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Experimental Turntablism
Live Performances with Second Hand Technology
Analysis and Methodological Considerations

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Declaration

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Abstract

In experimental turntablism, sound artists and musicians encounter not only the pre-recorded sound of the vinyl records, as is common in DJ culture and hip hop turntablism, but also accentuate the materiality of the records and turntables themselves. The thesis shows that the record player is itself the key concept within which each experimental turntablist unfolds an intricate dialogue between mediation and materiality. Through these media-specific practices, these sound artists raise to the surface the fact that our listening habits tend to dissolve the reproduction medium from our awareness. This thesis explores experimental turntablism in live performance and presents an innovative methodology that establishes the ideas and tools for a potentially generalisable approach to performance analysis for concerts using live electronics. The analytical framework, disclosing the medial and sensual significance of experimental turntablism performances in a digital era, broadens the perspective on sound with theories of performativity, materiality, mediality and instrumentality in electronic music. The thesis methodology includes performance analysis, artist interviews, video and audio recordings and interactive graphical transcriptions based on the current music analysis software EAnalysis.

Three case studies examine three distinct artistic approaches: the specific focus of each experimental turntablist varies from playing techniques, to sculptural objects, to mechanical operations. Joke Lanz's direct and embodied playing negotiates a sound production between signal and noise, musicalises samples, and leads to spontaneous acts with site-specific aspects. Vinyl -terror & -horror destruct playback devices and vinyl records to re-structure samples in chance processes; the duo accompany their sculptural objects with movie soundtracks and 'unfinished compositions' from their own records to engender cinematic soundscapes and imaginary scenes. Graham Dunning's turntable construction sequences patterned discs, which trigger auxiliary instruments through the turntable's rotary motor operations. These mechanical movements embody rhythmic loop structures with temporal inconsistencies, creating a mechanical techno.

Having been considered redundant following the introduction of digital media, the vinyl record has recently witnessed a revival. As a post-digital tendency, contemporary musicians using live electronics seek to recover tactile and physical actions in performance. This thesis shows the ways in which the turntable allows artists to develop personal instruments from ready-made products and to emphasise specific sensual-bodily aspects.

Introduction

Media technology[1] is omnipresent in our daily lives. This is reflected in media technology's relationship with culture and perception having become a growing research field in musicology, media studies and cultural studies (Katz, 2004; Saxer, 2016a). As Mark Katz (2004, p. 3) points out in *Capturing Sound – How Technology Has Changed Music,* the influence of audio recording technology is partly shaped by the inventions themselves but also by how dependence on these inventions manifests in human actions. Today we primarily listen to music via audio recordings or broadcasts rather than live performances: with reproduction and transmission media, sound has become detached from its time and place of origin (Benjamin, 1936/2008, p. 22; Föllmer, 2004, p. 81). From the 1930s on listeners seem to have dissociated the sound from its reproduction, and with the arrival of the CD around 1982 the medium was considered to have disappeared completely from the listener's awareness (Straebel, 2009, p. 1). Scholars speak of reproduced sound as a 'supplanting reality' (Chion, 1994, p. 103) or 'media reality' (Großmann, 1997).[2] Musicologist Helga de la Motte-Haber (1998) argues that the products of electronic media change the coordinates of the subjective 'present' and transfer us to a different place and time. As a consequence of these competing realities that have arisen through omnipresent technological mediation, de la Motte-Haber (1998) sees in art responsibilities to reconnect with the here and now:

> [T]echnologically defined fictitious worlds make it difficult to determine a here and now in our own existence. The more the events surrounding us can be simulated, the more does art have the task of enabling the perceiving subject to reflect on its own reality. [...] i.e. the function of surrounding life artistically, will become less important than the task of creating irritations in order to set off a process of reflection about perception itself, which seems necessary in order to enable us to rediscover our subjective position (p. 93).

De la Motte-Haber (1998) assumes that this task of facilitating reflections on perception is more likely to be realised in 'one of the technologically determined art forms [...] than in traditional concert music' (p. 93).

Experimental turntablism can be considered as an artistic practice that facilitates reflection on technological mediation. Media are considered to remain transparent and unnoticed (Krämer, 2008, p. 68). Yet by exploring the creative potential of turntables and vinyl records, musicians and artists of experimental turntablism interrupt the listener's focus on the 'illusion' – on the reproduced sound from the medium – , which reveals our relationship with the reproduction technology (Barthelmes, 1995, p. 15). Christian Marclay – who, as well as being a visual artist, can be considered one of the first contemporary experimental turntablists – states that his artistic approach generally includes reflection on mediation:

---

[1] Following media theorist and musicologist Rolf Großmann (1997), in this thesis mediation and media will solely refer to technological media (such as film, photography, audio reproduction and transmission devices) although I do not differentiate between electronic and electro-mechanical media. I also agree with Großmann (1997) that a change of media is not solely the introduction or replacement of a new medium but a 're-positioning' of the old medium.

[2] Großmann (1997) understands this secondary reality from a constructivist point of view, in which reality is understood as a construct and excerpt of the recipients' inner reality. The recipients construct each an individual reality from the media reality.

> With music, I want to disrupt our listening habits. When a record skips or pops or we hear the surface noise, we try very hard to make an abstraction of it so it doesn't disrupt the musical flow. I try to make people aware of these imperfections, and accept them as music; the recording is a sort of illusion, while the scratch on the record is more real. I want to question the recording medium itself, or any medium for that matter, be it a sound recording or text (Marclay in Estep, 2001/2014, p. 42).

Marclay's concept is to foreground the reproduction through imperfections that intentionally interfere in the listening process.

By abusing audio media, sounds of malfunction and distortion occur (for example, with a record player, an impulse noise occurring in the moment of dropping the tone needle on the disc). Caleb Kelly, in his study *Cracked Media* (2009), examines noise and sounds of malfunction in the practices of artists who re-use and hack audio reproduction technology such as turntables and CD-players. Kelly (2009) suggests four main definitions of noise (which are not absolutely distinct from each other): acoustic noise, noise in information theory, subjective noise, and material noise (pp. 69-76). 'Acoustic noise' is based on Hermann von Helmholtz's definition of noise as a sensation produced by the 'non-periodic motion' of a 'sonorous body' (Helmholtz, 1954, p. 7). In information theory, noise is defined in relation to communication. Noise interferes with the reception of a message but this interruption or extraneous signal itself can create meaning for the receiver (Attali, 2009, p. 27). Kelly (2009) also sees a record disc's inherent noises and pops as referring to the medium's heritage in a past era:

> In fact we forgive vinyl media for this flaw and even hear these noises with a sense of nostalgia, as they are marks created from listening to the record and remind us of times in the past when we played the music (p. 72).

Subjective noise only 'exist[s] in the ears of a subject' (Kelly, 2009, p. 73). This is relevant with regard to how a particular audience paradoxically find enjoyable features in the noise music genre whereas for other listeners this noise is unwanted and annoying. However, in the noise music genre, Kelly (2009) argues, noise is not considered in terms of information theory or subjective noise; instead, ‘these noises are quite simply noise no matter what the subject feels about the sound he or she hears’ (p. 73). Material noise, Kelly’s (2009) last category, is based on Michel Serres’ understanding of noise as the backdrop to all communication (pp. 74-76). Describing noise in the practices of cracked and broken media, Kelly (2009) states:

> Noise has been brought forward to become the actual content of much recent work in the area of cracked media. However, this practice need not be seen as transgressive, excessive, or even chaotic, contrary to much of the theoretical discourse around it. Although at times noise utilized in this way certainly is excessive, it is just as often quiet, gentle, low, and almost inaudible. [...] Noise is the backdrop to all communication, but in those instances when the backdrop is brought to the fore it is simply not disturbing or blotting out any information; it is not a break in communication, but instead becomes the content of communication itself (p. 82).

These theories and notions mainly oppose noise to a signal (or message); whereas, as a salient feature of experimental turntable practices, I see in noise a reference to the specificity of a medium. Noise and destruction are not the only focus of experimental turntablists but can be combined with individual artistic ideas and strategies. In order to obtain a broader perspective than would be provided by the focus on noise and ‘failed’ mediation, I here diverge from Kelly by taking the media’s specificity into account. The medium’s specificity is not only revealed by a disruption or noise that fails in transmitting a signal or message; the medium’s specific materiality and the development of distinct actions create medium-specific transformations.[3] This perspective will guide my considerations on experimental turntablism.

The media-specificity of music within modernity has been recognised since the early twentieth century. In the early 1920s, through his gramophone experiments, the Hungarian Bauhaus artist László Moholy-Nagy aimed for an ‘authentic record-music’ (‘authentische Schallplatten-Musik’) (Stuckenschmidt, 1985, p. 410). He used the gramophone to produce rather than reproduce sound by directly incising grooves into the disc with needles (Stuckenschmidt, 1985, p. 410). In 1930 Austrian composer Ernst Toch together with composer Paul Hindemith performed with gramophones a ‘characteristic music of its own’ (Toch cited in and translated by Katz 2001, p. 164),[4] which, in the programme of the Neue Musik Berlin Festival, they entitled *Original Works for Disc* (‘Originalwerke für Schallplatte’) (Katz, 2001, p. 162; Elste, 2016, p. 360). Toch and Hindemith manipulated the playback of their records presumably by playing them at various speed and blending several discs (Katz, 2001, p. 163), producing media-specific sounds (Elste, 2016, p. 364). Theodor W. Adorno (1928/1990a) observed a process of transformation of the reproduced sound when, due to a worn-out mechanical spring, a gramophone's rotation slows down; this 'breakdown' causes the reproduced sound to drop 'in chromatic weakness' (p. 55). In the 1930s Adorno also discussed 'radio-specific' and 'gramophone-specific music' (Adorno, 1934/1990b, p. 57).[5] He saw in the record's second characteristic – its 'thingness' – the potential for creating 'gramophone-specific music':

---

[3] Rolf Großmann (1997) and Volker Straebel (2009) also look at media-specific music.

[4] German original version: ‘eine ihr typische arteigene Musik’ (Toch, 1930, p. 222).

> Nevertheless, as an article, the record is already too old not to present us with riddles, once one forgoes considering it as an art object and explores instead the contours of its thingness. For it is not in the play of the gramophone as a surrogate for music but rather in the phonograph record as a thing that its potential significance – and also its aesthetic significance – resides. As an artistic product of decline, it is the first means of musical presentation that can be possessed as a thing (Adorno, 1934/1990b, p. 58).

The noise of a scratched record surface reveals the record as a material thing, and the changed pitch as a result of the playback speed alteration refers to a record player's idiosyncrasies. Either of these modifications is 'gramophone-specific' and draws the focus on the technological medium itself. These particles inscribed in the produced sound provide the medium with a presence or voice (Wilkins, 2011, p. 62). Film sound theorist Michel Chion (1994) describes such acoustic particles, indicating the idiosyncrasies of the sound production, using the concept of 'materializing sound indices':

> Materializing sound indices frequently consist of *unevennesses* in the course of a sound that denote a resistance, breach, or hitch in the movement or the mechanical process producing the sound. [... They] return the sound to the sender, so to speak, in accentuating the work of the sound's emitter and its faults instead of allowing us to forget the emitter in favor of the sound or the note itself (pp. 115-116).

After Chion, materialising sound indices can initiate an awareness of 'the sender' – in this case the reproduction device itself – and therefore interrupt the illusionary process of listening to the reproduction of an audio recording. In playback devices, the materialising sound indices, linked to the resistances and materiality of the medium, are therefore medium-specific.

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[5] 'German original version: 'rundfunkeigene' and 'grammophoneigene Musik', from the essay 'Die Form der Schallplatte', first published in 23 – *Eine Wiener Musikzeitschrift* 17-19 (December 15, 1934), pp. 35-39 and reprinted in Theodor W. Adorno (1984), *Gesammelte Schriften*, 19, pp. 530-34.

As Christian Marclay says, the materiality of the medium also creates specific conditions in the performance:

> One doesn't think of music as a physical reality, but it has physical manifestations. It can also be an illustration, a painting, a drawing. In a performance you have the visual presence of someone producing sound. In my work I'm constantly dealing with the contradiction between the material reality of the art object as a thing and its potential immateriality (Marclay in Curiger 1997/2014, p. 23).

Marclay highlights a general dichotomy apparent in the performances by experimental turntable artists using the specificity of the medium. By working with records reproducing sound (from a different place and time) and the material features of the turntables and records as physical things in the live performance, a contrast emerges between 'material reality' (Marclay) and 'media reality' (understood as simulated event, after de la Motte-Haber, 1998). In the more general practices of 'cracked media', Kelly in this regard observes a 'dialogue between these material objects and the nonmaterial nature of data' (Kelly, 2009, p. 218).

As Marclay indicates, the 'visual presence' of the performer producing the sound in a performance additionally plays a key role in this dialogue between media and material reality. Musicologist Volker Straebel (2009) describes 'performative' qualities in media-specific music for gramophone record and compact disc:

> It becomes obvious that the concept of gramophone-specific music is determined as much by the record's use as by its design. [...T]he performative aspect of any gramophone-specific music is hard to deny. For, when not being played, the gramophone record remains utterly silent, even more so as it lacks the possibility of being read and imagined like a score (p. 24).

The specificities and idiosyncrasies of the phonographic medium are related to the medium's materiality and use in the playback. Artists encounter the reproduced sounds from vinyl records, as well as the playback devices and objects themselves. The media-specificity can be recognised in the acoustic dimension as 'materialising sound indices' (Chion, 1994) and as distinct 'performative aspects' in the performance.

The abuse of sound media can be considered a reaction to and 'indirect critique' (Kelly, 2009, pp. 320-321) of the omnipresent modern technology that aims to dissolve the mediating processes from our awareness. Artists of experimental turntablism in this way provoke reflections on technology in de la Motte-Haber's sense. However, although the abuse of audio media has been considered one of the most important outcomes of twentieth-century art (Sanio, 2013, p. 237), its significances in performance have scarcely been investigated. Creative practices using record players and vinyl discs appear in various and individualistic performances, and in engaging with the medium's specificity they are guided by diverse artistic perspectives. My thesis takes off from the angle of media-specificity outlined up until now to study the multiple directions of experimental turntablism practices.

Experimental Turntablism – Terminology

In 1995 DJ Babu introduced the term 'turntablism' retrospectively to describe the creative use of turntables as instruments in hip hop music.[6] Although this term does not serve as a description of a distinct musical style, a majority of the DJ community would agree that 'a turntablist is a DJ that has moved beyond the ordinary role and become a musician playing the turntable (typically the instrument consists of two turntables and mixer)' (Hansen, 2013, pp. 44-45). From the late 1970s onwards, in parallel to hip hop turntablism, an 'experimental turntablism' began to grow. These artistic practices incorporate a broad range of approaches and forms of presentation; drawing clear lines is difficult in regard to such self-taught creative practices. As pointed out in Kelly's description of 'cracked media', experimental turntablism is not limited to the manipulation of the recorded audio content of the vinyl record. Experimental turntablists modify the recorded sound and extend their assemblage to the materiality of record players and vinyl records. This duality becomes the basis for developing an individual approach and personal instrument setup. By experimenting with individual approaches, each of these sound artists develops personal strategies and concepts for music generation and interaction with the instrument (Lippit, 2006, para. 2.1). The experimental turntablists at times also move away from using vinyl records and their sound production might entirely rely on the materiality of the phonographic medium.

Although Christoph Cox and Daniel Warner gather hip hop turntablists as well as experimental turntablists such as Marclay under the term 'DJ Culture', their scenes are generally considered as being completely separate (Kelly, 2009, p. 168; Lippit, 2006, para. 2.1). Asked in an interview by Daniel Neumann about the provenance of turntablism, turntablist Maria Chavez – who has been involved in both popular and experimental music scenes – highlights this separation:

> The history of the turntable is a known series of events, peppered with names of sound artists that used it in their works. It's just the later half of this history that is

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[6] See Katz (2004, pp. 115f) and the documentary by Pray, D. (Director), Blondheim, B. (Producer), & Meza, E. (Producer). (2001). *Scratch* [Motion Picture] USA: California or FilterHQ (10 May 2012)/*Scratch (HipHop DJ Documentary)* [Video file]. Retrieved from www.youtube.com/watch?v=YEKRAn-ZleM.

> most celebrated and capitalized on. As far as positioning my work goes, I really don't feel that my turntablism has anything to do with the DJ hip-hop culture, except for the fact that my first experience with the turntable was under a DJ context. As time went on and I pursued a DJ career, I began to get bored with the parameters that this culture was enforcing (Chavez, 2012, p. 10).

Approaching the technological medium in a nonconformist way sees the sound reproduction objects reinterpreted as physical materials, as is conveyed in distorted and manipulated sounds (Kelly, 2009). Yet there is no single agreed term to denote these heterogeneous practices. The term 'experimental turntablism' is used in Kelly's study *Cracked Media* (Kelly, 2009, p. 151) and in Thom Holmes' historical study *Electronic and Experimental Music* (Holmes, 2008, p. 421). Other terms in use are 'abstract turntablism' (Chavez, 2012, p. 17; Holmes, 2008, p. 425; Ody, 2009) and 'avant-garde turntablism' (Katz, 2004, p. 45). In *Capturing Sound* (2004), Katz analyses contemporary practices in hip hop turntablism and briefly mentions 'avant-garde turntablism' in regard to Christian Marclay. Katz's term might emphasise similarities between artists such as Marclay and earlier predecessors in the avant-gardes of the twentieth century. However, the self-taught contemporary turntablists share disparate historical influences without following any agreed manifesto.

My choice of the term 'experimental turntablism' is informed by the turntablists' being associated more with sound artists in the experimental and improvisational music scene than with performers for popular music audiences (Holmes, 2008, p. 422; Lippit, 2006, para. 2.1). The agents of experimental turntablism are composers, performers and inventors, yet they often refer to themselves as sound artists without predefining the format of their artistic output. The turntable is an easily transformable device for multiple areas, whether as a sculpture, an instrument or a sequencer for studio music production and live performances. The practices in question are most commonly presented in live performances but also appear in sound installations, collaborations with orchestras, live music for movies, and with plays in the theatre. The experimental turntablists are not reliant on a professional musical education and can come from various backgrounds: for example, Christian Marclay, Martin Tétreault, and Greta Christensen and Camilla Sørensen of Vinyl -terror & -horror all come from a visual arts background. Performances are rich in variety and might demonstrate allusions to sound collage, noise music and electronic dance music whilst also engaging improvisation and indeterminacy, depending on the artist and the performance. The audience size for live performances of experimental turntablism can vary greatly, rarely exceeding 200 people and sometimes as small as five. The venues vary just as much as the audiences, from galleries and churches to illegal rooms in unused buildings (Kelly, 2009, p. 3).

Kelly's (2009) general description of cracked media is also appropriate for experimental turntablism practices:

> Cracked media slides across disciplines, between music, sound, and noise. It is part of the wider project of sound in the arts, an area that has recently been receiving attention from a range of different disciplines (p. 13).

The term 'experimental turntablism' should therefore be understood as a loose designation, acknowledging the openness of the practice. It should also be considered in respect of Cox and Warner's notion in *Audio Culture*, that 'the lines between improvised music, experimental music, and electronic music are increasingly blurry' (Cox & Warner, 2013, p. 252). Nonetheless, experimental turntablism's historical lineage and concepts seem linked to John Cage and, through Cage, to certain related experiments before him. The subtitle of this thesis – *Performances with Second Hand Technology* – alludes to a key characteristic of the turntablists of today: the re-use and recycling of outdated and found objects as instruments, which puts an emphasis on the technological objects' materiality and secondary qualities (as will be explored in Chapter 1).

Precursors and Historical Context

The historical lineage of composers, artists and experimenters using the record player artistically can be traced back to the beginning of the twentieth century. Contemporary turntablists might not have been aware of any of these historical forebears before starting their own projects, although single works might on the other hand have served as inspiration. An extensive historical overview of early ideas and experiments going back to the invention of the phonograph can be found in Mark Katz's 'Hindemith, Toch, and Grammophonmusik' (2001) and his later book *Capturing Sound* (2004). Kelly's study *Cracked Media* (2009) follows in particular the historical steps from John Cage to Milan Knížák, Marclay and contemporary sound artists such as Lucas Abela. Although Kelly (2009, p. 81) acknowledges the unique ways of producing sound using turntables, his study does not give a detailed account of the resulting music. Thom Holmes' *Electronic and Experimental Music* (2008) provides brief descriptions of a number of 'abstract turntablists' such as Philip Jeck, Christian Marclay, DJ Olive (Gregor Asch), John Oswald, Marina Rosenfeld, DJ Spooky (Paul D. Miller) and Otomo Yoshihide.

As it is experimental turntablism's historical lineage that, in the literature to date, has been foremost explored, my thesis does not focus on the historical context of experimental turntablism. Nevertheless, a brief outline of historical precursors and their approaches will now provide a useful contextual background for comparisons with contemporary practices and the discussion of methodology and case studies later in this thesis.

Hungarian artist László Moholy-Nagy was one of the earliest experimenters to explore the creative potential of gramophones, from 1923 on (Stuckenschmidt, 1985, p. 410). Together with Hans Heinz Stuckenschmidt, Moholy-Nagy played records backwards (particularly records with piano for 'surprising effects'), drilled excentric holes into the discs for a de-centred and wobbling playback (to create 'grotesque glissandi') and scratched the surface with needles to create 'rhythmic figures and noises' (Stuckenschmidt, 1985, p. 410). In an article of the *Musikblätter des Anbruch* (1926), published earlier in *Der Sturm* (1923), Moholy-Nagy lists a series of ideas on how to study the gramophone. One of his ideas, the one most discussed, is his suggestion for developing and applying a 'groove-script alphabet' (transl. in Katz, 2001, p. 167). By cutting graphical signs directly into the wax plate Moholy-Nagy saw the possibility of a compositional tool for the production of new sounds. To create further incitements through unexpected results he also advocated gramophone improvisations (Moholy-Nagy, 1926, p. 366). Moholy-Nagy's approach included the use of the medium's materiality to manifest compositional elements whilst embracing chance and improvisation, and this makes his early gramophone experiments comparable to contemporary practices in experimental turntablism, as will be shown in the course of this study.

The impulse for Moholy-Nagy's study of the gramophone for sound production rather than reproduction appears to originate in an intention to pursue and extend the Bruitists' sound explorations (Moholy-Nagy, 1926, p. 364). In this respect Luigi Russolo's 1913 Futurist manifesto 'L'arte dei rumori' ('The Art of Noises') and Russolo's performances with his intonarumori as 'noise intoners' (Kahn, 2001, p. 56) might have directly encouraged experiments with record players. The Dadaists' work with assemblages, collages, cut-up and 'sampling' ideas in literature might have provided further inspiration (Feuerstein, 2004, p. 257). The Dadaists also included chance and improvisation techniques (Livet, 1977, p. 8) while questioning the established performance forms, challenging the viewer's perception and the experience of performer/audience roles (Feuerstein, 2004, p. 257). Next to Moholy-Nagy, other composers and performers, such as Darius Milhaud, Stefan Wolpe and Edgard Varèse, experimented with record players in the 1920 and 1930s (Davies, 1996, p. 9). By contrast with Moholy-Nagy's inclusion of the medium's materiality, though, these composers' use of the turntable was mainly based on the use of pre-recorded sound from records (Katz, 2001, p. 168).

The previously mentioned gramophone pieces by Paul Hindemith and Ernst Toch are the first compositions specifically developed for the playback device. Before these works' performance in 1930 at Neue Music Berlin (Katz, 2001; Elste, 2016, p. 360), ‘original music for the radio’ or other concerts using unconventional instruments were also shown in a series of annual contemporary music festivals in Germany (Katz, 2001, p. 162). Although the original discs for Toch and Hindemith’s composition have disappeared and their form of presentation cannot be reconstructed, there are indications that in the performance several discs were blended in a mix and records were played at varied speed to produce pitch and timbre alterations (Katz, 2001, p. 163). Already in 1926, Toch published an article alongside Stuckenschmidt and Moholy-Nagy in the special edition of *Musikblätter des Anbruch* on mechanical music, in which he considers the potential and specificity of music for mechanical instruments. Hansjörg Dammert’s (1926) piece in the same edition – suggesting new possibilities for polyphonic compositions by using the gramophone as an orchestral instrument accompanying ‘real’ instruments in concerts (p. 407) – might have spurred Toch to compose a ‘characteristic music of its own’ for gramophone in 1930.

As Katz points out, these early gramophone experiments seem only to link to later works and practices with record players by way of Cage. As a young student from the United States, Cage visited Berlin and attended Hindemith and Toch’s 1930 concert. Yet he only mentioned his admiration for Toch’s gramophone piece later in his career in a conversation with Toch’s grandson (Katz, 2001, p. 176; Weschler, 1996). However, the 1930 performance may well have had an influence on Cage, as only nine years later his *Imaginary Landscape No. 1* used record players to accompany a muted piano and a large Chinese cymbal (Zeller, 1990, p. 113). Cage used test tone records with sine tones on two turntables and applied pitch alterations by playing the discs at variable speed, a similar technique as Hindemith and Toch applied. Cage continued to write for record players along with other playback and broadcast devices. The record player appears in several works, such as the series *Imaginary Landscapes*,[7] *Credo in Us* (1942) and *33 1/3* (1969). Cage also introduces a new way of approaching the record player without using any pre-recorded sound from records. In *Imaginary Landscape No. 2 (March No. 1)* and *Imaginary Landscape No. 3*, for example, he used the record player’s tone arm to amplify a variety of percussion instruments and objects, such as ‘tin cans, conch shell, ratchet, bass drum, buzzers, water gong, metal wastebasket, and lion’s roar’, and to combine the sounds with oscillators. The record player serves there as an electro-acoustic quasi-percussion instrument. In the live performances of *Cartridge Music* (1960) with David Tudor, the duo deployed the record player in a similar percussive way by replacing the stylus in the cartridge with objects such as feathers to create amplified sounds (Kelly, 2009, p. 114). Such live performances with record players apply the phonographic medium in a comparable way to contemporary experimental turntablism concerts.

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[7] See *Imaginary Landscape No. 2 (March No. 1) (1942); No. 3 (1942) and No. 5 (1952).*

Pierre Schaeffer's early *musique concrète* pieces from 1948/49, collage works in the spirit of early surrealist experiments,[8] were first realised with fixed sounds on record discs and several turntables.[9] Among these pieces, two 'experiments in interruption', the 'closed groove' and the 'cut bell', particularly set the bedrock for the development of *musique concrète* (Chion, Dack & North, 2009) and were at this time specific to the use of records. For these manipulations of the recorded sounds, Schaeffer used a direct-to-disc cutting lathe available in the RTF radio broadcasting studio, available to him through his work as a radio technician (Holmes, 2008, p. 49). The recorded 'concrete' sounds of trains and engines were cut into a 'sillon fermé' – a closed or locked groove – creating the repetition of the groove after one rotation in a loop (Holmes, 2008, p. 50). In Schaeffer's 'cut bell' experiment, the attack of a resonant bell sound was cut away so that the remaining excerpt, in combination with the closed groove, sounded similar to a continuous flute sound (Chion, Dack & North, 2009, p. 13). Today, these modifications used to create isolated excerpts of recorded sound can be realised via tape or digital technology; but in 1948 Schaeffer required a cutting lathe to modify the grooves directly through the groove cutting process of the recorded, concrete sound. Schaeffer's methods in his early *musique concrète* pieces have been inspiring for some contemporary turntablists, such as turntablist Ignaz Schick (2009). Collage works in general, although not realised with the record player, provided impulses for the manipulation of recorded sound, as in the early radio play *Weekend* (1930), realised with optical sound film by Walter Ruttmann, or Karlheinz Stockhausen's *Gesang der Jünglinge* (1955–6), which unites electronically synthesised and 'concrete' sounds. Marclay has in this regard mentioned his fascination at a young age with the Beatles' collage work 'Revolution 9' (1968) from the *White Album* (Marclay in Kahn, 2003/2014, p. 17).

Starting in the 1960s, the Fluxus artists emphasised the specific sculptural and material features of records and record players through destruction and damage, directing the audience's focus at the same time onto the value of the artefacts. Fluxus artists Nam June Paik (*Random Access* or *Schallplattenschaschlick*, 1963/1979) and Milan Knížák (the *Destroyed Music* series from the 1960s) in particular paved the way for this artistic direction. Knížák modified and destroyed vinyl discs by taping, painting, burning, breaking and gluing broken parts back together again to achieve a rich palette of sounds (Kelly, 2009, pp. 142-149). By gluing four quarters of various discs together, Knížák created cut-up records that also create rhythmical structures specific to this restructured disc.

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[8] Pierre Schaeffer in an interview: 'Oui, au début c'était des formations, c'était des coupures, c'était des collages comme lors des premières expériences surréalistes' (Schaeffer in Fouchet, 1959).

[9] See, for example, Pierre Schaeffer's pieces *Cinq études de bruits* (1948) and *Suite pour 14 instruments* (1949).

In popular music, the turntable and records also appear with a subversive quality. Katz (2004) considers the instrumental use of the record player in hip hop, starting in the late 1970s, an act of subversion, since scratching techniques reorient the original purpose of playback devices from reproduction to production (p. 132). For post-punk and industrial music bands the nonconformist and destructive use of media devices served more directly as a tool of revolt against commercialism. In the late 1970s and 1980s, artists such as Throbbing Gristle, Psychic TV and Merzbow were strongly inspired by William Burroughs' (1970/1998) ideas concerning cut-up methods for tape as described in *The Electronic Revolution* from 1970 (Kopf, 1997, p. 26).[10] These artists' interests included sparking a revolt with extreme sounds and visuals and the shock and surprise of audiences through unusual setups (Hegarty, 2013, p. 135). The musicians of Cabaret Voltaire, for example, aimed to use the 'clichéd sounds and sights of heavy industry' to oppose pre-designed, mass-produced devices with 'the more subversive dirt of reality', as the band's singer Stephen Mallinder (2013, xi) states. Experiments with vinyl records, by artists such as Boyd Rice of the industrial music band NON, directly inspired the contemporary turntable artists Janek Schaefer (2001, p.75) and Lucas Abela:

> In the late '80s when I first read the *Industrial Culture Handbook* I read about Boyd Rice and him chopping up records and drilling holes in records.[11] Because I couldn't buy a NON record [Boyd Rice's group] I repeated the experiments that I read about: chopping records in half, flipping them around, and drilling holes so they'd play off-axis. That's the first turntable stuff that I did but it was just to emulate Boyd Rice (Abela in Prescott, 2011).

Starting in the 1970s/1980s, the questioning of the vinyl record's meaning through the abuse of its media technology also played a role for experimental turntablists. In 1979 visual artist Marclay started his diverse work with turntables and records as a reaction to the abundant consumption of records as corporate commodities of the music industry (Marclay in Gordon & Marclay, 2005/2011, p. 157).[12] Particularly influenced by Fluxus, punk and no wave, the Swiss-American artist includes modified records and record players in sculptural works and improvised performances. His general concepts seem consistently to emphasise the close relationship between the visual and auditory dimensions (Bossis, Marclay & Dufeu, 2013). Marclay also conceptually explores the medium itself and its imperfections. As the phonographic medium usually takes a backseat, Marclay also foregrounds the medium itself by exploring its materiality and idiosyncrasies. This concept is particularly evident on his LP *Record Without a Cover* (1985). Marclay released this record without a sleeve so that the surface becomes damaged. When this record is played, these surface scratches and imperfections create pops and noises that draw the listener's attention to the vinyl record's material surface.

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[10] See for example 'TO DISCREDIT OPPONENTS' in Burroughs (1970/1998, p. 19).

[11] See for example NON [Boyd Rice] (1981), *Pagan Muzak*, [7-inch Vinyl record]. US: Graybeat Records – GB 3301. (Originally released in 1978 as GB 3000, a record containing locked grooves and two holes for off-axis playing).

[12] In 1976 Marclay went to the US for the first time to visit a summer course at Harvard University. He then spent fall 1977 in New York (Marclay in Kahn, 2003/2014, p. 17).

Although it is Marclay who is the most well-known performer with record players in experimental turntablism, independently of him in the late 1970s/1980s on several continents various artists started experimenting with turntables, further exploring the specificities of the medium. In the 1980s, turntables were explored by Martin Tétreault in Canada (Fortier, 2013), Gum and Vicky Browne in Australia (Kelly, 2009, p. 178), Philip Jeck in the UK,[13] and Otomo Yoshihide in Japan (Kelly, 2009, p. 188). In Germany in the early 1970s, Claus van Bebber included the turntable in his repertoire for improvised concerts and focused particularly on it from the 1990s on.[14] Techno music producer Thomas Brinkmann in the late 1970s started an entirely rhythm-focused approach by cutting the record surface with a cutter knife to transform the record player into a sequencer for rhythmic beats (further details in Chapter 5, see also the list of contemporary experimental turntablists in Appendix B).

From the 1990s on, the practices of experimental turntablists can be linked to post-digital movements (Kelly, 2009, p. 320). With the proliferation of digital technology and the increasing use of computers in performances, countermovements started to return to sound production its absent tactility and direct access (Essl, 2007; Richards, 2008). Performances with laptops, despite the universal functions and possibilities of this device, have created some discontent about their lack of engagement (Armstrong, 2006; Stuart, 2003). In his book *Handmade Electronic Music: The Art of Hardware Hacking* (2006), Nicolas Collins emphasises that what 'the computer offered in the way of power and universality was obtained at the expense of touch.'[15] As a consequence, many sound artists look for possibilities to treat sound in a direct and intuitive manner. The simple application of the technology's seemingly limitless possibilities in this way becomes questioned (Bosseur, 1996, p. 245). The 'post-digital tendencies' (Cascone, 2000; Richards, 2008) in sub-genres of electronic music, such as 'lo tech' and 'circuit bending' (Essl, 2007), unearth alternative concepts of music creation by hacking DIY electronic circuit systems or electronic objects (such as speaking dolls and Walkmans). Artists choose and design limitations and manufacture individual equipment, and thereby regain direct control over technological processes. As new technological inventions are easily accepted in society often without reflection or critical discussion (Bartmanski & Woodward, 2015, p. 165),[16] personalised DIY instruments challenge conventions in our Western culture with their unconventional practices of re-inventing and recycling electronic technology. In comparison to a sterile and wireless design such as that of laptops, handmade instruments appear imperfect. John Richards (2008), exploring the idea of ‘dirty electronics’, emphasises that this dirtiness determines the interaction with the electronic instruments and links the often unfamiliar sounds with playing techniques. The sound production becomes more comprehensible for the audience.

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[13] See Philip Jeck's biography (Jeck, P. Biography. Retrieved from http://philipjeck.com).

[14] See Claus van Bebber's biography (Bebber, C. van, Vita. Retrieved from www.cvbebber.de/html/vita.html).

[15] See Collin's website *Nicolas Collins.* Retrieved from www.nicolascollins.com/handmade.htm.

Turntablist Christian Marclay, however, says that, despite these more recent developments, performances with records and turntables have lost their significance:

> The reason for not performing so much any more with records and turntables has to do with the relevance of the instruments. In the early 1990s, with the advent of the digital, I started questioning what I was doing, and then there was a revival of the vinyl record through this DJ culture, it started booming just as I was ready to quit. So I got this second wind, but now, even though there’s still a thriving DJ culture, it doesn’t seem to be as relevant as it was, it has become a tired fad (Marclay in Toop, 2008/2014 p. 63).

Due to the numerous lives the vinyl record has had during its history (Bartmanski & Woodward, 2015, p. 1), the meaning of Marclay’s work with records and turntables has changed (Kelly, 2009, p. 170). As the record has usually been handled with care, in the late 1970s, when Marclay came to the USA, he felt shocked by the overt presence of consumerism he saw there in the abundance of apparently unwanted, cheap records in thrift stores: Marclay started his work with records at that time as a reaction to this experience: ‘Before that, the record was something I was taught to respect and preserve. But in the States everything was about consumption and I was reacting to that as well’ (Marclay in Gordon & Marclay, 2005/2011, p. 157). However, in the 1980s and early 1990s the CD format became the new mass music product of choice and the vinyl record was considered obsolete, before DJ Culture and electronic music underground ‘rejuvenated’ vinyl in the 1990s (Bartmanski & Woodward, 2015, pp. 20-25), which gave Marclay his ‘second wind’ (Marclay in Toop, 2008/2014, p. 63). Within the past ten years, a new upward trend in record sales has helped give the vinyl record another comeback and a third life as a niche product, which may be its remaining position (Bartmanski & Woodward, 2015, p. 28).

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[16] See, for example, new media formats, mobile and internet-based ways for communication, consistent upgrades of computer soft- and hardware, whereby new devices are often not compatible with media or devices of the former generation.

The turntable's attribute of binding sound to the physical material in a specific way, which is hardly found in digital instruments, still appears as an asset for contemporary turntablists, as Joke Lanz states:

> What I personally miss nowadays is the organic feeling for a body and the homemade ideas and constructions. Since computer technology found its way into the nursery, many brains have been synchronized. The speed of internet has definitely improved the quantity of outputs but for sure not the quality (Lanz in Sienko, Lanz & Marhaug, 2012, p. 20).

In today's digital age of 'bodiless' audio file formats (such as MP3 or WAV) that are streamed online and stored on computers or physical media players, musicians such as Lanz appreciate sound material that is tangible, malleable and destructible – sound that comes with a physical representation. In comparison to digital data and software, vinyl records and turntables offer something singular through their 'thingness and unique pragmatic qualities' and their human qualities as a fragile object, making them 'cutting-edge' again (Bartmanski & Woodward, 2015, p. 68). However, the vinyl records' complex nature can be looked at from many points of view:

> In the end it may be hard to put the finger on what it is that makes vinyl special. There is no singularly overpowering 'cause' or condition of infatuation with vinyl. Rather, it's more holistic emergent experience, uniting various senses around a piece of music. It is about entire sensory formation and its histories, not about any one narrative or sentiment, be it nostalgic retromania or hipsterish snobbery (Bartmanski & Woodward, 2015, p. 98)

Beginning with its precursors that were available to a number of composers and performers throughout history, such as the gramophone, the records and record players seem to have remained a playback medium with the potential for conveying multiple meanings. Its use in particular as an instrument to create media-specific music leads to a variety of directions for artistic output, as this study will show.

Focus and aims of this thesis

Experimental turntablism describes heterogeneous practices. In order to narrow the focus of this study, I only address herein live performances as the most abundant and therefore most cross-comparable format. The goal of this dissertation is to analyse the interdependencies and multifaceted significances obtaining within the threefold relationship between the turntable's and record's specificity, the artist, and the live performance. A detailed insight about Marclay's improvised concerts is provided in the study by Bossis, Marclay and Dufeu, 2013; yet it is not extensive enough to draw an accurate picture of how Marclay works within the media and performative specificities, and is only engaged with the artist's practices without aiming to discuss more generally the salient attributes of this art form.

My thesis has several aims. My individual artist examinations seek to receive deeper insight into how the turntable's and the record's specificity permeates individual artistic practices and live performances. As a countermovement in the digital era, it seems that live performances of experimental turntablism convey medial and sensual meanings facilitating reflection on technological mediation; revealing these entanglements will contribute to an understanding of the conditions for that reflection. In order to analyse the interdependent relationships obtaining within the turntable's and record's media-specificity, this thesis also aims to develop a thorough and innovative analytic methodology for experimental turntablism, with a particular focus on practice-based concepts and live performances.

The key features in the turntable's and record's specificity in performance are the physicality of the mechanical rotation, the plasticity of the record disc, the engraved grooves in the record surface, the needle transducing graphical contours into vibration, the pickup cartridge transforming and amplifying the needle's movements into signals for the loudspeakers and the performer's body halting, manipulating and controlling the device. In performance these features are visible and palpably present. In experimental turntablism the artists use these specific features to create an interplay between material and media realities or else to work solely with the medium's materiality. This emphasis on materiality foregrounds the device's and material's specificity and hence the mechanisms behind the media reproduction. Central to my study are therefore the following research questions:

1) In what ways are the artists' strategies and concepts a product of their encounter with the medium?
2) In what ways are the artists' playing techniques the product of their encounter with the medium?
3) How do the artists' strategies, playing techniques and intersections with the performance environment work together?
4) How do these synergies allow the audience to reflect on the mediated processes?

Since experimental turntablism is a distinct practice, the theoretical dispute concerning experimental turntablism requires that we look at single examples. Experimental turntablists present the negotiations between media and material reality in highly individualised ways. The aim is therefore to scrutinise how the individual artistic practice and the particular performance implement and emphasise the media-specificities. The individual artist's encounter with the medium and its specificities results in distinct performances. The approach of my study is therefore to explore the role of the turntable in three concerts of experimental turntablism with a focus on the relationship between media and material realities. By analysing three case studies (see Chapter 3-5), the research questions are addressed in due detail. These three analyses also facilitate the formulation of a general theory underpinning these artistic practices.

I chose three different experimental turntablist artists to analyse in three live performances with the intention of representing a wide range of possibilities and individual approaches. Due to the heterogeneity of sound material and musical style in this art form, each of which can change with each concert, the focus on the artists' practices for the selection of case studies provides a more continuous criterion. Drawing on Straebel's (2009) differentiation between media-specific approaches in the use of the CD, used either for its performative features or for the creation of sculptural objects, I distinguish between three similar (albeit partly overlapping) approaches or focuses that turntablist artists might emphasise in their practices:

- **Case Study 1 – Joke Lanz, Interaction and Playing Techniques**

Joke Lanz demonstrates a focus on manual interaction with a standardised DJ setup of two turntables and a DJ mixer to develop distinct playing techniques. In this case study performative aspects can be examined, that relate the performer's 'embodied playing' to the simplistic turntable setup and to his incorporation of spontaneous ideas in the performance situation.

- **Case Study 2 – Vinyl Terror and Horror, Sculptural Objects (Camilla Sørensen and Greta Christensen)**

The duo 'Vinyl -terror and -horror', who have a background in the visual arts, focus on records and turntables as sculptural objects, which inform the duo's use of sound effects from horror movies. Vinyl -terror and -horror's preparations of turntables and records, such as a turntable tower and a baked record, make a strong case for scrutinising the interdependencies between specific material properties and the resulting sounds and structures.

- **Case Study 3 – Graham Dunning, Mechanical Operations**

Graham Dunning's 'Mechanical Techno'[17] turntable setup transforms the device into a modular sequencing apparatus that is joined with additional instruments, such as synthesisers, and several delay effect devices. By focusing on the turntable's rotating motor, Dunning explores mechanised sequences, repetitions of rhythmic patterns and superpositions of several modules. The case study allows us therefore to analyse the turntable's specific cyclic movement in an interplay with prepared 'patterned discs' that create imprecise rhythmic figures.

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[17] This title is used by the artist, see for example on his webpage: Dunning, G. *Projects – Mechanical Techno: Ghost in the Machine Music.* Retrieved from https://grahamdunning.com/portfolio/mechanical-techno-ghost-in-the-machine-music.

As the artists of experimental turntablism prevalently focus on improvised live performances, a challenge for the analyst is the general lack of written sources and recordings. Experimental turntablism performances require distinct methodological considerations concerning the analytical tools applicable to this eclectic practice. My methodology and analyses aim to provide a bedrock for a better understanding of performances, in which artists focus on the 'materiality of the sound and its sound producer' (Nauck, 2012, p. 8). 'Building the instrument' is here to be understood as part of composition (Nauck, 2012, p. 8). Studying the artists' instrument creation provides indices of predetermined and compositional elements, which my thesis will highlight.

The methodological considerations herein encounter general issues concerning materiality, mediality and instrumentality, elucidating this interplay of media and material reality in live performance to reveal the appropriate means and entanglements. Since experimental turntablism unifies manifold concepts, one of the key outcomes of the study is demonstrating the versatility of musical directions and individual approaches in this practice. My thesis stresses that we should consider not only the specificity of the medium but also the specificity of each performance.

My study encompasses interviews with the turntablists, video recordings, and analyses of the live performances, the latter including the preparation of several interactive graphical transcriptions as a type of listening score accompanying each concert analysis (see movie files in Appendix C). These graphical representations, developed with the software EAnalysis, support a listening focus on the sounds in parallel to the concert video of the performing artist. As an illustration, that can be understood intuitively, of distinct sounding events, the graphical representation supports the discussion between analyst and reader around the sound elements. The design of the software allows the allocation of events in the video to the intensities in the frequency spectrum of the audio recording shown in a spectrogram parallel to the video. The support of this software is crucial to discuss concepts of mediality (liveness) and materiality (embodiment & presence) in dependence on the turntable's sound possibilities. I differentiate between three main sound possibilities that turntablists can produce via the turntable: mediated sounds (reproduced sound from records, samples), manipulated sounds (reproduced sound that is manipulated live in concert) and abstract sounds from the medium itself (live produced sounds independent from the audio content on vinyl records). The close study of ‘instrumental relationships’ and embodiment in the sound production reveals how experimental turntablists create and accentuate correspondences between material and sonic dimensions, which indicate compositional elements.

One of this study’s main contributions to knowledge is the development of an analytical methodology and theoretical bedrock, tailored to individualistic and improvised turntable performances. The analytical framework, using general points of orientation adapted from theatre studies, provides tools applicable to further studies of performances with live electronics. This set of methods and tools can therefore contribute to musicology’s growing research interest in the area of performance studies. The AHRC Research Centre for Musical Performance as Creative Practice (CMPCP) in the United Kingdom and the ICASP-Projekt in Canada (Improvisation, Community, and Social Practice), for example, have recently been concerned with the study of performance and improvisation as well as with the political, cultural and ethical dialogues between these practices. My methodology and detailed analyses illuminate the relationship between artist, instrument/medium/object, and performance and might be useful for the research of electronic instrument design.

