking sounds of birds outside. As Renai is tidying, a plate rattles, which is spatialised leftwards. This spatial subtlety also contributes to this sonic environment. The spatiality of this scene *sutures* because it correlates to what Renai would hear in the diegesis, bonding the spectator to the character, increasing an emotional connection and providing awareness of the narrative (Gorbman, 1987, p. 55).

At 40:06, Renai leaves the house; the camera perspective is from inside and pans to follow her movement. At 40:12, the record player makes loud, scratching sounds, which are spatialised omnidirectionally, breaking the spatially subtle sonic environment and not fulfilling my expectation. The sound indicates a change in the diegesis, particularly as I know the record player and music are diegetic. The scratching finishes and the music changes to *Tiptoe Through the Tulips* by Tiny Tim. Renai looks back into the house to see a child, who is not one of her own, dancing.

Spatial subtlety has the primary effect of a subtle sonic environment and the secondary effect of sonic preparation. *Nuvole Bianche* contributes to the sonic environment and, although it is diegetic, it can encourage ubiquitous listening. The unexpected change to this subtle sonic environment signals a narrative change. The sonic environment itself functions as a sonic preparation for the interrupting, shocking barrage of sound, which can enhance rollercoaster listening.

Stoker (2013)

In *Stoker* (2013), directed by Park Chan-Wook, India Stoker (Mia Wasikowska) and her Uncle Charlie have superhuman heightened senses. Charlie has incestuous relations with both India and her mother and it is revealed that Charlie is a murderer. The film begins with India narrating "My ears hear what others cannot hear." India's auditory perspective is largely presented to the viewer through the spatiality and spatial subtlety in the sound design. Spatial subtlety assists the viewer's emotional experience by enhancing the sounds that India would hear so clearly. By increasingly the directionality, and loudness in many cases, of these sounds, the viewer is made aware of India's unusual, disturbing experiences.

At 1:18:10, the Sheriff questions India about the boy that Charlie killed. This scene has an extreme spatial sonic environment; all dialogue is spatialised leftwards, the music is omnidirectional and the sound effects of rustling and footsteps are all spatialised rightwards. This spatialisation is extremely unusual, because it does not portray the sounds conventionally.

Instead, it portrays the heightened sense of hearing that India and Charlie possess, causing confusion and heightening the emotional discomfort throughout the film.

The music has a beating bass guitar note, quiet strings and a crunching percussive tap. The central positioning of the music is a typical use of sonic space in film. Centralising a sound decreases the attention drawn to it, which is expected for non-diegetic music. Oppositely, the hard panning of the dialogue and sound effects draws direct attention to these diegetic sounds which India and Charlie would hear so prominently. This is highlighted through the severe spatialisation.

Spatial subtlety performs an established sonic environment that does not soothe anxieties, but enhances discomfort and confusion with the unusual spatialisation. It does not depict a first or third-person perspective, but, instead, mimics the intensity of India's heightened hearing. This sound *sutures* by presenting the spectator with a similar sonic experience to the character, bonding the listener to the confusing, tense narrative (Gorbman, 1987, p. 55). This can create an emotional response and a rollercoaster listening experience.

Spatial Subtlety Conclusions

In *Gravity,* spatial sonic clarity enhances the speech of the characters on-screen and in the diegesis, giving the viewer a realistic first-person sonic and visual perspective that is enhanced by the intermediality of visual sound objects. In *Insidious,* spatial subtlety has the primary function of a spatially subtle sonic environment, which, even though *Nuvole Bianche* is diegetic, can encourage ubiquitous listening. The unexpected change in the sonic spatiality creates the secondary function of sonic preparation, which signals a change in the diegesis. In *Stoker,* the sounds are subtly spatialised to create a sonic environment that mimics the character's hearing ability, enhancing tension by drawing the listener closer to the character's auditory experience and encouraging rollercoaster listening.

Spatially subtle sonic environments can function to encourage ubiquitous listening, like in *Insidious*, or to enhance the prominence of sounds and rollercoaster listening, like in *Stoker*. Spatially subtle sonic preparation precedes an unsubtle sonic barrage to enhance a narrative

or visual occurrence, like in *Insidious*. Spatial sonic clarity enhances directional sounds assisting the reception of sonic information by highlighting important sounds and their spatial positioning. Overall, spatialisation creates a listening perspective that is often relative to the visuals or narrative. Spatial subtlety can provide a less chaotic sonic experience by separating sounds in the surround sound system, drawing attention to some and encouraging ubiquitous listening to others.

Chapter 3 Conclusions

The modalities of subtle performativity function to enhance and add value to the visuals, narrative and emotional experience. Sonic subtlety is different in film sound than it is in music, because the sound incorporates dialogue and sound effects. This means that one part of a soundtrack can be sonically subtle, while another part is not. For example, the music might be amplitudinally subtle while the dialogue is loud.

The Absence of Thematic Subtlety

Firstly, it must be noted that thematic subtlety, which appeared in 20th-century classical music, does not appear in film music. A theme establishes itself by reoccurring: therefore time is important when considering thematic subtlety. In music, thematic subtlety does not have to occur with a scene, emotion or circumstance and is only connected to the repetition of itself, therefore is perhaps more readily achievable in music. Within film, musical, sonic and melodic themes occur very frequently and are more functional by sonically indicating or enhancing a situation. In film, sonically subtle music might occur when a character appears. This might be sonically subtle, but it is not the subtlety itself that is thematic; the musical leitmotif is thematic.

Film scores are longer than most pieces of 20th-century classical music. The establishment of a theme happens over time and so this happens more rapidly in shorter pieces of music than in film. In music, themes generally are closer in proximity and repeat more frequently, making them more recognisable as a theme. In music, thematic subtlety could occur twenty seconds apart, so thematic recognition is more likely. In films, themes

could occur twenty minutes apart, decreasing the likelihood of thematic recognition. Although the connection with a visual of a location or character could help to prompt recognition of an auditory cue, the primary theme is visual in this situation, rather than sonic.

Sonic Clarity

The main function of sonic clarity is the clear reception of sonic information. In films, amplitudinal sonic clarity encourages the spectator to listen to more important or relevant sounds. Spectral or temporal sonic clarity makes some sounds to stand out, sometimes these sounds function with a visual, narrative or emotional moment. Temporal sonic clarity separates different sounds over time, so inconsistent, shorter sounds are more prominent than consistent sounds. Spatial sonic clarity enhances directional sounds, which correlate with the visuals and provide information about the narrative perspective.

Sonic Preparation

Sonic preparation functions to sonically enhance visual, narrative or emotional occurrences. It is most obviously achieved with amplitudinal subtlety where quiet sound precedes loud sound. Although this did not occur in the examples, spectral sonic preparation could enhance a barrage of the frequency spectrum. Similarly, temporal sonic preparation could enhance a barrage of many inconsistent sounds. Spatial sonic preparation is created with directional sounds preparing for many omnidirectional sounds, perhaps enhancing something off-screen.

Sonic Environment

Sonic environments create a level of sound that the listener becomes accustomed to, allowing different sounds to stand out. Sounds may function with a visual or narrative moment. Temporally subtle environments enhance inconsistent sounds, spatially subtle environments enhance directional sounds and spectrally subtle environments enhance new sections of frequencies.

When listening to music, the listener solely focuses on the sound, but, when it is combined with film, the visuals add another aspect on which to focus. The spectator also

follows the diegetic narrative and characters, developing emotions. The music is, sometimes, of secondary importance to these aspects.

Sonically subtle environments encourage ubiquitous listening because they are less intrusive, enhancing other important cinematic factors such as the visual, narrative or diegetic sounds. This occurs in the amplitudinally subtle environment of *Koyaanisqatsi* and the temporally subtle environment of *Gone Girl*.

Unconscious Sonic Performativity and Subtly Attentive Musicking

Considering the performativity of subtle sonic environments in film music, I refer to the listening experience as ubiquitous and inattentive. This is contrasted with attentive listening with more present or cacophonous sound. Sonic subtlety blurs the lines between inattentive listening and (the preparation for and enhancement of) attentive listening. The audience neither listens attentively nor inattentively, so sonic subtlety introduces a new listening experience that I call subtly attentive musicking. The scale of subtly attentive musicking is displayed in Figure 12. This is a new epistemological listening mode, developed from and grounded in the listening modes discussed in Chapter 1, particularly attentive listening and inattentive hearing.