Structure

This thesis on experimental turntablism is organised into two parts. Part I (Chapters 1 and 2) focuses on general theoretical and methodological considerations. Part II (Chapters 3 - 5) then applies and develops these insights in the individual case studies.

Chapter 1 examines the turntable as an instrument by tracing the experimental turntablists’ motivations and the technical and practical characteristics of the medium. Contemporary practices are discussed mainly in reference to Lévi-Strauss’s concept of bricolage, which shapes the artists’ instrument creation, sound production based on vinyl records and turntables (related to samples and the material objects), and live performances. As the turntablists’ performances implement improvisation and indeterminacy, the last subsection considers issues of liveness in the light of process-product binaries, the tension between freedom, structure and accident, and the aesthetics of imperfection.

Chapter 2 discusses the methodology used for the case studies’ analyses. The emphasis in experimental turntablism on live performance sees the study implement ideas from theatre studies which facilitates the acknowledgement of the concerts as unique events and an approach to the artists’ use of technology as part of a feedback loop. The analytical methodology for investigating improvised live electronic performances uses as a starting point a study of Marclay’s performances (see Bossis, Marclay & Dufeu, 2013) and develops a twofold framework featuring an 'External Study' and an 'Analysis of the Performance'. The 'Analysis of the Performance' encompasses two different perspectives: a perspective dedicated to the sound produced by the artists (criterion 3) and a perspective focusing on the materiality and mediality of the performance (criterion 4). I round off the chapter with an outline of appropriate tools for the developed framework, such as graphical representations with the software EAnalysis.

Each chapter of the case studies is structured according to the framework presented in chapter 2: first painting a picture of the artist and her/his instrument in an 'External study' (maintaining from the artist an appropriate critical distance) and then analysing the performance (see also concert video and graphical representations in Appendix C).

Chapter 3 on Joke Lanz demonstrates how Lanz's musical dialogue between noise and signal is bound up in his sample choice and playing techniques. Lanz mainly works with mimetic effects in terms of the acoustic properties of the samples, the manipulated samples and abstract sounds; he brings this into a structure of rhythmic developments, transitions and interruptions, mixed at times with semantic dimensions for moments of absurdity and surprise. Overall the spontaneity and embodiment through the performer's actions characterise this concert as presenting a tension between pre-recorded and live sounds.

Chapter 4 illustrates how Vinyl -terror & -horror apply the 'horror topic' (related to the horror movie genre) to create emotional and fictional soundscapes that are convoluted with rough and eerie sounds and the aesthetics of failure. The temporary opacity of the sound production might reinforce the effects of the sounds on the listeners' perception, while confronting the audience at the same time with the horrific appearance and sounds of the sculptural objects.

Chapter 5's performance analysis of Graham Dunning demonstrates how the mechanical function of the turntable, the rotating platter, is not only emphasised in its use as a step sequencer but also in its meta-dimension. The instrument's materiality and mechanical rotation, however, causes rhythmic imprecision, highlighting the turntable's mechanicalness in sensual loops of rhythmic patterns. Dunning's performance demonstrates a union of minimal techno and experimental music.

I conclude by relating the results of the case studies and diverse turntablists' practices to each other. With a deeper understanding of materiality and mediality in experimental turntablism, the significances of this practice can be discussed from more diverse perspectives.

In appendix A I gather supplementary documentation material for the case studies that can be studied by the reader. Including these tables and pictures in the main body of text would have disrupted the flow of the thesis. For an overview of the artists associated with experimental turntablism, I provide a basic list of names and webpages in appendix B. Although it was not the goal of this study to gather detailed information of all existing turntablists, this limited list might give an impression of the extent and international distribution of their practices. Appendix C provides videos of the graphical representations of the case studies' performance analyses. These accompany the analyses of the case studies and provide visual material for discussions on the details of the performance.

Part I

Theory & Background

1. The Turntable as an Instrument

In experimental turntablism, the sonic dimension is extended through ‘material matters’. The duality of the materiality of the phonographic medium and the immateriality of the sounds emphasises the interdependency of artist, instrument and performance. In answering my research questions, then, and in developing a methodological approach for the analyses, the first step herein is to present the key features and mechanisms of these individual practices. Over the past twenty years, an increasing number of artists have explored this playback medium in various directions. This chapter will accordingly examine the experimental turntablists’ practices from several vantage points, gaining insight into the initial instrument design or making processes, approaches to sound production, and the implications of live performances. In this way this general overview will establish unifying ideas operating at a background level which provide a foundation for the methodological considerations of Chapter 2 and the single case studies.

1.1 Bricolage – Instrument Creation

The artists’ reuse of turntables in experimental turntablism appears to be governed by the search for new sounds, new combinations, and new modes of presentation, similar to the unconventional use of traditional instruments, such as the prepared piano (Patteson, 2016, p. 5). One of the precursors of this tendency was Erik Satie. In 1914, he prepared the piano by inserting paper between the strings for a private performance of his piece *Le Piège de Méduse* (Butler, 2000, p. 15). Henry Cowell and John Cage extended the piano’s sound palette by putting screws and other objects between the piano strings (Braun, 2006, p. 53). In this regard, Cage’s re-use and preparation of electronic media, such as record players, appears in line with his experiments of acoustic instruments, which primarily focused on the search for new sound possibilities:

> Like many others before me, from Russolo to Varèse, I looked forward to an exploration of sound by new technological means: machinery, electricity, film and photoelectric devices, the invention of new means and new instruments. However, I determined to exercise patience in this regard, because I knew that the equipment required was either not existent or not available, being, if existent, expensive and under the control of large commercial companies. I decided, therefore, to work with whatever producing means came my way, and always to have one ear to the ground in search of a new sound (Cage, 1948/1992, p. 10).

As was the case with Cage, experimental turntablists deploy affordable and available technological means. These artists often acquire their devices and records second hand from flea markets, car boot sales or thrift shops, as Christian Marclay describes:

> It was part of a financial situation. I could only afford records in thrift stores. Then you could find wonderful things, but now everything is a collectible. I like the recycling idea – using the stuff that people don't want anymore, and make new music out of it. There was an element of looking back and listening to your parents' records and doing something with that stuff. Sort of acknowledging the past while rejecting it at the same time (Marclay in Gross, 1998).

Through the discovery of forgotten music and recordings, turntablists deploy vinyl records as a 'token of music and cultural heritage' (Bartmanski & Woodward, 2015, p. 174); they re-evaluate waste and discarded discs. Contemporary sound artist Lisa Busby (2013), for example, applies the critical concept of 'Availablism (making use of the resources available to you)' to frame her practice with record players and other DIY devices. She situates this concept in relation to 'All-ism (utilisation of various methods and media without hierarchy)' and 'Feral-is[m] (the seeking out of undiscovered territories, ideas and methods unencumbered by capitalist concerns)'.

The experimental turntablists' creative reuse of turntables and records can be more generally related to Claude Lévi-Strauss's (1968) concept of 'bricolage'. In *The Savage Mind* (1968), French anthropologist Lévi-Strauss describes bricolage as a practice of invention and creation that follows a 'concrete logic'. He presents this form of concrete science as an alternative rather than a primitive form of knowledge that is analogous to 'mythical thinking' in cultural systems. Pierre Schaeffer described his early practice of *musique concrète*, which began in 1948, as 'bricolage' (Schaeffer in Hodgkinson, 1987); and scholars have used the term bricolage to describe the artistic assemblage of available technology in the works of Nicolas Collins, Christian Marclay and others (Barthelmes, 2002; Braun, 2006, p. 54). Mark Katz (2012) presents a comparable notion when he describes the early hip hop DJs' re-creations using the turntable as a 'vernacular technological creativity' (p. 68). Katz lists as an example DJ Ivan 'Doc' Rodriguez's upside-down tone needle to play an elevated record backwards (see also Chapter 4) alongside several other similar modifications of the available technology in the late 1970s (Katz, 2012, p. 68). These early hip hop technological adjustments parallel the modifications of experimental turntablists, indicating that the early stage of hip hop turntablism was also shaped by bricolage and individual setups. Although Lévi-Strauss (1968) places the artist in general as being half-way between scientist and bricoleur (p. 22), the practices of experimental turntablists reflect numerous characteristics of bricolage, which I will outline here in this chapter.

Lévi-Strauss (1968) differentiates the practice of bricoleurs from the procedures of engineers. The engineer, Lévi-Strauss (1968) writes, depends on 'the availability of raw materials and tools conceived and procured for the purpose of the project' (p. 17). By contrast, the bricoleur's tools and means are the 'remains and debris of events', 'odds and ends', 'fossilized evidence of the history of an individual or a society'; they therefore have a 'second hand' quality (Lévi-Strauss, 1968, p. 21). Experimental turntablists work with second hand record players or vinyl discs carrying 'found sound'. Contemporary turntable artist Janek Schaefer emphasises how practices are based on the reuse of the acoustic and material debris of vinyl discs:

> [Philip Jeck] showed me that anything and everything is there waiting for you on vinyl. It's available all over the world, it costs pennies and you can use it as found sound, you can react to it and change it to make new music. Philip's music was a revelation. He just took some rubbishness, put it through some rubbish stuff, and out popped this majestic soundscape. I was absolutely ecstatic when I heard it (Schaefer in Sharp, 2010, p. 27).

As bricoleurs, experimental turntablists work 'retrospectively', exploring their collection of tools for the tools' potential uses. Although material is limited by availability, at the same time this offers heterogeneity (Lévi-Strauss, 1968, p. 17). The assemblage of constraints in this way constitute 'structural patterns' (Lévi-Strauss, 1968, p. 36). The choices bricoleurs make are therefore a key element in their output. In the sound artist's encounter with the turntable, the familiar playback medium is transformed by exploiting its inherent characteristics (Schaefer, 2001, p. 71). During the making processes of instrument design, the artists draw on the devices' and objects' affordances and constraints.[1] As in practices using DIY electronics, John Richards indicates here an 'extended musical process, where building and making artefacts and instruments inform and dictate music' (Richards, 2013, p. 280). The varied creative abuse of the turntables and records predetermines actions and processes in concert, too, as the next subchapter will demonstrate (see 1.2 Sound Production based on Vinyl Records and Record Player). In experimental turntablism, instrument setup and sound have a clear analogue connection. A number of these constraints shape the live performance, as will be discussed later in this chapter (see 1.3 Live Bricolage, Improvisation, Indeterminacy and Liveness).

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[1] Donald A. Norman (1999) discusses affordance, conventions and constraints for the design of technological systems (after J. J. Gibson). Norman (1999) suggests that affordances are not necessarily perceived on first sight; therefore a longer process of exploration of the devices and objects might reveal new affordances to the artists that otherwise have not been discovered.

The making process of the instrument is strongly connected to the recycling of already produced objects. Creation using such wrought products often implies an unconventional usage or deconstruction, partly accidental, that transforms given structures into raw materials (Butler & Hoppe, 2006, pp. 183-184; Lévi-Strauss, 1968, p. 36). Turntablist Maria Chavez sees the 'beauty of destruction'[2] in the resulting new sound material and the maturation of the artistic output (Chavez, 2012, pp. 16-17). The purpose of the tools remains only partially defined: in principle, with every concert a new setup and assemblage of records or devices is possible. The close link between artist, instrument-making and performance implies that the concerts and instruments change alongside the artist's personal development.

Experimental turntablists also share characteristics of scientists. They often see their instruments and projects as 'inventions' (Schaefer, 2001, p. 71) and compare their practice to 'scientific experiments' for which they set themselves restrictions (Dunning, 2015; Andrews, 2013). The turntablist's technological innovations also seem related to games and play. Cultural scientist Mark Butler underlines the ambivalence of technology as related both to purpose and to play (Butler & Hoppe, 2006, p. 180). The record player and its technological precedents was seemingly considered a ludic object from early on. Phonographs and gramophones were used as toys for children and were hidden in dolls to provide them with a voice.[3] The company Stollwerck in Cologne offered chocolate records and a metal toy record player around 1903 (Jüttemann, 2000, p. 120; see Fig. 1.1).[4]

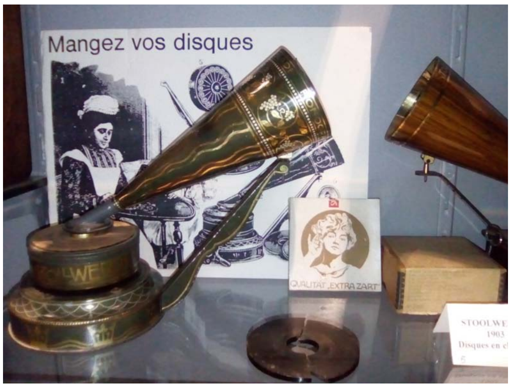

Figure 1.1 Stollwerck's toy record player and chocolate record in the Phono Muséum Paris. Photo © K. Weissenbrunner. Published with the permission of the Phono Muséum Paris.

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[2] Also the title of a text from the 1960s by Fluxus artist Milan Knížák (Kelly, 2009, p. 131).

[3] See record players for children, Thomas Alva Edison's speaking doll, 1886 and the 'Bébé Jumeau' by Henri Lioret with a 'Lioretgraph', 1893 (Jüttemann, 2000, pp. 119-123).

[4] See also Fig. 24 in the section 'Machine parlante à disque' at the website of the Phono Muséum Paris, *Photos – Machine parlante à disque.* Retrieved from http://phonomuseum.fr/photo-musee/#prettyPhoto. Today, the company Wohlfarth Schokolade Berlin sells chocolate records online at www.wohlfarthschokolade.de/index.php?cat=c5_Schoko-Schallplatten-schoko-schallplatten.html.

A variety of materials for the record objects have been used since then, such as wood, glass and ice.[5] As well as black vinyl, records might be made of coloured, patterned or transparent plastic, carrying a picture or glowing in the dark (Bartmanski & Woodward, 2015, p. 83). Experimental turntablist Sebastian Buczek, for example, uses this flexibility of disc material in his turntable projects, exploring sound coming from records made of chocolate or beeswax (Buczek in Schick, 2013). The principle of the record player's technology is based on simple mechanical processes, so that a record can also be played by a simple cardboard construction without using any electricity.[6] The intuitive and approachable technology of the record player seems to provide a palette of playful choices. A ludic stance in technology and music furthermore dissolves the boundaries between entertainment and academic interests in art (Braun, 2006, p. 55). Sound artist Lucas Abela, for example, combined the playback of vinyl records with gameplay in his recent large-scale installation 'Vinyl rally' (2009): visitors were invited to drive a remote control toy car with an attached stylus over a route paved with hundreds of vinyl records.[7] Play also connects to that tolerance for accidents and destruction important in the process of sound research and in performance (see further in section 1.3 Live Bricolage, Improvisation, Indeterminacy and Liveness). Bartmanski and Woodward (2015) observe a hybrid characteristic in the vinyl record owing to its materiality, suggesting that:

> Vinyl is narrated as 'authentic' or 'real' in large measure because it is corporeal. It combines the seriousness of professional archive and geekiness with sheer sense of fun – it's an instrument to play and a toy to play with, it is a tool and an art object, all at once, or whatever you want it to be at a moment. It attracts people who are 'visual' or 'haptic' in their approach to music media and more generally. This seems to be particularly important to those into electronic music where traditional, haptically engaging instruments are typically not used (p. 91).

Bartmanski and Woodward (2015) argue in this regard that the abstract discursive approach of Marshall McLuhan's well-known claim that 'the medium is the message' is too restricted (p. 2).

The vinyl record encompasses a variety of characteristics and purposes, which can be extended to the playback devices as well. The mechanics and materials of the playback medium show fragility, so that the objects require due care. Signs of aging or breaking tend to be object-specific and unique. The playback process leaves traces in the record material and slightly deteriorates the record's quality with each usage, since the stylus directly touches the record disc. These material qualities might support the establishment of a personalised relationship between the artist and the turntable as an instrument. Lévi-Strauss (1968) seems to acknowledge that the specificity of assemblage art's ready-made products engage poly-significance and the process of individualisation:

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[5] Further examples can be found on this blog about coloured vinyl records: Coloredvinylrecords.com (5 August), *28 unusual and creative vinyl records*. Retrieved from http://coloredvinylrecords.com/blog/25-unusual-and-creative-records.

[6] Several methods for playing records without record player are discussed by turntablist Christopher DeLaurenti (2013).

[7] Since its premiere in Newcastle (AUS), October 2009, the Vinyl Rally has been shown numerous times at festivals, conferences and in museums, such as NIME conference, Sydney (June 2010) and Sonic Protest at the Palais de Tokyo Paris, France (April 2012). For further exhibitions of the installation, see the artist's webpage, L. Abela, *Vinyl Rally*. Retrieved from www.dualplover.com/vinylrally.

> [T]he 'bricoleur' also, and indeed principally, derives his poetry from the fact that he does not confine himself to accomplishment and execution: he 'speaks' not only with things, as we have already seen, but also through the medium of things: giving an account of his personality and life by the choices he makes between the limited possibilities. The 'bricoleur' may not ever complete his purpose but he always puts something of himself into it (p. 21).

This observation seems to be key for the turntablist's encounter with the record player. The turntables and records are not only an instrument but the basic concept of the artistic output. The ways in which these instruments become carriers of individual concepts and compositional ideas will now be examined.

1.2 Sound Production based on Vinyl Records and Record Players

In experimental turntablism, as per Lévi-Strauss's notion of bricolage, the concrete material – here, vinyl records and turntables – provides predetermined structures that the sound artists can work with. Bricolage's concrete logic, however, applies to the immaterial dimension of the sound as well as to the material dimension of the technologies and objects themselves. As Adorno (1934/1990, p. 58) highlights for gramophone records and Bartmanski and Woodward (2015) elucidate in their extensive study on *Vinyl*, as well as being a medium the record disc is also a thing. Bartmanski and Woodward (2015, p. 64) describe an 'indistinguishability' of sonic and material dimensions, which seems to apply to the vinyl record as well as to the record player. Experimental turntablists work on the basis of this specific indistinguishability, as Marclay has underlined (Marclay in Curiger, 1997/2014, p. 23).

Approaching the sonic dimension can affect the material dimension, and vice versa. Effecting distinct physical movements, or using distinct shapes and surfaces, materialise a sounding result while providing the performer with sensual attributes. The turntable's sound production is not necessarily based on the use of samples from a vinyl record. Experimental turntablists such as Philip Jeck, Christian Marclay and Janek Schaefer, unlike most DJs and hip hop artists, particularly address the materiality of records and turntables (Sexton, 2007, p. 94). The various parts of the playback medium – such as the turntable base, the vinyl record, the mechanically rotating platter (incorporating speed and direction), and the tone arm with the stylus in the cartridge – offer the artist numerous possibilities for transforming the turntable, for example, into a sampler, sequencer, sculpture or percussive instrument. The artist's instrument-making hence implies a form of composition taking place prior to the performance (Nauck, 2012, p. 8). Kelly uses the categories 'manipulated, cracked or broken' to describe most turntable and record modifications, distinguished by the degree of destruction of the media (Kelly, 2009, pp. 95-97). While this might give a systematic overview of the various turntablism preparations, I want to focus rather on how the turntablist's bricolage, in combination with media-specific features, engenders the discovery of potential compositional and conceptual strategies. This focus engages my first research questions concerning artists' strategies and playing techniques with turntables. A closer look at the medium's individual components, which sound artists use or re-design, will show this instrument's hybridity and multifunctionality. At the end of the section I provide an overview of the medium's components (record samples, records as material things and record players) and their possibilities for sound production.

1.2.1 Vinyl Records

Many experimental turntablists use vinyl records and explore the ample possibilities of incorporating samples of distributed records. With record discs, the recordings or 'frozen sounds' are shaped into a physical object, which, as a tangible and visible artefact, can be selected, collected, shared and owned (Bartmanski & Woodward, 2015, p. 97). But the physical form, the plastic material itself, can also serve artistic purposes (Block, 1989, p. 9). The following vinyl record practices distinguish such turntablists' approaches to samples and the record as a material object.

A. Pre-recorded sound from Vinyl Records – Sampling

Ottorino Respighi's symphonic poem *Pini di Roma* ('Pines of Rome', 1924) is one of the earliest examples of pre-recorded sound from a record being used in concert (Katz, 2001, p. 168). In the third movement, *I pini del Gianicolo* ('The Pines in the Janiculum'), a record of a nightingale singing plays from a gramophone alongside the orchestra.[8] Early in the twentieth century, photoelectrically recorded film soundtrack was also available. Walter Ruttmann created the ‘tone montage’ *Weekend* (1930) by cutting and splicing sound-on-film, displayed by optical shapes as a track alongside the images (Patteson, 2016, p. 105; Davies, 1996, p. 10). The composition is based on studio recordings and recordings of Berlin’s streets uniting various snippets of words, songs, instrumental music and noises to create a ‘blind film’ (Ruttmann cited in Patteson, 2016, p. 105).

Today, pre-recorded sound allows artists, using elements of the concrete, to borrow sounds without actually producing them, though still with the premise of ‘fair dealing’ and having created something new. The legal use of sound excerpts without permission is considered as fair use if the appropriation ‘does not interfere with the economic viability of the initial work’ (Oswald, 2015).[9] Although ‘sampling’ was already possible with analogue devices, the term itself first arose with digital technology. The word ‘sample’ in digital signal analysis describes a slice that separates a continuous signal into discrete steps. Coined in the late 1970s, ‘sampling’ in music refers to the use of excerpts of pre-recorded sound that may be arranged in a new musical context using special digital devices (Davies, 1996, p. 3). Herein, the term sampling will be used, following Hugh Davies’ (1996) more general definition, ‘to describe all of these methods of storing and replaying sounds, using both analogue and digital technology’ (p. 4).

In discussing samples in experimental turntablism, I apply similar categories as Pelleter and Lepa (2007) use in their discussion of sampling strategies in hip hop music (p. 203). I first discuss the samples as non-referential tools, and second examine the samples’ referentiality. By including dubplates and self-released records in addition to the archive of released and distributed records, experimental turntablists can further extend their strategic possibilities. Pelleter and Lepa’s (2007) third category is concerned with the samples’ self-referentiality and materiality as revealed, for example, by scratching techniques. This category can be compared with Chion’s (1994) ‘materialising sound indices’, which describe the mechanisms that allow the sound to be traced back to its ‘sender’ (pp. 115-116). A medium always remains something heterogeneous, conveying both a signal and at the same time a technical trace of itself within the signal (Müller, 2013, p. 316). The medium’s materiality determines the technical trace within the signal and can become a second signal in itself. As such references to materiality play an extensive role in experimental turntablism, I tackle this sound category separately as ‘manipulated sounds’ and ‘abstract sounds from the medium itself’ in the later sections ‘The Record as a Material Thing’ and 1.2.2 Sound Production based on Record Players.

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[8] A footnote in the score (1925. Milan: G. Ricordi & C., p. 55, bar 2) indicates that ‘No. R. 6105 del Concert Record Gramophone: Il canto dell’usignolo’ is to be played for approximately 10 measures, illustrated in the score by a graphical representation of the pre-recorded sound dedicated to the gramophone on the stave, as if it were itself an orchestral instrument.

[9] See also the recent court case of Kraftwerk in Germany; the court ruled in favour of sampling: Kraftwerk loses German hip-hop copyright case in top court (31 May 2016). *BBC News*. Retrieved from http://www.bbc.com/news/world-europe-36415880.

The first strategy for using samples as tools is through paying little regard to their origin. Marclay gives a description of this strategy:

> I do not remember specifically which records were used on most of these mixes; to my ears they were only sounds, very abstract and detached from their original sources. They lost their identity and became fragments to be mixed – a loop, a texture, a transition, a beat, an intro, a word (Marclay cited in Demers, 2010, p. 56).

By contrast with a citation, the sample here does not aim for a reference. The sound element is transformed into a different logic towards the creation of a new structure or rhythm, revealing the sample simply as basic sound material (Feuerstein, 2004, p. 256). This non-referentiality, and the emphasis on the acoustic properties of the sound itself, serves as a basis for several manipulations exploring the sample’s depth (Pelleter & Lepa, 2007, p. 205), such as looping and scratching. Pierre Schaeffer emphasised the use of such abstract qualities in his *musique concrète*; he suggested to listen to the sounds in a ‘reduced’ mode in order to keep the focus strictly on these non-referential qualities. Michel Chion (1994), one of Schaeffer’s composition students, describes this form of listening:

> Reduced listening takes the sound – verbal, played on an instrument, noises, or whatever – as itself the object to be observed instead of as a vehicle for something else (p. 29).

However, due to the experimental turntablist’s improvisational approach, the sound excerpts are not necessarily fixed objects to be replicated exactly, as in *musique concrète* compositions, but instead might be ‘found’ in the process of the performance. Experimental turntablists remain flexible for working within the moment (see also subchapter 1.3). Yet often they can have developed skills for finding a distinct groove on a record or they can use stickers on the disc surface to mark a groove’s position (as with Marclay or as with Joke Lanz in Chapter 3, see Fig. 1.2).

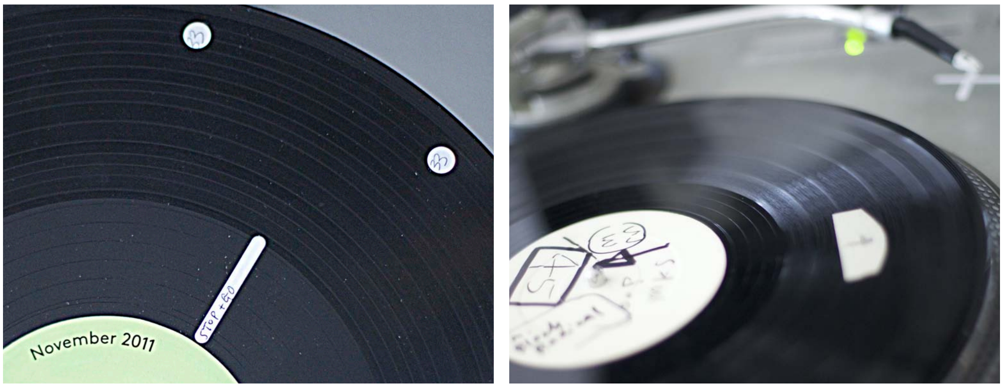

Figure 1.2 Examples of Joke Lanz's records with stickers to mark a sample and to notate performance instructions.

Experimental turntablists seem to engage with samples in the manner of bricoleurs, working with found sound fragments of a recording – 'acoustic readymades' reminiscent of Marcel Duchamp's *objets trouvés* (de la Motte-Haber, 1998, p. 92). Released, distributed vinyl records in second hand shops and flea markets provide a rich archive gathering together auditory cultural products distributed over decades. Similar to Pelleter's (2013) description of the hip hop musician's 'crate digging' in the effort to find a particular sample (p. 394), sound artists might equally buy a record only for a sound lasting four seconds. On the other hand, in comparison to the extensive number of digital recordings available online or via digital artefacts or streaming services, distribution via the vinyl artefact limits availability; this in general seems to be a deliberate constraint and aid for the sample selection.

Lévi-Strauss (1968) compares the bricoleur's assemblage of 'debris and odds' with a kaleidoscope whose fragments show distinct similarities in 'size, brightness of colouring [and] transparency' (p. 36). The fragments in question only possess as much reference to their former identity as is necessary for their new context (Lévi-Strauss, 1968, p. 36). An analogous relationship is evident in the use of samples in experimental turntablism. A fragment cut out of a fixed recording might still retain traces of its identity and therefore a particular referentiality. As de la Motte-Haber (1998) argues, the transformation of a sound sample's symbolic qualities does not necessarily guarantee the complete removal of those referential aspects that might lead to associations (p. 92). These might arrive through listening to the audio excerpts semantically, by interpreting a possible message in the sound based on codes of communication, or by causally identifying the sound's source (Chion, 1994, p. 28). The referentiality of a sample, however, appears primarily optional (Großmann, 2005, p. 319) and often unavoidable. Asked in an interview about the relationship between his work with vinyl records and musical recontextualisation, Marclay explains:

> Sometimes people will hear something, and they'll ask 'did you play this' when I actually didn't. It's interesting that audiences have this need to identify the source material. Once different unrelated records are combined, they sometimes have the power to trigger the memory of a tune. I don't consciously make music to trigger memory but it happens naturally. [...] What I consciously try to do is to use the widest variety of music. These records often have different sets of references for different people, because most memories are personal and subjective. Whatever happens in their mind is something that I can't control, I can't control what they think about what I'm doing. It's like silent audience participation (Marclay in Gross, 1998).

The audience's reception of the samples is difficult to predict, something towards which experimental turntablists, such as Marclay, have an open attitude. The narrative dimension of a record content might be heightened with references to movie scenes via 'figurative, semantic, or evocatory value, in reference to real or suggested causes, or to texts' (Chion, 1994, p. 31). We will see a focus on these qualities in Vinyl -terror & -horror's case study. Steve Reich emphasises the value of this multi-dimensionality of concrete sound, which seemed to be neglected in *musique concrète* by Pierre Schaeffer:

> The bone I had to pick with (Pierre) Schaeffer and that bunch was that if they were using the sound of a car crash, they had to lower it by an octave or speed it up by an octave, run it through a ring modulator or play it backwards. Why not hear that it's a car crash! These sounds that you're using in the original state have some kind of emotional resonance. We relate to them in various ways. If you bring them into the music, that brings in an emotional, theatrical meaning which is useful. It's worthwhile maintaining and building upon (Reich in Gross, 2000).

Artists in experimental turntablism use the samples' broad spectrum from abstract to referential dimensions, harnessing the tension between the sample's original identity and its assimilation into a new context. The creative use of the sample's referentiality might also go towards a distinct citation, yet often included in collage-alike structures. In comparison to the traditional implementation of musical citation in a new musical piece, while at the same time referencing a different context or meaning; in a collage, a central tenet is dissolving functional combination and liberating the single detail (Vowinckel, 1995, p. 17). Depending on the listener's particular experiences and background, the citation might also be 'cryptic', intended only to be recognised by connoisseurs (Kühn, 1972, p. 14).

A typical example in experimental turntablism might be the creation of a context-specific referentiality via samples, as is also a distinct feature of sound art

(Sexton, 2007, p. 85). Samples from distributed records might be used to indicate specific topics, places or seasons, mostly in respect of a specific performance. Experimental turntablists search for particular records or samples following criteria related, for example, to an upcoming concert or a general project idea. Marclay, for example, when playing concerts during Christmas time bought Christmas records with the aim of appearing 'seasonal' (Young, 2010/2014, p. 157). Marclay's collection of Christmas records eventually culminated in the artwork *The Sounds of Christmas*, which draws on nine hundred Christmas records and was first exhibited at Artpace in 1999 (Young, 2010/2014, p. 158). Vinyl -terror & -horror had a similar idea independently, gathering Christmas records for one of their first concerts at their academy in 2001.[10] Next to these seasonal examples, Joke Lanz and Graham Dunning present another approach by using the site of their concerts as a criterion for record selection. Lanz included samples from records with church bells for a concert in a cathedral in Switzerland; the mediated bell sounds referring to related churches were set in dialogue with the venue in which the performance took place.[11] Similarly, for a concert in Venice, Graham Dunning gathered 'Venice-related records' from charity shops, such as Johann Strauss's *Lagoon Waltz* from the operetta *A Night in Venice* (1883).[12]

Dubplates yield possibilities for the experimental turntablist deviating from the secondary use of found sounds, allowing control of the recorded sound. Dubplates are especially ordered records using the customer's own recordings, which certain shops with cutting lathes offer to prepare in small numbers. Dubplates might be attractive for sound artists who could not find a particular sound on released records or who wish to use their own (digital) recordings on record. Composed or assembled recordings can be used as raw materials providing a pre-mix of sounds with fixed structures or sound layers (see case study Vinyl -terror & -horror, Chapter 4).

Marclay, for example, explored the compositional potential vinyl cutting processes provide in a recent concert to create context-specific references. During his 2015 exhibition at White Cube Bermondsey, London, live recordings were made of a series of concerts with the London Sinfonietta and composers and improvisers, and the recordings were then pressed on vinyl (in collaboration with The Vinyl Factory Press). At the closing event of the White Cube exhibition, Marclay performed live exclusively using the concert records cut and pressed during the exhibition. This concert is available as recording named 'Last Orders' on the B-side of the LP *Ryoji Ikeda & Christian Marclay – Live At White Cube*.[13] Marclay's context-specific sampling strategy revives the recent concerts from the same venue and conflates them in a final remix. The dubplate can therefore function as a sampler, capturing recordings of any sound.

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[10] Camilla Sørensen and Greta Christensen from Vinyl -terror & -horror, personal conversation, Berlin (Germany), 28 August 2014.

[11] See Joke Lanz's album: Lanz, J. (2012). *Münster Bern* [CD]. Bern: Cubus Records; a recording from 22 October 2010, at »zoom in« – Festival für improvisierte Musik in Bern (Switzerland).

[12] His relation to Venice-related records is documented on his blog: G. Dunning (16 September 2015), Day 12: More making + Venice records, *Rhythm & Drones*. Retrieved from https://rhythmanddrone.wordpress.com/2015/09/16/day-12-more-making-venice-records.

Artists who have already released their own music on vinyl records include another form of referentiality in concert by incorporating samples of their own releases. In a recycling process, they place their music into a new context. Although fixed on record, their releases remain open for re-makes and constant change.

Experimental turntablists seem to make use of gradual degrees of referentiality and of the ambivalence inherent to the field of possible references, emotional values, and abstract qualities. Diego Garro's (2012) example of a 'multi-modal' acousmatic composition combining 'abstract and mimetic materials along with (especially) intelligible speech or musical phrases', gives an idea of how this multi-referentiality of samples in experimental turntablism might be perceived:

> The audience will have no choice but to engage in continuous shifts in decoding strategies, making sense of the narrativic implications of the forest virtual space, establishing links between the spectromorphological properties of the various abstract tones and the whole, and, especially, relating empathically to the message and the emotions conveyed in the spoken word, moving on to consider anything else only when their ineluctable anthropological interest in meaning has been satisfied (p. 105).

The experimental turntablist's approach to samples is often individual and follows particular strategies, as the detailed case studies will demonstrate (see chapters 3-5). Despite the new context in which the samples are placed, without primarily addressing their references, the end result nonetheless retains a characteristic of the reused and the second hand. The materiality of vinyl records and the objects' relationship to acoustic dimensions and performative aspects will now be discussed.

B. The Record as a Material Thing

In experimental turntablism, as well as using the record for samples the sound artist approaches the record disc in its 'plastic order' (Celant, 1977, p. 24), as a visual and palpable 'thing'. On a tape, the audio content is represented linearly; on a record, the grooves are fitted via a spiral pattern on a round plate. The common 12-inch record, for example, fits 20 to 30 minutes of sound on one side, depending on the volume and complexity of the recorded audio signals (Bartmanski & Woodward, 2015, p. 90). By contrast with tape players, CD players and digital file devices, record players usually provide visual feedback of the playback (Yochim & Biddinger, 2008, p. 191), and this emphasises the record's link between mediated sound and material:

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[13] See the programme description of the exhibition 'Christian Marclay' 28 January – 12 April 2015 on the webpage of White Cube Bermondsey in London (UK). White Cube (2017), *Christian Marclay.* Retrieved from http://whitecube.com/exhibitions/christian_marclay_bermondsey_2015. Ikeda, R. & Marclay, C. (2015). *Ryoji Ikeda & Christian Marclay – Live At White Cube* [LP]. London: The Vinyl Factory – VF 153 Live 15, White Cube.

> The record's technical information may not inform you about the playing time but you get to know the song's duration by playing it and you learn its progression and changes visually as the groove changes its look. In this sense vinyl is as much about sound as it is about look (Bartmanski & Woodward, 2015, p. 82).

The visual feedback of the temporal division of sound on the record is crucial for the artist's preparations, such as a sticker visually marking the approximate groove of a distinct sample. While one might expect to find compositional decisions most prevalently in the turntablist's sample selection, experimental turntablists in fact equally demonstrate strategic planning via their material preparations, following the logic of a bricoleur.

Distinct physical properties of the round plastic discs can generate a particular type of sample manipulation or abstract sound production from the medium. Experimental turntablists might not only 'scratch' a mediated sound in performance via jerky movements of the record, but also physically scratch the material and mesh in its surface structure or shape. In Marclay's video *Record Players* (1984), for example, a group of performers create purely acoustic sounds with records by manually scratching over the record surface with their finger nails and by wobbling, bending and smashing the disc (Levin, 1999/2014, p. 99). Treating the material disc in this physical way causes the record itself to produce distinct acoustic sounds, independently from its audio content or from the use of a record player. Both the manipulation of mediated sound and the production of abstract sound from the record itself can refer to the record's materiality and specificity. Experimental turntablists can in this way use the analogous relationship between material and sound to predetermine:

- Sculptural aspects
- Structural aspects
- Rhythmical aspects
- Textural aspects
- Playback manipulations.

The following outline will draw a picture of how the record material can be strategically used in artistic practices according to the above aspects/manipulations. How these record preparations can be incorporated into individual performances will then be discussed in the case studies.

Sculptural Aspects

Experimental turntablists prepare ‘cut-up records’ (abbreviated as ‘cut-ups’) by reassembling and gluing together broken or cut parts from several records to construct a new disc (and possibly of different material; see, for example, Fig. 1.3 and the cut-up record with glass in Fig. 4.8, middle, in the case study of Vinyl -terror & -horror, Chapter 4). In a broader sense, though, the disc collage’s specific visual and tactile qualities let it simultaneously appear as a sculptural art object, comparable to collages of images and photographs (as with Milan Knížák’s ‘Destroyed music’, Kelly, 2009, p. 144; and Marclay’s colourful and eclectic ‘Recycled Records’, 1980-1986, Schoonmaker, 2010, pp. 130-136). In experimental turntablism, the sound itself is not necessarily always compositionally in the foreground but might be the by-product of the artist’s examination of the raw record material. The solid record material provides specificities for this process, however, differentiating it from cut-ups with, for example, tape, as Brian Eno points out:

> The move to tape was very important, because as soon as something’s on tape, it becomes a substance which is malleable and mutable and cuttable and reversible in ways that discs aren’t. It’s hard to do anything very interesting with a disc – all you can do is play it at a different speed, probably; you can’t actually cut a groove out and make a little loop of it. The effect of tape was that it really put music in a spatial dimension, making it possible to squeeze the music, or expand it (Eno, 2013, p. 128).

From the point of view of isolating samples, cutting tape might appear simpler than destroying the hard material of a vinyl disc with a cutting knife. However, by incorporating sculptural approaches into their considerations to create cut-ups, artists might draw on the records’ optical and material features as structural entities; examples of such cut-up variations will be discussed in particular in Vinyl -terror & -horror’s case study (see also Appendix A). As visual sculptures, such prepared records materialise the sound artist’s compositional arrangements and strategies (Levin, 2014, p. 100).

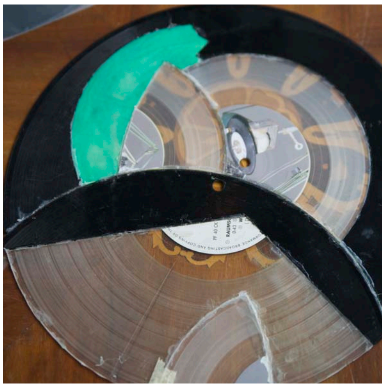

Figure 1.3 Cut-up records of Camilla Sørensen's (Vinyl -terror & -horror) collection.

Structural Aspects

Structural aspects within the sound production can be controlled by physically restructuring the record disc. The physical cut of the record parts equally cuts the pre-recorded sound. Each junction between the glued parts, as the stylus moves over an obstacle, creates an impulse noise – an abstract sound from the medium itself. The reorganised record grooves produce an audio event with abrupt dislocations. Cut-up records are in this way a material equivalent of audio collages. A generic characteristic of a collage, as mentioned above, is the conglomeration of heterogeneous prefabricated material through disclosing its secondary use for the listeners and without hiding any cuts or breaks (Vowinckel, 1995, p. 14). The dislocations caused by the material create references to the secondary use of the material and samples. Experimental turntablists might develop compositional strategies letting them arrange in particular ways the cut-ups' disruption and recontextualisation of the record grooves (see the case study of Vinyl -terror & -horror).

The structure of the sample assemblage in cut-up records is determined by the pattern of the cut parts. Sound artists achieve a random structure of playback samples through the assemblage of irregular record shards, combining and disordering various samples from several records. The playback in performance of an irregularly patterned cut-up record will hence result in an arbitrary order of samples combined with noise impulses. Christoph Cox (2014) has observed with regard to Marclay's 'Recycled Records' that they 'cast the fixed past into an uncertain' (p. 166).

A more radical way of creating chance situations and indeterminate sample structures in performance is the arrangement of loose record shards of broken record discs. Sound artists during the performance arrange these loose shards on the rotating platter for the playback. Without the disc as a whole, the process of the sample playback and interruption becomes even less predictable, resulting in random and versatile structures of samples and impulse noises (for more on this, see Vinyl -terror & -horror's case study). Maria Chavez from the USA, a former DJ and since 2004 an experimental turntablist, describes this strategy in more detail in her self-published book *Of Technique: Chance Procedures on Turntable,* for example (see Fig. 1.4; Chavez, 2012, pp. 78/79). Her book features several instructions on chance-related turntable techniques. Experimental turntablists might also break a record into shards live in concert before they use the shards. As a vinyl record requires a certain amount of energy to break, it can be broken through smashing it on the floor, as seen for example in performances by Vinyl -terror & -horror. Alongside creating a peculiar acoustic sound, such destructive actions equally serve as nonconformist actions emphasising the discrepancy between the record's value as a commodity and its value as a material thing:

> A lightweight disc of acetate is in itself worth little and easily destroyed, but to do so would for some be a type of iconoclastic, sacrilegious act (Bartmanski & Woodward, 2015, p. 105).

Shellac records break more easily; they also break when beaten against the head, as Bavarian comedians Karl Valentin and Liesl Karstadt demonstrate in their short movie *Im Schallplattenladen* ('In a Record Shop', 1934).[14]

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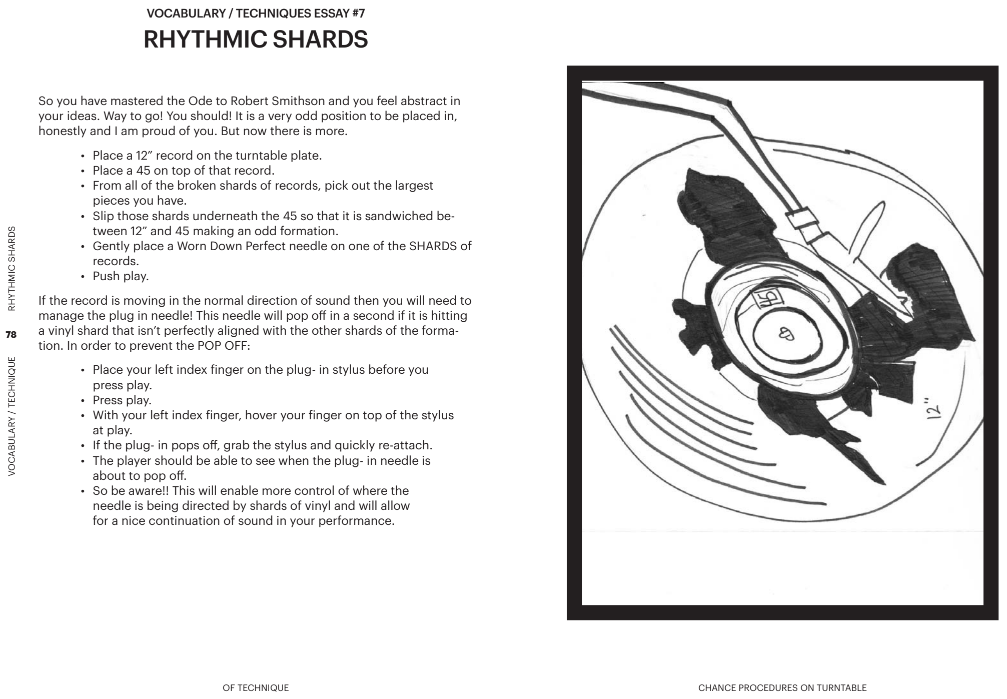
[14] Video in: Valentin, K. & Karlstadt, L. *Karl Valentin und Liesl Karlstadt 2 – Im Schallplattenladen, Der Theaterbesuch, u.a.* (1934-1941/1992). [Motion Picture]. Deutschland: Atlas Film;
or: Valentin, K. & Karlstadt, L. [Kaiservideo]. (1934/16 June 2014). *KARL VALENTIN UND LIESL KARLSTADT: Im Schallplattenladen* [Video file]. Retrieved from https://vimeo.com/98316999.



VOCABULARY / TECHNIQUES ESSAY #7

RHYTHMIC SHARDS

So you have mastered the Ode to Robert Smithson and you feel abstract in your ideas. Way to go! You should! It is a very odd position to be placed in, honestly and I am proud of you. But now there is more.

- Place a 12″ record on the turntable plate.
- Place a 45 on top of that record.
- From all of the broken shards of records, pick out the largest pieces you have.
- Slip those shards underneath the 45 so that it is sandwiched between 12″ and 45 making an odd formation.
- Gently place a Worn Down Perfect needle on one of the SHARDS of records.
- Push play.