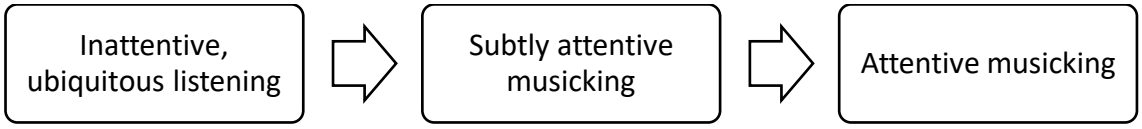

Figure 12 – Scale of attentive musicking

Sonic subtlety can create a subtly attentive musicking experience where the sonic subtlety itself is not attentively listened to, but changes the overall listening experience which incorporates all diegetic and non-diegetic sound. The sonic subtlety can be inattentively listened to, but in turn, this can enhance the attentiveness to which the audience listens to a subsequent sonic barrage (by sonic preparation) or a sound that is out of the ordinary (by sonic environment). In addition, as I previously explained, listening modes can occur simultaneously. I have discussed ubiquitous listening is detail; it refers to the inattentive listening of music while participating in other activities (Kassabian, 2013, p. 9). Sonic subtlety can create a

ubiquitous listening experience while simultaneously encouraging “rollercoaster listening” by enhancing other sound effects that might encourage an emotional response.

Sound and music, particularly within films, are often functional and listeners understand its powerful effect on them. Listeners don’t consciously recognise sonic subtlety or its powerful performativity, yet they consciously experience its effects in their subtly attentive musicking. Unconscious performativity is where the audience does not recognise the sound, nor the effect it has. Conscious performativity is the listener’s recognition of the sound which urges them to sing along or tap their foot. Subtly conscious performativity is the slight sonic effect experienced by the listener, which is subtle enough to perform unconsciously; this is displayed in Figure 13. Sonic subtlety has subtly conscious performativity by actively performing an effect or function to and *with* a subtly consciously participatory audience.

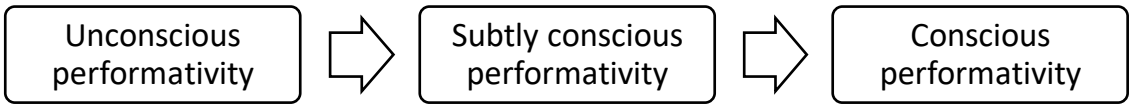

Figure 13 - Scale of conscious sonic performativity

Figure 14 displays the scale of sound and the position of sonic subtlety between soundlessness and sound. This scale must be considered in parallel with Figure 12 and Figure 13 above, because the central categories are all closely linked.

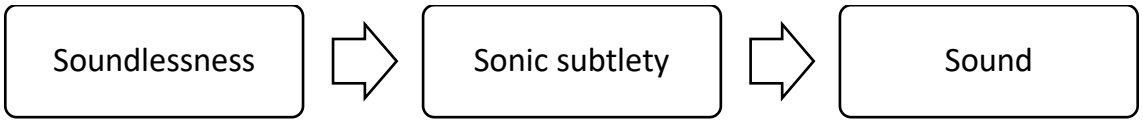

Figure 14 - Scale of sound between soundlessness and sound

The practice of subtly attentive musicking (Figure 12) can be created by sonic subtlety. The positioning of sonic subtlety between soundlessness and sound means that the listener, or musicker, is not musicking inattentively, as they might with soundlessness, and they are not musicking attentively, as they might with more present sound. Sonic subtlety must be listened to with subtly attentive musicking.

Sonic subtlety, between soundlessness and sound, has subtly conscious performativity, which is between the conscious and the unconscious (Figure 13). Soundlessness often

performs unconsciously and more present sound performs consciously. The performativities that I have discussed throughout this research are all created with sonic subtlety and have subtly conscious performativity.

Bringing these two new terms together, for subtly conscious performativity to be between the conscious and the unconscious, the audience must be subtly attentively musicking. If the audience is inattentively, ubiquitously listening, unconscious performativity. On the other ends of the scales, attentive musicking is more likely to result having conscious sonic performativity. The correlation of these scales is that subtly conscious performativity can involve an act of subtlety attentive musicking. Because the listener is engaging subtly, sonic subtlety can perform.

Contribution to Analysis of Film Music

Throughout this chapter, it has become clear that sonic subtlety performs effects and functions within film music to enhance the narrative, visuals and emotional experience. Film sound is very broadly functional, *suturing* as ubiquitous background music or having *ancrage* through identification with cultural musical codes (Gorbman, 1987, p. 58). But, it also can do more, though subtly conscious performativity.

This research contributes to the phenomenology of sonic performativity, explaining that sound can have effects and functions, while blurring the lines between the conscious and unconscious. Subtly attentive musicking is a new way of describing the musical engagement of film viewers, between the attentive and inattentive and going further than just listening. This fills an phenomenological gap in performance studies, explaining musical engagement on a passive, yet still participatory level.

The study of sonic subtlety incorporates both the construction of sonic parameters and the ways of understanding musicking and sonic performativity. In film music studies, this research encourages the study of sonic parameters in the *overall* sound, rather than separating sounds like the dialogue vs. the violin melodies. This shifts the focus from the effects of certain sounds to the sonic levels and what they contribute to the film.

Sonic subtlety is a new sonic parameter existing between soundlessness and sound, which breaks many binary oppositions. It blurs the lines between soundlessness and sound, attentive and inattentive, conscious and unconscious. It plays with listening as a musicking practice which is attentive, yet ubiquitous. Sonic subtlety changes the analysis of music and sound, encouraging musicologists to consider sonic parameters and the subtle sound which sometimes goes unnoticed. This research challenges musicological approaches to listening, incorporating Kassabian's ideas of ubiquitous listening, Butt's rollercoaster listening and Small's *musicking*, blurring the lines between attentive and inattentive listening. This research calls forth study surrounding unconscious sonic performativity and subtly attentive musicking to explore the other situations in which they take place.

Combinations of Subtle Performativity

In Chapter 2, I explained that the primary function is the main performativity achieved with sonic subtlety. The secondary function is another performativity of sonic subtlety which is simultaneously present and contributes towards the primary function, but is not the most prominent function. I have displayed these in Figure 15, with thematic subtlety removed, as this did not appear in film music. The combination of sonic clarity and a sonic environment creates a non-intrusive, real-life sonic experience that could be listened to ubiquitously. Sonic clarity and sonic preparation both enhance particular sounds; this creates *ancrage* by using important sounds that guide the spectator to create thoughts and understandings (Gorbman, 1987, p. 58). The sonic environment and sonic preparation create sonic interruption to enhance sounds that stand out from the environment, playing with Gorbman's *suture* to draw the spectator closer to the visuals (Gorbman, 1987, p. 55).

	Secondary Sonic Clarity	**Secondary** Sonic Preparation	**Secondary** Sonic Environment
Primary Sonic Clarity		Sonic clarity is created by a sonic preparation (and *ancrage*)	Sonic clarity is part of the sonic environment (and ubiquitous listening)
Primary Sonic Preparation	Sonic preparation is achieved with sonic clarity (and *ancrage*)		Sonic preparation is achieved with the subtle sonic

			environment (and *suture*)
Primary Sonic Environment	Sonic environment has sonic clarity (and ubiquitous listening)	Sonic environment is broken with a prepared barrage (and *suture*)	

Figure 15 - Ways that modalities of subtle performativities can be combined and compared in film

The modalities of subtle performativity and their combinations blur the lines between conscious and unconscious, attentive and inattentive, listening and musicking. They play with emotion, visuals and the narrative in films to have performative effects, but requiring different levels of attentive listening and having different levels of conscious performativity. In Figure 16, I have displayed the scale of subtle performativity and placed the modalities of subtle performativity depending on their levels of attentiveness and consciousness. Sonic environment is close to the unconscious, because the listener is partially aware of the environment, normally if the environment changes, but they do not attentively listen to it. Sonic clarity is closer to the unconscious and inattentive because it provides a clearer listening experience that does not require direct attention. Sonic preparation encourages subtly attentive musicking because the preparation is subtle and performs unconsciously, but the barrage demands more attention and performs consciously. The overall effect of sonic preparation is subtly conscious. Thematic subtlety requires a somewhat conscious recognition, but it does not require attentive musicking.