If the record is moving in the normal direction of sound then you will need to manage the plug in needle! This needle will pop off in a second if it is hitting a vinyl shard that isn't perfectly aligned with the other shards of the formation. In order to prevent the POP OFF:

- Place your left index finger on the plug- in stylus before you press play.
- Press play.
- With your left index finger, hover your finger on top of the stylus at play.
- If the plug- in pops off, grab the stylus and quickly re-attach.
- The player should be able to see when the plug- in needle is about to pop off.
- So be aware!! This will enable more control of where the needle is being directed by shards of vinyl and will allow for a nice continuation of sound in your performance.

VOCABULARY / TECHNIQUE 78 RHYTHMIC SHARDS

RHYTHMIC SHARDS 79 VOCABULARY / TECHNIQUE

OF TECHNIQUE

CHANCE PROCEDURES ON TURNTABLE

Figure 1.4 Explanation of 'Rhythmic Shards', an experimental turntable technique in Chavez (2012, p. 79). Published with Maria Chavez's permission.

Rhythmical Aspects

Further developments of structural arrangements via disc are also possible for creating rhythmic patterns. Cut-up records can be planned to realise determinate structures in the sound. In order to form a regular pattern on the round disc, such coordinated rearrangement requires the record parts to be a regular or symmetrical shape, such as halves or quarters. The playback of a regularly patterned disc creates correspondingly a regular rhythmic figure, as the rotating platter repeats the pattern periodically and translates the material structure directly into a temporal pattern. The consistent disruptions of samples paired with noise bursts due to the glued transitions can in this way transform into rhythmic beats. This correlation between optical and sonic patterns can provide specific incentives for sound artists and will be discussed further in Graham Dunning's case study.

The most general way of creating rhythmic patterns is on the basis of percussive noise bursts the needle produces when it hits an obstacle on the disc surface, such as a bump or a scratch in the material. Accordingly, the disc or the rotating platter can be structured with surface preparations. Turntablists apply stickers (as with Joke Lanz and the experimental turntablists of the Institut für Feinmotorik); cuts from the centre to the edge of the record (as with producer and sound artist Thomas Brinkmann); distinct patterns of a platter/disc; and other preparations (as shown in the case study of Graham Dunning). Experimental turntablist Ian

Andrews, for example, gathered plates, saucepan lids, metal film canisters, ceramic plates, sandpaper disks and a perforated stainless steel disc, which he prepared with additional spring steel clips (Andrews, 2013; see Fig. 1.5).

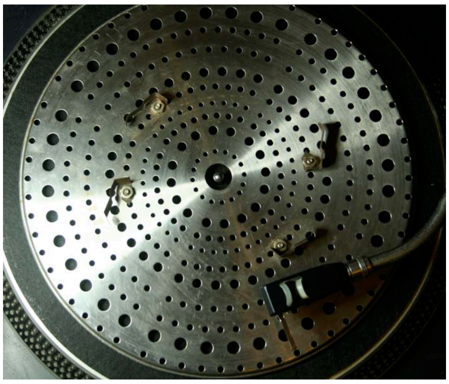


Figure 1.5 Ian Andrews' perforated stainless steel disc (2009). Photo © I. Andrews. Published with Ian Andrews' permission.

Arranging four stickers symmetrically on the edge of a record disc, for example, splits the disc into four quarters and causes four noise bursts per rotation with equal temporal intervals. These noise bursts can resemble bass drum strikes. The periodic rotation of the platter at 33 $^{1/3}$ rotations per minute (rpm) sequences this pattern of four beats so that a 4/4 rhythm of 133 $^{1/3}$ bpm might develop (see examples in Fig. 1.6). German producer Thomas Brinkmann modifies such rhythms by cutting records during the performance (see further in Graham Dunning's case study). Music software such as Overbug (2008)[15] seems to use this optical principle by displaying a cursor that follows the timeline of loop-based sound structures in a circle, similar to a clock. In comparison to the conventional linear-horizontal graphical representation of a timeline in audio software for recording and editing like Audacity, Logic Pro or Pro Tools, this disc-oriented display allows the creation of rhythmic loops via geometrically repeating patterns.

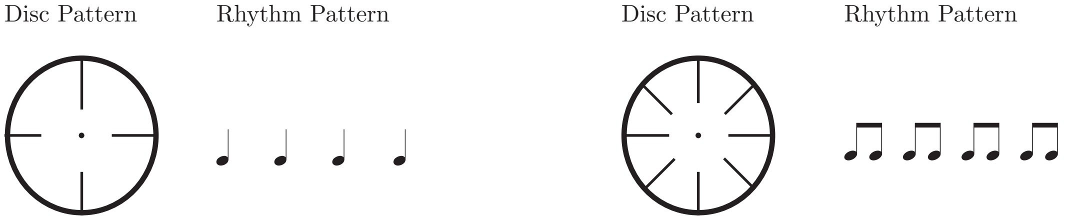


Figure 1.6 Illustrations of a patterned disc in relation to the resulting rhythm after one complete disc rotation, which can be interpreted as a 4/4 rhythm.

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[15] A music performance tool by Hiroshi Matoba (JP).

Textural Aspects

Topographic compositions of disc surfaces can be explored not only for rhythmic features but also for their textural potential. The familiar crackling effect that a record's surface can create due to miniscule scratches in the material is one such texture, which can be modified by scratching the material with sandpaper. This was presumably the idea behind an anonymously distributed LP without any grooves from 1981 that was sold in a cover made of sandpaper (Straebel, 2009, p. 23). Marclay's *Record without a Cover* (1985) – released albums that were sold without the protective sleeve – receives individual scratches, and therefore textures, depending on the record's handling (Kelly, 2009, p. 172). Moving the stylus over distinct surfaces, such as the paper material of the inner record label, can be used to generate particular broadband noises (see the Joke Lanz case study). Canadian turntablist Martin Tétreault particularly focuses on modifications of the record's surface structure to compose textural qualities in noises and rhythmical figures (Tétreault in Fortier, 2013).[16]

Playback Manipulations

By interfering with the playback process itself, experimental turntablists achieve distinct changes in the mediated sound of vinyl records. These manipulations can be executed manually during the performance (see playing techniques in Joke Lanz, Chapter 3). The most popular manipulation amongst hip hop artists, scratching movements, mainly changes the speed and/or direction of the record playback by manually moving the record forwards and/or backwards. On the other hand, distinct preparations of the devices or records additionally allow the sound artists to predetermine an automatically manipulated playback. The correct playback of a disc requires a constant clockwise rotational speed, typically 45 or 33 $^{1/3}$ rpm, in a centred position on the platter. Off-centring the record alters the helical rotation, alternately increasing and decreasing the playback speed on certain areas of the disc. This might have been experienced by record users who tried to play a 7-inch disc without an adapter for the turntable's spindle. 7-inch records are produced with a larger centre hole than other record formats, which was once related to the playback processes in jukeboxes (Bartmanski & Woodward, 2015, p. 89). Due to the greater central hole, the disc will not be fixed to the centre. The record groove will be played at a varied speed, although the rotation speed remains the same, since the calibration of the record grooves requires the centred position (see further in Bartmanski & Woodward, 2015, p. 76). Other record formats for irregular playback require an off-centred hole, and this can be drilled into the disc (see Fig. 1.7).

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[16] Tétreault in the filmed interview demonstrates a collection of his prepared surfaces (Fortier, 2013).

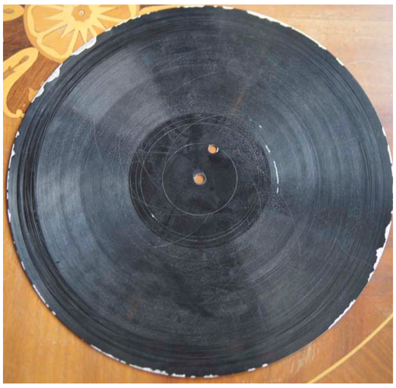

Figure 1.7 Record with off-centred hole by Vinyl -terror & -horror.

A manipulated playback can also be controlled via the vinyl record's cutting process. Locked grooves, for example, determine a looped playback and thereby the repetition of a sample (as mentioned above with Schaeffer's 'sillon fermé'). The released record *Various 500 Lock-Grooves by 500 Artists* (1998),[17] for example, provides such concentric grooves. This record might be conceived less a record for daily use than a sculptural object (Straebel, 2009, p. 23). For sound artists these records represent a collection of already chopped up samples and therefore an ideal tool for sampling strategies (see the case study of Vinyl -terror & -horror, for example). Other examples of engraved grooves refusing standard playback are off-centred or multi-grooved records (Straebel, 2009, p. 23).

The material correspondences between disc structure and sample structure, between the disc surface's geometric pattern and the sound's temporal pattern, and between the material surface texture and the sonic texture, are specific to the vinyl record. Record preparations in this regard are not only applied to create sound results referring to the materiality but reflect compositional or conceptual decisions.

1.2.2 Sound Production based on Record Players

The notion of records as 'acoustic photographs' (Adorno, 1934/1990, p. 57, and Dziga Vertov cited in Smirnov, 2013, p. 26) obscures the obligatory process of making the record audible. Although in these discs recorded sound is made tangible and visible, unlike in a photograph the record grooves require a translating system, such as a record player, to be perceived acoustically (Straebel, 2009, p. 24). A record player traces and amplifies the wavy lines on the record surface using a pickup system, which consists of the tone arm with the cartridge and diamond (or saphire) stylus on a cantilever. The record grooves as shapes in the material move the stylus by tactile contact. There are various types of cartridges, which transduce the vibrations of the stylus. Common cartridges are moving-coil and moving-magnet designs. In a moving-magnet cartridge, the voltage is induced by moving a magnet close to a fixed coil of wire, whereas in a moving-coil cartridge the opposite is true. The cartridge with the stylus in this way transforms mechanical movements into electrical signals. The wires in the tone arm send these signals to an amplifier. Finally, the loudspeakers convert the electric signal into an acoustic pressure signal (Kleiner, 2012). Common turntables unite particular characteristics in their design and functionality that the sound artists can draw on:

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[17] Various artists (1998). *Various 500 Lock-Grooves by 500 Artists* [LP]. Lowell, MA: RRRecords RRR-500.

- an electro-mechanical system of the cartridge (pickup system) for transformation and amplification of the record grooves
- mechanical parts (equipped, for example, with a rotating platter connected to a direct-drive or belt-drive mechanism, a distinct selection of speed regulations, an optional backwards playback or an automatic tone arm control)
- material properties depending on the design of each record player model (the base, for example, may be made of plastic, metal or wood material).

Pickup system

The record player's pickup system serves almost as a scientific instrument for exploring the phonographic translation processes of various surface structures. In the early twentieth century the transformation process of a wavy line into sound via a phonograph fascinated the poet Rainer Maria Rilke, who speculated that using a stylus to follow the cranial suture of the human skull might decipher a form of 'Ur-Geräusch' ('primal noise') (Rilke, 1919, cited in Kittler, 1986, p. 63). In Cage and Tudor's live performance of *Cartridge Music* (1960), the performers investigate the phonographic translation of the cartridge by replacing the stylus with alternative objects such as feathers and pipe cleaners (Kelly, 2009, p. 114). Experimental turntablists Ian Andrews (2013) and Alexandre Bellenger (2013) explore similar preparations by attaching objects such as springs, contact microphones or rubber (see for example Fig. 1.8). Contemporary turntablist Maria Chavez with her 'pencils of sound' explores the materiality of individually broken needles and their specific acoustic signatures (Chavez, 2012, pp. 30-37). Graham Dunning reinterprets the audio signal of the pickup by linking the turntable's output signal over a noise gate to a synthesiser as an alternative transducing system: the audio signal of a cut on a record, which would usually be heard as a brief impulse noise or click, is in this way rendered towards shaping sounds from a synthesiser (see Chapter 5, Case Study Graham Dunning).

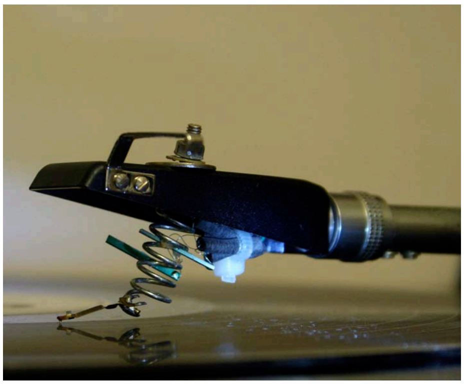

Figure 1.8 Ian Andrews' prepared 'stereo piezo spring cartridge' (2010). Photo © I. Andrews. Published with Ian Andrews' permission.

To create polyphonic structures without needing a high number of individual record players, experimental turntablists multiply sound layers by adding extra styli or tone arms. Around 1994/95, Australian sound artist Lucas Abela – performing as Justice Yeldham – developed a 'stylus glove' with four styli; these transfer the sensation of the touch from the tone arm directly onto the performer's fingers. Abela prepared a silver dress glove with superglued sewing machine needles on the fingers, which he used for a variety of techniques, such as playing four grooves simultaneously and scratching his fingertips across a disc to create a distinct warbling effect. Abela has also mounted several styli in series like a caterpillar to receive a distinct warbled delay effect, inspired by a tape delay.[18] Greta Christensen from Vinyl -terror & -horror has developed a cartridge with two styli to play two grooves simultaneously (see Chapter 4). She has also developed a turntable tower that stacks up several records and tone arms, and this has been adapted in a similar way by Graham Dunning after he saw Christensen's construction (see case studies in Chapter 4 and 5). More common is the preparation of several tone arms to play several sound layers using one record player. In 1997 Janek Schaefer constructed a tri-phonic turntable combining three tone arms and a system to apply these tone arms to three different records on one platter (Schaefer, 2001, pp. 73-74). Other turntablists using multiple tonearms are, for example, Thomas Brinkmann (Kelly, 2009, p. 168), Camilla Sørensen from Vinyl -terror & -horror, Yuri Suzuki,[19] and Ian Andrews (2013) (see Andrews' four-tone-arm turntable in Fig. 1.9).

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[18] Unfortunately there is no existing documentation of these inventions. L. Abela, personal communication, 7 March 2014 and 11 April 2017.

[19] See Yuri Suzuki's prepared record player with five tone arms from 2008 on his website. Retrieved from yurisuzuki.com/archive/works/prepared-turntable.

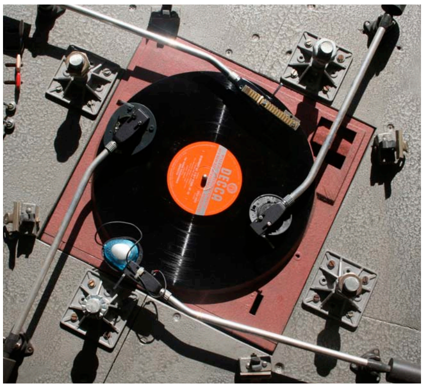

Figure 1.9 Ian Andrews' four-arm turntable constructed by John Jacobs (mid-1990s) with headphone and piezo cartridges. Photo © I. Andrews. Published with Ian Andrews' permission.

Mechanical Parts

The rotation of the turntable's platter in a periodic motion is often utilised to create looping samples, a common tool in experimental turntablism. Loops are often seen as a basic rhythmic and repeating unit (Poschardt, 1997, p. 238), although the achieved sound result depends on the sample (a loop can also create a continuous sound, for example). To create a loop, turntablists apply stickers to or scratch the record surface at the end of the desired sample, or adjust a thread on the tone arm (see case study Graham Dunning, Chapter 5). Instead of following the grooves in their spiral shape, the tone arm is now forced to jump back into the former groove and thus play in a loop. By disturbing the needle's path (or by playing concentric grooves, as mentioned above), the mechanical and automated rotation becomes translated into the cyclic repetition of a sample or other sound element, depending on the surface structure.

Strotter Inst. and Ignaz Schick's practices demonstrate further modifications of the rotational motion of the platter for a distinct sound production. Swiss turntablist Strotter Inst. builds up rhythmic figures by stretching rubber bands above the platter, so that rotating pins on a disc surface cause the rubber band to vibrate; the turntable's stylus is attached to the rubber band and transforms this vibration into sound. German turntablist Ignaz Schick plays 'rotating surfaces' – a setup of turntables and objects (Fuchs, 2013; see Fig. 1.10). He applies the rotating platter simply as a motor to create friction by holding various objects against the platter (e.g. plastic spoons and percussive instruments such as cymbals); a small microphone attached to the turntable base captures and amplifies these acoustically produced sounds.

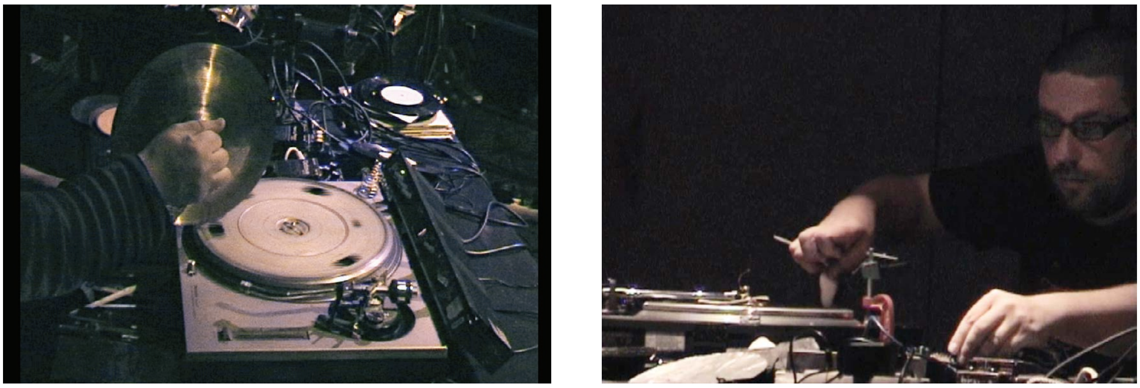

Figure 1.10 Ignaz Schick playing ‘rotating surfaces’ in a concert (Berlin, 2009).

Material Properties

The base of the record player itself, either made of wood, metal or plastic, can be optionally mounted with contact microphones for amplification and used as a percussive sound body when struck with different objects (see, for example, Graham Dunning or Ignaz Schick).

In collaboration with Florian Kaufmann, Marclay conceptually approached the sound production solely based on the materiality of the turntable body in his project *Tabula Rasa*, first performed in 2003.[20] Equipped with three turntables, Marclay starts the concert without any records whilst live onstage Florian Kaufmann creates records of these sounds with his lathe:

> I come to the concert with three turntables but no records. I start making sounds with the turntables only, while Flo cuts an acetate with a lathe on stage, recording what I’m doing: rubbing my finger on the needle, hitting the tone arm, or making feedback with the turntables. Then he hands me that first acetate, which I start manipulating, changing the speed, scratching, spinning backwards, etc., while he’s recording a second acetate. This goes on back and forth for about an hour. By the end I’m manipulating about six discs. [... This] project is still exciting because [...] I’m not quoting from recorded music, it’s only about the live recording on acetate, with all its limitations, fragility and unpredictability (Marclay in Toop, 2007/2014).

This reciprocal process of sound production and sound recording/cutting continuously confronts the live produced sounds with their recorded and mediated versions in an infinite recycling process. Marclay, persistently extending his exploration of the medium’s boundaries, uses abstract sounds solely produced from the record players and the records themselves. These various noises and sounds, commonly regarded as products of technological ‘failure’, can be seen today in line with post-digital tendencies, such as the glitch music genre, highlighting the ‘aesthetics of failure’ (Cascone, 2000). Marclay followed a similar concept of foregrounding these medium-specific noises that were ordinarily disregarded as unwanted noise with *Record without a Cover* (1985). In *Tabula Rasa* however, the abstract material sounds are set into a dialogue with their mediated reproductions from dubplates.

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[20] Short documentation of the project on Florian Kaufmann’s webpage: Marclay, C. & Kaufmann, F. (2008). *Tabula Rasa. A performance for turntables, cutting machine laquers and electronics.* Retrieved from www.floka.com/tabularasa.html.

Various turntable models exist, and for the turntablists these might not be exchangeable due to model-specific idiosyncrasies. The model Technics SL1210 MK2, for example, plays a central role in DJ Culture. As it has proven to be an utterly robust model that withstands various manipulations for numerous hours, it has become a standard device since its release in 1984 (Poschardt, 1997, p. 240). Although the revival of the vinyl record was gaining ground, and despite a petition by fans and users requesting its continuation, the Panasonic Company discontinued the production of this device (Bartmanski & Woodward, 2015, p. 95); however, the production was recently continued again. In experimental turntablism the Technics model has not received such a key role. Marclay, for example, says: ‘The Technics [SL-1200] MK2 and MK3, which every DJ swears by, are annoying machines to me. They’re too delicate, too limiting for me’ (Marclay cited in Bossis, Marclay & Dufeu, 2013, p. 342). Marclay instead uses Rheem Califone turntables, which offer four different speed selections: 16, 33 $^{1/3}$, 45 and 78 rotations per minute (Bossis, Marclay & Dufeu, 2013). French turntablist Alexandre Bellenger (2013) uses Vestax PDX 2000 turntables, which feature a reversed playback function. For live performances, however, rather than bringing their preferred turntables, most experimental turntablists choose to limit their equipment for travelling and incorporate the venue’s record players in their setup.

Sound production based on vinyl records and record players, approached through the logic of the bricoleur, offers vast and specific variations in the creation of sound, manipulation of samples, development of conceptual strategies, and establishment of pre-compositional structures and textures. The following overview summarises the key features:

1.2.1 Vinyl Records

A. Pre-recorded Sound/Samples

- abstract, non-referential qualities
- referential (optional) aspects: figurative, diegetic, semantic or evocatory qualities, e.g. for context-specificity, citations (cryptic)

Sources: Distributed Records (found sound), Dubplates (composed recordings) & Self-released Records (recycling of own compositions/performance recordings)

B. The Record as a Material Thing

- Sculptural aspects (e.g. cut-ups, record shards; using optical or material features)
- Structural aspects (e.g. irregular/regular cut-ups, record shards; creating audio collages and indeterminate sample structures)
- Rhythmical aspects (e.g. regular cut-ups, record shards, disc surface pattern)
- Textural aspects (e.g. prepared surface/topographical features of disc surface)
- Playback manipulations (e.g. off-centre hole, off-centered grooves, locked grooves)

1.2.2 Record Players

- Pickup system (e.g. cartridge preparation, multiple tonearms/cartridges)
- Mechanical Rotation (e.g. loops, motor for vibration)
- Material Properties (e.g. percussive instrument, special features of turntable model)

Through material correspondences, in experimental turntablism the instruments combine sound with sensuality and visual appearance. Having now concluded this overview of the instrument creation and the possible strategies for producing sound using vinyl records and record players, the discussion will now turn to general live performance strategies. The ramifications of such conditions in sound production using records and turntables will be further pursued in the individual case studies.

1.3 Live bricolage, Improvisation, Indeterminacy and Liveness

Most experimental turntable performances are improvised, incorporating indeterminacy and the devices' malfunction to discover unknown sounds and processes (Kelly, 2009, p. 208). In characterising improvised experimental music in general, Keep (2009) emphasises the notion of 'instrumentalizing', which applies to turntablists' performances. Musicians 'seek to discover the performability, intrinsic sonic palette and possibilities for sonic manipulation of objects' while using an instrumentation that is customised and temporary (Keep, 2009, p. 114). Despite individual distinction and accentuation, the experimental turntablists' live performances also appear as a 'live bricolage' in John Richards' sense (2008). In Richards' DIY electronics performances, the processes of making and crafting prepared objects are continued live onstage (Richards, 2008, p. 29). Experimental turntable performances similarly appear as a process onstage in which the artists start to organise and set into relation their repertoire, which consists of their knowledge, strategies, sample collection and instrument preparations. The degree to which this process is determined or freely improvised fluctuates depending on the artist. Terms such as ‘comprovisation’ try to indicate the varying balance between composition and improvisation (Dudas, 2010, p. 29). Live bricolage in performances of experimental turntablism seems mainly to be based on a framework of strategies, structural ideas and chance procedures, drawing on influences from Cage’s experimental music and indeterminacy as well as DIY electronics.

In experimental turntable concerts, the artist’s individual strategies strongly shape the performances and can vary with each concert. Therefore, ‘referents’ relating in an improvisation to rules, systems or patterns (Kenny & Gellrich, 2002, p. 118) seem less valid. Instead, as described in the previous subsections, the turntable and vinyl record’s specificity provides crucial constraints that can limit the performer’s choices in a live performance. By preparing objects and devices in distinct ways prior to the concert, the artist shifts compositional decisions (such as sample order, textures; see sections above) onto the material objects. Each personalised instrument or performing strategy might yield specific limitations. On the other hand, experimental turntablist Maria Chavez intentionally tries to avoid shaping her equipment to liberate herself from strategic material constraints (Chavez, 2012, p. 44); nonetheless, certain material restrictions remain. In contrast to digital sampler devices, the number of samples is bound to the selected number of records for the concert, which latter is limited due to practical reasons concerning the weight and size of the records.[21] The number of turntables used in concert has an influence on the number of simultaneous sound layers. Turntablists who work without vinyl records rely on different constraints, such as those provided by the mechanical functions of the turntables (see the case study of Graham Dunning, for example). Motor skills might influence the improvisatory process and add sensual aspects for the performer (Behne, 1994, p. 120). The artist’s knowledge base – a set of expertise or of skills achieved by training and based on the performer’s experiences – might generally bear an impact (Kenny & Gellrich, 2002, p. 118).

In improvised turntable concerts, experimental turntablists draw on the creative potential of mistakes and chance situations. The likelihood of mistakes occurring when performing with live electronics seems to be a central aspect that requires the performer to improvise (Collins, 2010, p. 8). At the same time, Collins (2010) considers it a result of Cage’s influence that a general demand for electronic instruments enabling indeterminate processes has arisen (p. 8). Allowing imperfections and mistakes in an improvisation appears as the ‘logical end’ of indeterminate music (Piekut, 2014, pp. 774-775). As Piekut (2014) argues, although Cage generally rejected improvisation, his performances shifted towards improvisational situations in the 1960s and 1970s. Post-Cagean improvisation groups developed a particular kind of improvisation by ‘avoiding self-expression and emotion’ (Piekut, 2014, p. 770). A statement by David Tudor is suggestive in this regard:

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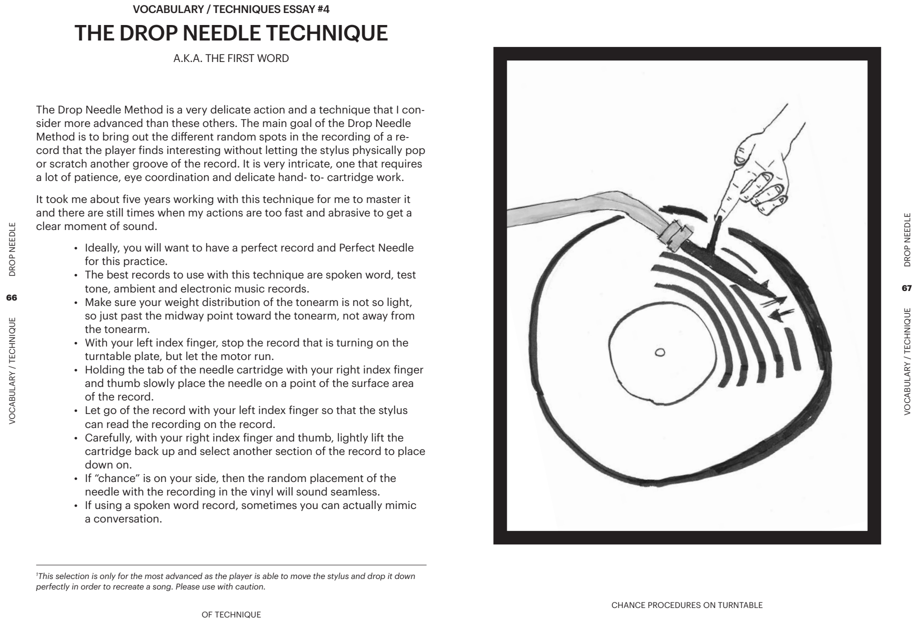
[21] The records selected for each concert might usually not exceed around twenty records.

> I try to find out what’s there – not to make it do what I want, but to release what’s there. The object should teach you what it wants to hear (cited in Collins, 2004, p. 1).

Marclay names several artistic precursors aside from Cage who were concerned with indeterminacy and improvised situations:

> The struggle between control and loss of control is so much at the core of improvised music. Many artists have been interested in that threshold between determinacy and indeterminacy, and not just John Cage, but also Duchamp, Pollock, Burroughs, and others (Marclay in Ferguson, 2010/2014, p. 76).

In improvised performances, the unpredictable outcome of indeterminate processes or accidents might generate new and unexpected sounds that can be interpreted as a meaningful element in the musical context (Kenny & Gellrich, 2002, p. 118). Concurrently, the unpredictable outcome of chance situations ensures partial independence of the sound and provides artists with a certain distance. Marclay appreciates this ‘loss of control’, or rather the handing-over of control to a device, since he can harness the musical inspiration of an external system (Marclay in Estep, 2001/2014, p. 44). While hip hop turntablists and DJs might use headphones for greater precision in the control of record samples, experimental turntablists often select samples randomly by dropping the needle on any spot of the record (see Chavez’s ‘drop needle technique’ in Chavez, 2012, pp. 66-67; see Fig. 1.11). The turntable’s tone needle easily jumps into a different groove, though, which is a risk that turntablists in general have to deal with (Wilke, 2013, p. 420). Compositional elements can accordingly move ‘touch strategies and performance actions’ into the foreground ahead of the precise control of a sound event, as Richards (2013) observes in DIY electronics performances (p. 279).



VOCABULARY / TECHNIQUES ESSAY #4

THE DROP NEEDLE TECHNIQUE

A.K.A. THE FIRST WORD

The Drop Needle Method is a very delicate action and a technique that I consider more advanced than these others. The main goal of the Drop Needle Method is to bring out the different random spots in the recording of a record that the player finds interesting without letting the stylus physically pop or scratch another groove of the record. It is very intricate, one that requires a lot of patience, eye coordination and delicate hand- to- cartridge work.

It took me about five years working with this technique for me to master it and there are still times when my actions are too fast and abrasive to get a clear moment of sound.

- Ideally, you will want to have a perfect record and Perfect Needle for this practice.
- The best records to use with this technique are spoken word, test tone, ambient and electronic music records.
- Make sure your weight distribution of the tonearm is not so light, so just past the midway point toward the tonearm, not away from the tonearm.
- With your left index finger, stop the record that is turning on the turntable plate, but let the motor run.
- Holding the tab of the needle cartridge with your right index finger and thumb slowly place the needle on a point of the surface area of the record.
- Let go of the record with your left index finger so that the stylus can read the recording on the record.
- Carefully, with your right index finger and thumb, lightly lift the cartridge back up and select another section of the record to place down on.
- If “chance” is on your side, then the random placement of the needle with the recording in the vinyl will sound seamless.
- If using a spoken word record, sometimes you can actually mimic a conversation.

[1] *This selection is only for the most advanced as the player is able to move the stylus and drop it down perfectly in order to recreate a song. Please use with caution.*

OF TECHNIQUE

CHANCE PROCEDURES ON TURNTABLE

VOCABULARY / TECHNIQUE 66 DROP NEEDLE

VOCABULARY / TECHNIQUE 67 DROP NEEDLE

Figure 1.11 Examples of the Drop Needle Technique in Chavez (2012, p. 66). Published with Maria Chavez’s permission.

Chavez highlights indeterminate processes that specifically include damage to the medium as an asset for producing unexpected modifications in the sound:

> Experiencing chance situations during performance created the basis of my vocabulary with the turntable. The more that ‘went wrong’ the more I learned about new sound possibilities, i.e. when a needle broke a certain way, it began making interesting sounds on different records. The more they broke the more sounds began to emerge that wouldn’t have without accident and damage (Chavez in Daniel Neumann, see Chavez, 2012, p. 12).

Bricolage and the discovery of new sounds onstage during the improvised concert, as Chavez describes, indicates a feedback process that might influence future concerts, not only by changing the artist’s experiences but also by re-shaping their instruments.

Improvisation is often associated with dialogical processes (Lewis, 2013) that might have an impact on the concert experience of the audience. Marclay sees mistakes and chance situations as contributing to a ‘failed communication’, engendering as a result new and ‘enlightening’ meanings (Marclay in Estep, 2001/2014, p. 44). For audience members, tolerating accidents in improvised performances might even enhance the joy of a success (Behne, 1994, p. 126). In this regard, Marclay notes:

> [...] when it works, it's really magical. It's that tension – between failing and succeeding – that makes for an interesting concert experience (Marclay in Toop, 2008/2014, p. 64).

Marclay argues that in live performances, by contrast with the turntable, the laptop restrains such elements of risk and failure, resulting in less compelling concerts for the audience (Marclay in Toop, 2008/2014, p. 64). However, elements produced by risk-taking might not necessarily be distinguishable from planned actions for the audience members, who may not be familiar with the performer's style (Lehmann, 2008, p. 340).

By emphasising the instance and the mistake, improvisation in general seems to support the liveness of a concert, a crucial element in concerts using playback media as instruments. In daily life, of course, there is no 'undo function' or any way to cancel or correct past events. Life in general resembles an improvisation (Noglik, 1988; Rzewski, 2013). As Philip Auslander points out, the concept of something being 'live' only arose after recording media had been introduced (Auslander, 2011, p. 56). Record players and records as reproduction technology, alongside photography and film, transformed the ephemeral event into a repeatable and re-accessible document. In his famous essay 'The work of art in the age of its technological reproducibility' (1935/36), Walter Benjamin related such artefacts to the loss of 'aura' and 'authenticity', since they technologically reproduce a unique event, a distinct 'here-and-now', and thereby replace it with a 'mass existence' (Benjamin, 2008, p. 22). In Adorno's (1934/1990b) related view a record disc carries a two-dimensional reality that has 'sacrific[ed] its third dimension: its height and its abyss' (p. 57). Reproductions have been generally criticised for lacking 'immediacy, uniqueness, authenticity, intensity and liveliness' (Vowinckel, 1995, p. 277). In today's complex networks of liveness and nonliveness in performances of mixed media and acoustic sound, for example, Paul Sanden (2013), searches for references to the 'live' and human qualities in order to address nuanced relationships and significances (p. 10). According to him, a hip hop turntable concert based on the use of mediated sound/recordings features a 'rich network of liveness' (Sanden, 2013, pp. 14-15). Sanden highlights, that in hip hop turntablism the appeal 'is on the revivification of the dead, as turntablists and other DJs breathe new life into long-forgotten recordings', whereby the DJ 'allow[s] his own authentic voice to be heard' (p. 158). This notion of reintroducing non-live recordings into the realms of live is similarly valid in experimental turntablism, as turntablist Marclay describes this dichotomy in his performances (Richard, 2014, p. 83). In turntable performances, sample manipulations such as scratching dissolve the reproduction's fixed temporal course (Wilke, 2013, p. 420). Sanden (2013) suggests seven concepts of liveness, discussing corporeality, spontaneity, interaction, temporality, fidelity, spatial proximity and virtual liveness. While these notions may be productive in gathering aspects in which 'traces' of the live can be found in 'musical performances' (either in recordings, musical works, scores, performances or hearings) (pp. 15-16), Sanden's discussion does not include improvised acts in performance or a detailed focus on the specificities of electronic instruments and their relationship to the sound (a more detailed view on this will be given in Chapter 2).

By embracing failure, chance and spontaneity in improvisation, specific conditions develop that contrast with the fixed products of reproduction. Imperfections can deny precise, and therefore artificial, movements and mechanical regularity. As music psychologist Klaus-Ernst Behne (1994) emphasises, instead of performing a pre-existing composition, in an improvisation the performers bring forth the creative act itself in the here and now of the performance (p. 124). In improvisation the whole performance, including mistakes and unexpectedness, becomes part of the art, and there is no art work that can be considered distinct from the live performance (Vowinckel, 1995, p. 278).

The liveness of turntable performances might not only be challenged in the context of reproduction media but also due to the conditions of electronic sound production. In the late 1950s, electronic music composition, once fixed on tape, provided the composers with a desirable independence from performers, while for others the music seemed lifeless (Teitelbaum, 1973, p. 194). Cage therefore sought to initiate liveness into electronic music by creating 'a theatrical situation involving amplifiers and loud-speakers and live musicians' (Cage cited in von Massow, 1995, p. 235).[22] Cage's realisation of this live concept in his performances of *Cartridge Music* (1960) with David Tudor formed the basis for the introduction of the term 'live electronics' (von Massow, 1995, p. 235). With the occurrence of a theatrical situation in electronic music, visual aspects were accorded a more equal role next to the sounds:

> [W]e realize that in experimental music sounds no longer have a pre-emptive priority over not-sounds. Seeing and hearing no longer need to be considered separately, or be combined into 'music theatre' as an art-form separate from, say, instrumental music (as it tends to be with the avant garde). Theatre is all around us, says Cage, and it has always hung around music – if only you let your attention be 'distracted' from the sounds: Cage prefers the sight of the horn player emptying out the spit from his instrument to the sounds the orchestra is making [...] (Nyman, 2009, p. 22).

Today electronic music is performed live from a variety of devices. However, as per Marclay's (Marclay in Toop, 2008/2014, p. 64) earlier comment, the laptop as an instrument in live performances might lead to an impression of disembodiment and lack of engagement (p. 64). Bartmanski and Woodward (2015) state that music playback via digital media generally removes any ‘sensual-bodily relation to the medium’:

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[22] Albert von Massow cites an excerpt of the accompanying text for the record of *Cartridge Music* (1960) published 1962.

> The actual process of retrieving the music from the medium, playing of the music, is most of the time pushed beyond sensual experience or aesthetic contemplation. Transferring the digitalized music to computers and portable electronic devices ever deepended this process of mediated detachment. Music has become data, just like many other things (p. 71).

By contrast with devices transferring ‘music as data’, the mediated sounds coming from vinyl records are bound to one specific object – the disc – and a specific playback device – the record player. The reuse of this specific playback medium as an instrument creates ‘electronic hybrid instruments’ that present ‘tactile performing’ onstage due to the sensual-bodily relationship between sound and medium (Barthelmes, 2002, p. 16). For audience members the link between production process and sounding event, and aspects concerning the relationship between human and machine, become accessible, having elsewhere at times seemed forgotten in electronic music (Barthelmes, 2002, p. 16). Responding to general post-digital tendencies in our contemporary environment, these artists oppose sterile designs in digital technology with DIY equipment or ‘dirty’ electronics (Richards, 2008) in order to re-introduce links between electronic sounds and particular interactions in the live situation:

> Combinations and recombinations of patched devices create a sense of experimentation and danger in the unknown and unpredictable. The process of physically patching devices together sets up an expectation of cause and effect, with the potential to link a sound with an action or movement (Richards, 2008, p. 29).

Through preparing and destroying the material of the playback media, the physical effort of modification becomes visible and inseparably merged with the resulting sounds. The instrument’s unusual sound production, based on assembled objects, might add further dimensions:

> [L]istener interpretation could shift between the referential, the conceptual or a purely sonic experience, as many newly discovered or ‘found’ musical instruments had resonances with the objet trouvé of the visual arts (Keep, 2009, p. 115).

Live performances with such handmade devices can therefore highlight the presence of the instruments (Barthelmes & Osterwold, 1996, p. 237). Further conditions in live performances, such as created by a specific venue and social situation, contribute to the audience's shared experience in a way that cannot translate with a recording (Marclay in Toop, 2008/2014, p. 56). These aspects will be further discussed in the methodological considerations of the following chapter.

Conclusion

The use of record players and records as instruments reveals multidisciplinarity in uniting sampler, tool, toy, apparatus, sculpture and sequencer. In respect of this dissertation's research questions, artists encounter the turntables and records prevalently through a logic of bricolage: both as a medium for the playback of samples and as a material thing. This can be observed in the instrument design, sampling strategies, material preparations and live performances. This chapter's examination of the key features and mechanisms within contemporary practices shows that by choosing, assembling and preparing second hand objects, the sound artists in question deliberately work with material constraints and 'secondary qualities'.

The ambivalence of the samples, between abstract acoustic properties and referentiality through its former identity, is used as a starting point for several directions. Distributed records, self-released records and dubplates can provide non-referential sound fragments as tools for manipulations, such as looping and scratching. The samples' heterogenous referentiality might serve for associations, narrations, emotional qualities, citations or for the creation of context-specificity (see the examples with Christmas music or church bell records), depending on the artist's individual concepts. Dubplates and self-released records extend these possibilities, as artists have more control over the records' audio content. However, audiences might find their own subjective references in the samples played.

Correspondences between the record's materiality and the sonic results lead to the creation of compositional elements controlling structural (cut-ups, irregular / regular parts), rhythmical (surface preparation) and textural (surface texture) aspects or playback manipulations. The record preparations can also follow (e.g. optical) criteria for the creation of sculptural objects, which in return deliver sonic results.

Several modifications in design or functionality of record players can be used to cause vibrations in objects (Ignaz Schick's 'rotating surfaces') or to create polyphonic (by adding extra tone arms/cartridges) and loop structures (Graham Dunning, Strotter Inst.). The phonographic translation is often explored via prepared cartridges (Cage & Tudor, Ian Andrews, Alexandre Bellenger) or broken needles (Maria Chavez).

The inclusion in live performance of improvisation and indeterminacy negotiates the fixed structures of pre-recorded samples. The turntable serves as a tool to implement indeterminacy (for example, by the use of cut-up records or drop needle techniques) in deliberately structuring the musical output with degrees of uncertainty. Rather than composing complete and definite structures and musical results, the artists search during the concert for challenges. The process of technological failure is integrated within the performance process to create unexpectedness, which fosters a feeling of liveness. The production of electronic sound with turntables receives tactility through sensual-bodily relationships between sound and medium. The artists vary their improvised live performances by reassembling their instrument setups and placing them in a constant process of change that can be shaped by each performance. The artists' encounter with the turntable depends therefore on the artists' general ideas and strategies, on the sampling strategies and sample selection, on the choices for and material preparations of the devices and objects, and on the actions and structural strategies followed during the improvisation.

This chapter's examination allows my research questions, towards the study of the individual implementation of these mechanism in particular performances, to be better targeted in what follows. The inseparable relationship between sonic and material dimensions in the instrument creation as well as in the live performance guides my methodological considerations in the next chapter. The case studies will elucidate the ways in which these strategies and practices fit into the individual artist's concept.

2. Methodology

Experimental turntablism practices are bound up with the specificities of the playback medium and the live performance format. By analysing three performances of different artists as case studies, I will demonstrate on a more detailed level this interdependency and media-specificity. This entanglement in performances of experimental turntablism brings the situation of technological mediation into the foreground of perception and facilitates reflections on the media technology and on the here and now. These basic premises guide my methodology and analytical steps, which I outline in this chapter.

The characteristics of experimental turntablism practices, as displayed in the previous chapter, and my research questions, require the combination of several methods in developing an appropriate analytical framework (see Table 2.2). The theoretical discussion in this chapter will accordingly draw on theories that engage live performance as process and event. This approach yields new perspectives for musical analysis and allows us to tackle experimental turntablism's special aptitude for acting within referentiality, materiality and mediality. My methods are accompanied by considerations of descriptive tools to transcribe particular elements for the analytical discussion, and they incorporate a new software-based tool, EAnalysis,[1] that allows the simultaneous display of several views by layering video, spectrogram and graphical signs. As sound production and instrumentality in experimental turntablism appear in manifold variations, the selection of three case studies in this thesis aims to capture a range of different artistic strategies. The diversity of these analyses might then serve more generally to refine methods and frameworks in subsequent studies. The methods developed in the course of this study furthermore provide a more general starting point for approaching concerts of improvised experimental music with individually prepared instruments and DIY electronics (see schematic overview in Fig. 2.1), an area that within musicology has only had limited research so far.

2.1 Discussion of Methodology

Experimental turntablism is a relatively young movement, and there is no fully developed methodology for analysing its mostly improvised concerts. The analyst can therefore neither rely on a score nor on a compositional system. Only a fraction of the artists' concerts have been recorded. In order to document and capture these performances, each concert from the case studies was video recorded (see further in 2.2 Tools/Media of Presentation).

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[1] A recently developed audio analysis software created by Pierre Couprie (see 2.2 Tools/Media of Presentation).

Recent studies have explored analytical questions in hip hop turntablism and DJing, such as in Smith (2006), Hansen & Bresin (2004), Hansen, Fabiani & Bresin (2011). Although practices in hip hop turntablism mostly differ from those in experimental turntablism (Bossis, Marclay & Dufeu, 2013, p. 420; Lippit, 2006, para. 2.1), comparable areas are sampling and the use of specific manipulations with records. 'Stickering of records' as a technique to create a loop, for example, can be found in both genres (Katz, 2012, p. 200). Yet in approaching the focus of my research questions on issues of media-specificities and dependencies on the live situation, hip hop-related studies are only partially useful although they provide some ideas for comparison. My preliminary focus was also directed on literature about experimental and electro-acoustic music. Cutler (2000), Katz (2004, 2012), Holmes (2008), Kelly (2009) and Criqui (2014) feature theories and portraits concerning experimental turntablists. Several articles and interviews of and on several experimental turntablists (e.g. Ody, 2009; Schaefer, 2001; Institut für Feinmotorik, 2009; Chavez, 2012; magazine issue *eContact! 14.3* Turntablism, 2013) cover individual practices. An analytical study of experimental turntable performances has to date only been carried out in Bruno Bossis and Frédéric Dufeu's Christian Marclay conference proceedings (Bossis, Marclay & Dufeu, 2013). Therefore, in order to explore the role in live experimental turntablism performances of media-specific aspects, the analytical methodology herein draws on several approaches from related performances and practices, and focuses mainly on the framework presented in Bossis, Marclay and Dufeu (2013) (see Table 2.1).