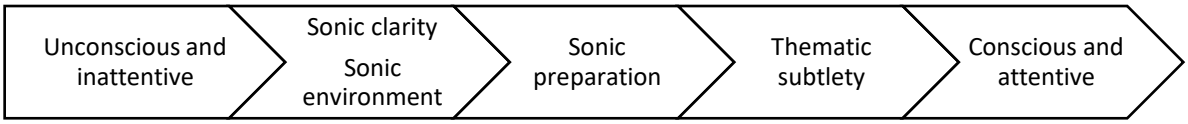

Figure 16 - Subtle scale of performativity in film

Conclusions: Subtly Attentive Musicking and Subtly Conscious Performativity

Sonic subtlety is a combination of sonic parameters and an approach to the middle ground it creates in listening attentiveness and consciousness of performativity. Sonic subtlety blurs the lines between binary oppositions of soundlessness and sound, the conscious and unconscious, and the attentive and inattentive. This invites a new way of studying sound, music and film by observing the performativity of subtle sound and considering the attentiveness of the audience's musicking.

Sonic parameters are different to musical parameters but they are similar in many ways. Musical parameters such as harmony, instrumentation and rhythm can create sonic subtlety by playing out through the sonic parameters of amplitude, spectrum, time and space. The study of sonic subtlety shifts the musicological focus from the musical parameters to sonic parameters, not focusing on specific notes, instruments or rhythms, but the overall sound itself. It is not the specific sounds that perform the effects, but the reserved sonic parameters which create the subtle effects.

Sonic subtlety can have the same effects as musical parameters such as harmony, rhythm, melody and instrumentation. Consonant and dissonant harmony is said to have the effects of tension and release. Interestingly, for something to be considered a 'release', it must be preceded by tension, otherwise it might simply be called 'calm' or 'reserved'. Sonic subtlety could be described as being more relaxed than sound, much like consonant harmony, a thinner musical texture or simple rhythms. Sonic subtlety plays with tension and release like musical parameters, playing with the emotions of tension and stress versus calm and relaxation, which contribute to the effect of sonic preparation. Stressful sonic moments could encourage attentive listening. Subtle, reserved sonic moments can be listened to inattentively.

For Salomé Voegelin, "listening to sound art and the sonic environment engages in the playful tensions of spatio-temporal productions and highlights the critical equivalence between spatial and temporal processes" (Voegelin, 2010, p. 124). This requires studying 'time', where it is neither "opposed to space nor is it time plus space" and "'space' is not

opposed to that time nor is it space plus time" (ibid., p. 124). It is important to first discuss sonic parameters separately to highlight their core differences, but further explorations of sonic subtlety could explore sonic parameters and subtleties as extensions of each other, which interplay, affect subjective sonic perception and manipulate sonic performativity. Brandon LaBelle explains that the "temporal and evanescent nature of sound imparts great flexibility, and uncertainty, to the stability of space" (LaBelle, 2010, p. xxi). Temporal properties can manipulate, both positively and negatively, the perception of space. In this thesis, I have discussed the sonic environment, which the listener can become accustomed to through stability of sound. If one sonic parameter can affect the perception stability and a subtly sonic environment, it could also affect the performativity of another sonic parameter. Further studies of sonic subtlety could consider inter-affective sonic properties and subtleties.

Sonic subtlety is like soundlessness in that it is sometimes listened to passively. It functions differently to soundlessness, however, because there is performative sound present. Sonic subtlety is different from other types of sound, such as instruments or dissonance, because it is more a type of sound level. Focusing on sonic subtlety helps to achieve a wider understanding of more reserved sound and how it can perform on a subtly conscious level. Sonic subtlety can be listened to differently to other types of sound; it sometimes encourages subtly attentive musicking.

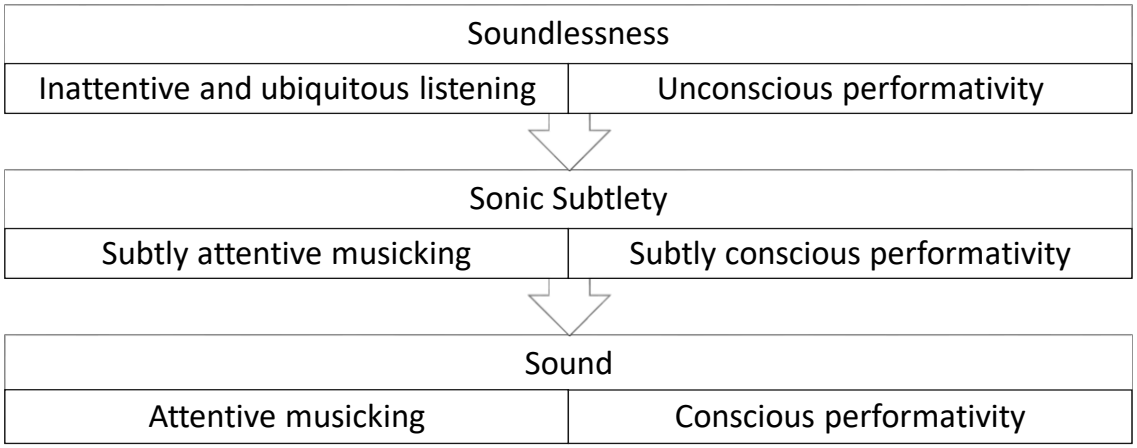

Figure 17 - Scales of sonic subtlety, attentive musicking and conscious performativity

At the end of Chapter 3, I created scales of sonic subtlety, subtly attentive musicking and subtly conscious performativity; these are displayed together in Figure 17. Inattentive,

ubiquitous listening requires no direct attention from the listeners. Attentive listening, or attentive musicking, requires more participation and can be a form of "rollercoaster listening" by sparking an emotional or physical response for the listener (Butt, 2010, p, 9). Sonic subtlety can encourage both of these listening modes simultaneously. For example, in film, ubiquitous, inattentive listening to non-diegetic music can encourage a more attentive, rollercoaster listening experience to the sound effects and dialogue. The overall listening experience is, at the same time, attentive and inattentive. Listening to sonic subtlety can encourage 'subtly attentive musicking', a new category of audience interaction, between the attentive and the inattentive. In a sonic performance, sound performs consciously to the audience. Soundlessness, on the other hand, performs unconsciously. Sonic subtlety blurs the lines between the conscious and unconscious by performing effects that are unconsciously recognised, introducing 'subtly conscious performativity'.

By questioning and exploring these previously opposed categories, sonic subtlety brings new, exciting areas of study. Listeners and musicologists can now consider areas of which they were previously unaware: sonic subtlety, subtly attentive musicking and subtly conscious performativity. Composers can experiment with reserved sound in new ways, to enhance subtle sonic performativity and film composition. In the wide area of performance studies, new concepts of subtlety can be applied, bringing new considerations of sonic levels, attentiveness and consciousness.

Glossary

Amplitude – the loudness of a sound.

Amplitudinal subtlety – the restrained use of loudness.

Directional sound – a sound that has a distinguishable direction in space.

Hearing – the passive form of listening.

Intermediality – the nature of an art form that has multiple sensory parameters that affect each other.

Listening – attentive hearing.

Omnidirectional sound – a sound that is spatialised from all directions at once.

Sonic cacophony – where the sonic parameters are so saturated that sound is stressful and cannot be fully comprehended.

Sonic clarity – where the sound is reserved, allowing each separate sound to be listened to without confusion.

Sonic environment – the sonic backdrop to which a listener becomes accustomed and does not listen attentively.

Sonic preparation – where a sonic barrage is prepared for with sonic subtlety.

Sonic subtlety – where a sound is reserved in one or more sonic aspects.

Soundlessness – not silence. A lack of any purposefully created sound.

Space – the way in which sound is positioned in direction, distance and height.

Spatial subtlety – the reserved use of directional sound and the listener's ability to distinguish discrete sound sources.

Spectral subtlety - Spectral subtlety occurs when the overall sound only occupies a limited range of frequencies.

Spectrum – the presence of frequencies in a sound.

Temporal subtlety – where shorter, inconsistent sounds occurring separately and consecutively, creating sparse textures.

Thematic subtlety – where the sonic subtlety occurs as a reference to itself in music, or it can occur with a character or situation in a film to create a connection with the sound.

Time – the durations of sounds.

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