Bossis, Marclay and Dufeu's study (2013) on Christian Marclay provides important methodological features for analysing improvised turntable performances. Amongst the numerous publications so far on Marclay's output as a visual artist and musician, this analysis is the only study focussing in detail on Marclay as an experimental turntablist and on his improvised concerts (Bossis, Marclay & Dufeu, 2013, p. 419). The strength of this analysis is the authors' acknowledgment of the close relationship between Marclay's sound research, sound production and live performance, as well as the authors' emphasis on the originality of the artist's instrumentation. However, the relevance of their methods is restricted. In comparison to my study, which will investigate one single performance from each experimental turntablist, Bossis and Dufeu discuss several of Marclay's performances in general terms. Furthermore, their exclusive focus on Marclay's practices restricts the wider application of their developed criteria. Although it was not the authors' goal to provide general criteria for the practices of experimental turntablism, more comparisons with other experimental turntablists – such as with the briefly mentioned artist Martin Tétreault – would have situated Marclay's practices in a broader context and underlined the individuality of each turntablist's approach. Bossis and Dufeu try to resolve the challenges in analysing Marclay's improvised music by interviewing the artist and by scrutinising several of Marclay's commercial discs and videos of his performances. My study uses similar sources, such as video recordings of the concerts.

In addressing Marclay's production processes, Bossis, Marclay and Dufeu's (2013) investigation focuses on two main aspects: Marclay's instrument and the musical results in concert (p. 420). I extract criteria from this study's structure for my framework. Criteria 1 and 2 explore the artist and the instrument in an External Study in Part I of this thesis. Criteria 3 and 4 (in a second part of this study, 'Performance Analysis') have been utilised to focus on the musical result in performances. An overview of the main categories of Bossis, Marclay and Dufeu's (2013) structure is provided in Table 2.1. In the following, I will explain my decisions for the adaptation and alteration of these guidelines (outlined in Table 2.2).

	Criteria	Explanations/Examples
Part I External Study	**1 Artist profile**	General introduction to artist and Marclay's work
	2 Instrument	
	Technical scheme of setup	
	Turntables	Turntable types, configurations, modification, evolution of current setup
	Additional tools	Sampler, effect devices as foot pedals
	Musical source & object of experimentation	Vinyl records, modified records
Part II Study of Performance	**3 Sound possibilities (turntable & vinyl records)**	
	Content of vinyl records with timbre as primal element	Diverse, depending on published works and musician collaborations, improvisation in group, usage of pop music, abundance as reaction of recorded music history and mass of distributed records
	Gestural manipulations of the musical source	Speed variations, manual turning, finger regulation (centre or outside) = glissandi and transpositions
	Specificities of the turntable / manipulations	Abstract material, distortion sounds, actions that distort and fragment
	4 Playing the record player in collective improvisations	
	Using the turntable in improvisation	Strong dependence on audience, visible information for meaning, records become 'alive'
	Dialogue with other musicians	Artist's improvisation, sound possibilities: mimetic approach, pitch, noise, rhythm, using records with similar instruments as samples for difficulties to distinguish – tension Examples of several performances
	Formal constructions in improvisation	Qualities of improvisation, free versus idiomatic improvisation

Table 2.1 Structural criteria in Bossis, Marclay and Dufeu's (2013) analytical study.[2]

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[2] Translated from French by the author.

Research Design/ Framework

Part I External Study

Criteria	**Explanations/Examples**
1 Artist profile	General introduction to artist and her/his work
2 Instrument	
2.1 Technical scheme of setup	
2.2 Turntables	Turntable types, configurations, modification, evolution of current setup
2.3 Sound production & objects	Vinyl records, dubplates, self-released records, prepared records
2.4 Additional tools	Sampler, effect devices, other instruments

Part II Analysis of the Performance

3 Sound possibilities	
3.1 Content of vinyl records	Categories: for example, music, speech, noise (Frisius, 2002)
3.2 Manipulations of samples	Glissandi, pitch changes, scratches, loops
3.3 Abstract sounds created by the medium itself	Needle distortion, pops, surface crackling
3.4 Other sound possibilities	Synthesizers, drum machines, samplers
3.5 Musical context	Depending on musical style (e.g. collage-like structures)
4 Materiality and Mediality	
4.1 Embodiment / Content of vinyl records	Phonographic embodiment Human physical actions
4.2 Embodiment / Manipulations	Phonographic embodiment Human physical actions
4.3 Embodiment / Abstract sounds from the medium itself	Phonographic embodiment Human physical actions
4.4 Embodiment / other devices/instruments	Phonographic embodiment Human physical actions
4.5 Presence	Brought forth through specific processes of embodiment: e.g. sculptural objects, distinct playing techniques
4.6 Mediality and formal constructions	Qualities of improvisation, criteria of Fischer-Lichte (2008) concerning attention economy

Table 2.2 Research Design/Framework of this study adapted after Bossis, Marclay and Dufeu (2013).

Part I: External Study

In the External Study of each case study, the first research question assists our identifying how the artists' strategies are produced through their encounter with the medium. The first two categories of Bossis, Marclay and Dufeu's (2013) analysis of the artist and instrument follow a similar question. The decision to extract and gather these criteria in an 'External Study' is inspired by the ideas of François Delalande (1998, 2002). In electro-acoustic music, numerous compositions are preserved as a recording but not as a score. For their analysis, Delalande (1998) suggests therefore an 'external inquiry', which addresses production or reception processes, 'in order to deduce what the analysis must account for' (p. 22). The results are then related to the analysis of the musical object (Delalande, 1998, p. 22). Facing similar challenges in improvised concerts where neither a score nor a recording is provided, I accordingly interview the artists and investigate their drafts to gather further information on the artists' intentions and on the sound production. This is especially relevant in the context of individualised electronic instruments, such as in experimental turntablism. As Bruno Bossis (2006) points out in endorsing this External Study approach, the 'framework within which the problem lies must be examined before appropriate solutions can even be proposed' (p. 106). Another argument for the external study is the documentation of the artistic processes, especially if technology is involved (Bossis, 2006). Awareness of technological obsolescence and of the problem of reproducing and reviving musical works (which can question the work's authenticity) is steadily growing, as is research into solutions for the reliability and sustainability of works with technological means (see for example Boutard & Guastavino, 2012). Since experimental turntablists are at once both performers and composers, without proper documentation their art risks being lost in the future.

The musician, composer and researcher John Richards (2013) considers electronic instruments, in the context of the DIY (Do-it-yourself) and DIT (Do-it-together) movements, as a documentation of the artist's practice and sound research. Richards acknowledges the close connection between composition and musical instruments and proposes a relationship similar to that between a composition and a physical artefact such as a score or recording. As discussed in Chapter 1, sound artists create individual instruments with record players as a result of their bricolage, experiences in improvised performances, and/or circumstances related to financial or mobility conditions. Richards (2013, p. 274) presents a triangular relationship as obtaining between 'sound/music, process and making, and physical object', and this is relevant, too, for experimental turntablists. The schematic in Figure 2.1 represents this idea as an interdependent alliance mostly in effect prior to concerts, as a process; then in live performances, the customised design and unconventional use of the turntables is demonstrated to an audience. The links with performative aspects in the concerts will be discussed later in this chapter (see Part II: Analysis of the Performance). Wilke (2013) describes a similar relationship as obtaining for a DJ, who is dependent on the available technology, the knowledge base, and the samples (p. 420). Despite the individuality of the sound artist's techniques and experimentations, then, a systematic and detailed study can allow comparisons between other turntablists or sound artists. Maria Chavez's (2012) illustrated techniques in experimental turntablism (for example, 'Rhythmic Shards', 'Bouncing Needle', 'Manual loops', 'Backwards language', 'Ruining vinyl', see Chapter 1) provide a useful collection for such comparisons.

Conducting an external study before the actual analysis is crucial to establish appropriate criteria for the analysis of a performance based on individual electronic instruments. The documentation and cataloguing in this thesis of the selected artists' practices relies on interviews with the artists, audio and video recordings, and pictures of the instruments. The turntable manipulations and preparations outlined, which draw on those described in Chavez (2012) and Bossis, Marclay and Dufeu (2013), provide a bedrock for the analyses. The aim is to categorise manipulations and preparations for a better understanding of the turntablists' practices. In following Bossis, Marclay and Dufeu's (2013) structure (see Table 2.1), this thesis uses the following criteria:

Criterion 1 The Artist
The artist profile analyses artistic choices in relation to the turntable's evolution and performing strategies. The search for certain types of sounds or vinyl records, the specificity of the medium, and the influence of other artists and music genres together shape the artist's strategies and compositional decisions.

Criterion 2 Instrument

Criterion 2.1 Concert Setup
A technical scheme of the artist's setup gives an overview of all devices used. Due to the constant evolution of the instruments, my analysis as a reference setup uses the concert setup that was video recorded.

Criterion 2.2 Turntables
As outlined in Chapter 1, different models of turntables provide various features to control the speed or other options based on media-specificities (e.g. backwards playback, or automatic record selection). Alongside the artists' personal preferences, the necessity of touring and performing internationally

can also shape the musical equipment profoundly, since turntables and records are heavy and delicate objects. Specific portable solutions for travelling, such as portable tone arms (see Chapter 4, Vinyl -terror & -horror), have at times been developed.

Criterion 2.3 Musical source and objects of experimentation
covers artefacts such as vinyl records, prepared records and sculptural objects. Prepared records or sculptural objects manifest the processes of the sound manipulation. They are visible references for 'touch strategies' (Richards, 2013, p. 279) and sound research. My study differentiates between distributed records, self-released records, dubplates and prepared records, as based on the discussion in Chapter 1.

Criterion 2.4 Additional electronic tools, such as audio mixers or effect devices, assist in manipulating or enhancing the sound production. Samplers, for example, often help to reduce the number of turntables (Bossis, Marclay & Dufeu, 2013). These tools come with their own specificities.

Part II: Analysis of the Performance

The performance analysis scrutinises the emergence and impact of media-specificities in a live performance context. The performances of experimental turntablists are to various degrees improvised. In order to tackle these conditions, my methodology draws on theories from theatre and performance studies, mainly those of Erika Fischer-Lichte, in which the focus shifts from the artwork[3] to the art event.

Since the early 1960s, artists have presented creative processes increasingly as events (Fischer-Lichte, 2008, p. 18; Brüstle, 2013, p. 17), and this has effected a dilution of certain traditions in Western art. This 'performative turn' led to the establishment of new performative genres such as action and performance art; in music this development started in the 1950s with John Cage's events (Fischer-Lichte, 2008, p. 19; Barthelmes & Osterwold, 1996, p. 233).[4] The shift towards study of the art event has in musicology as yet only occurred tentatively, since it challenges the received, long-standing understanding of music as an artwork (Brüstle, 2013, p. 17). In musicology, methodological discussions moving away from a strict focus on the artwork towards the transient art event draw on theories and concepts from theatre studies, poetic and literary theory, sociology, and (on an intra-disciplinary level) ethnomusicology (Cook, 2001; Brüstle, 2013, p. 17).

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[3] In Fischer-Lichte's (2008) theory the term artwork is understood in equivalence to art object and the German term 'Werk'.

[4] See, for example, the performance of John Cage's *4:33* (1952) by David Tudor (Fischer-Lichte, 2008, p.19).

Here I turn to Fischer-Lichte. Fischer-Lichte (2008) proposes an aesthetic theory of performance rooted in the concept of performativity initially formulated in a linguistic context in John L. Austin's speech act theory and thereafter applied in a feminist social context by Judith Butler (p. 36). Drawing on Max Herrmann's thought, Fischer-Lichte (2008) defines performance as:

> a genuine act of creation: the very process of performing involves all participants and thus generates the performance in its specific materiality (p. 36).

In relation to aesthetic processes, she writes, it is essential to acknowledge:

> the bodily co-presence of those who perform and those who look on ... [A] performance comes into being only during its course. It arises from the interaction of performers and spectators (Fischer-Lichte, 2009, p. 391).

These general definitions of performance are useful in discussing musical performances (Barthelmes & Osterwold, 1996, p. 233; Brüstle, 2013, p. 178); they are especially applicable for improvised performances, such as those in experimental turntablism (Barthelmes & Osterwold, 1996, p. 234). In improvised turntable performances, the artists conflate several strategies, combining chance situations with planned actions, so that a unique musical performance with unforeseen reactions is created. Listeners cannot access the same event repeatedly and independently, because the transient performance by definition only exists in the present (Fischer-Lichte, 2008, p. 75). Rather than focusing on the distribution of recordings, many sound artists let their music happen anew with every performance.

Fischer-Lichte (2008) presents the notion of an 'autopoietic feedback loop' – a self-organizing system that transforms audience members into co-subjects (p. 17) – instead of focusing on an autonomous artwork. However, in musical performances a feedback loop between audience and performer might be less apparent, and the focus may well remain on the artist's actions in the here and now (Brüstle, 2013, p. 176; Barthelmes & Osterwold, 1996, p. 233). Central within this framework, as musicologist Christa Brüstle states (2013, p. 178), is the conflation of composer and performer, as well as that of composition and interpretation. In experimental turntablism performances, sound artists customise or create individual instruments, so that it is not only 'composer' and 'performer' that are identical: as shown in the previous chapter, the performers additionally play the role of creators/researchers/bricoleurs of their instruments (Barthelmes & Osterwold, 1996, p. 234). Therefore, in parallel to the feedback loop existing between performers and audience members, a feedback loop exists between performers and their instruments. In respect of Richards' (2013) notion, as outlined above in Part I (see also Fig. 2.1), of a triangular relationship obtaining between 'sound/music, process and making, and physical object', this interaction generates a feedback loop between performers and their instruments in the process of the performance:

> The 'how the instrument feels' consideration is part of a critical feedback loop between action and instrument response [...] the performative act is a composite of technical and somatic relationships, where the focus shifts depending on the context – performance or practice/rehearsal (Paine, 2015, p. 84).

In such audio-events, the audience is therefore not strictly focussed on listening to the sound but also on the individual instruments or playing techniques specific to the performer (Barthelmes & Osterwold, 1996, p. 233). As already highlighted in the introduction, the reason for visual artist and experimental turntablist Christian Marclay working with particular records has never been solely due to their recorded sound (Bossis, Marclay & Dufeu, 2013, p. 424); instead, he seeks to encounter the vinyl record's hybridity: the record's 'contradiction between the material reality of the art object as a thing and its potential immateriality' (Marclay in Curiger, 1997/2014, p. 24). Marclay therefore considers his performances as 'demonstrative' and puts an emphasis on the audience's sight of the medium's material reality (Marclay cited in Bossis, Marclay & Dufeu, 2013, p. 428).

Marclay's observations in this regard sketch out some important criteria. His observations suggest in essence a dichotomy in the analytical approach Bossis, Marclay and Dufeu (2013) use in their criteria (see Table 2.1) – specifically in criterion 3, 'Sound possibilities', and criterion 4, 'Playing the record player in improvisations' – between immaterial sound and performative aspects. My framework mirrors this binary approach; I follow it by pursuing analysis of the performance from two separate perspectives: that of the physical sound and that of performative aspects (see criterion 3 and 4 in Table 2.2). This dichotomy of entwined elements follows from the theories on performance by Brüstle (2013) and Fischer-Lichte (2001a, 2008). In performances that incorporate electronic media as musical instruments, Brüstle (2013) suggests that we focus on four distinct features concerning actions and sound; features that imply a similar partition between 'sound as acoustic phenomenon' and the 'relationship between sound and body movement' (p. 173f). 'Sound' is here considered as an umbrella term gathering multiple acoustic phenomena such as noise, tone, clang or voice (Brüstle, 2013, p. 173). This definition applies equally for my study.

In musical performances, sound remains the main element for analysis (Brüstle, 2013, p. 13). But in more recent artistic processes crossing musicology and media studies, Großmann (2013a) advocates that we address in analysis the direct link between the sound material, its materiality, and the mediality of the musical phenomena (p. 64). The use of vinyl records and turntables creates conditions in particular that might facilitate an understanding of the physical medium as an 'actual thing', a material object, and wherein what happens with that medium can be seen (Bartmanski & Woodward, 2015, p. 82). Drawing on Fischer-Lichte's (2008) analytical ideas from theatre studies, then, is suitable here, as she suggests that we 'investigate mediality, materiality, semioticity and aestheticity separately, albeit keeping in mind that they are intrinsically interlinked through the performance event' (p. 37). In my analytical methodology I adapt this approach, while the main focus remains on the sound produced by the performers in respect of my research questions:

- How are the artists' playing techniques the product of their encounter with the medium?
- How do the artists' strategies, playing techniques and intersections with the performance environment work together?
- How do these synergies allow the audience to reflect on mediated processes?

As Großmann (2012) rightly emphasises, working with a certain type of technology, such as the turntable, does not define an artist's aesthetic material or lineage of tradition (p. 35). Chapter 1's outline of artistic practices in experimental turntablism forms therefore an essential bedrock for my analysis, in alignment with Fischer-Lichte's methodology. Part I's External Study will extract further artistic strategies and elaborate on how to distil, alongside the main criteria, relevant aspects for my argument.

Fischer-Lichte's analytical approach reformulates the relationship between semioticity and materiality in theatre performance. Features of materiality are not interpreted as signs but instead appear as self-referential and as creating distinct effects. Performances are not to be understood but experienced (Fischer-Lichte, 2008, p. 158); this is because 'performances cannot transmit given meanings. Instead, they themselves bring forth the meanings that come into being over their course' (Fischer-Lichte, 2009, p. 392). The materiality of actions can at times be more relevant than semiotic elements (Fischer-Lichte, 2008, p. 17). This can set conditions for the spectator's reflection (Fischer-Lichte, 2008, p. 18), as their perception oscillates between 'the sensual perception of an object, seen mostly as a physiological process, and the attribution of meaning, considered a mental activity' (Fischer-Lichte, 2008, p. 142). Accordingly, analysing materiality is a key criterion for my research questions regarding how the interdependencies of artist and turntable can provide conditions for the audience to reflect on perception, conditions that are effected by the mediated processes and the technology in use.

As an event mixing live produced and reproduced sounds, the turntable performance sets crucial characteristics in the medial situation, concerning the bodily presence of performers and audience members, the uniqueness of the event, and the liveness of the sound production based on reproduction media (Saxer, 2016b, p. 133). In this context, the 'live' situation, with bodily present performers sharing the here and now with the audience, is seen in a distinct relation to mediated events (Brüstle, 2013, p. 172). Enhancing the analytical methodology with the dimensions of materiality and mediality is therefore key in tackling my central research question, which aims to unveil the medial and sensual meanings in experimental turntablism through the interdependency between media-specificity and live performance.

In this way my study combines Fischer-Lichte's (2008) 'points of orientation' for performances with Bossis, Marclay and Dufeu's turntablism criteria. In my analytical framework (see Table 2.2), criterion 3, 'Sound possibilities', addresses the acoustic phenomenon of the live performance, while criterion 4, relates these findings to the 'Materiality & Mediality' of the performance. That approach allows us to study in detail the interdependencies of sound, performer, instrument, audience and venue, in order to elucidate the role of media-specificities in experimental turntablism.

The schematic in Figure 2.1 displays the notion of the event in terms of my analytical criteria. It locates the production dimension within a triangular relationship that obtains between performer, instrument, and making processes; in the process of the performance that production interacts as part of the feedback loop with the audience and the performance situation.

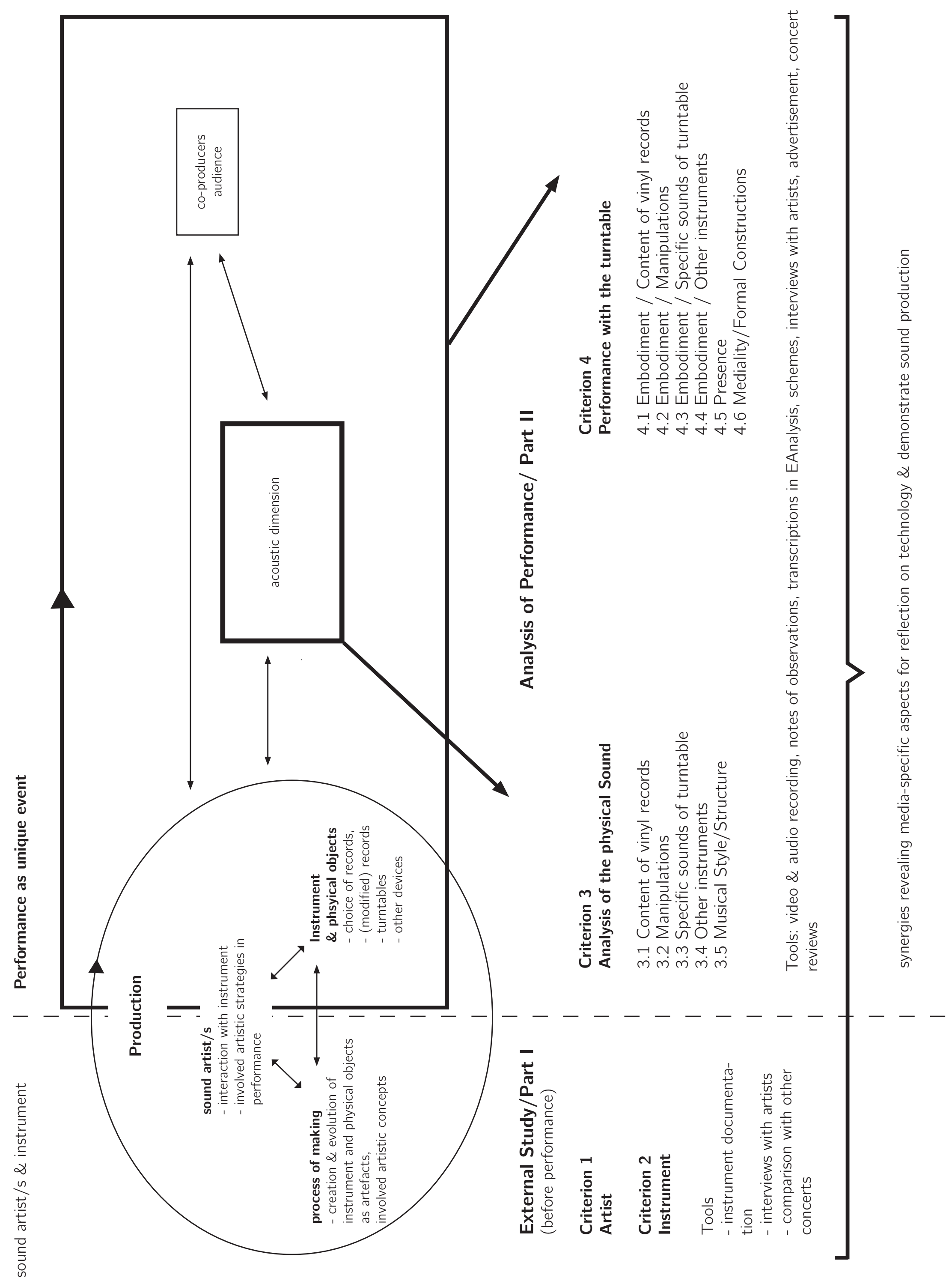
sound artist/s & instrument
Performance as unique event
Production
sound artist/s
- interaction with instrument
- involved artistic strategies in performance
process of making
- creation & evolution of instrument and physical objects as artefacts,
involved artistic concepts
Instrument & phsyical objects
- choice of records,
- (modified) records
- turntables
- other devices
acoustic dimension
co-producers
audience
External Study/Part I
(before performance)
Criterion 1
Artist
Criterion 2
Instrument
Tools
- instrument documentation
- interviews with artists
- comparison with other concerts
Analysis of Performance/ Part II
Criterion 3
Analysis of the physical Sound
3.1 Content of vinyl records
3.2 Manipulations
3.3 Specific sounds of turntable
3.4 Other instruments
3.5 Musical Style/Structure
Criterion 4
Performance with the turntable
4.1 Embodiment / Content of vinyl records
4.2 Embodiment / Manipulations
4.3 Embodiment / Specific sounds of turntable
4.4 Embodiment / Other instruments
4.5 Presence
4.6 Mediality/Formal Constructions
Tools: video & audio recording, notes of observations, transcriptions in EAnalysis, schemes, interviews with artists, advertisement, concert reviews
synergies revealing media-specific aspects for reflection on technology & demonstrate sound production

Figure 2.1 Schematic overview of the criteria developed along the framework for the analysis. This figure summarises the possible interactions between artist, instrument and venue/audience.

Criterion 3: Sound possibilities

The numerous sound possibilities available in experimental turntablism are not limited to samples from vinyl records. Bossis, Marclay and Dufeu (2013) acknowledge this in their study, wherein they differentiate between three types of sound production: **3.1 Content of vinyl records (Samples), 3.2 Manipulations, and 3.3 Abstract sounds created by the medium itself**. That study is based on several of Marclay's diverse projects and musical collaborations, so these three criteria cover a wide range of possibilities. However, experimental turntablists can also invent further sound possibilities (see criterion **3.4 Other sound possibilities**). The analytical framework therefore remains open, for example, to sounds from acoustic instruments or synthesizers, as we will see in Graham Dunning's case study (Chapter 5).

My analytical framework extends Bossis, Marclay and Dufeu's (2013) criteria with guidelines and ideas from more detailed analyses of similar works.

Criterion 3.1 Content of vinyl records (Pre-recorded sound)

Frisius (2002) and Smith's (2006) analyses present detailed and systematic distinctions concerning the sample selection. In an analysis of Walter Ruttmann's collage *Weekend*, scholar Rudolf Frisius (2002) separates all sound fragments into three different categories: music, speech or noise. Sophy Smith (2006) develops a framework for exploring the poietic processes of hip hop turntablists' composed routines. Although Smith (2006) focuses on neither performative nor media-specific aspects of these routines, in her category 'Sample choice' she does present useful differentiations between instrumental and vocal samples, sound effects and other samples (p. 91). Samples from vinyl records are not necessarily narrative or understood as a citation; this is acknowledged in both studies and applies within my framework (see also the discussion in Chapter 1).

Criterion 3.2 Manipulations

Manipulations change and fragment samples. This sound category addresses sounds derived from 'scratching' techniques, for example. In the context of hip hop turntablism, Thomas Wilke (2013) describes the listener's difficulty in identifying scratch techniques; he indicates that without an understanding of the vocabulary or context, the listener might assess a scratch sound simply in its acoustic quality and in terms of whether it creates comfort or discomfort (p. 419). Other examples of such sound manipulations are loops or speed changes in the playback.

Criterion 3.3 Abstract sounds from the medium

Examples of abstract sounds produced by the medium itself are the crackling noises picked up from the vinyl disc's surface, noise bursts from needle drops, or other distortions transmitted by the tone needle. Abstract sounds can result from any kind of distortion, malfunction or imperfection of the mediated process. In contrast to the preceding sound possibilities, these sounds are not based on the content of the vinyl record.

Criterion 3.4 Other sound possibilities

This section covers sounds produced by other devices and objects, such as synthesizers, samplers, or acoustic instruments.

Criterion 3.5 Musical context

My analysis of the musical context adapts Bossis, Marclay and Dufeu's (2013) Criterion 4 (see Table 2.1), and explores the formal constructions of the performances linked with the turntable and live performance. Nevertheless, my analysis conceives the acoustic phenomenon in a live performance context partly as an object. This approach follows thinkers such as music semiologist Jean-Jacques Nattiez (1990), who understands an improvisation as 'the simultaneous performing and inventing of a new musical fact with respect to a previous performance' (p. 88). Nattiez's (1990) tripartitional point of view for musical analysis rethinks the notion of a work and differentiates between three families of analysis: poietic analysis, analysis of the neutral level (the musical result) and esthesic analysis (p. 15). According to him, 'poietics' describes the links to the processes of creation (such as a composer's intentions and strategies), while 'esthesics' refers to a group of listeners' 'perceptive behaviour' (Nattiez, 1990, p. 92). For the analysis of improvisations or open works, Nattiez suggests an alternating approach between neutral level and poietic analysis. He qualifies the application of this tripartitional model, though; requiring it to be adopted only if it can represent the 'weights of each phenomenon's component parts' (Nattiez, 1990, p. 90). Fischer-Lichte's approach to performances acknowledging a feedback loop between producers and co-producers can therefore extend these ideas (see discussion in Criterion 4.6).

Concerts of experimental turntablism are mostly improvised, yet there are therein various degrees of improvisation. In experimental turntablism, the fact that there are more diverse sound possibilities than those based solely on record samples, alongside an artist's individual concepts, results in diverse and unpredictable concert forms. Concerts can differ from performance to performance in their respective use of instrumentation, musical style, or sound material. Christian Marclay's concerts, for example, are not always based on the use of samples from vinyl records: in his collaboration with Flo Kaufmann, *Tabula Rasa* (performed in 2003, Bossis, Marclay & Dufeu, 2013, p. 428), he proceeds by creating abstract noises via the turntable itself, which are subsequently recorded, cut on vinyl, and then sampled (see Chapter 1). This being the case, the analytical framework must consequently remain open to address diverse musical styles. In this regard Nattiez (1990) suggests the analytical situation called 'inductive poietics' – an analysis of the 'result of a process' (neutral level) 'to [draw] conclusions about the poietic' (p. 140); Delalande, however, doubts that Nattiez's inductive method obtains sufficient information about the poietic (Delalande, 1998, p. 16). My framework tackles this through the External Study (Part I).

Although each experimental turntablism concert demands its own analytical strategy, the great number of concerts featuring samples from record discs can best be compared with an audio collage. In his analytical approach to Walter Ruttmann's collage *Weekend*, Frisius (2002) observes the relation between known and narrative sounds and unknown musical contexts. By recontextualising sound fragments, the meanings and associations of identical 'takes' (samples) can be altered during listening. Frisius describes in this regard a transition from noises to music. The morphological similarity in both sound chains – of a car chugging and a violin scale – facilitates this transition (Frisius, 2002, pp. 186-187). In Barbara Flückiger's (2012) study of sound design, such organisation of pre-recorded sound fragments not only in terms of semantic criteria but also in terms of sensory qualities is termed 'musicalising'. Borrowing from Greimas, Flückiger (2012) adapts the term 'isotopy' from literary theory to describe a series of similar sound fragments (pp. 292-293). Different sound fragments can resemble each other in sensory dimensions, such as timbre, pitch, envelope or rhythm, yet their similarity might partly also be based on semantic criteria. In contemporary sound design for movies, such series of resembling sound fragments are a tool to create coherence and assist in constituting sense: an example of this is several door squeaking sounds in a movie (Flückiger, 2012, p. 294). In turntable concerts, the interrelation of morphological relationships and semantic meanings are equally relevant; as discussed in Chapter 1, experimental turntablists use samples due to their ample values. In this study the analysis of the acoustic dimension, after Frisius' and Flückiger's ideas, will therefore focus on semantic, syntactic and morphologic relationships in order to highlight the interplay between the samples' initial referentiality and their sensory elements when introduced into a new musical context. This approach facilitates the inclusion of a wide range of sound possibilities in turntable concerts. On the other hand, fast cuts of heterogenous samples without any seeming order can create an exhausting and chaotic effect and indicate the application of chance procedures.

From a stylistic standpoint, other musical styles similar to electronica, ambient or noise music might require alternative analytical approaches. In Graham Dunning's case study, for example, we find a setup that uses the turntable's rotational movement as the centrepiece in constructing a beat-oriented techno track based on loop structures; that analysis accordingly focuses on rhythmic patterns, comparing them with typical features in electronic dance music (EDM) such as are explored in Mark J. Butler's (2001, 2006) studies. Butler's framework addresses several concepts of rhythm, meter and beat found in the work of Harald Krebs and Maury Yeston, highlighting how in electronic dance music a shift of attention between different metrical layers facilitates multiple ways of listening (Butler, 2001, [37]). Butler's theories are further explained in the Chapter 5 case study in relation to practical examples. In a provisional way, the following criteria serve for an orientation:

Rhythm patterns	Created by timbre, register, pattern, accents, or repetition in relation to manipulation: for example, via the mixing board: high, middle and low range
Textural layers	Figure/Ground relationships
Ambiguous patterns	Dissonance through nonalignment: shifts between on and off beats
Specifics of the turntable(s)/ manipulation/processes	Abstract sound material as source: for example noise impulses, pops.

The comparison of improvised turntable concerts with composed pieces is of limited application, however. In recorded music, without a visual component, distinctions between intention and randomness – and therefore processes of production – remain unknown. Herein, on the other hand, by relating analysis of the acoustic dimension with analysis of the performative aspects in Criterion 4, certain meanings of the acoustical phenomenon can more adequately be considered (see Criterion 4). The analytical approaches just discussed furthermore lack a theoretical framework concerning media-specificity. Record samples, for example, might differ in their sound quality from digital samples and produce 'materialising sound indices' (see Introduction). The playback quality of older and used vinyl records is typically accompanied by a crackling noise. Record crackling, – an abstract sound from the medium – is specific to the vinyl record and record player as a medium and would allow an identification of the sound coming from a record. However, in recorded music such sounds can be added in digital editing processes, making the specificity of the medium undefinable and ambiguous. The aural transparency of manipulated sounds also remains questionable. Through causal listening, as described by Chion (1994), the listener can detect categories of ‘human, mechanical or animal cause’ (pp. 26-27): from a repeating pattern, for example, the listener might deduce a characteristic mechanical movement (Chion, 1994, p. 27). In a turntablism context, a rhythm pattern caused by a looping record groove might indeed direct the listener’s attention to the characteristic mechanical rotation of the turntable and therefore to a specific feature of the medium. Yet such a loop is no longer a clear indication of mechanical rotations. Audio editing processes with modern electronic tools or computer software are able to imitate numerous of the turntable’s sound modifications, such as looping or pitching samples.[5] While ‘scratched’ sounds might appear more specific and recognisable, in recent years digital solutions for DJs have been developed that produce similar results (Lippit, 2006, para 3.; Hansen, 2002, p. 364).[6] Comprehending, then, the cause of the sound production, and therefore the involvement of the medium, often depends on the visual dimension of the performance, as Katz (2012) observes with regard to scratch techniques in hip hop turntablism:

> [...] it is often difficult to understand how sounds are being manipulated when the listener is hearing but not seeing the performance (p. 210).

The most significant ways of conveying media-specificity into the sound quality might then be through abstract sounds from the medium, such as sounds of distorted playback, pops and crackling, noises; however, the listener’s awareness tends to shift these noises into the background of attention (see Introduction). Criterion 4 scrutinises conditions in materiality and mediality that may highlight the performative aspects of media-specificities.

Criterion 4 Playing the record player in a live concert – Materiality and Mediality

Bossis, Marclay and Dufeu’s (2013) research addresses Marclay’s improvisations in the context of a collective with other musicians (see Table 2.1 Criterion 4). In this regard their criteria are only partly of use here, as my case studies generally focus on solo improvisations, with the exception of Vinyl -terror & -horror, a duo project. In approaching the dimension of materiality and mediality, in establishing more detailed criteria than in Bossis, Marclay and Dufeu’s (2013) study, I have therefore engaged Fischer-Lichte's ideas on materiality and corporeality, whilst drawing on the results from Criterion 3 concerning the physical sound. In theatre performances corporeality, as Fischer-Lichte (2008) writes, is a crucial element in generating materiality, while 'generating and perceiving corporeality in performance depend on [...] processes of embodiment and the phenomenon of presence' (pp. 76-77). My methodology adapts these points of orientation towards performances with the turntable, acknowledging its 'hybridity' as an electro-mechanical instrument (Barthelmes & Osterwold, 1996, p. 236). Barthelmes and Osterwold (1996) describe artistic actions that occur in performances with live electronics as technically enhanced body art (p. 236). In regard to my research questions, I mainly focus on the corporeality in experimental turntable performances that is based on the feedback loop obtaining between performers and their instruments (see Fig. 2.1).

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[5] Especially the popular computer software for sound production ‘Ableton Live’ is specialised on a loop-based interface design.

[6] See several digital solutions emulating vinyl manipulations, such as Traktor Scratch by Native Instruments.

Embodiment

Fischer-Lichte's (2008) notion of embodiment in theatre studies emphasises the body's materiality (the phenomenal body), acknowledging the individuality of the body and 'highlight[ing] the performer(-body)'s fragility, vulnerability, and shortcomings' (Fischer-Lichte, 2008, p. 82). This is a useful point of orientation for the analysis of improvised turntable performances featuring individual composer-performers and partly individual instrument setups. However, in audio-events with electronic instruments different conditions have to be considered.

In studies on electronic music, many authors raise concerns about the liveness and disembodiment of electronic instruments in performance (Croft, 2007; Armstrong, 2006; Iazzetta, 2000). Paul Sanden (2013) introduces the concept of 'corporeal liveness', for example, as a 'tool for interpreting some recordings when visual cues of performing bodies are absent' (p. 40). While he focuses on meaningful 'traces' of the 'live' and corporeality in the perception of mediated music that 'reengage with listeners' embodied experiences' (Sanden, 2013, p. 53), my study follows a different path. The missing feeling of embodiment in a live performance, despite the visual cues of a performer using live electronic instruments, seems to be crucial to examine the turntable's specificity in experimental turntablism. In respect of digital devices and instruments such as laptops, the technology's relationship with the sound can appear ambiguous (Paine, 2015, p. 83). When compared to traditional instruments, digital electronic instruments are seen as 'black boxes' (Iazzetta, 2000, p. 264). The physical movement is more or less unrelated to the sound production. This 'disconnect' can become apparent between performer and instrument, as well as between performer and audience (Armstrong, 2006, p. 3). The current study does not discuss gestures in the service of expressivity, as Iazzetta (2000) defines them, 'a change in space, or a body action, or a mechanic activity [... that] embodies a special meaning' (p. 261). Instead, it draws on Fischer-Lichte's (2008) definition of performativity and embodiment in a theatre context, wherein movements are no longer necessarily related to expressivity but refer instead to the body itself, taking into account, for example, the body's energy, intensity or direction (p. 82). My study therefore examines the links between action and sound in live performances on a more microscopic level that helps to distinguish between digital instruments that mediate 'music as data' and the 'sensual-bodily relationship' between sound and the electro-mechanical turntable (Bartmanski & Woodward, 2015).

In his doctoral thesis *Action – Sound*, Jensenius (2007) develops several useful definitions for the relationships of 'music-related body movements' in performances, which appear to correspond with Fischer-Lichte's concepts. As with Fischer-Lichte (2008, p. 90), Jensenius's ideas extend Maurice Merleau-Ponty's phenomenological considerations into theories of enactivism. Referring to an embodied music cognition, Jensenius (2007) points out 'that the whole body plays an important role in our experience of music' (p. 11). In what follows I adapt Jensenius's (2007) conceptual framework concerning movement, action and interaction in musical concerts (p. 42):

- **Movement** refers to the change of the physical position of a body part or of an object. In my study this also covers mechanical movements of a device. Movements can therefore be caused by either a person or an object.
- **Action** refers to a unit of movements: for example, in sound manipulation techniques. However, Jensenius's differentiation between goal-directed movements and 'fidgeting' (non-goal-directed or unintended movements) is difficult to maintain in regard to improvised turntable concerts and will therefore be disregarded.
- **Interaction** refers to the reciprocal relationship between performer(-body) and objects.

Jensenius (2007) suggests further relevant 'Functional Aspects of Musicians' Movements' in the analysis of musical performances (p. 46). I adapt the following:

- **Sound-producing movements** are movements necessary to produce or modify sound. I will define these movements further in the following. They can be described phenomenologically (referring to the movement's temporal or spatial dimensions) or intrinsically (referring to the conditions of the movement).
- **Ancillary movements** are supporting movements, such as phrasing or entrainment movements.

- **Sound-accompanying movements/actions** are movements made to trace or mimic the sound-producing action; these can be executed either by the performer or an audience member.
- **Communicative movements** are movements related to forms of communication that are categorised into endogenous, performer-performer or performer-perceiver. Theatrical elements can be described as communicative movements, for example.

I mainly discuss sound-producing movements in regard to my research questions, and this terminology forms a useful bedrock. Jensenius' differentiation between 'action-sound coupling' and 'action-sound relationship' is not fruitful for my study of sound production with the turntable. In contrast to 'action-sound coupling' (Jensenius, 2007, p. 21), such as occurs when we watch performances using acoustic instruments, 'action-sound relationships' refer to artificial relationships in sound-producing actions, such as occur with electronic devices and virtual interfaces (Jensenius, 2007, p. 28); yet within this conceptual schema the electronic devices are not further differentiated. Jensenius's (2007) criteria for whether the relationships on the 'action-sound palette' may be regarded as strong or weak also appear rather general, as in his argument that 'we can never really trust the stability of an artificial action-sound relationship' (p. 29).

In designing electronic instruments, more detailed mapping strategies or criteria have recently been developed (Iazzetta, 2000; Armstrong, 2006; Croft, 2007). Croft's (2007) eight detailed criteria, in particular, with regard to electronic instruments propose an 'instrumental relationship' between sound and action that facilitates our tackling the turntable's and records' materiality, as based on a mixed system of mechanics and electronic amplification. I here briefly examine each of these authors in turn, before addressing Croft's eight instrumental criteria in detail.

In discussing live performances of electronic music, Croft (2007) expresses doubt as to whether the requirement on the part of the performer for engaged interaction with digital instruments may provide the desired sense of liveness and embodiment. Croft questions in this respect the richness of meaning for the audience when the simplistic relation of sound and movement is made apparent. Instead of this he accords importance to the 'appearance of human fallibility and corporeality', an aspect he relates to Roland Barthes' notion of the 'grain' (Croft, 2007, p. 65). In a manner that is not unconnected to Fischer-Lichte's concepts of materiality and embodiment, Roland Barthes' (1977) notion of the 'grain' signals an opposition to simplistic codes of communication in the representations of feelings, and traditional expressivity. Barthes describes the grain of the singing voice as the 'geno-song' (a reference to Julia Kristeva) that relates to 'the materiality of the body' (Barthes, 1977, p. 182). Adapting Barthes' theory, Croft (2007) describes the 'grain' in a wider sense as:

> the appearance of the body in the (musical) text – the body of the performer, and the sounding body of the instrument. The grain, the 'imperfections', the unrepeatable, constitute, I would argue, the reason for the continued importance of performance (p. 65).

The other authors' theories offer further insights. Garth Paine (2015) defines the causal relationship between physical movements and the sound of electronic instruments as the 'techno-somatic dimension', a dimension shaped by the 'material properties that establish its [the techno-somatic's] nature' (p. 84). In addressing the materiality of this interaction in music, Paine suggests examining elements such as 'precision, gestural qualities of engaging the instrument, nature of control (continuum, events etc.), [and] the fluidity or viscosity of engagement' (Paine, 2015, p. 84). Newton Armstrong (2006) notes different forms of resistance of conventional acoustic instruments. He argues:

> We can assume, then, that in much the same way that the contingencies of human embodiment play a determining role in the dynamical emergence of performative patterns, so too do the contingencies of instrumental embodiment (Armstrong, 2006, p. 101).

Iazzetta (2000) expands on this, highlighting the importance of the instrument itself:

> [The musical instrument] establishes an almost magical relation between gesture and sound and, in this way, the musical instrument is not only the medium for the musical idea, but also part of the idea (p. 264).

This is especially true with regard to individual and customised instruments, as in experimental turntablism. I address Iazzetta's point further in the section on the criterion 'Presence & Mediality'.

In experimental turntablism, the instrument's material properties can generate embodiment, revealing the media-specificity of the turntable. Here Croft's eight criteria for musical instruments are useful. Through Croft's considerations we establish a link between Fischer-Lichte's ideas of embodiment in the theatre and the condition of electronic music instruments. Croft (2007) acknowledges that electro-acoustic systems demonstrate limits that might fulfil the conditions of instrumentality; yet he questions whether these ‘limits [can combine] into a single instrumental identity’ (p. 66). He furthermore raises the question of how the notion of liveness is dependent on the ‘instrumental paradigm’ and suggests that, ‘“liveness” involves relatively simple relations between input and output’ (Croft, 2007, p. 66). For Croft (2007), simulating with digital instruments a resistance or the limitation of a physical body appears hardly desirable and, indeed, rather ‘second-rate’ (p. 66).

Croft’s (2007) ‘conditions for an instrumental relationship’ might here be compared with a sound possibility using the turntable and a vinyl record (p. 64). The turntable example I will consider is sound production via the manipulated playback of a record, whereby the sample of the record is altered through its skewed and de-centred spinning. Such manipulation might be achieved by the playback of an LP with a hole drilled off-centre, or by the playback of a 7-inch vinyl record without a spindle (adapter) to fix the disc to the centre of the rotating platter (see also Chapter 1). The turntable’s responses in this regard fulfils most of Croft’s criteria for an instrumental relationship:

1) Proportion

The response of the turntable is proportionate to the movements of the performer or device. A slightly off-centred rotation of the record, for example, alters the playback’s speed and therefore the pitch of the sample.

2) Energetic and morphological characteristics

The energy of the rotational motion translates into the sound as the alteration of its pitch.

3) Synchronicity

The onset of the turntable’s sound is synchronous with the record needle’s touching the groove on the disc – assuming that the channel output, for example on the mixing desk, is open.

4) Timbral continuum, affinity, or fusion

The condition for a timbral continuum is only partly fulfilled. Sounds produced through manipulation are strongly dependent on the record content. Sounds produced through off-centred playback of a record can have a stable, characteristic effect, alternately decreasing and increasing the sample pitch. Using related samples, such as voices and the spoken word, produces similar timbral effects. The modification of the samples caused by the irregular rotation is mostly recognisable and constant, comparable to a sound effect, such as reverberation.

5) Stable relationship

Due to the dependency on pre-recorded sound, the relationship between turntable and performer is nevertheless not as stable as with an acoustic instrument, such as a violin. However, the use of abstract sounds from the medium can provide a stable relationship, which will be shown in Chapter 3's case study in the example of the needle drop technique.

6) Consistent relationship

A consistent relationship between instrument and performer is evinced in how the instrumental manipulation creates similar effects with all samples.

7) **Learnable relationship**

This makes the turntable also a learnable instrument; the turntable has to date primarily been a self-taught instrument.

8) Fine-grained mapping

The mapping of the sound is also sufficiently fine-grained: minimal movements can alter the sound (see Joke Lanz's playing techniques in Chapter 3's case study).

In sum, the turntable meets most of these conditions for an instrumental relationship, although the characteristics of timbral continuity and the stable relationship between instrument and performer are more flexible than with traditional instruments. In the interaction of electronic instrument and performer, Croft (2007) does not advocate 'purism' (p. 65): that is fulfilling all eight of the criteria.

In experimental turntablism, the bodily resistance of physical objects helps shape the sound through the material properties and mechanical functions of the turntable and the vinyl discs. The alteration of the pitch manipulation depends on the position of the off-centred hole in the LP, for example: the greater the distance of the hole to the centre, the more the pitches are transformed. In the playback, a change in these spatial relations serves to manipulate the envelope of the record sample. The speed of the rotating platter also influences the unstable off-centred playback: at a high speed (such as at 45 rpm or faster) the tone arm, depending also on the counterweight, might easily leave the groove and jump off the record due to the unbalanced rotation; the physical material and the mechanics of the turntables and records therefore provide a friction that generates the 'grain' or embodiment in the sound (re-)production. This 'form of embodiment' emphasises simultaneously the media-specificity and the dependency on the playback medium. However, the precise 'instrumental relationship' between sound and movement, as well as the embodiment, can vary. Similar to Jensenius's (2007) considerations of an 'action-sound palette' the instrumental links can be stronger or weaker with a continuous range of possibilities. The more of Croft's conditions the relationship between device and sound fulfils, the stronger the 'instrumental relationship'. The dimension of grain or embodiment, though, arises from material limitations and dependencies. Yet in combination with a stronger instrumental relationship, the embodiment becomes more clear.

The following scenarios focus on embodiment in relation to the turntable's sound possibilities as found in criterion 3. Automated movements of the turntable are considered separate from movements produced by human action. I define as 'phonographic embodiment' a distinct form of embodiment that emerges via automated and mechanical movements of the record player and that emphasises a bodily action-sound relationship and material resistance. In general my analysis focuses on embodiment as well as Croft's criteria for instrumentality and detects the material resistances present in the musical performances. Such forms of embodiment contribute in a sensual way to the audience's understanding; irregularities or limitations bring the processes of technical mediation to the foreground of audience perception.

Criterion 4.1 Content of vinyl records – Playback of pre-recorded sound

Phonographic embodiment

After the stylus is placed into a groove, the playback works automatically with the rotating record. The stylus runs along the groove leading towards the inside of the disc at a linear speed. This electro-mechanical process of record playback is partly comparable to mechanical instruments, which relate movements to the resultant sound (Iazzetta, 2000, p. 266). Observing the straightforward connection between mechanical movement and record playback supports the listener's engagement, as record collectors report in the article *It kind of gives you that vintage feel*:

> The moving parts of a turntable and the ability to see what's going on allow you to participate more in the music – there's a more participatory nature to listening to vinyl than listening to MP3s or CDs (Matt cited in Yochim & Biddinger, 2008, p. 190).

> There's something about seeing the record, seeing it go around. You don't get that with CDs, but with vinyl, you can see the music coming off the record (Chris cited in Yochim & Biddinger, 2008, p. 191).

The sight of the record player's mechanical playback – the rotation of the vinyl disc – embodies the sound production in a limited way. The sounds of the record content are not directly related to the turntables' mechanical movements, and only Croft's third criterion 'Synchronicity' for an instrumental relationship applies. Yet the onset of the needle on the record surface, the record's rotation, the qualitative aspects of the record's surface (such as dust or scratches on the surface) as well as the position of the tone arm (on the rim or in the middle of the record) visually indicate the playback, and in doing so associate with the sound a distinct materiality. This is evident in the fact that if in a performance the record did not rotate or the tone arm did not rest on the record, one would hardly presume that a physical sound would come from the record. This 'incomplete embodiment' – which differs from other playback media or electronic devices for sampling such as samplers or computers – is specific to the turntable; that said, with an increasing number of turntables the links between material object and playback sound can be more opaque (see Chapter 4). The playback and sound production is comprehensive, yet the reproduced sound is not altered. Sample manipulations and the creation of abstract sounds from the medium itself can create even stronger senses of embodiment, as they create 'instrumental relationships' (Croft, 2007) on top of this incomplete embodiment of the record playback.

Human physical actions

In regard to record playback, prevalent within a performer's physical actions are the positioning and control of playback start and stop by dropping the needle on the disc's surface or lifting the needle from the disc. On a record disc the timeline of the recorded sound, in the form of a continuous groove, is engraved as a spiral on a compact space; this facilitates direct access to any position on the disc and therefore to any time of the recording. These actions can partly establish an instrumental relationship via synchronicity and a learnable, consistent and stable relationship. Although the sound production is mostly dependent on the record content, the needle drop creating a noise burst – an abstract sound from the medium dependent on the force of the drop – can reveal an energetic characteristic and refer to the materiality of the record needle.

Criterion 4.2 Manipulations

Manipulations of the sound via the record player highlight the turntable's status as a mechanical instrument. The mapping of such movements into sound is determined by mechanical laws and the design of the media (Iazzetta, 2000, p. 264). At the same time, the mechanical laws limit the possibilities of manipulating the record's sound content, revealing the record's resistance and media-specificity.

Phonographic embodiment

The turntable's mechanical processes give the performers several possibilities for manipulating record content through automated functions. There are several ways, for example, of creating an off-centred playback, which causes a wobbling sound effect (see example above). Such manipulation is partly dependent on the physical preparation of the vinyl records or turntables (for example, preparing an off-centred hole in a disc; or using an extended spindle centre, as Greta Christensen does in Chapter 4). Certain turntables are equipped with functions allowing an automatic start and stop of the playback or record selection. Another common manipulation is the creation of a loop. This can be achieved by preparing the material in advance: either the groove is locked; a sticker blocks the continuous groove; or a thread on the tone arm restricts the arm's progression (see Chapter 1). Such material alterations embody within the music the instrumental sound manipulation.

Human physical actions for manipulation

Hansen (2015) has outlined, in regard to hip hop turntablism, certain complexities in handling the record player. In order to produce a scratch with a forwards and backwards movement, for example, the sound is dependent on 'the sample, the starting position, the place of returning the record, the extent of the movement, and the crossfader movement' (Hansen, 2015, pp. 50-51). As Hansen (2015) emphasises, the energy of the movements directly affects the sound, which is why that control, whilst appearing 'simple' to the audience, is in fact complex (p. 51). In experimental turntablism although such hip hop playing techniques are only partly in the foreground (see case study Joke Lanz in Chapter 3), Hansen's observation is more broadly applicable to sound manipulations effected on vinyl records. The physical actions of moving the record under the needle with the fingers, for example, can translate into changes of timbre, rhythm, envelope or morphology of the samples, resulting in glissandi, noisy elements, reversed playback or rhythmical patterns.

Criterion 4.3 Abstract sounds from the medium itself

This criterion mostly addresses abstract sounds produced by the medium itself. Since the material characteristics of the media determine in this context the sound production (without being reliant on pre-recorded sound), the action-sound coupling generates a strong instrumental relation and prominent embodiment. The performative aspects directly reveal the materiality or raw mechanics of the medium, usually in relation to a malfunction.

Phonographic embodiment

Any disturbance of the record needle creates a distinct sound. A scratch on a blank surface disc, for example, or the use of an obstacle such as a sticker, creates a noise burst on each rotation. Cut-up records, comprised of several broken record pieces glued together, similarly create noises and bursts when the needle jumps over their glued transitions. These distortion sounds might be visually represented in the imperfection or damage of the material in use (see also Chapter 1). The typical record crackling is caused by miniscule scratches on the record surface. Accordingly, prepared surfaces (such as with sand paper) or very-repeatedly played records can serve to amplify such crackling noises. Here the sound production is entirely based on material resistances and the mechanical movement, creating a strong instrumental and embodied link between sound and movement.

Human physical actions

These actions include tapping certain parts of the tone arm or stylus to create percussive low frequencies. Drop needle techniques, as described by Maria Chavez (2012, p. 66; see Chapter 1), similarly create abstract sounds entirely dependent on the material properties of the turntable. The sight of these unconventional playing techniques facilitates audience reflection on the technology. Such movements, in seeming to damage the medium, foreground its material characteristics and instrumental relationship.

Criterion 4.4 Embodiment / Other devices

My main focus concerning media-specificity is directed towards the turntable and the performer's interaction with it. Other devices used in relation to embodied playing, and their media-specificity, are discussed in detail in the case studies. Examples of such additional tools are acoustic instruments, such as cowbells, electronic instruments, and effect devices.

Presence & Mediality

Criterion 4.5 Presence

In relation to the notion of presence, Fischer-Lichte (2008) writes:

> Today's aesthetics discourse sees presence as a specific aesthetic quality not just of the human body but, perhaps first and foremost, of objects from our environment, including products of technical and electronic media (p. 93).

However, her 'strong' concept of presence, which I see most relevant in this study, excludes products of electronic media, such as reproduced sounds, as they 'create the impression of presentness without actually bringing forth these bodies or objects as present' (Fischer-Lichte, 2008, p. 100). The notion of presence therefore refers to the physical bodies of performer and objects. Presence is considered to describe a performative (rather than expressive) quality that enables the performer or object to hold the audience's attention (Fischer-Lichte, 2008, p. 96). Barthelmes & Osterwold (1996) note that, in live performances using DIY electronics, the presence of the objects used or the presence of the room can appear more in the foreground than the presence of the performer (p. 237). This raises the question of the balance in performance between human actions and automated functions; that is, whether performer and instrument appear as a unity or whether, on the contrary, the phonographic processes in the performance challenge the idea of human authorship.

phonographic presence

In the era of digital technology, the vinyl record has become considered a conspicuous and unique material object. However, media-specific appropriations support the notion of a 'phonographic presence', a distinct presence related to turntables and records and phonographic embodiment. Experimental turntablist Janek Schaefer, for example, is aware of the visual effect of the conspicuous appropriations of his tri-phonic record player with three tone arms. Inspired by Philip Jeck's *Vinyl Requiem* (1993) for 180 record players, Schaefer decided to combine several record players in one unit; but it's 'a very visual idea as well — people look at it and they go, "A three-armed record player — what does that sound like?"' (Schaefer in Eastley, 2007, p. 57). During the performance the artists' turntable setup can bring forth a form of presence and thereby hold the audience's attention.

human presence

A performer can generate presence 'through specific processes of embodiment', such as the skilful execution of certain techniques (Fischer-Lichte, 2008, p. 96). Katz (2004) emphasizes in this regard the additional appeal that comes from watching the skills of a hip hop turntablist:

> In addition to the verbal and instrumental aspects of a routine, the physical element can be just as crucial. Part of the appeal of a successful routine is the sight of the swift and intricate motion of the DJ's hands; in fact, it is sometimes hard to appreciate the difficulty of a routine without seeing it (p. 126).

In live performances of experimental turntablism, the sight of an embodied use of the turntable (as defined above) facilitates the audience's engagement and comprehension and might generate the performer's presence. Less comprehensive actions, such as movements that are too fast to track in detail, may also indicate skilful playing and expert knowledge of the instrument. The distinctiveness of the performer's creative authorship increases with the transfer of a certain stylistic language or vocabulary through the personalised use of the turntable.

Criterion 4.6 Mediality and formal constructions

This study also focuses on the live performance's medial conditions: for example, the bodily co-presence of performers and audience members, and the directness, liveness and process of the artist's performance. By contrast, however, in experimental turntablism the sound production dimension creates ambiguity for the audience due to the performer's use of pre-recorded sound (often from other authors), manipulated samples and live produced sounds from the medium itself. Fischer-Lichte (2008), discussing a theatre performance incorporating reproduction technology,[7] points out that despite this situation of mixed media, the live performers retain their liveness and the presence of the 'real' bodies can even be emphasised by their contrast to mediated events (p. 73). In this study, the products of electronic media are limited to the use of pre-recorded sounds.

Performances with the turntable as an electro-mechanical instrument can fulfil an 'instrumental relationship' after Croft's (2007) criteria and map aesthetically meaningful differences from the input to the output sound, which Croft defines as 'aesthetic liveness' (p. 60). I therefore refer liveness to an embodied playing mode. For the audience, a visual impression of the feedback loop between performer and reused playback medium often provides information on the level of sound production, allowing the music's media-specificity to become apparent. In the context of a turntable concert, observing the sound production processes can be crucial. Due to its corporeality the vinyl record is often presented in these terms as 'real' or 'authentic' (Bartmanski & Woodward, 2015, p. 91). Watching the sound production processes can help the audience differentiate, for example, between, on the one hand, mediated and live produced sound and, on the other, random and intended actions/movements. A common feature of improvised turntable performances using conspicuous devices is, after the concert, audience members gathering around the performer's equipment in order to get a closer look at the unusual objects used in the sound production. Discussing John Cage's famous composition *4'33''* (1952), an audio-event in which the performer is instructed not to play any note, Nattiez (1990) acknowledges that 'music' here is not bound to 'the merely acoustic dimension of sound' but intersects with the audience's 'knowledge of a poietic dimension' (p. 43). This observation has wider application. Insight into how the sound is produced during a turntable concert enriches our knowledge of the artist's encounter with the instrument and thereby underpins the emergence of meaning.

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[7] Fischer-Lichte discusses the theatre performance *The Idiot* by Frank Castorf.

In Fischer-Lichte's 'auto-poietic feedback loop', the process of performance is presented as 'a self-organizing system which must permanently integrate newly emerging, unplanned, and unpredictable elements' (Fischer-Lichte, 2008, p. 165). Although this is useful for our methodology, it must also be noted that, since the audience's participation in a turntable concert strongly depends on the performer and performance, it can therefore vary to a considerable extent. Graham Dunning's case study shows, for example, that the auto-poietic feedback loop between performer and audience can be temporarily interrupted: towards the end of Dunning's performance, a verbal argument between two audience members broke out just in front of the stage; yet presumably due to the high sound level of the concert, though, Dunning noticed neither the women's shouts nor the audience's shift of attention from the concert to the fight until after he had finished the concert (see further in case study Graham Dunning in Chapter 3). Along these lines, Marclay describes in an interview the general impact audience can have on the performance:

> Records imply a more passive and domestic relation to the music, whereas every performer will tell you that the audience plays a role; they're participating, they create an atmosphere, they reflect what's happening on stage and influence it in some way (Marclay in Curiger, 1997/2014, p. 24).

This being the case, analytic methodology should provide suggestions for a framework whilst nevertheless acknowledging the uniqueness of each performance.

Another factor is the concert venue. The community of performers and audience members affects the feedback loop in the performance (Fischer-Lichte, 2008, p. 51). In this regard the specificity of the venue can play a part in shaping the performance's perceptual conditions (Brüstle, 2013, p. 319). At times the venue might be a place originally designed to serve a purpose other than that of a concert hall. Improvised concerts often provide a bar service during the concerts, for example, so that audience members move around during the concerts. Seats are not necessarily provided. A high-volume of the electronically amplified concerts might have conversations taking place during the concert.

Another question is that of the concert's form related to the 'auto-poietic feedback loop' in the process of performance. A collage-like form, such as is often used in experimental turntablism, tends to allow disruptive breaks and unexpected transitions. Derek Bailey (1993) claims that improvisations are generally formless. Structures in a traditional sense are therefore not expected. Dependent on the performer, the degree of improvisation in the turntable concerts varies. The turntablists selected for my case studies partly prepare their concerts. For the artists, the selection and preparation of records and devices for the concert largely determines the sonic output. Ahead of a concert, Camilla Sørensen and Greta Christensen of Vinyl -terror & -horror prepare drafts of a rough structure or communicate transitions and cues with each other. Visual and conspicuous elements of the turntable setup, related to the design and use of the playback medium, might indicate a distinct instrumentation, such as several turntables or more than one tone arm per turntable (see Janek Schaefer in Eastley, 2007) or sampling devices (see Christian Marclay in Bossis, Marclay & Dufeu, 2013). In Graham Dunning's case study (see Chapter 5), the construction and deconstruction of all instrumental parts to a great extent determines the form of the concert.

Generally speaking in experimental turntablism performances, multiple selection criteria interact in the emergent phenomena at play in the performance. This is related to the improvisational dimension of the performance. Fischer-Lichte (2008) – borrowing from theories of attention economy by Michael H. Goldhaber, Jonathan Crary and Walter Seitter – offers some suggestive ideas for identifying structural elements. In a live performance, the audience might identify dependencies on rhythm, temporal structures or chance operations by taking 'intensity, deviation, surprise, or conspicuousness' into account (Fischer-Lichte, 2008, p. 165). However, formal constructions in the physical sound do not necessarily equate to structural elements emerging due to performative aspects of the musical event. For example, a surprising action, such as breaking a vinyl record in front of a microphone, might receive attention less because of the sound than because of the conspicuous physical action.

These considerations, together with the theories discussed in Chapter 1 and the findings of the Part I External Study, will be related to the context of the physical sound (Criterion 3) (see overview in Fig. 2.1). Although criteria 3 and 4 are separated in my framework (see Table 2.2), in the single analyses of the case studies they serve more as points of orientation than structural criteria. Due to the highly diverse and unique performances of experimental turntable concerts, developing a general model is a challenging task. As Bossis (2006) says, during the last century in contemporary music 'we are at a point where each work is individualised' (p. 102). Although some methodological aspects have been adapted from Fischer-Lichte's theatre theory, that approach has not been transferred in its entirety. My analytical methodology has been developed to investigate turntable performances in regard to a specific question, concerned with the interdependencies of the media-specificities pertaining to sound, materiality and mediality in performance. The methodological framework (Table 2.2, Fig. 2.1) outlined accordingly aims to study the artists' encounter with the turntables in live performance without providing a single 'true' interpretation of an artwork. Taking off from this position, the further goal is to explore conditions of perception and reflection that occur during the process of the performances.

2.2 Tools/Media of Presentation

External Study – Sources and Tools

- Web-based information about the artists
- Interviews with the artists (transcriptions of author's own interviews as well as published interviews)
- Literature on experimental turntablism techniques (e.g. see Chavez, 2012)
- Pictures of setup, records and other tools
- The artists' publicly released recordings and release reviews
- Videos of the artists' turntable techniques
- Field studies on turntables

Analysis of the Performance – Sources and Tools

- Findings of the External Study
- Notes on concert observations
- Video documentation (two cameras)
- Separate audio recording of concert (direct sound from PA and from room microphone)
- Interactive graphical representations with concert video
- Event flyers and web-based information about the concerts and artists, interviews with the artists after the concert.

As with Fischer-Lichte's suggestions for the analysis of theatrical performances (Fischer-Lichte, 2001a, p. 241), documentation of the concert on video and audio media, along with notes of the author's observations, were prepared. Interviews with the artists and transcriptions (see videos in Appendix C) build on this material. Further analytic material, if available, might include information from concert advertisements and online feedback/comments/reviews.

Video recordings

Making a video recording of a live performance introduces a certain tension into that performance's experiential uniqueness. Aside from any questions of the recording quality, as Fischer-Lichte (2008) argues, in watching a video recording, 'the specific materiality of the performance itself simply vanishes' (p. 76). A video cannot adequately represent the impression of the live performance; this is also the view of Fischer-Lichte and Peggy Phelan (Fischer-Lichte, 2008, p. 75). The video recording instead becomes something else, as performance artist Laurie Anderson (2004) indicates:

> When live art is documented on film or audio recordings it immediately becomes another art form – a film or a record – another rectangle or disk. It's in the can. But live art is continually elusive (p. 7).

Anderson (2004) admits, though, that video documentation of her performances nevertheless protects her work from disappearing and staves off any confusion that might arise from inaccurate information. In this regard such 'documentations rather create the conditions of possibility to speak about [sic] past performances at all' (Fischer-Lichte, 2008, p. 75). Notwithstanding the incompleteness and technical modification the video tool entails, it remains a useful support for the memory of the analyst (Fischer-Lichte, 2001b). It is therefore advisable to triangulate methods by attending the performance, taking notes, and subsequently studying the video recording as a document so that more details can be recalled (Fischer-Lichte, 2008, p. 76). An exchange with the artists after their turntable performances can clarify further details about the sound production and the feedback loop with the live situation; the artists might also report on relevant comments or feedback from audience members.

Improvised turntable concerts are rarely filmed with professional equipment. The focus of the author's video recordings was narrowed down to the events onstage in order to capture the most relevant details, pertaining to particular analytic questions. These videos' visual and audio information furnish additional data concerning the communication between performers, the interaction between instrument and performer, and the performers' movements during the event. The video only conveys to a limited degree the atmosphere and the performance context involving the venue space and audience members (Fischer-Lichte, 2001a, p. 264). However, the videos capture some of the audience's reactions, such as cheering or audience members filming the concert, which can be relevant for criterion 4 of my framework.[8]

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[8] However, this study did not have the scale to focus on audience members in particular.

Each of my case study concerts was video recorded. This was done using two video cameras: one camera with a master shot to capture the overall action onstage, and one camera from a different angle to capture variable close-up shots of the performers' actions.[9] A reference sound including the room's acoustic was recorded with an external microphone, while an internal sound directly connected to the venue's PA (public address) system was recorded with a recording device. In forming a representative impression of the live context it is usually desirable to mix the direct sound with the sound recording of the room and voices of the audience. In editing the video the two sound sources were overlain to provide a clear sound quality whilst also preserving an impression of the venue's acoustics.

A relevant consideration in video representation is camera placement. One must be aware that the camera image serves to frame the events onstage and highlights their importance; in this way an evaluative selection is implied with certain facts being cut out. The lens of the camera is not identical with the spectator's perception, in particular concerning the following aspects of the performance:

- venue atmosphere (only transferred to a limited degree)
- audience reactions (only transferred to a limited degree)
- the viewpoint and number of cameras are fixed
- performers moving outside of the frame (a spectator can perceive more than a framed camera setting and react faster to movements).

In regard to these limitations, notes of observations made during the concert assist the analyst's memory and compensate for information missing from the video recording. Close-ups of physical movements and playing techniques provide further details, though this enhanced sight does not match the common perception of a spectator. Furthermore, for the video recording the artists agreed to perform with more light onstage than usual. This allowed for greater visibility of the physical movements than would be the case in concerts with less light.

Video recording a performance involves several technical difficulties. Positioning the video cameras in the venue is challenging, especially in smaller venues such as the venue for Graham Dunning's case study, where people were standing and dancing just in front of the stage. The cameras would have disturbed the sight of the audience if not positioned at the edges of the room in front of the performers. A drawback of this camera placement is that the camera's microphone is placed too directly in front of the loudspeakers, and this can distort the sound quality on the recording.

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[9] Usually the author operated both cameras (Canon XF 100 and Canon XF 105).

Transcriptions

Visualising the sounds via a transcription supports the analyst's focus on the sounding elements and assists the researcher's memory. The process of creating the transcription can moreover facilitate a deeper engagement with the performance. According to Delalande, making several transcriptions can provide additional tools by showing different perspectives; Delalande (2002) compares this approach with the creation of various street maps that can assist one in getting to know a new city (p. 231). These sound transcriptions, being based on a fixed visual format, introduce another imaging medium but give wider scope for communication and pedagogy.

In contrast with a composer's score, which shows prescriptive visual representations of the sounds, the analyst's transcription remains solely descriptive and is thus implicitly an interpretation. Certain key decisions and analytical positions always shape the form and choice of the acoustical representation, and in this regard even machine representations cannot be considered as fully objective. In regard to concerts, the audio recordings provide data for physical representations, such as of the audio waveform and spectrogram, and these are usually realised via software calculations based on the Fourier transform. It should be borne in mind, though, that the audio recording might be altered by the microphone position, recording quality, or editing processes.

A few words are due here on the inherent limits of graphically representing audio. Audio software presents the waveform as a graphical shape dependent on the amplitude of the physical sound over a given time-frame, without presenting information of the pitch or timbre of the recorded sounds. The spectrogram presents a graphical representation of frequency partials and their intensities over a given time-frame in the audio recording, based on physical measurements and mathematical calculations.[10] The frequency's amplitude is represented with a colour-scale or greyscale. Despite the spectrogram's detailed information on the recorded sounds, as Clarke (2012, p. 352) underlines, its legibility for the human eye remains limited and discrepancies with auditory perception still ask for other forms of transcription. Denis Smalley (1997) suggests not only objective data such as spectrograms but additional transcriptions to represent listening processes (p. 108). This would address such issues as the fact that the spectrogram cannot represent discrete voices within a complex or polyphonic sound pattern, for example. In a spectrogram, broadband noises with a high volume visually superimpose single events in a similar frequency area, while cognitive organisation processes can separate such perceptually complex sound patterns (Flückiger, 2012, p. 253).

Graphical representations as additional transcription tools might assist in supplementing such perceptual discrepancies to certain degrees. Pierre Couprie

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[10] In literature, the alternative term sonogram is often used. In the following, I will only use the term spectrogram.

(2004) identifies two different types of graphical representations: iconic and symbolic. Couprie refers to Lasse Thoresen's extensive collection of symbols, which Thoresen uses to categorise several distinct sound types (see Thoresen & Hedman, 2007). However, Couprie (2004) writes, despite the benefit to accuracy, 'the complex decoding of each symbol is principally of interest to specialists' (p. 110). Couprie contrasts this with the iconic representation, which he views more favourably as a more intuitive representation and more readable to the public due to its 'didactical and aesthetical qualities' (Couprie, 2004, p. 110). An icon can be described as a sound-representing shape located on a two-dimensional timeline, having a certain colour or texture, positioned in relation to the spectral area (y-axis). A representation in three dimensions, such as suggested by Kevin Patton (2007), would involve difficulty in reading the icon's position in relation to the coordinates, especially when animated (Couprie, 2004, p. 109). Regarding the question of adequately representing sound, Michael Clarke (2012) criticises the non-standardised forms in graphical scores as well as limitations in representing more complex sounds, and he suggests that an interactive link between a graphical representation and an audio recording might be helpful in relating the visual to the aural perception (p. 355). Couprie (2004) presents iconic shapes as useful in this regard, the advantage of iconic representation inhering in the fact that it is 'based on a very strong relation between image and sound' (p. 110). Couprie's approach, using the software EAnalysis to create such interactive graphical representations, will be explained in the next section.

In addressing these issues of representation I propose here as a viable solution the use of several physical representations and graphical transcriptions, designed to complement each other's limitations. Following Clarke's suggestion, I have chosen software that displays several representations interactively next to the video and audio recording. In this study the transcriptions are the product of the analyst's criteria. They are at once informed by objective criteria and demonstrate one possible interpretation.

Graphical representation – Software support

Transcriptions within my study are based on the recently developed software EAnalysis. EAnalysis was created by Pierre Couprie in coordination with Simon Emmerson and Leigh Landy.[11] In comparison to other analysis software such as Sonic Visualizer, for video recordings EAnalysis allows the simultaneous screening of several representations as different layers. For my analyses this video support is a crucial element, as significant movements or other visual events can be noted graphically, or via text, in an extra layer and then directly evaluated using the video. EAnalysis furthermore provides visual representations of physical data (waveform, spectrogram) that assist in creating graphical representations of the audio, in adding text, or in allocating elements to analytical parameters (based on sound characteristics developed by Denis Smalley, Pierre Schaeffer, Lasse Thoresen, Simon Emmerson and R. Murray Schafer). Although the software exports the transcriptions into software-independent files, such as image file format (e.g. JPEG) or multimedia format (e.g. MOV), it is so far not possible to export the videos with a sound based on a 48 kHz sample rate. The video files in Appendix C are therefore based on screen recordings. A minor deficiency within EAnalysis is the software's relatively low resolution for zoom-ins that seek to spot details in the sounds (such as precise frequencies). Accordingly, additional software such as Sonic Visualizer or Audacity supplements EAnalysis for the determination of distinct frequencies.

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[11] See Couprie, P. (2014) *EAnalysis: Sound-Based Music Analysis.* Retrieved from http://logiciels.pierrecouprie.fr.

Couprie's (2004) four phases describe useful steps for the analyst in creating graphical representations in EAnalysis (p. 111):

> 1) Quick [graphical] annotation of the material's main features [in spectrogram] (see Fig. 2.2).
> 2) A precise segmentation of the sounds or basic sound structures
> 3) An analysis of the structures
> 4) Final representation of the analysis.

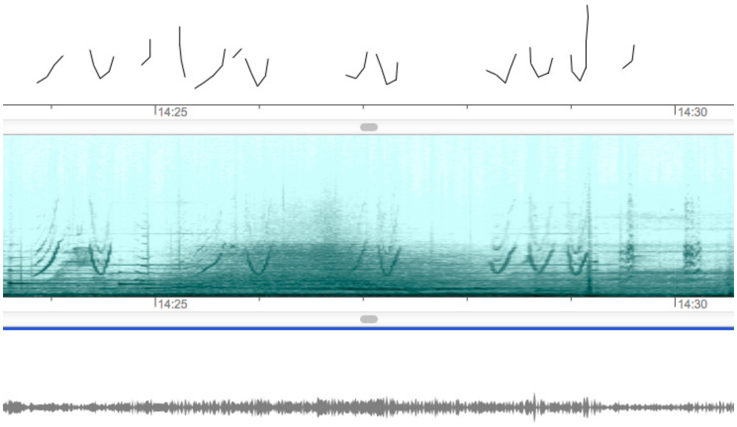

Figure 2.2 Excerpt of the software EAnalysis with a draft of graphical annotation in the top layer, spectrogram in middle layer, and waveform on lowest layer (audio excerpt of a Vinyl -terror & -horror recording).

Couprie's second phase corresponds to the separation of sound possibilities and sound sources in a turntable concert; in this study it can therefore be placed first in the order of phases. Couprie's steps suggest how the iconic signs can be designed by using the shapes in the spectrogram as a template. Iconic representation is not standardised, though, and remains mostly intuitive (Clarke, 2012). Nevertheless, as Lindsay Vickery (2014) highlights, several experiments show that the mapping of graphical representations onto sounds has natural limitations due to ‘weak synaesthesia’ or weak cross-modal correspondence between hearing and sight (p. 224). As Vickery suggests, Wolfgang Köhler’s bouba/kiki experiment in 1929 constituted important early research into this area. Participants in Köhler’s study tended to allocate a visual shape with sharp curves to the name ‘kiki’ and a rounded curved shape with the name ‘bouba’ (Vickery, 2014, p. 223).

I follow Couprie’s intuitive principle in designing my iconic representations. I additionally take Rainer Wehinger’s aural score of György Ligeti’s *Artikulation* (1958) as a point of reference, in order to link my icons to already existing icons: for example, sine tone pulses are shown as dots (Ligeti & Wehinger, 1970). Similar to Wehinger, I represent dynamic changes partly through the relative size of the icons. Dynamics are orientated to physical data (for example, measuring the range of decibel levels), but can only be represented relatively rather than absolutely. Unlike in Wehinger, the representation of pitch is orientated in the vertical axis: this allows easier legibility and ease in following the shapes in the spectrogram. Figure 2.3 is an example of the mode of graphical representation used herein. It shows an excerpt from a recorded concert by Joke Lanz featuring scratching sounds (red) ending in a sweep. The different colours of the graphical signs (in layer 2) indicate the overlap of two different sound sources; black represents a noise sample from the second turntable. The EAnalysis software allows the creation of high precision shapes using the waveform or spectrogram as a stencil to follow the contours. The growing distance of the peaks in the graph indicates the growing intervals of the scratched sounds, and it matches at the same time the growing physical movements of the performer (see Fig. 2.3).

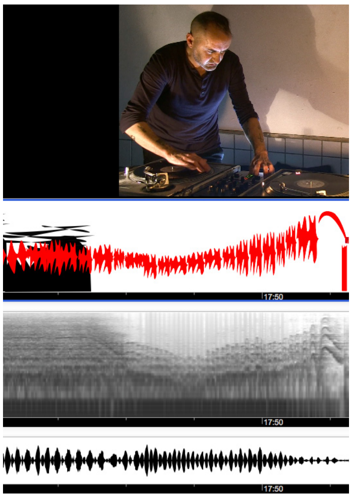

Figure 2.3 Example for the transcription of a chain of scratch sounds in the software EAnalysis.

Forms of notation that, for hip hop turntablists, show scratch techniques are discussed in Smith (2006). However, these approaches for notation are strongly focused on the artist's sample choice. In the Turntable Transcription Method (TTM) by John Carluccio, for example, graphical lines within a grid representing a beat structure show a reduced form of the morphological sounds resulting from sample manipulations (such as backspinning). TTM uses simple and intuitive symbols and, as Katz (2012) notes, is partly suitable as a descriptive tool (p. 210). It is furthermore possible in this way to display the representations of the scratching techniques alongside a video. Other examples come from hip hop turntablists such as Radar or Stephen Webber, who have developed notational systems partly based on traditional notation (see the S-Notation) (Smith, 2006, pp. 95-102); however, these forms of notation aim to prescribe specific hip hop turntable techniques and are therefore not sufficient as a descriptive analytical tool. Drawing on several of these notational systems, Sophy Smith has developed a notational system to use in analysis representing '[sample] material, manipulation techniques and structure as well as tempo, timescale and the roles of individual musicians' (Smith, 2006, p. 111). Yet Smith's use of a colour code to categorise playing techniques (for example, aquamarine for Backspinning, and blue for Punchphasing) requires that the reader decodes these unknown playing techniques as well as their colour symbols.

Hip hop turntablists' notation generally focuses on scratch techniques and in this regard is therefore too restricted to capture the diverse approaches used in experimental turntablism (see Chapter 1). The outlined EAnalysis approach after Pierre Couprie provides a more developed tool set for a graphical representation supported by spectrogram and waveform; not reliant on a beat-oriented framework or fixed sample selection.

Action Score

In my analyses I include several elements of an action score as descriptive tools for representing aspects of the sound production processes. Here I will give a brief overview of some relevant approaches. In the case of more beat-oriented music, a form of staff notation (similar to Vowinckel, 1995) might be useful for representing rhythmic patterns. In Graham Dunning's case study, for example, transcriptions in such a staff system might be appropriate for analysing in detail the rhythmic layers of Dunning's 'Mechanical Techno' and in order to compare those layers with general elements in electronic dance music.

To represent the diverse sound fragments in Walter Ruttmann's collage work *Weekend* (1930), Antje Vowinckel (1995) uses, alongside text descriptions and symbols for noise and sound fragments, notes in a staff system of three lines without clear pitches. With the use of the traditional notation in the first part, which Ruttmann calls ‘Jazz of work’, Vowinckel (1995) highlights the rhythmic structures created by noise fragments (p. 69). In composing the music Ruttmann cut film pieces into identical sizes in order to create a musical rhythm that has a swinging effect. As Ruttmann prepared a corresponding score, when composing *Weekend* it seems appropriate to use a transcription based on traditional notation to allow the analysis to follow the work’s compositional processes.

Here by way of example we may look at Joke Lanz’s turntable score for *Radiorgasm*, which was performed during the TITO Festival in Berlin in 2009 (see Fig. 2.4). During the performance Joke Lanz conducted the piece and used paper boards to signal cues to the performers. In the score the horizontal axis represents a spatial notation of events against a loose grid of minutes. The action score separates each of the six turntable players and indicates samples via text description (similar to Vowinckel): examples of this text description are ‘throat sound fragments’, at around 9:30 min for players 1 & 4, and ‘breath/dog fragments’ at 3 min for players 2, 4 & 6 (Fig. 2.4). Representations of pitch are not included; traditional symbols for the dynamic, on the other hand, such as for crescendi, are included. Furthermore, the performers’ actions are specified using notation for turntable techniques (e.g. various speed, forwards/backwards playback) and for record materials (locked groove, cut-ups).

Despite the example of *Radiorgasm*, in general developing notational systems is not a common practice in experimental turntablism, as most concerts are improvised and performed by the turntablists themselves. For turntablists notation can serve as a useful tool during collaborations with other musicians, which might involve more complexity or require explicit means for communication.

To summarise, to analyse the sound production for criterion 3 and 4 I implement elements of action scores, similar to Joke Lanz’s example, focusing on samples, record material, playing techniques and the separation of single voices. Interactive graphical representation via the software EAnalysis allows the addition of text and elements of note symbols; it also facilitates the representation of more intuitive elements, such as pitches and sound qualities, while being based on objective physical representations, such as the spectrogram and waveform.

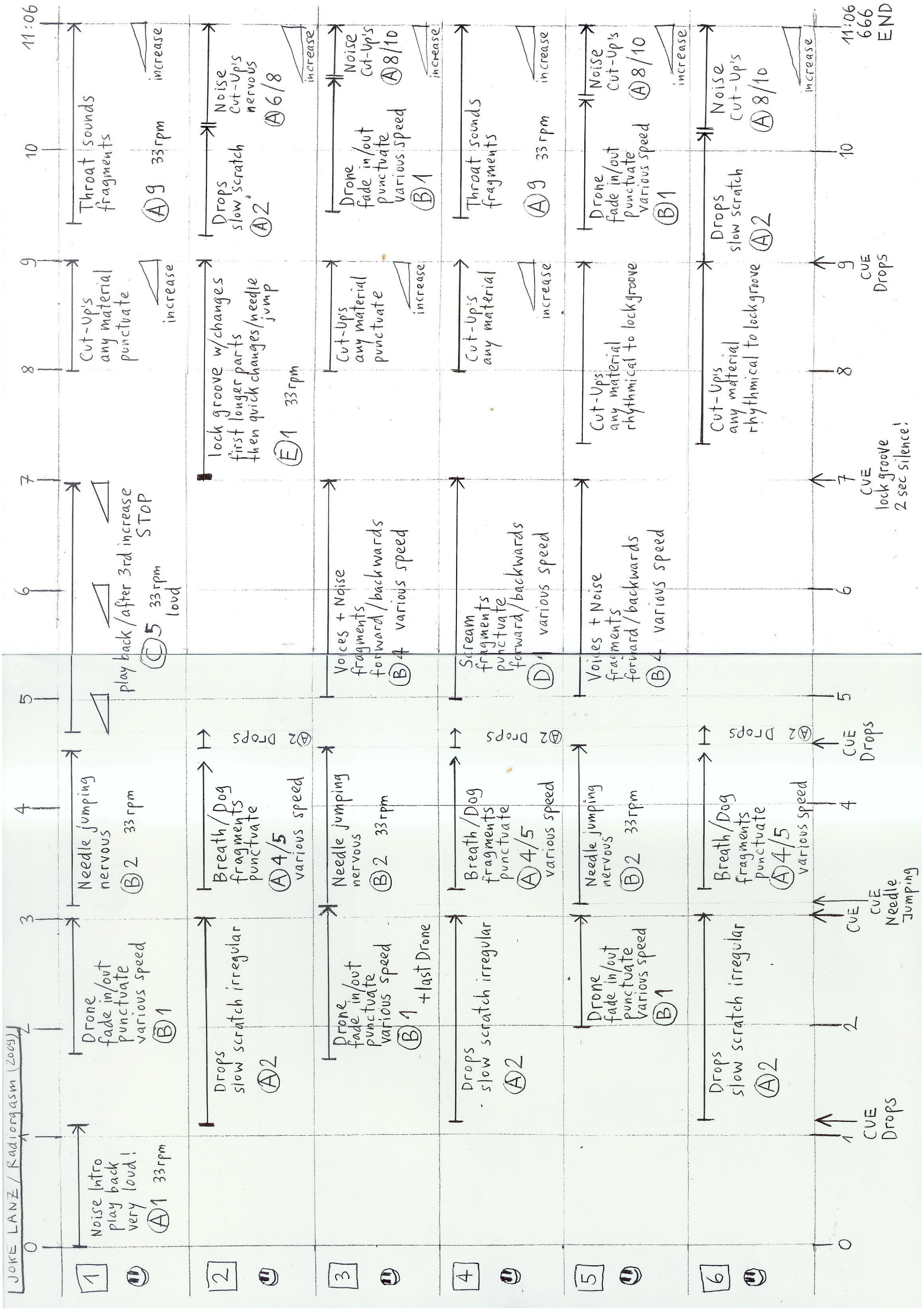
JOKE LANZ / Radiorgasm (2009)
0
1
2
3
4
5
6
7
8
9
10
11:06
1
Noise Intro play back very loud! A1 33rpm
Drone fade in/out punctuate various speed B1
Needle jumping nervous B2 33rpm
play back / after 3rd increase STOP C5 33rpm loud
Cut-Up's any material punctuate increase
Throat sounds fragments A9 33rpm increase
2
Drops slow scratch irregular A2
Breath/Dog fragments punctuate A4/5 various speed
A2 Drops
lock groove w/changes first longer parts then quick changes/needle jump E1 33rpm
Drops slow scratch A2
Noise Cut-Up's nervous A6/8 increase
3
Drone fade in/out punctuate various speed B1 +last Drone
Needle jumping nervous B2 33rpm
Voices + Noise fragments forward/backwards B4 various speed
Cut-Ups any material punctuate increase
Drone fade in/out punctuate various speed B1
Noise Cut-Up's A8/10 increase
4
Drops slow scratch irregular A2
Breath/Dog fragments punctuate A4/5 various speed
A2 Drops
Scream fragments punctuate forward/backwards D1 various speed
Cut-Up's any material increase
Throat sounds fragments A9 33rpm increase
5
Drone fade in/out punctuate various speed B1
Needle jumping nervous B2 33rpm
Voices + Noise fragments forward/backwards B4 various speed
Cut-Ups any material rhythmical to lockgroove
Drone fade in/out punctuate various speed B1
Noise Cut-Up's A8/10 increase
6
Drops slow scratch irregular A2
Breath/Dog fragments punctuate A4/5 various speed
A2 Drops
Cut-Ups any material rhythmical to lockgroove
Drops slow scratch A2
Noise Cut-Up's A8/10 increase
CUE Drops
CUE
CUE Needle Jumping
CUE Drops
CUE lockgroove 2 sec silence!
CUE Drops
11:06 666 END

Figure 2.4 Score for *Radiorgasm* (2009) by Joke Lanz.

2.3 Discussion of Problems

There are a few final methodological issues to be addressed. For its case studies this thesis predominantly focuses on solo shows, with the exception of the Vinyl -terror & -horror case study. Two reasons guided this decision. Firstly, analysing a group improvisation would have challenged the allocation of the generated sounds to a single performer. The main focus herein is placed on the feedback loop between the performer and the turntables in order to detect media-specific aspects. Even in solo performances, the complex sound production in experimental turntablism – wherein the turntable blends mediated, manipulated or live produced sounds that might sound similar to each other – is difficult to monitor (this observation is based on my previous study of the turntablist Ignaz Schick). Secondly, a solo improvisation tends better to reflect the artist's distinct personality and to show greater cohesion, since in this context the performer has more control over the live situation. As Bailey (1993) notes:

> [The performer's] language becomes much more important and there will be times in solo improvisation when the player relies entirely on the vocabulary used (p. 106).

The selected performers in my thesis play solo shows on a regular basis, so that the study's findings remain comparable with the artists' general performances.

Elements of group improvisation, such as unpredictable actions from one or the other performer, can be observed within the duo dynamic of Vinyl -terror & -horror. The long period of that duo's existence since 2001, however, makes their situation less comparable to that of group improvisations by musicians who are not used to performing with each other.

In documenting instrumentation, giving a detailed list of record sources could raise ethical concerns due to the copyright of the original sources and the legal grey-zone of sampling. This is also seen as an issue in transcriptions of hip hop turntablism (Smith, 2006, p. 94). My analyses address this issue by consulting the publication of the transcriptions with the artists of the case studies.

Conclusion

The analytical methodology developed in this chapter for experimental turntablism performances underlines the significance of the interdependency existing between the turntable as an instrument, the performer, and the live performance context (including the audience). An overview of these conditions in performance and of my analytical criteria is illustrated in Figure 2.1. To focus on the media-specificity in the performance, and thus to tackle my research questions, my analytic framework (as shown in Table 2.2) develops points of orientation that facilitate separate perspectives.

The ***External Study*** constitutes, for the analysis of experimental turntablism performances using customised instruments and personal playing techniques, a crucial part of the analytical methodology. This methodological approach derives from Delalande's (1998) suggestion of an 'external study' for the inquiry of production, Bossis's (2006) discussion of the need for documentation in regard to creative processes that are based on technical devices, and Richards' (2013) theory on the interconnectedness of sound, making-process and physical object. The criteria for the External study – which is Part I of each analysis – examine the artist's encounter with the turntable in a triangular relationship including the processes of designing their equipment. Richards, especially, acknowledges the relationship between, on a technical level, the constant change and processual development of the individual instruments and, on a musical level, the artists' sound research. In a feedback loop with the performer, the instruments shape materiality and mediality in the live performance.

Throughout I scrutinise media-specificity in live performances of experimental turntablism. I do this in the ***Analysis of the performance***, by investigating the synergies between acoustic, performative, and medial aspects. The turntable inscribes various forms of embodiment and instrument-specificity within the sound results it produces (separated in pre-recorded sounds, manipulated sounds and abstract sounds from the medium itself). My methodological approach drawing on theories of performance, as outlined above, establishes criteria addressing bodily aspects of the performers (human actions/presence) and of the media technologies (phonographic embodiment/presence). Through this my analysis elucidates how the performance's materiality and mediality work alongside the media-specificities in a reciprocal dependency of performer and audience in the here and now of the performance. These criteria assist my identification of the media-specific aspects of experimental turntablism, which constitute the grain of the turntable performance and highlight turntablism's peculiar sound production.

The challenges of analysing these unique and transitory events has been met with a broad tool set allowing documentation and transcription (based on iconic signs in the software EAnalysis). My analyses in the following chapters, in demonstrating the broad spectrum of practices that exist in experimental turntablism, fortify my methodological considerations and my analytic framework. Moreover, the analytic criteria outlined in this chapter for approaching performative aspects in experimental turntablism performances might have wider application, providing a template for studying performances with live electronics or for studying sound sculptures.

Part II

Case Studies

Having discussed theoretical and methodological considerations, this study now shifts its focus to the three case studies. In doing so it engages the research questions with detailed examples, proposes three video files of the concerts including graphical representations (see Appendix C) and evaluates the proposed methodological framework.

3. Joke Lanz

This chapter presents the first case study, Joke Lanz. In analysing Joke Lanz's performance it employs the methodological framework outlined in the previous chapter and refers to the graphical representation and concert video (see Appendix C, Video Case Study 1). The chapter accordingly has two main sections: the External Study and the Analysis of the Performance, examining the artist, the instrument and the performance.

The Joke Lanz case study presents an experimental turntablist who emphasises the turntable's specificities mostly in his playing techniques. Lanz's negotiations between materiality and mediation become apparent in his sample manipulations and generation of abstract sounds from the medium. His primarily 'embodied playing' is related to his choice of turntable setup. By comparison with that of other turntablists, Joke Lanz's setup might appear relatively simplistic and quite similar to that of a DJ or hip-hop turntablist. Lanz's setup facilitates fast and direct interaction with the devices and records and incorporates elements of chance and unexpectedness to emphasise the performance as happening in the moment. His distinct playing techniques defamiliarise and musicalise a diverse set of samples whilst also incorporating elements of noise music. From a musical point of view Lanz's strategies create media-specific contrasts and cohesions between signal and noise-based sounds by fusing mediated, manipulated and abstract sounds from the medium. Lanz's setup includes a sampler device, which provides further possibilities to negotiate between mediation and materiality. This case study furthermore exemplifies the feedback loop already discussed between performer, instrument and live situation that shapes the performance and underlines the uniqueness of the performance.

Part I External Study

3.1 Artist Portrait

Joke[1] Lanz (born 1965 in Basel, Switzerland) is a Berlin-based sound artist, well known for his noise project under the name Sudden Infant and his turntable performances. Lanz has another, more performance-based project under the name Charles Moneypenny; he also works in the visual domain, creating paintings, collages, drawings and more recently tattoos.

Lanz grew up in Switzerland, where for a few years as a child he received violin lessons. However, his interest in performing music has occurred solely in side projects without any basis in studying art or music. This is exemplified in the fact that, since his school education, Lanz has switched between numerous professions, having even worked as a garbage man or chocolate manufacturer; such work experience he considers as a grounding in and a familiarisation with reality.

In 1978 Lanz's father committed suicide by shooting himself. Lanz recalls the bitter experience of having heard the gun shot from a distance. These biographical circumstances have shaped his music profoundly, he says, and have instilled in him a critical position towards externally-imposed societal rules and moral obligations. In the context of his release of a retrospective LP series called *My Life's A Gunshot,* Lanz has stated:

> Why did my father kill himself? How desperate must someone be to shoot a bullet in his head? I came to my personal conclusion, that life and society can cause such negative energies onto [sic] a person, that everything becomes worthless. I decided not to take part in this game and to give a shit about rules and regulations given by society and moral aspects. Never loose yourself in pressure [sic] in order to produce results (Lanz in Fischer, 2010).

In the search for an escape punk and hardcore music seemed to provide an expedient, and in 1985 Lanz became a bass player with the punk band Jaywalker. The band's main influences were Joy Division, Black Flag, Sonic Youth, Throbbing Gristle and Butthole Surfers. On tour with Jaywalker Lanz played in squats and punk clubs, and this instilled in him a particular musical ethos rooted in improvisation and spontaneity.

After 1988 Lanz's interest in critical and alternative lifestyles, and his characteristic search for new aesthetic challenges, led him into the noise music scene:

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[1] Joke is not his birth name but was adopted in his late teenage years; only a few people know his real name. In this choice of adopted name the connotation of the English word 'joke' played a role (J. Lanz, personal communication, 30 December 2014).

> I grew up with Punk music and the whole idea of it. After my father's death, Punk became my safety net and my family at the same time. ... But the original spirit of Punk died when big business arrived. Therefore it was a natural conclusion for me to search for something new, still keeping the raw and direct energy of early Punk, but with completely new aesthetics. Noise became an open source for me. Much more open than Punk ever was. Sudden Infant started with body art and performances in the early years. Music was not the most important part. And it still is a combination of all senses in an abstract and psychological way (Lanz in Sienko, Lanz & Marhaug, 2012, p. 14).

The suicide of his father was followed by another significant life event. In 1989 Lanz became a relatively young father to a son; this confronted him with pressing domestic responsibilities, such as earning a steady income to provide for a family. Lanz says he channelled the experience into his new (appropriately named) project, Sudden Infant, which he started around this time. For Sudden Infant Lanz took inspiration from the 'uncontrollable and surrealistic energy of a child's fantasy' (Lanz in Sienko, Lanz & Marhaug, 2012, p. 12); he even included his son occasionally in his live music performances.

After having lived in Berlin in 1998/99 Lanz stayed in Zurich again from 1999 to 2004. In the solo project Sudden Infant he started experimenting with cheap electronics, such as speaking dolls, tapes, radios, field recordings, contact microphones and effect pedals (Fischer, 2010). On a stylistic level Lanz mixes punk rock with elements of Viennese Actionism, industrial music, noise music and body art with an emphasis on physicality. Lanz generally describes having various influences from many stylistic directions. With this approach, through fusing several genres, he seeks to avoid restrictions:

> I was always interested in breaking up concepts and styles. I grew up with Punk & Hardcore music (Ramones, Germs, Sex Pistols, Damned, Black Flag, Dead Kennedys), then New Wave (Devo, Cramps, Gun Club, Blondie, Fad Gadget, Killing Joke) and early Industrial (Throbbing Gristle, Cabaret Voltaire, Einstürzende Neubauten, Factrix). I loved the destructive power of Whitehouse and the dadaist cut-up sounds of Nurse with Wound. But I never just wanted to copy something or follow one direction. Probably all these little bits and pieces of music and ideas collided with my own world. I never thought about a genre name for my music (Lanz in Fischer, 2010).

An important reference was Jacques Brel's expressive performance style. This inspired Lanz to focus on intense and emotional body language, requiring that he not be distracted by any overly-complex aspect of his technical equipment (Fischer, 2010). Among the several of his musical collaborations, Lanz has also pursued a Swiss Dadaist influence with the group 'Schimpfluch'.[2]

Around 1991 Lanz started to experiment with turntables and vinyl records. His use of turntables was initiated by working at a radio station:

> I started using turntables when I did Psychic Rally (1989-1994), a monthly radio show on a station in Zurich. Together with Rudolf (R&G) we played and manipulated records, tapes and CDs, and used our voices in cut-up style to place our comments during the show. It was a big noisy collage! (SEVEN1878, 2012).

In 1997 the percussionist Marco Käppeli invited Lanz to play in the jazz/improv band 'MK Selection', as they were specifically searching for a turntable performer. Since then Lanz has played solo shows as a turntablist and improvised alongside a diverse range of musicians (e.g. vocalists Shelley Hirsch, Mat Pogo and Audrey Chen; turntablists Christian Marclay, Martin Tétreault and Dieter Kovačič, aka Dieb13; and other musicians such as GX Jupitter-Larsen). As a performer he took part in two compositions by Jorge Sánchez-Chiong for turntables and orchestra[3] and he has additionally 'acted' with the turntable in music theatre pieces (e. g. *fuzzed fiction* by Gina Mattiello and Jorge Sánchez-Chiong at DSCHUNGEL WIEN MODERN 2006). Lanz's turntable-based albums, such as *Turntable Abuse EP – Remixes* (7-inch, Adverse14 UK, 1998), *Turntable Cookbook* (CD, GB37 Gameboy Records USA, 2002) and *Münster Bern* (CD, CR368 Cubus Switzerland, 2012), only give a limited impression of the unique style he demonstrates in his numerous live shows, in which, as in the Sudden Infant project, Lanz habitually blends several genres and influences.

Despite his being based in Berlin since 2006, Lanz's connections to Berlin's Echtzeitmusik improvisation scene have remained loose. Instead his turntable live shows have mainly taken place abroad, and during a residency in London in 2004, for example, he connected with the British improvisation scene.[4] Since this residency, he has decided to focus his professional occupation entirely on music and art. Since 2014 his solo project Sudden Infant has developed into a trio constellation featuring the bass player Christian Weber and percussionist Alexandre Babel.

Lanz's noise project Sudden Infant is generally closely connected with his turntable project. In his turntable concerts, for example, Lanz uses his own released LPs as Sudden Infant and recycles them. Lanz's understanding of noise deviates from the stereotypical image of noise as something loud and harsh that is meant to annoy (Reynolds, 2013, p. 57). He rather considers noise as a liberal tool encompassing every kind of sound, an approach displayed on Lanz's Sudden Infant album *Psychotic Einzelkind* (CD, BN036 Blossoming Noise USA, 2008):

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[2] Lanz's collaborations include: Psychic Rally, Vehikel & Gefäss, Catholic Boys in Heavy Leather, WAL and Teil.

[3] For example, at Festival TRANSART 2005 in Bozen in trapos/Catwalk en Guantánamo_Version 2 (2004/2005), a piece for double bass, electric guitar, turntables and electronic amplified large orchestra (the Haydn Orchestra Bozen), and at Festival Wien Modern in trapos/catwalk en Guantánamo (2004), performed with the Radio Symphony Orchestra Vienna.

[4] In London he met, for example, the Bohman Brothers [Jonathan and Adam Bohman] (J. Lanz, personal communication, 30 December 2014).

> [Joke Lanz] has no particular allergy to form, tune, and tone. To give up that territory for good would be, itself, weirdly complacent, for if noise is an aesthetic of total and absolute freedom then that freedom can only be proved in the capacity to choose anything, even music, even what is not stereotypically 'noise' as that term has become codified and ghettoized on behalf of rule-bound, puritanical and reactionary record collectors (Drew Daniel in Lanz & Marhaug, 2012, p. 5).

Furthermore, given how in electronic music Lanz mainly focuses on the human body and the physicality of music making, noise is for him an expression of:

> vitality, it is the pure essence of life and it comes from deep inside, from an intuitive life-system. I work with these very rough and basic emotional fragments and I put them into a soundframe which is rather defined by my intuition than my logical intelligence (Lanz in Fischer, 2010).

It is important to note that this aspiration towards directness and spontaneity is therefore crucial for Lanz's musical decisions in live performance, and it also guides him to design a turntable setup that is as minimal as possible. As will be seen, this impetuous performance style deliberately entails the incorporation of risk-based elements such as randomness, mistakes or accidents (Lanz in Weissenbrunner, 2015).

Vinyl records, as components of Lanz's instrumentation, support the emergence of such unpredictable elements in concert. As Lanz mentions, he nearly considers them as 'living creatures' that change over time and create increasingly crackling noises due to age and usage (Lanz in Weissenbrunner, 2015). The records' tactile qualities and proneness to failure inspire his work:

> Sometimes the needle gets stuck, without any reason. That is crazy. And only a single small action can change the sound. This is the fascinating thing for me, to work like this (Lanz in Weissenbrunner, 2015).

In this way, Lanz appreciates the vinyl record not only as a medium but as a material thing. Its physicality conveys a feeling of authenticity that appears opposed to the contemporary virtual world of digital technology.

Lanz's improvisational performance style is entirely intuitive. It is partly determined, though, by record selection prior to the concert:

> I have to admit that the records and the material, as well as empirical values from past performances, have already created a certain framework, a certain selection. I also know myself. It is rare that things come up that are completely new for me. It can happen, but [laughs] I roughly know the range and this is how I can pre-select the material. Sometimes I bring 40 records with me and play only with seven in a concert. Or I bring ten records and play all ten, but one only for ten seconds and the others therefore much longer. It depends (Lanz in Weissenbrunner, 2015).

Further compositional decisions can be guided by the performance situation and the audience. In Lanz's improvised turntable concerts, the feedback loop between performer and audience plays a crucial role. He applies humour and irony and works with surprising directional shifts to play with the audience's expectations. For example, Lanz focuses on vocal samples, which allows him to address the human being and to parody language and communication by probing the line between abstraction and semantic meaning (Lanz in Weissenbrunner, 2015). Nonetheless Lanz often develops general structural ideas beforehand, especially regarding the concert's beginning and end (Lanz in Weissenbrunner, 2015). The concert's overall dynamic is central in his musical thinking. Subsections might follow a particular topic and seem to show development; by then suddenly changing direction Lanz aims to confront his listeners with unexpected and unfamiliar territories. An example of this is the opposition of small and quiet sounds and enormous and loud sounds, whilst including alongside this opposition speech and brief citations intended to evoke associations amongst the audience (Lanz in Weissenbrunner, 2015).

3.2 Instrument

Joke Lanz's setup is based on two turntables, vinyl records, and a mixing desk. This resembles the setup used by club DJs or hip hop turntablists, though with a profoundly different musical output. Lanz occasionally extends this minimal setup with a sampler, especially for solo performances (as the analysis of the performance in Part II will show). Mostly, though, he considers the limitations and restrictions of his simple equipment as a creative source for continually finding new solutions. Although he uses the whole turntable base as a percussive sounding body, he feels mostly drawn to working with vinyl records (Lanz in Weissenbrunner, 2015).

Concert Setup

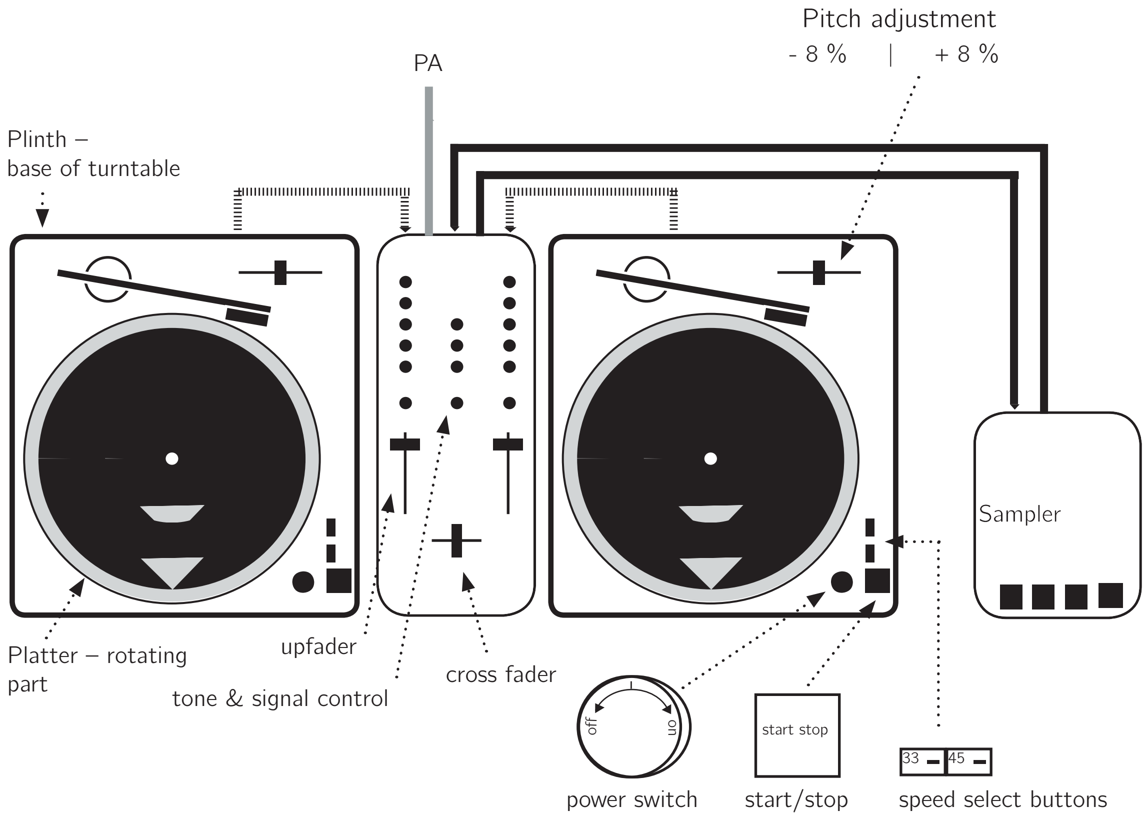
Pitch adjustment
- 8 %
|
+ 8 %
PA
Plinth –
base of turntable
Sampler
Platter – rotating
part
upfader
tone & signal control
cross fader
off
on
start stop
33
45
power switch
start/stop
speed select buttons

Figure 3.1 Technical draft of the setup. The turntables are rotated 90° counter clockwise.

Devices used in the performance:

- 2 record players (Technics SL-1210 MK2)
- Mixing desk (Ecler nuo 2.0)
- Vinyl records (Cut-ups, modified with stickers)
- Sampler (BOSS SP-202 Dr. Sample)

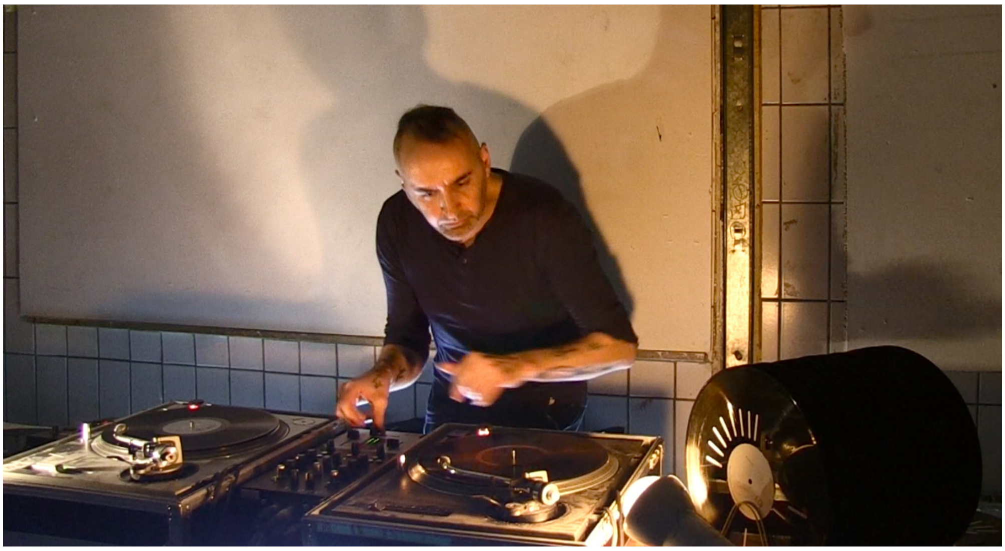

Figure 3.2 Joke Lanz in concert. The records are arranged in a record holder to his left.

Turntables

Lanz plays two turntables in a rotated position, in what hip hop turntablists call ‘the battle mode’ (Katz, 2004, p. 119) (see illustration in Fig. 3.1). In this position, the tone arm is positioned in front of the player instead of being at the side, which allows greater access for manipulating the rotating records. Furthermore, slipmats placed between platter and record (also standard for a DJ’s equipment) facilitate the performer’s making movements against the direction of the motor. Lanz prefers to play with his own DJ turntables, which are the well-known model Technics SL1210 MK2 (see also Chapter 1). As Figure 3.1 illustrates, this turntable with a direct drive motor features several options for adjusting the playback speed. Speed may be adjusted either via the select buttons for the standard 33 $^{1/3}$ or 45 rpm (rotations per minute) or via a fine-tuned slider for pitch regulation within a total range of 16%. The motor only requires a short time span (0.7 sec) to speed up to the standard 33 $^{1/3}$ rpm (Poschardt, 1997, p. 242). Changes of the playback speed alter the pitch of the samples. A start/stop button halts the platter, though it takes a short time span until the platter stops completely; this speed reduction lowers the pitches of the sample, an effect usually recognisable as a downward glissando. The position and behaviour of the cartridge, along with the rotation of the record, provide visual feedback for both the artist and the audience (depending on their position in the concert venue).

Vinyl Records

Joke Lanz engages in depth with the content of his records before mixing and manipulating them in concert. His collection of numerous records contains samples of all kinds. As a result of Viennese Actionist influences on his general work, he has developed a predilection for body sounds. This is represented by vinyl records featuring voice or speech recordings. An example is a teaching record series he owns called *Medical English for German Doctors* (see Fig. 3.3); his preferred record in this series is ‘A delivery’ because of the contrast it presents between a doctor’s calm and routine explanations and a patient screaming during a delivery (Lanz in Weissenbrunner, 2015). For sounds that cannot be found on record Lanz also gets dubplates cut. In an interview he explained that, for a pseudo conversation in concert, he and Dieter Kovačič (aka Dieb13) created a dubplate with recordings of them using Austrian and Swiss swear words (representing their nationalities) (Lanz in Weissenbrunner, 2015). Lanz also selects records after specific criteria that address the concert situation, as mentioned in Chapter 1 in the example of the concert in a cathedral (Münster Bern, CD, CR368 Cubus Switzerland, 2012). Considering records at times to be historical documents of sounds that might have disappeared, he ‘digs’ for records at flea markets to reveal such treasures again (see Chapter 1). Lanz treats records as serious instruments, so that even rare and valuable records (such as an LP by Viennese action artist Otto Muehl) are not spared if required for use in a concert (J. Lanz, personal communication, 19 August 2014). Lanz uses music records, mostly from friends, as well as LPs with field recordings or other diverse sound material. By ‘recycling’ LPs from his Sudden Infant project, he can also include his other artistic side in the turntable concerts. These enhancements of the repertoire ensure that his instrument will constantly evolve. Although remaining open to the arrival of spontaneous ideas in concert, ‘the records and the material, as well as empirical values from past performances, have already created a certain framework, a certain selection’ (Lanz in Weissenbrunner, 2015).

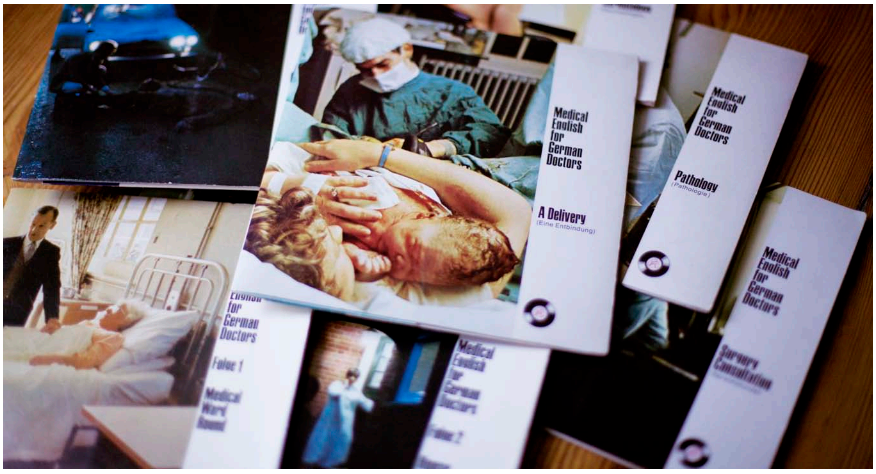
Medical English for German Doctors
A Delivery
(Eine Entbindung)
Medical English for German Doctors
Pathology
(Pathologie)
Medical English for German Doctors
Surgery Consultation
English for German Doctors
Folge 1
Medical Ward Round
Medical English for German Doctors
Folge 2

Figure 3.3 Lanz's 7-inch record series called *Medical English for German Doctors.*

Cut-ups and Prepared Records

Lanz's numerous vinyl records are only partly prepared. During the period of research, he had two cut-up records, which were mixes of two different 7-inch vinyls. One was glued permanently and the other one was taped. These cut-up records seem, respectively, to mix music of a Swiss record label with 1970s pop tracks[5] (Fig. 3.4 left) and Western classical music with new wave/electronic rock (Fig. 3.4 right). The design of each cut-up record appears to address visual criteria. The quarter of the cut-up in Fig. 3.4 on the right corresponds with the quarter that was cut out, so that the inner label remains complete, except with the record information from the other Tchaikovsky record. The cut-up on the left of Fig. 3.4 follows the same principle to unite two different record halves. However, the cut-up's geometrically precise segmentation also impacts upon the acoustic dimension. The cut between two record halves presents an obstacle to the stylus that causes a noise impulse: with the periodic playback of the cut-up, the two cuts thereby create two bursts per rotation, which can allow a 2-2 rhythmic pattern to develop. The playback of the cut-up record on the right (Fig. 3.4 right) switches the sample once per rotation for one quarter of the overall duration – since the cut part in the record corresponds with a quarter of the disc – and in this way its repetition can allow a 4-4 rhythmic pattern to develop. In this way the permanently glued cut-up fixes a compositional decision within the vinyl record, whereas the taped cut-up remains open and adjustable for new ideas.

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[5] ABBA (1979). *The king has lost his crown* [Single, B-side]. Sweden: Polar records.

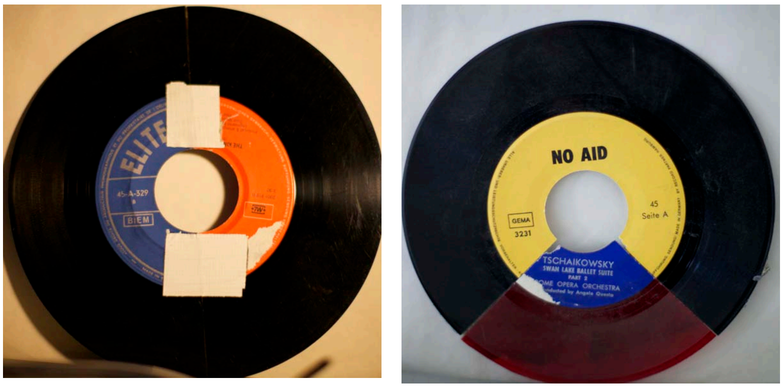

Figure 3.4 Lanz's 7-inch cut-up records.

Stickers

Stickers on records, as used by hip hop artists and Christian Marclay, act as a tool that fulfils various functions. In Lanz's collection of prepared records, stickers produce percussive, abstract sounds and thereby rhythmic patterns. They also mark samples or function as notation for storing instructions.

The disc with a sticker pattern (Fig. 3.5, left) produces abstract sounds via the needle distortions. Instead of playing the record content, the needle bounces over the stickers, creating a noise burst at each disruption. The uneven surface usually causes the needle to remain in a loop, so that the repeated noise bursts develop a rhythmic pattern. Rhythmic noise bursts caused by sticker patterns on vinyl discs are rarely applied in hip hop; however, DJ Kentaro used this method at the DMC World DJ Championship in 2001 (an annual competition for DJs held since 1985).[6] Similar to the segmentation of cut-up records, the geometrical arrangement of stickers determines a rhythmic pattern. A four beat rhythm emerges, for example, by a needle bouncing over one sticker on each quarter of the record, as seen with the record in Fig. 3.5, left. This record also shows one quarter divided by six additional stickers, which can be heard as a quintuplet during the periodic repetition of the turntable's rotation. In regard to Lanz, further explanations will be provided in the Analysis of the Performance (Part II), although it should be noted that the record example presented here deviates slightly from the record used in the performance.

Stickers mark specific samples like a bookmark on the disc and assist at the same time in creating a loop. A sticker obstacle interrupts routine playback and makes the needle skip back into a former groove. The repeated playback of the same groove then forms a unit – a loop. In this way stickers can determine musical processes prior to the performance. They represent a distinct sound result, selected or composed beforehand.

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[6] See: DJ Kentaro [yoyobradipo] (19 January 2008). DJ Kentaro – DMC World Championship 2001 [Video file]. Retrieved from www.youtube.com/watch?v=qA7MsLBv_-U.

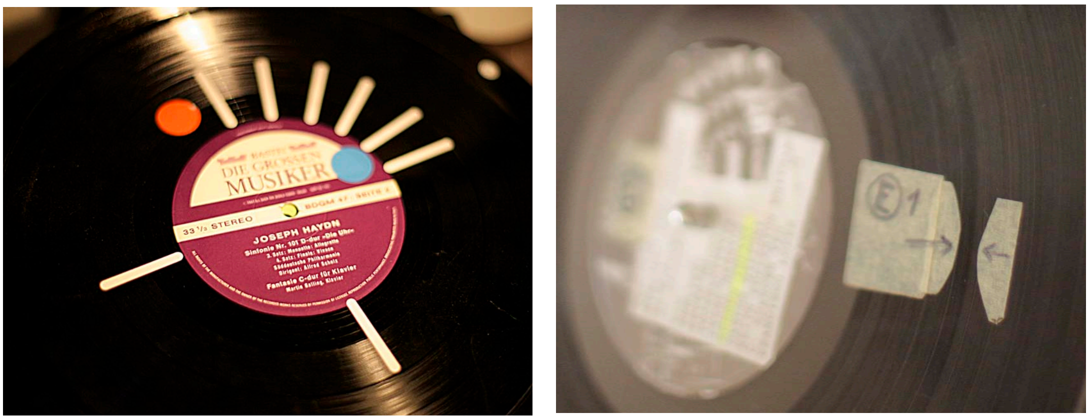

Figure 3.5 Left: Disc with a sticker pattern. Right: Disc with a sticker marking a sample and creating a loop.

Another function of stickers, and of the inner record label, is to notate performance instructions, such as playback speed (see Fig. 3.6, right ‘33’) or a particular record combination. ‘Psycho 33 + Mama’ on one label (see Fig. 3.6), for example, is a coded note that indicates the combination of a record with screams with a record that is atmospheric (J. Lanz, personal communication, 19 August 2014). Re-labelling and notating the records in this manner can facilitate speeding up the process of selecting a new record in the concert situation. Lanz’s sticker preparations are therefore a core element in the instrumentation and as prescriptive documents serve the player’s memory in the live performance. Compositional ideas as well as the results of experimentation or rehearsal become fixed and bookmarked with record preparations such as cut-ups or stickers.

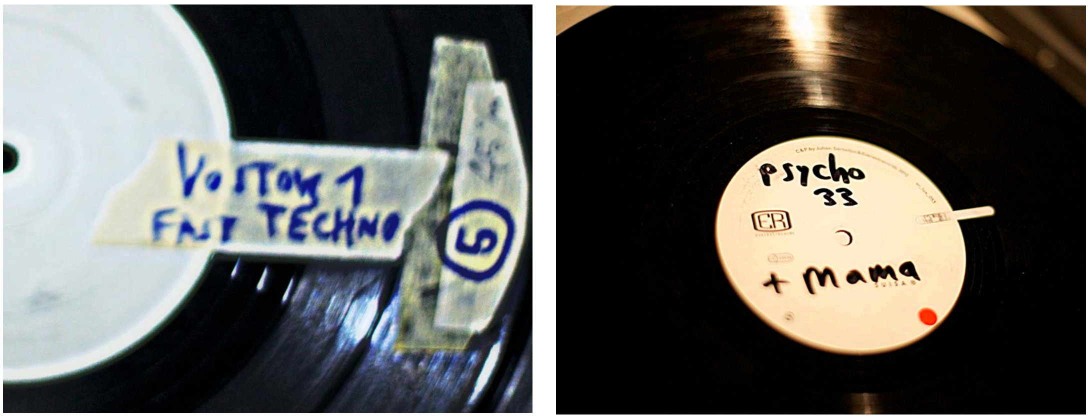

Figure 3.6 Examples of records with sticker notes and notes on the labels.

Additional Tools

Mixing Desk with Crossfader

Lanz's setup relies on two channels, from two turntables connected to a DJ mixing desk (see Fig. 3.1). Distinctive therein is the horizontal crossfader provided by such DJ mixing desks. The crossfader enables a blend of the two channels: whether in equal parts (when the crossfader is in the centre position) or towards one of the channels (by moving the fader from the middle position to the left or right). Although this cross-mix could be realised by moving a vertical fader on two different channels, the crossfader facilitates this action in a more precise range with only one fader. The crossfader's low resistance to movements enables, for example, when using only one finger, the execution of fast shoves and thereby cuts. This technical feature is crucial for manipulations such as scratching techniques or abrupt breaks (see Part II Analysis of the Performance/3.4 Manipulations). The mixing desk provides additional control of the channel input via vertical volume faders and adjustments of 'high', 'medium' and 'low' frequency areas to shape the timbre (equalisation). The position of faders and level meters and the lights on the sampler give the performer visual and tactile feedback. As a result of the high speed of the performer's actions during the performance, though, for the audience the impact of such visual feedback can be limited.

Sampler

The sampler (see Fig. 3.7) allows the performer to record and then play digitally saved or live produced sounds, sounds that may be played in a loop or as single events. The sampler is not a typical extension in Lanz's setup. Since the sampler is a much lighter and more practical device than a turntable, the addition of sound layers with a sampler often serves as a replacement for the use of other turntables. For this reason it is a tool that is especially suitable for solo performances, and this was the reason for its use in Lanz's performance on 19 December 2014. Although some artists might avoid the use of a sampler, a certain number of experimental turntablists have been known to include it in their setup, such as DJ Sniff, Ignaz Schick and Christian Marclay (Bossis, Marclay & Dufeu, 2013).

Lanz is particularly drawn to his twelve-year-old sampler, the Boss SP-202 Dr. Sample, due to its simplicity. Its design presents the performers with large buttons (as Lanz notes, similar to those of a child's toy) that are used to select a sample and to start and stop the recording of a sample. This simplistic design can require less precision and is therefore a better tool for fast movements, as fine motor operations require more planning and time. The sampler's role in Lanz's music will be further discussed in the following analysis of the performance.

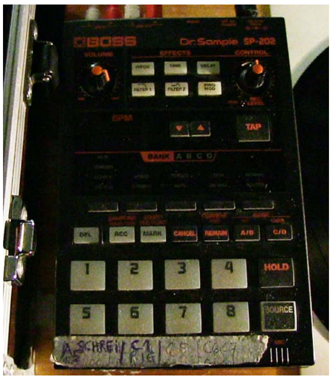

Figure 3.7 Sampler Boss SP-202 Dr. Sample with personal notes of the artist.

As discussed in the External Study, Joke Lanz's main influences – Dadaism, Viennese Actionist performance art, as well as punk, industrial and noise music – are partly linked to intense experiences in his early life. Similar to the minimal approach in his Sudden Infant project, in his experimental turntablism Lanz's setup and technological devices are aligned to guarantee direct and immediate playing; that performance style is consistent with his musical influences. Even inconspicuous details of the setup are aligned with the aim of providing access to vinyl records as directly as possible. A record holder next to the turntables, for example, provides sleeveless records that can be approached immediately without having to remove them first from their cover (see Fig. 3.2). Devices or instruments with complicated functions or multiple options would obstruct the execution of Lanz's spontaneous ideas and actions (Fischer, 2010). An unlimited number of possibilities is a general issue for musicians and producers using technical devices, as Brian Eno states:

> People are often paralysed by a range of choices when they're presented to them on a silver platter with unlimited time to explore and process them. You can't forget: everybody works better with fewer possibilities. You see it over and over again that good artists end up coming back to the same ideas they've always worked with (Brian Eno cited by Bartmanski & Woodward, 2015, p. 54).

In Lanz's setup, in order to facilitate a direct approach several features are aligned:

- a limitation to two turntables and two channels with standard functions
- the rotational position of the turntables
- the crossfader of the DJ mixing desk
- the simple sampler model
- the record holder with sleeveless records
- notes on record labels and stickers.

Lanz's possibilities are limited by the number of records, the number of samples per record, and the scope for manipulating these samples; within the here and now of the performance, though, elements of risk-taking and chance foster variation and degrees of unpredictability. Lanz's performing techniques will be described alongside the analysis of the performance in Part II. The arrangement of Lanz's limited setup features the following strategies:

- Limited number of records, though of several kinds: dubplates, self-released records, distributed records, cut-ups and prepared records (sticker-LP)
- Sample selection focused on: body sounds, unusual sounds, abstract sound qualities, references to the venue or performance situation (e.g. church bells, collaboration with Dieb13)
- Pitch manipulations of the samples: e.g. off-centred 7-inch disc without spindle*, speed changes via the turntable's speed selection buttons and pitch control
- Cutting options: cut-up records, crossfader, stopping the record rotation manually via the start/stop button or the power switch*
- Scratch manipulations*
- Structural re-arrangements of samples, rhythmic elements (e.g. cut-up records, stickers)
- Abstract sounds from the medium, often distortion noises (e.g. cut-up records, stickers, needle drops*)
- Fast switches between two turntable channels (mixing desk with cross-fader)
- Loops (sampler, stickers).

* See Part II Performance Analysis.

The performer receives multimodal feedback (visual, tactile, auditory) from the knobs, buttons and sliders of the devices, the headshell, and (during manipulation techniques) the vinyl record. In a manner comparable to the use of acoustic instruments, Lanz's limited setup seems to provide an instrumental resistance that can allow a state of 'flow',[7] a mode that resolves

> the sense of severance between agent (the performer) and environment (the instrument, the acoustic space, the social setting, and other providers of context) (Armstrong, 2006, p. 7).

Bartmanski and Woodward, examining the experience of DJs and producers playing vinyl records, come to a similar observation and emphasise the records' 'embodied playing':

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[7] See further in Csikszentmihalyi, M. (1998). *Flow: Das Geheimnis des Glücks.* Stuttgart: Klett-Cotta.

> [V]inyl's visuality and haptics make it prone to be a centre of meditation or ritual or both. Especially mixing the records can be experienced as a meditative and ritualistic practice that may consume most of player's attention [sic], allowing a sense of flow and remarkable connection both to the medium and its sonic message (Bartmanski & Woodward, 2015, p. 91).

In addressing my research questions, my study mainly focuses on the action-sound relationships with the turntables and on the feedback loops during the performance, which are further examined in Part II Performance Analysis.

Part II Performance Analysis

The analysis herein of a specific live performance is oriented around a main focus: Lanz's translation of the contradiction between media and material reality into a dialogical interplay exploring the scope of several polarities. Those polarities are: signal/noise, loudness/silence, comprehensible referential sound samples/abstract sound fragment, and musical order/disorder. Lanz's strategies aim furthermore to create comical moments and to disrupt the audience's expectations. The most conspicuous characteristic is the signal/noise contrast that seems to structure the concert and will be discussed in detail in the section 3.7 Musical Context/ Structure. An overview of the single sections is illustrated in Table 3.3 at the end of the chapter. In particular, in Lanz's concert a feedback loop between audience, performer and instrument can be observed, confirming Fischer-Lichte's notion of performance.

The framework developed in Chapter 2 will here especially consider theories of noise as well as Flückiger's ideas on the defamiliarisation and musicalisation of sound fragments. The analysis will refer to the accompanying interactive graphical representation and concert video; examples in the text can accordingly be rechecked with the movie file of this analysis tool (see Appendix C). In order to comprehend the sound production in the concert, the graphical representation uses a colour code to display the sound sources of Lanz's three devices: turntable on the left = red; turntable on the right = black; sampler = grey.[8] Following the example of Couprie (2004), the iconic signs are reminiscent of the shape in the frequency spectrum, albeit with necessary simplifications (see, for example, the graphical representations of manipulated and abstract sounds from the medium in Table 3.2). The dynamic is indicated in the size of the signs.

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[8] Here I refer to the setup from the audience's perspective rather than that of the performer.

Lanz's performance took place on 19 December 2014 in West Germany, a small alternative venue in Berlin, Germany.[9] The venue is situated in Berlin-Kreuzberg at Kottbusser Tor, a lively area filled with people of mixed nationalities and featuring many popular bars and cafés. Though Kottbusser Tor has had a reputation since the 1980s for being a problematic area,[10] more recently it has steadily become more and more gentrified. The underground atmosphere surrounding the venue West Germany is emphasised by the venue's unclear address: it is located on the upper floor of a 1970s housing estate and, on street level, there is no sign for the venue's name. The view from West Germany's windows looks onto the overground subway station Kottbusser Tor. The venue's white tiles covering all the walls and floors, a remainder from the former interior of a dermatologist practice, and the cables that hang from the broken ceiling, together emit an off-space characteristic and slightly trashy charm, corresponding to the assembled and reused equipment of the performing musicians.

The concert programme of the evening featured several experimental turntablists (Graham Dunning, Vinyl -terror & -horror, and Joke Lanz). The musicians' equipment of at least two turntables per performer was arranged on separate tables, visible throughout the whole evening for the audience.[11] In the room where the performances occurred no chairs were provided, so that most audience members stood in front of the performers at some distance from the setup. Audience members were free to move during the concert to the front rooms, where there is a bar. Since Lanz positioned this table to the left side of the room in front of the stage, the stereo speaker arrangement was only on the right side of the audience members. The stage, as well as the centred spot in front of it, were occupied by the other acts. The concert started at around 9:30 pm, with a crowd of around 50 people gathered. Lanz closed the concert evening with his 26-minute performance.

3.3 Sample Selection/Content of Vinyl Records

Lanz's performance encompasses heterogeneous sound material from the sampler and 19 vinyl discs. That material includes varieties of noises, spoken word and music samples. Similar to Christian Marclay (Bossis, Marclay & Dufeu, 2013), Lanz employs a broad range of possibilities for the auditory function of the samples, from abstract and non-referential aspects to semantic and narrative references. By creating similar acoustic properties in manipulated and abstract sounds from the medium, Lanz generates links to the pre-recorded samples and presents a play with the various turntable-specific sound possibilities (this will also be addressed in 3.4 Manipulations and 3.5 Abstract sounds from the medium). In this collage-like concert, two categories – signal-based and noise-based samples – seem to trace the artist's main criteria in his choice of records.

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[9] Although the author organised the concert especially for this study, for such concert evenings of live improvised music the conditions and concert situation were generic. It was not officially communicated that the concert and filming would be used for academic research purposes. The higher number of lights and the cameras in front of the setup might, though, have had an impact on the audience's experience of Joke Lanz's concert.

[10] BLZ (6 August 2015) West-Germany in Kreuzberg: Und wieder schließt ein Berliner Club, *Berliner Zeitung*. Retrieved from www.berliner-zeitung.de/berlin/west-germany-in-kreuzberg-und-wieder-schliesst-ein-berliner-club-22687004. Contrary to what is stated in the article, the venue West Germany did not close at the end of 2015 and still exists.

[11] An arrangement that the artists considered important. This accessibility of the equipment might allow the audience to gain knowledge of the sound production.

Lanz's sample selection of signal-based sounds seems directed towards the creation of cross-references and a feeling of homogeneity through similarities in timbre, envelope and rhythm. The signal-based sounds feature pure frequencies at a lower sound level and few harmonics, and they share a conspicuous affinity to speech: for example, the samples feature phonemes in Section II (1:12 min), vocal sounds of a female dancer in Section IV, as well as recordings of a singing child (at 17:51 min), and a singing male (at 18:49 min) in Section X (see Table 3.3). The samples of sine tones (Section VI at 10:34 min) and drop sounds (Section VIII at 12:46 min) gain speech-related characteristics via Lanz's manipulations (see further in the section 3.4 Manipulations). Electronic organ chords appear as a recording from the sampler in Section II (at 1:51 min) but also as an ostinato accompanying the diverse vocal sounds of a female voice of a record sample (at around 8:37 min, Disc 7 in Section IV).

In the signal-based samples' range Lanz also presents an interplay between signifying content and sonic qualities. Despite the fact that human voices are prevalent amongst the samples, speech use remains allusive and only a few moments develop a potential for semantic meaning (see also section 3.4 Manipulations/ Interruptions). Lanz keeps the majority of vocal samples shortened and allows only certain snippets to transform into words. In those cases, Lanz seems to establish comic situations: for example, an incomplete but comprehensible phrase of a woman saying 'That way' can be recognised (at 5:55 min). As was shown in the External Study, Lanz's compositional strategy aims to redirect musical ideas in order to deviate continually from the listener's expectations. Regarding a vocal sample's placement amid several random vocal snippets, within an interval too short to allow any feeling of a consistent musical thought, the vocal fragment moreover appears as an ironic and self-referential comment. Lanz applies an ironic tone more clearly with a longer phrase in German: '*Haben Sie den Inhalt des Gesprächs ...?*' (translated as: 'Did you ... the content of the conversation?'), at around 6:15 min. German speaking audience members might mentally complete the phrase with the missing word 'verstanden' ('understand') and realise the trick question, as there is no conversation being provided that could be understood. Due to its musical context, the phrase could only refer to a passage of scratched fragments of incomprehensible vocal sounds or the repetition of the word ‘twelve’ by a male voice at around 6:02 min.

The noise-based sample category features less homogeneous sounds: for instance, harsh broad-band noise with feedback (at 0:07 min, Section I), periodic machine noise (at 6:35 min, Section III), digital noise impulses in various frequency bands (at 9:25 min, Section V), periodic noise with components in the low and high frequency areas (at 11:37 min, Section VII) and periodic noise with high-pitched movements (at 16:06 min, Section IX). Paul Hegarty (2013) draws a distinction between noise music that is inspired by industrial music and the ‘musicalization of noise’ (p. 135). In Lanz’s concert we find both characteristics, and this might have led to the description of Lanz’s music as ‘Industrial musique concrète’ (Fischer, 2010). The noise-based passages often appear controlled, due to the use of loop structures or timed breaks between samples. Lanz’s strategies that control and musicalise noise are further discussed in later sections (3.4 Manipulations, 3.5 Abstract sounds from the medium, and 3.7 Musical Context/Structure).

3.4 Manipulations

Interruptions

The most frequently occurring sample manipulation is Lanz’s control of the turning records, and of the faders on the mixing desk, to interrupt the playback from the turntables. Although chopping samples into fragments is a typical practice in hip hop turntablism (Pelleter, 2013, p. 400), my category ‘interruptions’ highlights interruption as a more general concept in Lanz’s music. Lanz’s setup allows particularly direct ways of interrupting the sounds, that are specific to the phonographic medium. Simply the touch of the record can stop the rotation and therefore the playback at any desired moment of the groove. In order to create a short fragment of sound, Lanz carefully moves the record manually under the needle. Through the performer’s fast movement of the crossfader (with his right hand) to open or close the channel input on the mixer or to vary the volume, the samples’ length is changed and the samples’ starts and ends are made to differ. These performative manipulations of manually varying the fragments’ envelope control the sample’s referentiality and emphasise the partly embodied sample playback. This playing technique demonstrates Lanz’s flexibility in his sample selection and his tactile control, bringing mediation and materiality into a dialogue while employing the full range of samples from defamiliarised to identifiable. Here I discuss Lanz’s interruptions in relation to two strategies: 1) shortening samples to defamiliarise and musicalise them, while also exploring their comic potential, and 2) creating abrupt breaks.

1) Interruptions that aim to defamiliarise and musicalise samples might be effected by changing the length or starting position of a sample's envelope and thereby impacting on the perception of its sound quality, comparable to Pierre Schaeffer's experiments with the cut bell fragment (Chion, Dack & North, 2009, p. 13). The shortened sample length cuts off information that might be crucial for the listeners to recognise syllables or identify the sound source. Distinct acoustic properties of the fragments can be accentuated so that they appear as abstract sound fragments. In following this strategy, Lanz defamiliarises and transforms the vocal sounds containing referential qualities into abstract sound fragments to play with the audience's expectations and the sample's comic potential.

An example can be observed with the sample of phonemes (Disc 2, in Section II from 1:12 min on). These vocal fragments have distinct formant regions and sound like vowels, indicating their origin in a human voice (J. Lanz, personal communication, 26 January 2016); however, they also sound similar to instrumental or electronic sounds. Lanz manipulates the vowels, for example, so that they fuse with the looped electronic organ chords at 1:51 min from the sampler. The similarities with the organ chords occur via both the pitch and the rhythmic structure. Lanz creates a significant isotopy by imitating with one sample the rhythmic elements of the temporal pattern of another sample. The organ chord's rhythmic pattern could be interpreted in a 4/4 meter as ♩ ♩ ♫ ♫ recurring four times (see grey chord symbols in the graphical representation or Row B in Table 3.1). From 1:51 min on, Lanz plays the vowel fragments (denoted by black signs in the graphical representation) simultaneously in a syncopated rhythmic layer and accentuates varied beats of the repeating organ rhythm. He nearly imitates the organ rhythm completely in the third loop, as the overview in Table 3.1 demonstrates (see bar 3 in Row B):

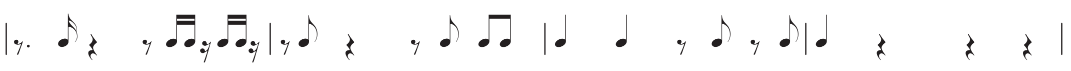
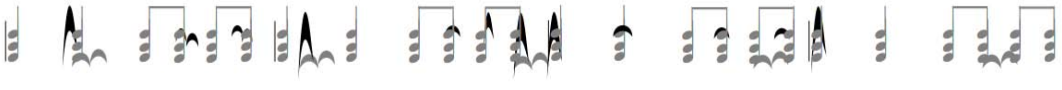
A	
B	

Table 3.1 Row **A** shows a transcription of the rhythm pattern of the vowel samples, Row **B** is an excerpt of the graphical representation showing the repeating organ chords from the sampler (grey) and the vowel fragments from the right turntable (black signs) starting at 1:51 min. The bar lines indicate the metrical structure.

Creative exploration of the ambiguity between vocal phonemes and abstract instrumental or electronic sounds has a distinct heritage in electronic music. In this performance, Lanz applies manipulated sound material of a singing child (Disc 16 at 17:51 min, Section X) and a sine wave (Disc 10 at 10:34 min), which is comparable to that in Karlheinz Stockhausen's *Gesang der Jünglinge* (1955–56).[12] In combining elements of French *musique concrète* and German electronic sound synthesis, Stockhausen's *Gesang der Jünglinge* unites electronic sounds, such as sine-tone chords, single impulses with definite pitch and narrowly filtered noises, ultimately matching the acoustic properties of phonemes sounded by a choirboy (Ungeheuer, 2005, p. 102; Decroupet & Ungeheuer, 1998). However, despite the boy's chant having biblical content, Stockhausen's composition of vocal sounds and electronic timbres had a disconcerting and amusing effect on its original audience (Reese, 2008, p. 100); confronted with incomplete words, the audience might feel reminded of stuttering of the type that provokes ridicule. In Lanz's concert, on the other hand, this humorous aspect of the fragmented vocal sounds (as in Section II and Section X) seems deliberate, especially given Lanz's Dadaist influences. His gathering of fragmented phonemes and words is reminiscent of 'phonopoems' from the beginning of the twentieth century, such as Kurt Schwitters' *Sonate in Urlauten* (Celant, 1977, p. 18).

The use of these shortened samples might also raise certain expectations for the listener. Lanz continuously interrupts the sample of the child's voice (transition to Section X at 17:51 min) into single syllables. As if the sample's meaning were being deliberately withheld, this action prevents any full comprehension of the pre-recorded sound for a long passage of two minutes. Finally, at 19:51 min the phrase and melody is played for four syllables so that a very recognisable song can be identified: *Over the Rainbow.*[13] Once the citation of this popular song is clear, the listener's desire to recognise the citation seems to transform into the listener's anticipation to hear the song's melodic progression. Yet Lanz still teases the listener, disrupting the musical narration by briefly inserting passages of a countermelody (see further in 3.7 Musical Context/Structure).

A similar example for musicalising samples via manual interruption techniques can be found at 23:55 - 25:05 min, where Lanz accentuates distinct beats from one sound layer's rhythmic pattern using random sound snippets from another disc. The interrupted samples (black signs) overlay the music sample from the looper (grey signs) on the weaker off-beats (see Fig. 3.8). These precise cuts – controlling the channels' input by moving the mixing desk's faders quickly – are crucial for creating syncopation (Poschardt, 1997, p. 243). The selection of a DJ mixing desk featuring crossfaders, allowing distinct manipulations, is therefore inherently connected with musical features. The prevalence of syncopation in Lanz's improvisation might also be influenced by his experience as a turntablist in a jazz band (MK Selection; see External Study). In free jazz, irregular and unpredictable metre is common and stylistically appropriate (Witek et al., 2014, p. 7). Lanz's rhythmic patterns, however, only appear temporarily.

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[12] In a review of Lanz's album *Münster Bern* (Lanz, J. (2012). *Münster Bern* [CD]. Switzerland: Cubus Records), Julian Cowley (2012) also noted a similarity to Stockhausen's *Gesang der Jünglinge*, showing that this concert is not a unique case.

[13] Originally sung by actress Judy Garland in the 1939 movie *The Wizard of Oz* (music by Harold Arlen and lyrics by E.Y. Harburg). The audience might also know the song from the many subsequent versions.

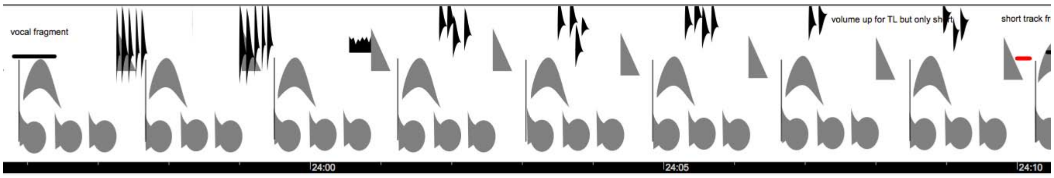


Figure 3.8 The sonic fragments from the right turntable (black signs) create syncopated accentuations over the clear metrical beats of the music sample from the sampler (grey signs).

2) Lanz's interruptions also create conspicuous breaks, and this is strongly related to his approach to timing. In Lanz's Sudden Infant project, methods of 'self-interrupting' and 'thought-erasing' (Drew Daniel in Lanz & Marhaug, 2012, p. 5) are used to accentuate the moment (Lanz in Sienko, 2012). Such dynamic concepts are manifested, too, in Lanz's turntable concerts, defining how he plays with the audience's expectations:

> [S]ometimes there are moments in which suddenly there is just quietness. It is said that 'an angel is passing through the room'. For around two seconds [...] nobody speaks! And suddenly everybody talks again. This is really such a dynamic element! It is very exciting and immediately opens the ears. It is something that I like a lot in music — loudness and silence, which kind of counterpoint each other (Lanz in Weissenbrunner, 2015).

The interruption of playback occurs as a structural concept highlighting the cut itself, the moment of silence. The interruption at the same time dissolves and weakens predetermined structures and narrations produced by the playback. The samples are not immediately confronted with a new context or direction, as in a collage, but are rather halted or paused. These breaks then allow the listener to process the heard sound fragment and to build up expectations. For the improviser, breaks can also create space for new musical thoughts (Behne, 1994, p. 120).

With regard to noise-based samples in particular, these breaks create structure and a sense of control (Bijsterveld, 2006, p. 324). For example at the beginning, through full volume being turned on and off, the walls of noise are presented by way of sharp cuts, so that powerful and intense noise blocks contrast with sudden silences. Each of the six noise blocks, with a length of between five and nine seconds, is interrupted by a break of around half that length. Furthermore, Lanz's movements of placing, with one hand, the needle on the record, whilst with the other hand opening the channel on the mixer through the fader, supports a clear and controlled characteristic for each wall of noise. Yet the noise walls seem to grow and receive an acceleration of intensity without any corresponding representation in physical movement or body language; this creates a slight feeling of disconnect. Lanz, however, contrasts this incomplete phonographic embodiment at the concert's beginning with an increasingly embodied playing throughout the course of the performance (see especially his final action in 3.5 Abstract sounds from the medium/Needle drops).

A variation on these breaks is the interruption of samples by using the turntable's start/stop button to stop the automatic rotation (Lanz does this seven times in total). Breaks of this kind, however, have their own distinctive characteristic, since the slowing down of the rotating platter creates an analogous downwards movement in the given sample's frequencies. Adorno considered the record player's 'winding down' as a direct interaction of the device and the content of the record (Adorno, 1928/1990, p. 55; see also Introduction), and Lanz's similar manipulation using electro-mechanical turntables likewise demonstrates a noticeable, media-specific feature. This feature of a rather continuous deceleration in contrast to an abrupt halt of the rotation might also be specific to Lanz's Technics SL-1210 MK2 turntables and occur in another form or not at all in the use of different turntable models. (The Vestax PDX 2000 model, for example, features controllers to set a variable speed to stop the platter). The sound alteration corresponds to the mechanical resistance of the record player's motor as it stops, instilling within this sound-action relationship a form of phonographic embodiment.

A distinct purpose of such automatically stopped rotation is to mark an ending section. In the above example of noise walls in Section I, Lanz prominently ends the last noise wall with the sound of a dying motor (see 1:10 - 1:12 min) rather than using the sharp crossfader cuts as in the preceding interruptions; Lanz's use of the stop button shapes the noise and accentuates the motoric movement (see further in section 3.7 Musical Context/Structure). Other examples occur at 10:32 min, when the stopped rotation marks the end of another noise section (before Section VI), and at 23:36 min, ending a music track with electric guitar.

However, the most prominent example of this manipulation is when it serves to end the whole concert: as the styli of both turntables play the inner labels of the vinyl discs, they produce a dense noise with irregular movements, which slow down together with the rotating platters. The analogue relationship mapping slower rotation onto corresponding sound manipulation, something that is additionally a visible process, might also be considered a symbolic act. In experimental concerts with electronic sound, the dependency on the devices is at times emphasised by simply pulling the plug to end a concert. In this regard, the turntables' 'winding down' serves to give the closing action of 'stopping the machine' a distinct, media-specific sound manipulation. The direct effect on the sound of this mechanical feature becomes reinterpreted for musical purposes.

This automated effect of the turntable's stop button, applied with signal-based samples, causes a clear downwards glissando, as in Section IV at 8:42 min. The subsequent break of around 1.5 seconds might build up expectations, and it develops a distinct intensity by resolving with a woman's intense moan, as Lanz starts the playback again. In Section VI at 11:06 min, the rotation's reduction in speed creates a downwards glissando on the sample of a sine wave. At this point the downwards glissando appears as a variation of the wobbling movement caused by the off-centred playback, which latter changes the pitches of the Morse code sample (see section 3.4 Manipulations/Speed Alterations).

Lanz's interruption techniques facilitate several possibilities (such as sample fragmentation and breaks) to work with the sample's referentiality and coherence (such as via rhythmic and timbral imitation). Manual or automatic cuts intervening in the playback simultaneously emphasise the performer's and medium's corporeality. In this regard, the sound fragments' presentation in a tactile relationship with the direct touch and movement of the record is significant. These actions draw the focus on the specific link between action and sound in the turntable's direct response.

Scratching

The interrupting manipulations seem related to Lanz's various forms of scratching techniques, given how they similarly interrupt and defamiliarise samples. The scratching techniques might ostensibly be comparable to those of hip hop turntablists, but their functionality is strongly linked with Lanz's personal concepts. Distinctive of Lanz is that he uses the scratching techniques not only as rhythmic elements but also to alter the timbre in oscillating between noise-based and signal-based sound.

The most common 'open-fader scratches' are manual forwards and backwards movements of a disc effected without changing the cross-fader's position. When scratching movements are combined with cross-fader cuts, forward scratches emerge; this is because, with the audio channel only open for the forwards rotation of the disc, the backwards motion is muted. Another manipulation sound is generated when the record is moved forwards and backwards whilst, at the same time, the cross fader is moved quickly back and forth.

These scratching techniques play a distinctive role in the transitions between contrasting sections. That is because, due to the manipulations, the sound quality of a sample can be changed from signal to noise, for example. For this effect, Lanz continuously moves the disc back and forth to create a chain of scratch sounds. These quick forwards-and-backwards scratches modulate the sample's dynamic and timbre. Through modulation, a signal-based sound develops a quality of harshness or roughness (see Fastl & Zwicker, 2007). A notable example occurs in the transition from the noise-based Section IX to the signal-based Section X using a signal-based sample of a child's voice (Disc 16). After building up tension with a constantly scratched passage lasting almost one-and-a-half minutes, which features dynamic and timbral variation over a noise loop, the chain of scratch sounds eventually resolves, with a chirp, into a fragile phoneme from a child's voice at 17:51 min, which is revealed as having been the basic sample for the scratches (see Fig. 3.9). In the scratched passage, through the use of scratch manipulation this vocal fragment with a harmonic spectrum (see Fig. 3.10, left) develops a frequency spectrum with non-periodic partials (see Fig. 3.10, right), thereby remaining hidden as a signal-based sample.

A similar tremolo as a transitional element, featuring little scratches with dynamic and timbral alterations effected via the disc movement, occurs before Section II (6:23 - 6:35 min). The tremolo ends with a quick crescendo and immediate switch, via the crossfader, to a repeating, dense noise sample from the other turntable. By following the direct links between physical movements and produced sound – and, thereby, the performer's use of the material properties of the turntable or disc – audience members can not only follow the sound production but also assess its execution.

At times, though, scratching sounds also occur in the pre-recorded sound (for example, at 11:09 – 11:31 min); in such cases, scratch sounds are not linked to live manipulations in the here and now. The link between sound and physical movement, as is provided by live manipulations, is broken and the view of the rotating record disc establishes a weak link with the mediated scratch sounds. In this way visual cues can help the spectator to resolve any confusion as to whether the sounds are manipulated live or pre-recorded.

Slow forms of scratching can transform samples of pure pitches into elements of vocal qualities. Lanz, for example, varies the speed of moving the record forwards and backwards for a varied manual playback of drop sounds (e.g. especially between 13:03 - 13:15 min). The drop sounds seem furthermore to relate to the hiccups in the child's sample at 17:51 min (Disc 16), each sound having a similar morphologic characteristic.

Lanz implements scratched sounds prevalently as transitional elements to bridge noise-based and signal-based sections in his concert or to create coherence with isotopies by producing similar acoustic properties in samples and manipulated sounds. In the dialogue with the samples' media reality, the scratches convey sensuality via the palpable impression of the performer's physical movements. For the audience, the effect of this tactile technique of manually moving the record grooves under the stylus might be rather transparent and accentuate the medium's specificity. On the disc's outer rim, small fast movements map a lower timbre onto the sounds, whereas wide and fast movements produce a higher pitched timbre. Similar to hip hop turntablists, the performer improves the physical grip on the record by moisturising his fingertips (also Chavez, 2012, p. 106).

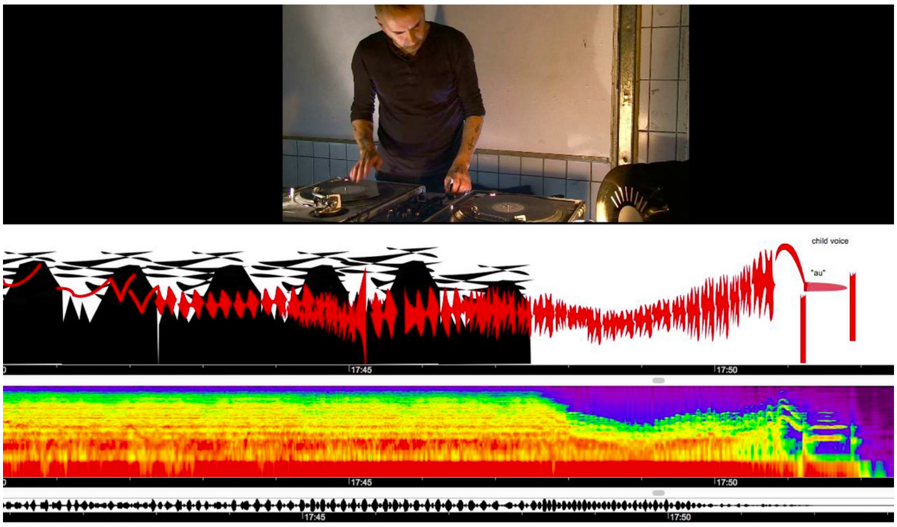
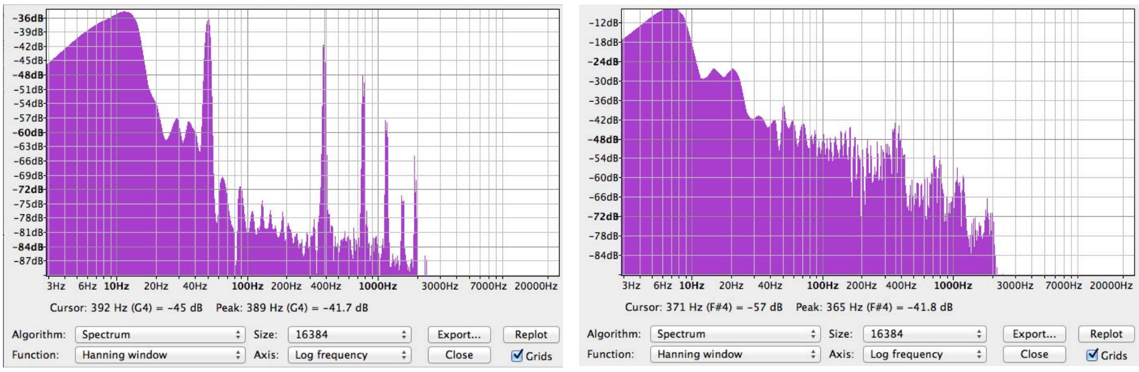

child voice
"au"
17:45
17:50
17:45
17:50
17:45
17:50

Figure 3.9 Excerpt of software EAnalysis at 17:40 min with several interactive layers: video of the concert (top layer), graphical representation, spectrogram and waveform (bottom layer). This passage shows the scratched sample of a child's voice that ends in a pure phoneme (in the layer under the video, see the red signs for the sample from the right turntable contrasting with the black icons for the noises from the left turntable).


-36dB
-39dB
-42dB
-45dB
-48dB
-51dB
-54dB
-57dB
-60dB
-63dB
-66dB
-69dB
-72dB
-75dB
-78dB
-81dB
-84dB
-87dB
3Hz
6Hz
10Hz
20Hz
40Hz
100Hz
200Hz
400Hz
1000Hz
3000Hz
7000Hz
20000Hz
Export...
Replot
Close
☑ Grids
-12dB
-18dB
-24dB
-30dB
-36dB
-42dB
-48dB
-54dB
-60dB
-66dB
-72dB
-78dB
-84dB
3Hz
6Hz
10Hz
20Hz
40Hz
100Hz
200Hz
400Hz
1000Hz
3000Hz
7000Hz
20000Hz
Export...
Replot
Close
☑ Grids

Cursor: 392 Hz (G4) = -45 dB   Peak: 389 Hz (G4) = -41.7 dB

Algorithm: Spectrum   Size: 16384

Function: Hanning window   Axis: Log frequency

Cursor: 371 Hz (F#4) = -57 dB   Peak: 365 Hz (F#4) = -41.8 dB

Algorithm: Spectrum   Size: 16384

Function: Hanning window   Axis: Log frequency

Figure 3.10 On the left, plotted spectrum (in the software Audacity) of the child's voice fragment without manipulations, showing a fundamental frequency at around 389 Hz (G4) and the next four harmonic partials (excerpt length 470 ms at around 17:53 min). On the right, the spectrum of this sample as a chain of scratches, showing a dense spectrum of non-periodic partials (excerpt at 17:50 min for around 500 ms).

Speed Alterations

Another conspicuous technique is the manual spinning of the disc at a fast speed: pushing the disc forwards on the label creates high-pitched glissandi or ‘Mickey Mouse’ voices. Generally, it can be observed that the link between action and sound is dependent on the speed and extent of the movement: the faster the rotation, the higher the pitch. The majority of Lanz’s sound manipulations are caused by human actions. Yet some significant speed alterations are conducted automatically by the turntable.

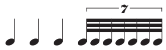
Conspicuous in this regard is the off-centred playback of a 7-inch disc (Disc 10), which Lanz uses to create coherence with speech-related samples. As mentioned in Chapter 2, 7-inch discs usually come with a hole of a greater diameter than that in a 12-inch record. Therefore, without the spindle the playback of this 45rpm disc will not be centred on the platter. Although the platter rotation speed remains constant, due to the changing distance from the centre certain areas of the groove are played faster or slower, and the disc’s off-centred movement alters the pitch of the sample. At 10:33 min in the concert, Lanz applies such irregular disc movement to samples of pure tones (Disc 10) (according to Lanz they are Morse code). The sample’s pitch rises in the faster-played areas and falls in the slower-played areas. The intervals of the pitches grow relative to the record’s distance from the centre. This continuous up-and-down swaying movement equips the sine tones with ‘intonation contours, stress patterns, and rhythm’ reminiscent of prosody in spoken language (Schön, Magne & Besson, 2004, p. 342); the rising pitch relates to the pitch contour for questions and the downwards glissandi to the pitch contour for declarations. The communication signals based on an abstract system become ironically transformed into the realm of human speech. The record’s irregular rotating movement is embodied in the sound’s wobbling effect, making the link between sound and physical movement clear (see also Chapter 2).

Another example of phonographic manipulation is the performer’s use of speed regulation via the speed select buttons for 33 $^{1/3}$ rpm or 45 rpm or the pitch adjustment slider, which can raise or lower the speed by about 16% in total. These transpositional effects are combined with other manipulations and create variations in the pitch range: for example, in the crossfader cut passage at 7:58 min; in the passage of the wobbling sine tone at 11:04 min; and in Section II at 1:31 min. Considering the less conspicuous movements of the slower or faster rotating platter, speed changes and pitch shifts are presumably more difficult to notice visually than acoustically.

Similarly to scratching techniques, speed alterations during playback, such as those caused by the off-centred 7-inch disc, can demonstrate clear instrumental relationships and emphasise the sound’s dependency on the correct operations of the phonographic translation process.

3.5 Abstract Sounds from the Medium

In Lanz's performance, prepared discs (sticker pattern), distinct features of the disc's surface (playing the inner record label, record crackling) and needle drop techniques predominantly produce abstract sounds from the medium itself. These sounds are produced live without being dependent on pre-recorded sounds; the link to the medium's materiality therefore becomes particularly notable.

A conspicuous source of abstract sounds from the medium is Lanz's prepared sticker LP (Disc 4: see Fig. 3.11). As explained in the External Study, stickers that are placed at distinct distances from each other facilitate the generation of rhythmic impulses. Lanz employs this method to create a percussive musical element and to imitate a rhythmic pattern in a signal-based sample. The sticker LP at 4:56 min shows seven stickers within one quarter. One sticker placed in each quarter of the record creates a 4/4 metrical base through the record's periodic rotation. The pattern with seven stickers per quarter would therefore result in a septuplet, an almost continuous sound similar to a drum roll when used with a standard rotation speed. The complete pattern in a repeated sequence of noise impulses occurs at 5:09 - 5:15 min and can be heard as a marching rhythm with the tremolo on the backbeat:  . Yet before the rhythm pattern appears in full length, Lanz places the needle several times solely over the last five stickers of the disc quarter. With the shortened roll of bursts from the needle bouncing over these stickers, Lanz adapts the sticker pattern to the rhythm pattern of the stuttering phonemes from the sampler (in the graphical representation, notated with reference to the International Phonetic Alphabet as 'ɪ æ æ æ'; see Fig. 3.11). The imitation of the speech figure becomes especially evident when Lanz aligns the sticker figure so that both sound layers simultaneously intersect each other, such as at 5:00 min or, less precisely, at 5:06 min. The discs' noise impulses can be followed by viewing the rotating black disc with white stickers, an example of phonographic embodiment. The noise bursts present similar acoustic properties and temporal patterns to the needle drop noises. Their repetitive character, though, indicates the mechanical movement of the rotating platter.

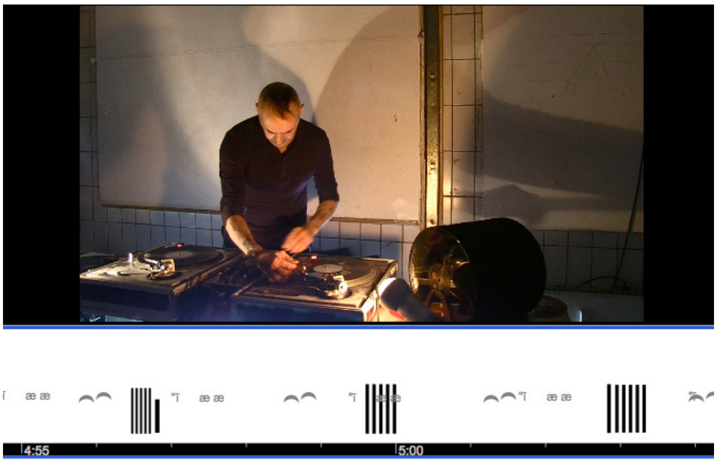


Figure 3.11 Lanz creating an imitative rhythm with a sticker pattern on an LP (black signs).

In the ‘needle drop’ technique Lanz allows the needle to bounce up and down, in contrast to its usual sideward movement. This misuse of the needle has two functions. Firstly, it produces needle distortions – namely abstract pops and noise bursts via the medium itself and independently from the disc’s audio content. Secondly, it allows Lanz to skip manually through several tracks of the disc (comparable to how Chavez describes her ‘drop needle technique’ in Chavez, 2012, p. 66). In this way the needle drop technique facilitates the creation of acoustic properties that might refer either to noise-based sounds or signal-based sounds. Needle drops consequently feature as a prominent tool in Lanz’s transitions between contrasting sections (see 3.7 Musical Context/Structure).

At 7:34 min, for example (the transition from Section III to Section IV), needle drops are used to play random samples of signal-based sounds, playing them in an interrupted way so that the sound snippets are hardly recognisable. Lanz introduces signal-based sound material in the noise-based section (Section III), though it is in a fragmented and therefore weak structure; on the other hand, the accompanying pops and noise bursts relate to the preceding noise-based samples. This approach to sound production displays a conspicuous physical process. Lanz stabilises his right hand partly on the turntable base while holding the little handle of the headshell loosely between his thumb and index, controlling the cartridge delicately. Skipping through sound recordings by placing the stylus on arbitrary spots on the disc highlights the medium’s specific material characteristics.

A more radical use of the needle drop technique in combination with playing the inner record label (in Section XI at the concert end) appears to develop as the concert’s standout action. Prior to the concert the venue’s ramshackle beer table was the only table left for Lanz’s setup. But instead of being constrained by the table’s physical flaws, Lanz embraces its idiosyncrasy and embeds it in his ‘needle drops technique’ with the turntables. He shakes the ramshackle table in order to drop the needles on both turntables simultaneously (see Figure 3.12).

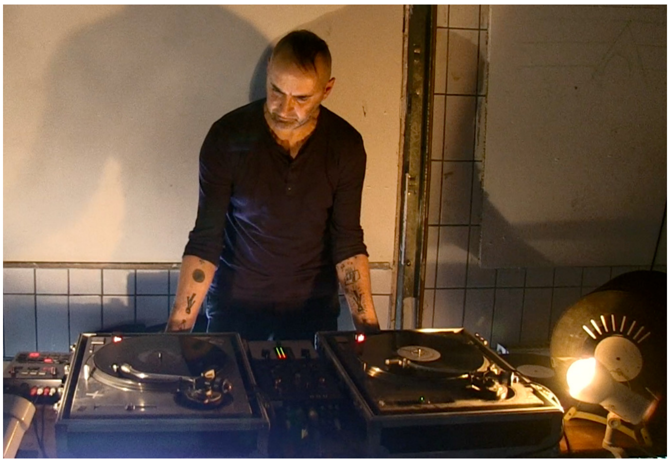


Figure 3.12 Joke Lanz's needle drops, carried out by shaking the table with both turntables at 25:30 - 25:40 min.

The tone arms have moved inwards, so that the headshells bounce on the inner record labels' uneven paper surface, which creates slightly irregular but constant broad-band noises, abstract sounds from the medium. Lanz's action of continually dropping the needles on the paper surface generates a nearly regular staccato rhythm of noise bursts. The bodily effort and physical movements seem proportionately linked with the sound: the higher the tone arm falls, the harsher the noise burst. These rather rough actions with the turntables manifest the physical body, and in doing so infuse an energy into the performance similar to that associated with industrial music:

> Performances of industrial music sought to address the question of embodiment through an exploration of its border conditions, creating abject bodies adrift in liquids, lost in objects and held in stress positions. It would also make the process of music-making dramatically physical, working through human/machine/nature relations through the literal exponent of bashing things, breaking others, chopping, sawing, exploding ... (Hegarty, 2013, p. 135).

Lanz's needle drop action particularly conveys a form of embodiment or what Croft (2007) describes as the 'grain' in an instrumental relationship: the material sound indices, as dependent on the material properties of the record player, the weight of the turntables and the table, and the physical effort to lift this weight, underline the performer's as well as the turntables' corporeality. The 'embodied' sonic results of this spontaneous action are presented as produced by the instrument's and table's limitations and physical idiosyncrasies. The effort needed for these rhythmic noise bursts might even result in physically damaging the tone needles or vinyl records.

Abstract sounds from the medium contrast the mediated samples in the performance in their strong reference to the medium's materiality. The action-sound relationships are directly related to material qualities (disc surface texture: paper label, scratches or stickers) and physical movements (needle bounces). As purely noise-based sound material, these elements facilitate an embodied and energetic sound source that also link to industrial music.

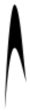
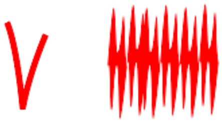
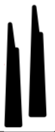
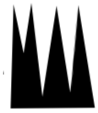
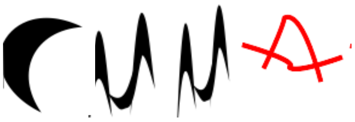
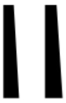
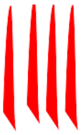
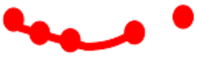
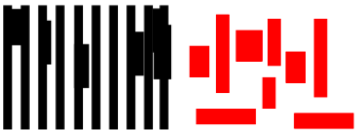
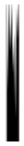
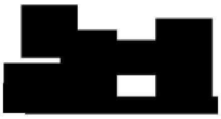
Manipulations	
	Interruption of a signal-based sample
	Single scratch, with forwards-and-backwards movement of the disc, or a chain of scratches (e.g. 6:25 min)
	Stab/Cuts with cross-fader while spinning the record forwards (e.g. at 23:25 min)
	Cutting with crossfader movements during regular playback
	Spinning (pushing the disc from the centre to speed up the rotation)
	Combination of crossfader cuts and moving the disc, with half the rotation, forwards and backwards
	Chirps (e.g. at 5:45 min)
	Off-centred playback
Abstract sounds from the medium	
	Needle drops, ordered or at random
	Single noise burst, created by a sticker or another unevenness on the record surface.
	Regular but constant broad-band noise

Table 3.2 Graphical representations of the manipulated and abstract sounds in the accompanying movie file created in the software EAnalysis (see Appendix C).

3.6 Sampler Manipulation

Lanz deploys the sampler device to play pre-recorded sounds or to record passages of the concert that can then be played back as single events or in loops. In this way Lanz transfers the dialogue between media and material reality into the synthesis of a new immaterial dimension of the sampler (see also 3.7 Musical Context).

Prior to the concert he prepared several samples of different types. During the concert these are featured prevalently in a dialogic relationship with the vinyl record samples: for example, in Section II with the samples of the electronic organ (at 1:51 min) and phonemes (at 2:11 min) or in Section XI with the electronic music sample (at 23:47 min; see also in 3.7 Musical Context). Samples of numbers between one and eight, originating from a male voice, receive a special role and appear twice in solo passages (at 7:12 min, only the numbers one to four occur; at 23:42 min, the numbers one to eight occur). These samples are applied in sudden breaks, similarily to a record disc sample of a male voice saying ‘twelve’ (at 6:02 - 6:10 min, Disc 5). These numbers’ sudden appearance without any clear function could be heard as a countdown for the break, which at once interrupts and emphasises the silence. Without preparation within the musical context, however, they feature as elements of surprise and unexpectedness. These number samples’ non-referentiality obscures their purpose, casting them in a slightly absurd and comic light.[14]

The sampler allows Lanz to freeze an excerpt of his live manipulation of the records and then to confront this excerpt with further live manipulations of the same record material: see at 1:41 min (Section II), at 11:43 min (Section VII), at 13:46 min (Section VIII) and at 20:22 (Section X). In Section VIII at 13:46 min, for example, the superimposition of two percussive samples with a similar acoustic profile results in a polyrhythm (Pfleiderer, 2006, p. 145); rather than having them appear as two isolated voices, Lanz obscures both voices by weaving a sonic web of dynamic auto-rhythmic figures such that these then develop a new specific texture (Pfleiderer, 2006, p. 150). The sampler is therefore both a documenting device and a creative device (Oswald, 1985/2015), enabling Lanz to recontextualise the record samples.

The sampler’s loop function furthermore plays a crucial role in structuring the noise-based sounds (see, for example, the periodic noise samples in Section VII at 11:37 min). Loops order samples into rhythmic patterns and assist in defamiliarising and musicalising concrete sound; this was a salient feature in Pierre Schaeffer’s *musique concrète*, as realised with locked grooves or tape loops (Flückiger, 2012, p. 272). The sampling device provides a similar tool and moreover facilitates the performer’s applying these loop functions live during the concert. An exploration of the sampler's structural role is discussed in the following section (see 3.7 Musical Context/Structure).

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[14] Joke Lanz confirmed this observation in a personal message to the author, 26 January 2016.

The performer interacts with the sampler by pushing a button for the beginning or end of a recording or playback. Despite the additional visual feedback of this activation, though, signalled by the red lights on the device, the sampler's involvement remains difficult to follow. Only the single samples of numbers (at 7:12 - 7:21 min, Sample 4, and at 23:42 - 23:47 min, Sample 4), wherein each number sample is allocated to a different button, present a simple relation between the heard sound and the act of pushing the button.

By providing an automatically running sound layer, the sampler bridges moments during the concert in which the performer searches for the next disc. A break between each record change would interrupt the musical flow and therefore turntablists typically develop strategies to avoid this problem. Using the sampler assures the performer a higher degree of independence from the records. At the same time such moments also assist our detecting the otherwise obscure fusion of live sounds and reproduced sounds in the looped passages, such as at 14:14 min or at 21:01 min; during the period in which the performer looks for a new disc, it becomes clear that no sound can be originating from the turntables and is therefore only coming from the sampler. In Lanz's performance, these situations demonstrate the use of mixed media technologies and varying dimensions of liveness in electronic sound production. In the moments of sampler playback only Croft's criterion of synchronicity is fulfilled. The limited instrumental relationship of the sampler contrasts with and underlines Lanz's embodied manipulations and abstract sound production from the turntable.

3.7 Musical Context/Structure

One of the most notable features of the performance is how the opposition between powerful noises and smaller signal-based sounds accentuates structural qualities. This is an attribute of noise that Hegarty (2013) emphasises:

> Noise must be heard in relation to not-noise: to harmony, structured music, meaning, language, discourse, to sounds recognized and appreciated rather than shunned or found unpleasant (p. 133).

Alongside this principle, contrasts in volume and density might function additionally to cause immediate attention on the listener's part (Flückiger, 2012, p. 250).

In forming distinct sections, Lanz weaves an alternating pattern of eleven entities, featuring predominantly noise-based or signal-based sounds; transitions between these entities, on the other hand, appear as subsections (see Table 3.3 for an overview). However, in the last three minutes of the concert Lanz dissolves this pattern by combining music samples and noise in a sort of synthesis of the disparate sections. Whereas the majority of the concert appeared as controlled and ordered, at the end Lanz opens the performance up to elements of randomness. By simultaneously switching between eclectic samples and several manipulation techniques, which were up to this point deployed in a more singular way, an impression of a climax is conveyed. Lanz increases the final intensity through playing harsh noise bursts in a staccato rhythm until these noise bursts flow into a constant low noise that eventually runs out into nothing. Lanz links the concert's ending with its opening through the use of similar sound material (broad-band noise) and similar manipulation techniques (stopping the rotation via the stop button), indicating the structural thinking underpinning his intuitive and improvised performance.

The beginning of Lanz's performance is significant for its use of noise from the realm of noise music, combined with extremely loud volumes. The performance starts abruptly, with repeating harsh noise walls from a vinyl disc (as discussed in 3.4 Manipulations/Interruptions). This spectrum-filling noise, featuring high-pitched movements similar to distortion or feedback, appears unexpectedly out of nothing. Such an introduction with noise sounded at high volume, though, is not an uncommon strategy in Lanz's concerts; his project *Radiorgasm*, for example, also started with a 'noise intro' (see score in Chapter 2, Fig. 2.4). Moreover, the sudden appearance of high levels of noise is quite a general tactic in concerts of cracked and broken media (Kelly, 2009, p. 80). Parts of the audience might be prepared and hear the noise as sounds, whereas others might react with discomfort or shock (Kelly, 2009, p. 80); the audience's expectations might furthermore be reset at this point and directed towards harsh noise concerts, due to similarities with Japanese noise music. As mentioned in the External Study, through noise Lanz says he expresses a vital substance of raw feelings originating from his inner core (Fischer, 2010). Paul Hegarty (2013) compares listening to these rough noise utterances with Gilles Deleuze's idea of masochism:

> This is not us perceiving and understanding it, it is the supplanting of perceptual control – noise parallels masochistic writing in that it is our senses in the plural that are addressed, and most of all the proper processing organ is displaced – the eye for reading is supplanted by erotic response; the processing ear, how we understand sound, is disturbed and becomes the means to the end of a sensory experience that is more hearing than listening (p. 139).

With increased volume, the walls of noise therefore gain physical dimensions for the listeners. As well as masking out further information, they can cause a raised heart rate or higher blood pressure (Flückiger, 2012, p. 239). After Lanz nonverbally asks the sound engineer to raise the volume, cheers from the audience seem to indicate that the walls of noise were generally welcomed. Lanz then suddenly changes direction away from extreme noises with a break (using the stop button) and samples of soft human vowels (Section II at 1:12 min). This opposition of harsh noise and soft human vocal sound signals the beginning of a continuous play of contrasts, between loud and small and between noise-based and signal-based entities.

Considering the influence on Lanz's music of industrial music and body art, the notion of a human/machine polarity (Hegarty, 2013, p. 135) might here charge Lanz's noises with a symbolic value regarding machines and industry. In the example mentioned above, the 'human' sounds in Section II (Disc 2's phonemes) follow the harsh noises of Section I, which Lanz prominently ends with the slowing down of the turntable's motor (using the start/stop button; see 1:10 - 1:12 min) rather than with a sharp cut using the crossfader. This accentuates the turntable's mechanical movement for the playback, something that would otherwise be not recognised. In Sections IV and V, Lanz counters the vocal sounds from a female dancer (from a dubplate, J. Lanz, personal communication, 26 January 2016) with the digital noises of Section V reminiscent of the now-outdated dial-up sound of a telephone modem establishing an internet connection (Sudden Infant/Carlos Giffoni, 2007, *Oslo Oscillation Orgy* [LP], UK: Entr'acte - E40). In Section IX and X, the noise/signal contrast manifests in the antithesis between periodic machine noise and a child's voice. At 21:10 min, at the end of Section X, a loop of vocal sounds is again confronted with the digital noises of Disc 8.

Lanz starts new musical ideas and then interrupts them with sudden breaks or fast changes. The quick alternation of sections – half of all sections last no longer than one minute – demonstrates a high number of direction shifts, especially in the middle section, which constantly plays with the listener's expectations (see Fig. 3.13). Lanz aims to leave the listener without any feeling of direction or security, a condition that he analogises with that of daily life. Natural phenomena are rather more related to randomness and surprise than to controlled events (Flückiger, 2012, p. 118). Despite the numerous pauses, shifts of direction, and eclectic samples, Lanz's musicalising the samples through manipulation techniques and preparations can help convey a feeling of coherence in the improvised concert. In Section II, Lanz imitates rhythm patterns using interruption techniques to blend vowel samples and instrumental sounds (see Table 3.1). The undulating sine tones of the off-centred 7-inch disc in Section VI (at 10:33 min) seem related to the drop-like sounds of Disc 12 in Section VIII, the two having similar acoustic properties; the drop sounds, though, gain a speech-related contour via Lanz's single forwards-and-backwards scratches, which create quick rises and falls in the pitch of the pure sounds (mentioned above in sections 3.4 Manipulations/Scratching and Speed Alterations). Although the sound material seems separated into two opposing groups, distinct signal-based sounds can still comprise an additional noise-based component within the range of their acoustic properties of pure frequencies, and this can link them to the contrasting noise-based sounds. For example, the signal-based sample of a female dancer at around 8:37 min provides vocal sounds having a nearly percussive characteristic (breathing, hissing sounds, and fricatives: e.g. '[ç]', '[ʃ]'); this sample thereby shares similar spectral characteristics with the noise-based sounds of the preceding and subsequent sections. The sample at 12:46 min (Disc 12, Section VIII) features soft drop sounds, but at the same time their amplification serves to accentuate the crackling of the record surface. The record's hissing can be heard as the charming flaws of vinyl records and they might initiate a nostalgic feeling (Kelly, 2009, p. 72, see Introduction). Yet in Lanz's concert these crackles also relate to the contrasting noise-based samples. Lanz's musicalising strategies and the dynamic element of his directional shifts let the concert oscillate between chaos and order, in a manner expressive of Lanz's inner processes as 'snap shots of his deepest psyche' (Lanz in Weissenbrunner, 2015).

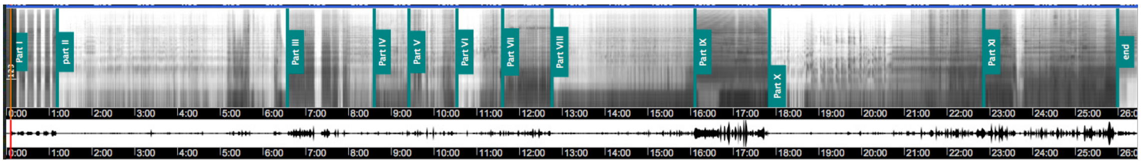

Figure 3.13 Overview of alternating signal and noise-based sections in the performance.

Lanz's dialogical structures and transitions indicate musical development, thus distancing the music from a straightforward collage. Various manipulation techniques and abstract sounds act to bridge the two poles of dense noise and harmonically clear sounds. Sections I and V end with the interruption of the start/stop button; Sections II and IX with scratches; Section III with needle drops and cutting manipulations; and Section VII with a short spin. (Examples of these were already discussed in more detail in 3.4 Manipulations and 3.5 Abstract sounds from the medium.) Dialogic structures as transitions from one section to another can be found at 9:08 min (Section IV-V), 10:54 min (Section VI-VII), 16:00 min (Section VIII-IX) and 21:10 min (Section X-XI) (abrupt changes only occur three times: at 1:11 min, Section I-II, at 10:32 min, Section V-VI, and at 12:45 min, Section VII-VIII).

The strategy of creating dialogical structures seems inherently bound up with Lanz's minimal setup, based on two record players and a sampler. Focussing on the discs and the role of the sampler therefore supports the search for structural elements in the concert. The structural overview in Table 3.3 indicates that certain disc changes mark a new section by introducing new sound material in short solo passages, such as with Disc 2 (Section II), Disc 7 (Section IV), Disc 10 (Section VI) and Disc 12 (Section VIII). In this way the concert mainly progresses from disc to disc, and from one turntable to the other; in the structural overview (Table 3.3) this is demonstrated in the column for turntable allocation (only Disc 8 was used twice, in Section V and again in Section X). Changing the record on one of the turntables temporarily drops a sound layer. Lanz often bridges this moment by playing one turntable with one hand, while picking a new record with the other hand (for example at 8:09 min). In a dialogical structure based on only using two voices, disc changes can therefore support a feeling of structure and indicate the entry of new, antithetical sound material; hence audience members might anticipate a new dialogue or musical direction.

The most conspicuous examples of dialogical structure in Lanz's pairing of a sample from one turntable (or sampler device) with brief cuts or scratches from the other turntable (or sampler device) were partly discussed in 3.4 Manipulations/Interruptions (see Table 3.1) and 3.5 Abstract sounds from the medium (with the sticker LP at 4:56 min). As a variation of the rhythmic interactions between the two turntables Lanz records the rhythmical dialogues with the sampler device: they are then reused as playback in a loop, in this way developing consistent acoustic textures as a background layer against which Lanz can frame the live manipulations of the turntables. Short fragments from the discs are added rhythmically to this consistent sound carpet. Lanz does this several times, as discussed in 3.6 Sampler Manipulations, but it can be particularly observed in Section X at 20:22 min. Here, the voice of a child (Disc 16) singing the tune 'Over the Rainbow' is interrupted by occasional hiccups, having an unpredictable and especially comic effect. Yet after the characteristic phrase 'over the rainbow' can be recognised, Lanz presents a confrontation between the child's naive tune and a male singer's bass voice (at 18:49 min). The male singer's classically trained voice conveys grace and severity, though its melismatic chant does not have any comprehensible lyrics. The sample is reminiscent of medieval monophonic plainchant (as Lanz also remarks: see Weissenbrunner, 2015), but it in fact originates from an LP by jazz vocalist Phil Minton.[15] Lanz inserts snippets of the child's voice into the breaks between Minton's melodic phrases to ridicule the male singer's majestic air (see 18:59 min and 19:55 min). The melismatic and monophonic chant of the bass voice acts in quasi-counterpoint to the child's voice with an alternative metrical pattern and melody. Both voices can in general be distinguished as separate voices: however, at times the strong male voice masks the weaker child's voice (at 19:49 min) or moves into a close frequency area (see 20:10 min). The polyphonic dialogue between these dissimilar chants continues in a synthesis of two overlapping voices, which Lanz records with the sampler and transforms into a loop of around two seconds (see Fig. 3.14). The looping repetition of this passage (starting at 20:42 min, Loop 7) becomes its own musical entity, which shifts the focus from the opposing vocal layers as signifying towards their unity as a rhythm pattern. This new unity then functions as a metrical background layer, which Lanz uses for a transitional dialogue with a noise-based sound (after the loop's 12th repetition at 21:10 min) by repeatedly accentuating the higher pitch of the child's voice using the digital noises from Disc 8. In the almost two-minute-long transition, from 21:50 min on, Lanz starts a more tumultuous interplay between the two turntables, while the loop partly retains order as a metrical background until 22:49 min. The combination of these samples of the child's and male vocalist's singing is a recurring event in Lanz's concerts, indicating Lanz's preference for these samples. Another variation featuring this pair can be heard on Lanz's album *Münster Bern* (Cubus Records, 2012), for example, at 23:30 min.

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[15] See Phil Minton's Solo LP (1982). *A Doughnut in Both Hands.* UK: Emanem Records.

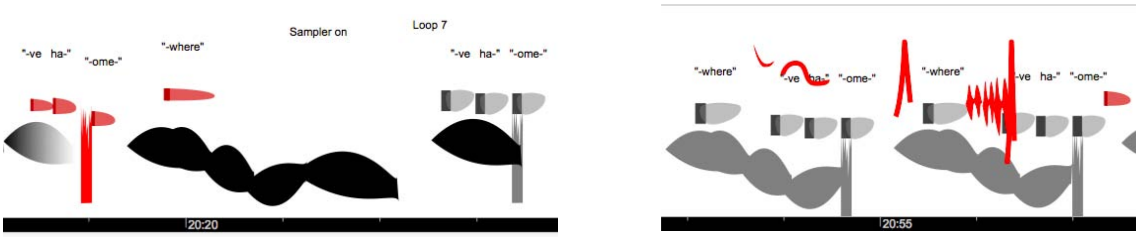

Figure 3.14 Opposing vocal layers of a child's voice, singing the tune 'Over the Rainbow' (red signs), and a male singer's melismatic chant (black signs); recorded and looped to function as a unity (grey signs, right).

While certain strategies or the combination of specific samples might appear planned, the musical result of Lanz's concerts is still dependent on the process of each unique event (see also the discussion of the needle drop action at the end of the concert in 3.5 Abstract sounds from the medium and 3.8 Presence – Mediality). This can be observed by comparing concerts, for example. Samples that occurred in this Berlin concert have been presented in a different musical context, such as at the concert at the Météo – Mulhouse Music Festival. At the latter concert, the dialogue between child and male singer from discs 16 and 17 (see 10:25 min), the music sample 5 (see 6:11 min), or the polyrhythm between drop sounds and percussion instrument from Section VIII (see 0:00 - 1:27 min) can be found in similar yet slightly different arrangements.[16] None of the samples from this concert, however, were used at a 2011 concert with Shelley Hirsch at NK in Berlin.[17] Regular attendees of Lanz's concerts or listeners to his released recordings might recognise these specific samples and appreciate regularly hearing them in a new context.

Lanz's setup of two turntables, a mixer and a sampler is directly involved in the concert structure. This dependency becomes apparent in the dialogical structures between samples from two turntables, in the manual record changes and in the transitional sections. Lanz's playing techniques and preparations as the result of his encounter with the phonographic medium yield various manipulation techniques and abstract sounds from the medium that can negotiate between the signal-based and noise-based units. This interdependence of media and material reality emphasises the medium's specific limitations and idiosyncrasies as an instrument, which Lanz transforms into useful and controllable tools.

3.8 Presence – Mediality

Joke Lanz's interactions with the setup (for example, in the actions for the abstract sound production or numerous manual manipulations) along with his other body language seem to generate a strong presence of the performer. Drawing on Hegarty's (2013) dualistic distinction between types of performers in noise music, Lanz's style resembles 'restless activity' (as represented by Masonna) rather than 'still focusedness' (as represented by MSBR or Merzbow) (p. 138). Lanz's deliberate choice of a simplistic setup follows the strategy to hold the audience's attention on his performing body, seen as a 'vital and energetic sculpture' (Fischer, 2010) in an organic symbiosis with the turntables:

> The [musical] output is probably a transfer of all the chemical reactions in my brain, stomach, tummy, lungs – I don't know actually – together with all the synapses and subtle elements as an extension on the turntables (Lanz in Weissenbrunner, 2015).

Due to the directness and simultaneity of the embodied action-sound relationship, Lanz's playing techniques with his limited turntable setup appear skilfully timed in execution. In regard to DJ battles with turntables, Katz (2004) describes skilfulness as follows:

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[16] The timings refer to the video of Joke Lanz's live concert at Météo - Mulhouse Music Festival 2014: Festival Meteo (10 October 2014). *JOKE LANZ SOLO @ Météo – Mulhouse Music Festival 2014* [Video file]. Retrieved from www.youtube.com/watch?v=zTYc4t1pWjU.

[17] See: Shelley Hirsch and Joke Lanz [suddenjoke] (17 July 2011). *Shelley Hirsch & Joke Lanz live at NK Berlin 2011* [Video file]. Retrieved from www.youtube.com/watch?v=MH6cx3ZgJ-A.

> extraordinary coordination and an exquisite sense of timing to fashion such intricate rhythmic and contrapuntal structures from rotating pieces of vinyl (pp. 130-131).

Lanz's application of manipulations and abstract sounds creates dialogic structures and similarities in acoustic properties for transitions and shows his turntable interaction from a technical point of view to be skilfully timed (see, for example, 3.4 Manipulations/Interruptions with fragmented vowels, or the use of the sticker LP in 3.5 Abstract sounds from the medium). Lanz's longer scratching passages in particular, which can last for up to a minute (e.g. 16:37 - 17:28 min), convey energy and effort and can be considered indicators of trained motor skills and physical constraints during these manipulations. The simplistic design of the turntable setup plays a crucial role in the execution of timed processes. As discussed in the External Study, Lanz's minimal setup allows fast and direct interaction by setting records in a record holder, having the turntables in a rotated position, specific faders on the mixing desk, as well as a sampler with easy-to-handle buttons. Although the turntable setups' possibilities (rarely using preparations) might seem restricted, the conditions foster a higher degree of control and embodiment and therefore contribute to the liveness of the performance.

By contrast with hip hop turntablists, Lanz's influences from punk, industrial and noise music at the same time let him forgo an overly technical or perfectionist performing style (as is also the case with Marclay: see Bossis, Marclay & Dufeu, 2013). Lanz's minimal setup, by avoiding intricate and distracting features, ensures not only precise movements but also spontaneity and intuition, which are central aspects of his work (Lanz in Weissenbrunner, 2015). Lanz's playing might therefore show not only coordination and accuracy in aligning rhythmic and dialogical structures, but also impulsive and unplanned actions within the feedback loop of the performance.

In improvised experimental music, the performer demonstrates skilfulness by exploring the sonic properties of accidentally produced sounds and discovering their potential for a creative use (Keep, 2009, p. 126). In contrast to studied and trained movements – demonstrating control over the instrument –, this kind of skilfulness is based on the performer's experiential knowledge as acquired through previous concerts, confidence in risk-taking, and artistic decisions made in the moment during the performance situation (Keep, 2009, p. 126). In the context of improvised experimental music, Lanz's skill set does not only manifest in the mastery of turntable techniques; it rather inheres in his flexibility and volatility in executing a broad range of actions and manipulations in relation to emerging elements, and in his dextrous ability to sense and capture timely acts pertaining to the feedback loop with the audience and the performance situation:

> I work with the material I have at my disposal. There's an idea in my head and at the end there is a body giving this idea some legs and arms, some muscles and organs. But mostly it's not the very end, because this body has to be destroyed again and again (Lanz in Sienko, 2012, p. 15).

The needle drop action at the end of the concert, for example, demonstrates Lanz's versatility as an improviser, acting within a feedback loop involving the audience and the performance situation. Lanz's application of needle drops appears rather feral and spontaneous, especially towards the end of the concert, when he jiggles the turntables together with the table (for example, at 23:10 min). When bouncing the weight of the devices with the table in a steady tempo for several seconds, Lanz shows signs of increasing exertion. The audience seems to recognise the physical effort and cheers to spur on the performer's endurance (for example, at 25:33 min). Up to this point he had not planned how the concert should end; Lanz says it was a complete spur-of-the-moment idea (J. Lanz, personal communication, 19 December 2014). Lanz opted to use the venue's ramshackle beer table (usually for outside use) as the support on which to place his setup. The spontaneous adaptation of the venue's ramshackle table for his needle drop actions, entirely dependent on the distinct performance situation, highlights the unique musical performance and its liveness: a sturdier table, for example, might not have afforded this action, and so the concert might have ended in a different way. By generating this site-specific aspect, Lanz's sound production emphasises the performance's uniqueness.

The audience's contribution additionally seems to have had an influence on the extensiveness of Lanz's needle drop action. The cheering from several audience members during Lanz's action might have encouraged the performer to continue jiggling the table with the turntables for a longer period. At another turntable performance by Lanz, for example, in a Berlin club in an electronic dance music context,[18] the audience responded to a similar needle drop action in a completely different way: Lanz jiggled the turntable (without the table) to create harsh impulses of noise bursts, but this time the audience responded immediately with a distinct quietness. Lanz must have taken this feedback to indicate the audience's discomfort and he swiftly stopped the needle drops action. In that performance at West Germany, however, audience members apparently have a high tolerance for loud noise or even a 'masochistic relationship' to noise (Hegarty, 2013, p. 139), since they encourage the performer to perform the needle drops more extensively, which shapes the complete concert.

The audience members' propensity for noise might have already been revealed by their positive reaction to the noise walls at the concert's opening. During his non-verbal communication near the start of the concert with the sound technician to increase the volume, Lanz establishes a discernible feedback loop with the audience and performance situation. Via eye contact, Lanz tries to signal to the technician to raise the already high volume of the noise walls; thereafter the volume still requires adjustment, so he signals his request more clearly to the technician by raising his thumb, accompanied by a smile (0:40 min). Audience members seem to interpret this communication as meaning that the artist intends to raise the noise to a more extreme volume and they react with amusement (0:43 min). Lanz generally seems to embrace humorous moments that might strengthen the feedback loop with the audience, something that might challenge traditional concert conventions. Lanz's performance shows how the distinct audience make-up and performance context might have had an impact on the improvisation. This reciprocal impact demonstrates a feedback loop operating between the performer, the instrument, the audience and the venue. The process of the performance features openness and unpredictability.

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[18] Observed by the author in Joke Lanz's concert at Urban Spree, Berlin (26 March 2016).

Lanz's performance is additionally shaped by his occasional theatrical actions that are not required for the sound production but draw the focus to his performing body. In Section II at 1:21 min (see Fig. 3.15), for example, Lanz's movements with his eyes and upper body seem to demonstrate a mimetic relationship with the delicate sound snippets. Such imitative 'acting' might be connected with his description of 'diving into another world':

> [I]n general, every performance can be life-changing; it just depends on intensity and ferocity of your presentation. It's important to dive into another world, to establish a new reality. Then every performance is like meditation (Lanz in Sienko, 2012, p. 20).

Lanz's theatrical actions, in accompanying throughout the performance spontaneous actions and sudden shifts of musical directions, might generate a peculiar and individualistic presence. Daniel describes that presence as follows:

> [W]atching Joke perform is like watching someone sneak up on himself. His movements have the suddenness of instinctual time, which is not the time of performance but a kind of neurological fast-forward that clicks on and off sooner than pre-meditation [...] (Drew Daniel in Lanz & Marhaug, 2012, p. 5).

Lanz's performance style seems to blend spontaneity and unpredictability with precision and skilful timing, demonstrating a fine, proficient ear for the creation of mimetic relationships and rhythmic syncopation. His minimal instrument design, by supporting his direct interaction and embodied playing, emphasises the performer's distinct presence.

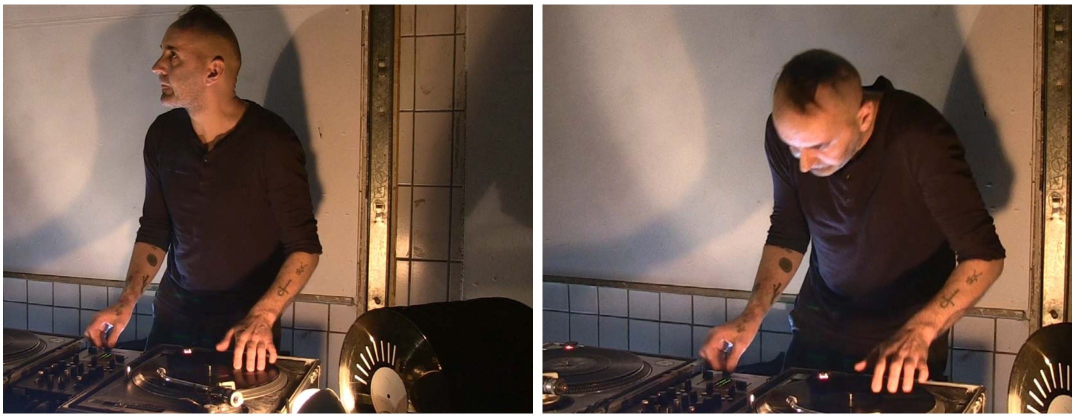

Figure 3.15 Lanz in concert at around 1:21 min.

Conclusion

In this case study, Joke Lanz emphasises the medium's specificities by his embodied playing techniques based on a simple setup of mainly unmodified turntables and records. As Part I shows, Lanz designs his turntable setup to be as simple and manageable as possible, working with a minimum of devices and preparations. In concert the instrument's basic functionality appears to enable Lanz's flexibility; it allows him to detect useful sonic properties in samples, manipulated and abstract sounds from the medium and to include the audience's feedback.

The performance analysis shows that the standard features of the devices and artefacts can present an abundance of options for manipulating (sample interruptions, scratching, speed alterations) or producing sounds (needle drop technique, surface texture of record label or sticker pattern). Lanz's actions and the turntable's mechanic movements are therefore inherently bound together in producing distinct musical features. Some of these are: the polarities between signal-based and noise-based sounds (for example, in scratching techniques), contrasts between loudness and silence (interruption manipulations), isotopies (rhythmic interruptions, off-centred playback of sine tones, scratching of drop sounds), musical order/disorder relationships (planned dialogical structures vs. spontaneous and random sonic events) as well as comic moments of absurdity and futility (via the sample's referentiality and their defamiliarisation, or Lanz's theatrical actions).

In Lanz's performance, liveness is an especially notable feature. The direct interaction between turntable setup and performer fulfils most of the criteria for instrumentality and embodiment. Tactile manipulation techniques (interruptions, scratching) contrast mediated sounds from the record player's or sampler's playback. By fragmentising samples, manipulations are also an important tool to interact with the audience's expectations on the base of the sample's potential referentiality.

Lanz's sound production emphasises the medium's specificity: for example, the number of stickers as well as their geometric pattern on the sticker-LP determines the rhythmic pattern of the noise bursts; the extent of decentralisation during the skewed playback of the 7-inch record shapes the scope of the sine tone glissandi; and the force of the dropping needles is conveyed in the harshness and volume of the staccato noise bursts. The simplistic setup and direct interaction underline the performer's bodily presence. With these characteristics, Lanz's performance bears resemblance to noise music and industrial music's prominence of physicality, but also presents noises in musicalised forms. However, a completely different approach shifting the focus from the performers' body to the objects will be discussed in the next case study.

Section	**Characteristic**	**Subsection**	**Time**	**Disc**	**Turn-table**	**Sampler**	**Description of Sound and Manipulation**	
I	noise		0:07 - 1:11	Disc 1	TR		noise with varying high pitches, feedback sounds	noises/other
II	signal	Episode I (Disc 2 solo)	1:12 - 4:44	Disc 2	TL		phonemes of a voice, recognisable vowels due to formants, also similarity with accordion, volume difference to Part I approx. -30 dB	noises/ instrumental or vocal
		Episode II	1:41 - 5:09:67			Loop 1	recording of phonemes from Disc 2	
			1:51:40 - 2:04			Loop 2	rhythmical electronic organ chord; A2-E3-G3-A3	
			2:11 - 2:39 & 2:56 - 5:11:71			Loop 3	short phonemes, similar spectrum to sounds of Disc 2 and Loop 1/with formants sounding like “ī æ æ æ m”, loop seems irregular, asynchronous/aperiodic rhythmic pattern with Loop 1	
		Episode III	2:32:60 - 6:35	Disc 3	TR		short diverse noises, then scratching	noises/other
		Transition	4:50 - 5:20	Disc 4	TL		playback hardly recognisable, gong, impulses from sticker pattern on vinyl surface	diverse noises
			5:31 - 8:35	Disc 5	TR		diverse sounds and noises, spoken word ‘twelve’ by male voice repeated for eight times with increasingly shortened length, German citation ‘Haben Sie den Inhalt des Gesprächs’ by male voice with bright timbre, - spinning, then little, constant scratches for 11 seconds	noises/vocal
III	noise		6:34:6 - 8:35	new track			machine noises, periodical	
		Transition	6:45 - 8:05	Disc 6	TL		high pitched noises, only inserted passages of around 50 ms at 7:33 needle drops, random noises, cutting, also female voice (7:44)	noises
			7:12:75 - 7:21			Sample 4	male neutral voice, counting from 1 - 4 each number on separate button of sampler, around 2 seconds break, last number is slightly retained, then noises of Disc 5 appear again	
IV	signal (mix with noise)		8:36:52	Disc 7	TL		female voice creating diverse vocal and noisy sounds by shouting, rhythmically breathing, hissing, with repeating organ chords in the background, (recording of a dancer), 200 - 400 Hz	noises, partly music/ vocal and instrumental,
		Transition	9:08:38 - 9:25	Disc 8	TR		digital noise of low, middle and high pitches in irregular impulses, melodic passages, sounds similar to the dialing noises of a internet modem (source: Sudden Infant/Carlos Giffoni - Oslo Oscillation Orgy (E40)) - manipulation: stabbing	noises/ technological
V	noise		9:25:34 - 10:33					
			9:50 - 10:28	Disc 9 7''	TL		syllables of male voice, fragments & words - inserted passages (9:50 - 10:00) - spinning (10:14 - 10:28)	speech/vocal

VI	signal	Episode I	10:34 - 11:26	Disc 10 7'' EP without spindle	TL		sine tones (morse codes, range 500 - 880 Hz & 1100-1300 Hz), - inserted passages - phonographic manipulation: wobbling effect creates similarity with prosodic characteristic - transpositions (33/45 rpm), power knob - dynamic variation with volume fader on mixing desk	noises / electronic sound
		Episode II/ Transition (noisy)	10:54 -11:37	Disc 11	TR		- scratching sounds as record content, gibbering - deep sine tones followed by deep granulated noise - inserted passages	noises
VII	noise		11:37 - 12:45				- periodic noise with slow movements, low frequency band (grainy) accompanied by a high pitched noise overlapped with loop 5, sound carpet	
			11:43 - 12:45			Loop 5	recorded noise from Disc 11	
VIII	signal	Episode I	12:46:18	Disc 12	TL		drop sounds, frequencies between 400 and 700 Hz & very present vinyl surface crackling & deep hum, quiet part - rotating disc manually forwards and backwards - soft, waxy forwards & backwards scratches, melodic up and down jigging	noises
		Episode II	13:32:60 - 15:52	Disc 13	TR		rhythm of pitched unknown percussion instrument, sound could be wooden, small sound - continuous overlap - manipulation: re-ajusting needle in groove	music/ rhythm
			13:46 - 16:11			Loop 6	recording of Disc 12 and Disc 13, short percussive, aperiodic rhythm	
		Transition	14:31:51 - 16:06:50	Disc 14	TL		bass drum beats, could be from techno music, deep frequencies and dead sound - asserted passages, continuous from 15:53 on	music
			16:00 - 16.06	Disc 15	TR		broad band noise, movements in higher frequency spectrum, periodic growing movement in deeper spectrum, repeating in a loop of around 1,5 seconds - continuous sound carpet	noises
IX	noise		16:06 - 17:47:50					
		Transition (scratching)	16:36:63 - 17:51	Disc 16	TL		child's voice with a hiccup, singing the song 'Over the Rainbow' - first scratched for transition - then phonemes, range 200 - 500 Hz, recognisable part of melody starts at 17:51:24	vocal/music
X	signal	Episode I	17:51:21 - 21:00					

		Episode II	18:49 - 20:42:31	Disc 17	TR		classically trained male voice (bass) singing a medieval, monophonic, melismatic melody, recurrent melodic units, vibrato and dynamic variation	music/voice
		Episode III	20:22 - 22:48			Loop 7	synthesis of Disc 16 & 17 as repetitive sound carpet (loop length 2:20 seconds)	
		Transition (noise elements)	21:10 - 22:52	Disc 8*	TR		digital noises, integrated in pattern of Loop 7, inserted passage on the word "where" - stabbing - playback	noisy, still with Loop 7 (signal-based)
			21:59 - 22:51	Disc 18	TL		- spinning and many diverse manipulations - needle drops 22.30 - 22:43 music track recognisable but as inserted passages, cacophonous characteristic	music
XI	diverse music/ noise,	Episode I	22:52 - 23:31				- continuous playback of music track, electronic dance music (with deep male choir fragment), 4/4 beat, ~160 bpm	
		Episode II	23:05- 25.58	Disc 19	TR		Rock music, e-guitar, instrumental and vocal (recognisable 23:32 & 24:37), - needle drops, spinning (significant) - rock music	music
		Transition	23:36:50 - 23:42			Loop 8		noise
			23:42 - 23:46:70			Sample 4*	number counting up from 1 - 8, neutral male voice, language English, enhancement by increasing speed of counting, only first syllable of seven, incomplete.	
		Final	23:46:83- 25:29:50			Loop 9	electronic music loop 4/4 beat, kick drums on 1 2 3, apocalyptic, background, gives structure	music
	noise			(Disc 18 & 19)	TR/TL		random snippets of both vinyl discs (Disc 8 & 18), more chaotic feeling, - needle drops manual and by shaking the table - shaking the table regularly without sampler, - both needles play inside the label of discs, slow down with power knob while raising the volume with faders for end.	noise

Table 3.3 Structural overview.

4. Vinyl -terror & -horror

This case study is of the duo Vinyl -terror & -horror (Greta Christensen and Camilla Sørensen) and presents an encounter wherein turntables and records create a complex with the visual and emotional qualities of horror movie soundtracks. The key findings herein regarding the alliance of media and material reality concern the group's sculptural and broken objects in relation to 'cinematic soundscapes'[1] and horror movie sound effects. Drawing on theories of film soundtracks and the perception of sound effects, this study shows how horror, fear and auditory images are dependent here upon both the media-specificity of the turntables and artefacts, and on the process of the performance. This case study's analysis is based on the methodological framework of Chapter 2 and a graphical representation alongside the concert video in the software EAnalysis (see Appendix C, Video Case Study 2).

The External Study of Vinyl -terror & -horror follows their assemblage and bricolage of diverse sculptural objects from vinyl records and turntables; these sculptural objects are conceptually related to the artists' sound installations. Significant for the duo is its prioritising of visual and sensual criteria that determine both the sonic dimension and the material properties of the media objects. Although such an interrelationship between visuals and sound can partly be found in Christian Marclay's and Martin Tétreault's work, Vinyl -terror & -horror's sculptures are uniquely bound up with the duo's use of horror movie soundtracks.

The analysis of the concert in Part II shows how the horror theme, as indicated in the group's name, is bound up with an aesthetics of destruction and failure as well as with emotional states of fear. With the 'visual' sounds of movie soundtracks, the duo embraces the illusionary aspect of the record as a medium and pairs it with manipulated and abstract sounds often created by randomised procedures.

Part I External Study

4.1 Artist Portrait

Danish artists Greta Christensen (b. 1977) and Camilla Sørensen (b. 1978) met in 2001 in Copenhagen during their studies at the Royal Danish Academy of Fine Arts, starting there their collaboration Vinyl -terror & -horror. Both artists come from small towns[2] and shared a similar path to the art academy: independently from each other they were both assistants to the sculptural artist Martin Erik Andersen for one year before beginning their studies. Although Christensen and Sørensen both specialised in sculptural art at the academy, when founding a collaborative project they decided to explore the relationship between visuals, materials and sound. Their work is presented variously as installation, composed work, or improvised performances. The idea for the project name 'Vinyl -terror & -horror' came during a year-long stay in Berlin in 2003, when a promoter's flyer for one of the duo's concerts described their music as 'vinyl terror'. Pleased by this expression, the duo added the 'horror' to indicate two performers and thereafter they increasingly grew into their project name, as will be explained later (Vinyl -terror & -horror, 2013b). The international, independent music scene in Berlin, located in venues such as Salon Bruit,[3] influenced the Danish artists profoundly in their early years (G. Christensen, personal communication, 28 August 2014). They were especially impressed by sound art and noise music performances featuring do-it-yourself technology and prepared instruments. By founding their own venue, 'Habengut', in Northeast Berlin (Prenzlauer Berg) – this venue being a space both for exhibitions and concerts – the Danish artists could exchange ideas and get in contact with such other musicians more directly. After four years living in Copenhagen (and partly in Berlin), Sørensen and Christensen returned again to pursue their musical career in Berlin.

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[1] This term is used by Vinyl -terror & -horror on their webpage. Retrieved from http://vinylterrorandhorror.com/vinylterrorandhorror.com/live.html.

[2] Greta Christensen comes from Haderslev in the south of Denmark, and Camilla Sørensen comes from Lemvig Gtrea Maugstrup skov in the northwest of Denmark.

The Danish artists' musical projects were initially inspired by a Hammond Cougar organ, which Christensen learned to play as a child (personal communication, 28 August 2014). Their single *ørehængeren* (earhanger, 2001) documents the duo's first improvisation with an old organ they had acquired (Vinyl -terror & -horror, 2013b). However, their lack of musical training restricted them in realising their musical ideas with the Hammond organ. In previous projects they experimented with various other objects and devices, such as typewriters, flutes taped to vacuum cleaners, radios, cassette tapes, turntables, and looped VHS cassette tapes (Vinyl -terror & -horror, 2013b). The turntable proved to be the most inspirational sounding object for them. The readymade sounds on vinyl records provided stronger artistic incentives: as Sørensen says, 'you can first hear some sounds and then you start to think about how to combine them' (personal communication, 28 August 2014). Additionally, the hybrid dimension of turntable and record as both medium and material thing inspired the duo to explore sculptural and musical ideas concurrently. Christensen highlights, for example, the fact that on a vinyl record the timeline of the recorded sound is available on the disc's surface as a compact, physical space in the spiral groove (Christensen,

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[3] The Audition Records website features a retrospective list of the musicians and sound artists at Salon Bruit who, in a range of events, including performances as well as exhibitions, used unconventional sound production for music and noise. SALON BRUIT – RETROSPECTIVE 2002-2011 | BERLIN (2011, April 20) *Audition Records*. Retrieved from www.auditionrecords.com/ar024.php.

2014). Compared to other physical sound storage media this property allows one to skip through the record's content in a unique way; the tone needle simply needs to be dropped down on any spot on the surface to start the playback. A CD allows skipping between tracks in a different way and a cassette tape necessitates being forwarded or reversed.

Informed by their academic training in sculpture, the duo prepare record players and vinyl records in such a way as to yield instruments and objects with peculiar shapes (e.g. see Fig. 4.1). The duo's bricolage focuses on the medium's materiality and the potential of that materiality to transform or generate sound. They consider the medium's 'flaws', as revealed in distortion sounds and noises, to be an inherent part of the vinyl object's identity (Sørensen in Engström, 2013). Although their work with prepared records is reminiscent of Milan Knížák's or Christian Marclay's cut-up records and objects (see for example in Kelly, 2009, p. 163), at the beginning of their collaboration the Danish artists were unaware of these art works and did not know of any other experimental turntablists. Instead, they pursued their own ideas. Visual marks of destruction, such as seen on the cut-up record players or cut-up records, are the result of a creative researching process. As mentioned in Chapter 2, loosening the given structures allows the artists to familiarise themselves with the objects and to recognise them, moreover, as raw materials (see Butler & Hoppe, 2006, pp. 183-184). Christensen describes this process:

> You have to go through certain stages of what the material can do and these are some obvious things and then slowly you develop maybe your own sound, your own style, your own approach to it. But that's a long process (G. Christensen, personal communication, 28 August 2014).

As in Joke Lanz's case study, the duo's instruments have evolved through experimentation, performance experiences, and practical decisions related to touring. The results of this intense, long-lasting work of bricolage and sound research, as the next sections will show, are numerous variations on cut-up records and a set of individual artistic concepts.

The duo's live performances are strongly connected with their installations; in both projects, they work with similar sounds and material sculptures. In the installations the duo juxtapose imaginary sound effects with bodily representations such as moving sculptures and objects. Visitors to the Copenhagen installation *It must be my imagination* (2012) for example,[4] could hear from a loudspeaker the squeaking sound of an opening door while in front of them an actual door in a door frame opened automatically. In the installation *Worst Case Scenario* (2011) at Brandts in Odense (Denmark), Vinyl -terror & -horror similarly played with the contrasting relationship between auditory and visual aspects:

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[4] Video of the installation: Vinyl -terror & -horror (2012). *It must be my imagination* [Video file]. Retrieved from https://vimeo.com/49266377.

> [...] the composition culminates with the sound of an airplane crash played from a speaker, which is falling from its cabinet towards the floor, but instead of smashing on the floor – like the sound would suggest [sic] – it lands softly on a pillow [...] (Vinyl -terror & -horror, 2013a).

In this way various relationships between sound and visuals become highlighted in Vinyl -terror & -horror's installations.

Sculptural objects such as featured in the installations also become part of the duo's setup for live musical performances. The installation *Worst Case Scenario* features a semi-destroyed turntable that was cut into two halves (see Fig. 4.1, left; Vinyl -terror & -horror, 2013a). Surprisingly this cut and broken record player can still be operated. Similar turntable-halves are part of the sculpture Greta Christensen uses in the live performances (see Fig. 4.4, left). Cutting not only the vinyl record apart but also the record player represents an explicitly abrasive act. Destruction is especially a feature of the art of the 1960s Fluxus movement; Milan Knížák's experiments in *Broken Music* are relevant here, for example, in regard to deploying sound from broken records (see Kelly, 2009, p. 142). Christensen's turntable tower recalls Fluxus artist Nam June Paik's sculpting of the *Schallplatten-Schaschlik* ('Random Access') (1963) installation. In that sculpture Paik similarly arranged records vertically together with a free-floating pickup arm, so that visitors could access the sounds on the records randomly by dropping the needle on an arbitrary spot on any record (see Kelly, 2009, p. 136). Christensen's turntables are roughly resized rather than being destroyed to adjust for the turntable construction. This turntable sculpture documents the result of the artists' encounter with the materiality of the turntables and records. The reconstruction and arrangement sculpt a unique instrument and open new ways of performing and producing sound (just as Kelly observed of Cage's preparations in *Cartridge Music;* Kelly, 2009, p. 125).

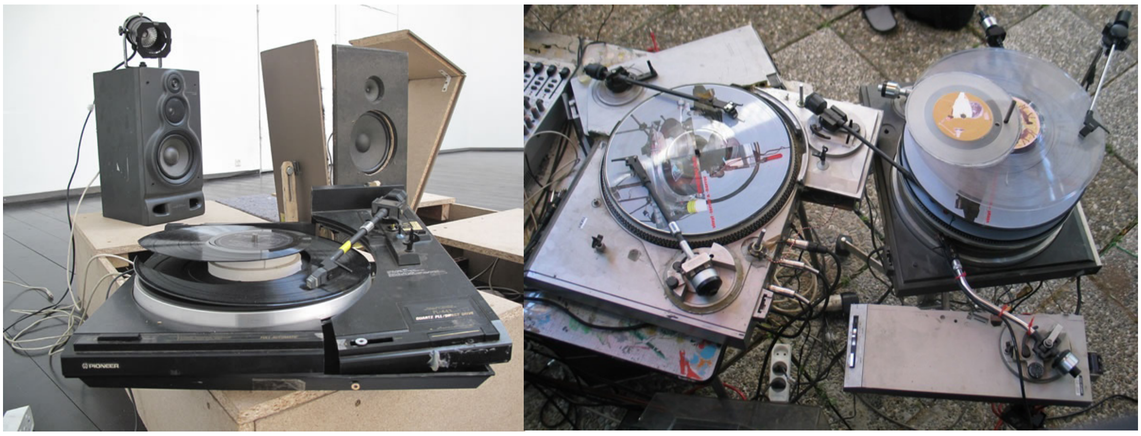

Figure 4.1 Left: ‘Spiral cut-up record’ and split record player in the installation *Worst Case Scenario.* Right*:* Example of Vinyl -terror & -horror’s concert setup (picture by Vinyl -terror & -horror, published in Vinyl -terror & -horror, 2013a).

Yet also coincidences and chance shape the evolution of the duo’s instruments and objects (C. Sørensen, personal communication, 28 August 2014). The duo’s choice of using available and already finished products, each having their own idiosyncrasies, is a typical feature of bricolage (as described in Chapter 2).

> Everything is guided by limitations and to what [sic] is accessible in everyday life. You work in a laboratory, so you’re surrounded by scientists and machines that open up possibilities for you, whereas we have secondhand shops in Berlin[5] where we find things. We work with what’s accessible to everyone and find new ways to use it for our own ends (Christensen in Jones, 2015).

In their live performances Christensen and Sørensen refrain from using effect devices or samplers (Vinyl -terror & -horror, 2013a). This limiting approach allows them to emphasise the specificities of their media devices and objects.

The duo’s prepared record objects support the implementation of chance occurrences in concert to add surprising and unpredictable elements in the sound. Their sculptural creations follow a concertedly non-standardised and visually rough design, which deliberately enables certain procedures to be unreliable. The performers embrace these aspects of risk as artistically interesting challenges: ‘There’s always a risk that something can fuck up. That’s what makes it so interesting’ (Christensen in Jones, 2015).

Vinyl -terror & -horror’s view of the turntables and records as material things sees them engage in a specific dialogue with the vinyl records’ media reality. The duo use samples for their abstract qualities as well as for their obscure references to scenes from horror movies to create an atmosphere and cinematic aspects in their music. Short sound samples from movie soundtrack records, such as footsteps, aim to trigger the listeners' visual imagination. At the outset of their duo project the performers were not drawn to such horror movie sounds, and it may have been due to their project title that these soundtracks have become a prominent feature of their work. However, they soon became aware of the movie samples' strong association with visual aspects:

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[5] Berlin is considered to be a city with a large offer of vinyl second-hand markets (Bartmanski & Woodward, 2015, p. xi).

> Movie sounds are already visual, seemingly original, taken out of a context and brought into a new visual reality, which is the record, and the record refers back to the instrument more than it refers back to a narrative in the movie or a story line. [...] They work so much with the imagination of the spectator. You have a feeling that they set an atmosphere. But there is nothing concrete. What they create is a state of fear maybe or they create a state of imagination of something might happen in the future and it might be bad. It's strongly focusing back to the individuals, who are listening to it (G. Christensen, personal communication, 28 August 2014).

The duo's underlying artistic concept in their sample selection appears to be an amplification of the imaginative imagery and narrativity. The sample's references are often bound up with the emotion of fear. However, this 'visual reality' is still supposed to refer back to the materiality of the records onstage.

Vinyl -terror & -horror work with a large number of turntables to superimpose numerous sound layers originating in diverse vinyl records. The superposition of multiple sound layers is a strategy that has also shaped the visual aspect of their instruments, in particular regarding the record tower. The duo's 'sculpturing' the sound also provides them with a certain degree of freedom in concert for experimentation and creating random processes (Christensen in Engström, 2013).

Vinyl -terror & -horror deploy pre-composed sound layers via dubplates (individually cut records); which they call 'unfinished compositions' (Sørensen in Engström, 2013). Also, as was the case in Joke Lanz's case study, during performances the duo use their own released records, the fixed and composed sound layers of which become in concert recycled and remixed. These predetermined structures aim to set a particular backdrop and mood without specifying a distinct narration:

> When we compose music or improvise we think of it as an abstract storyline that takes you through different situations and mental states. It's rather emotional than conceptual. We aim to move the music beyond genres and personal taste (Vinyl -terror & -horror, 2013b).

Before each performance the Danish artists establish a performance framework of loose structures, with approximate durations for sections and cues for transitions. Such cues can be distinct sounds such as footsteps or birdsong. These considerations often concern the performance set's general dynamic and the order of its 'heavy points' (G. Christensen, personal communication, 28 August 2014). The structures differ with each concert, though some parts may be similar.

In their interaction as a duo the artists follow a quite autonomous approach, providing space for one another to develop her own soundscapes and ideas (G. Christensen, personal communication, 28 August 2014). They usually prepare compositions and ideas independently from each other. Individual contributions within the musical interplay are dependent on the density of sounds already provided by the other performer. In these moments one person might take the lead while the other person holds back. In general, though, they aim for a balanced contribution from each performer. In the performance situation they prefer to put the focus of attention on the 'machines' rather than on them as performers. Yet they remain engaged by making decisions whilst having a high level of concentration. In their improvisations, the performance situation and its audience members play a subtle role. Sørensen seems to feel more comfortable and less pressured with a seated audience. In her view a standing audience expects more 'acting' from her, whereas, in certain situations, she might prefer to grant the sounds more time on their own without intervening (C. Sørensen, personal communication, 28 August 2014). As for Christensen, although appreciating an open venue situation with a bar service and people moving during the concert, in order to retain concentration she mentally blanks the audience members out. At times the scope of the duo's improvisation might be restricted by their agreed-upon structure. Recently Christensen has explored different performance situations and has performed solo or with other musicians, such as Marta Zapparoli, who works with tape machines

In summary, Vinyl -terror & -horror's concepts seem to be related to the creation of a cinematic soundscape evoking an atmosphere of fear. The duo's focus on their equipment's materiality is documented in their cut-up and prepared records and turntables. The following study of Vinyl -terror & -horror's instrumentation examines in more detail the links between their artistic strategies and their devices and objects.

4.2 Instrumentation of Vinyl -terror & -horror

Concert Setup

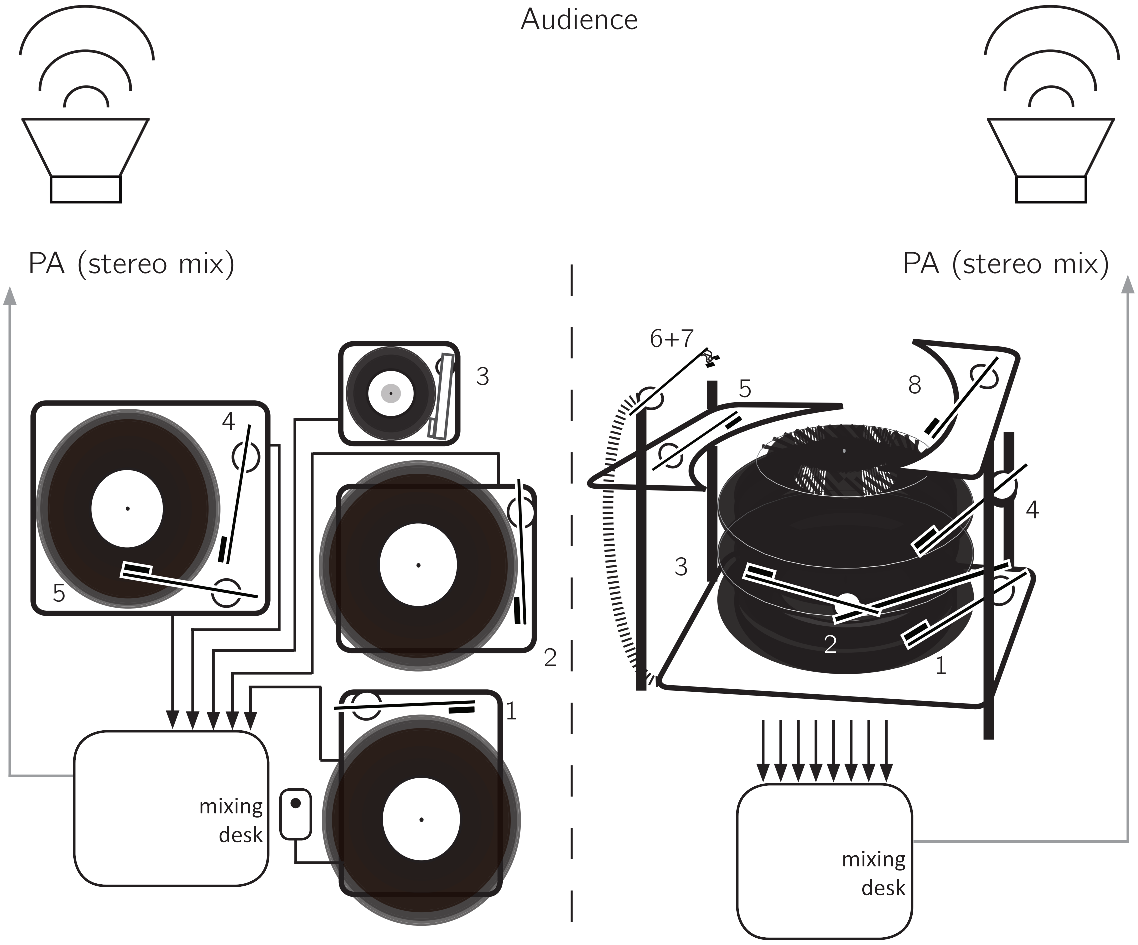
Audience
PA (stereo mix)
PA (stereo mix)
3
4
5
2
1
mixing desk
6+7
5
8
4
3
2
1
mixing desk

Figure 4.2 Schematic overview of Vinyl -terror & -horror's concert setup as used in the performance in London, 8 March, 2014 (see Part II).

Camilla Sørensen

- Vestax-PDX 2000 (from venue, exchangeable) [4 & 5]
- 2 Record players [1 & 2]
- Turntable Harting 45T for 7'' records [3]
- Motor control with a potentiometer
- Mixing desk (Allen & Heath Zed-10 mixing console)

Greta Christensen

- Turntable sculpture with Vestax-PDX 2000 (from venue) as a base [1]
- 2 Record player halves (Technics SL) [5, 8]
- free floating tone arm with two styli [6+7]
- Extra tone arms [2, 3, 4]
- 12-channel mixer (from the venue, exchangeable)

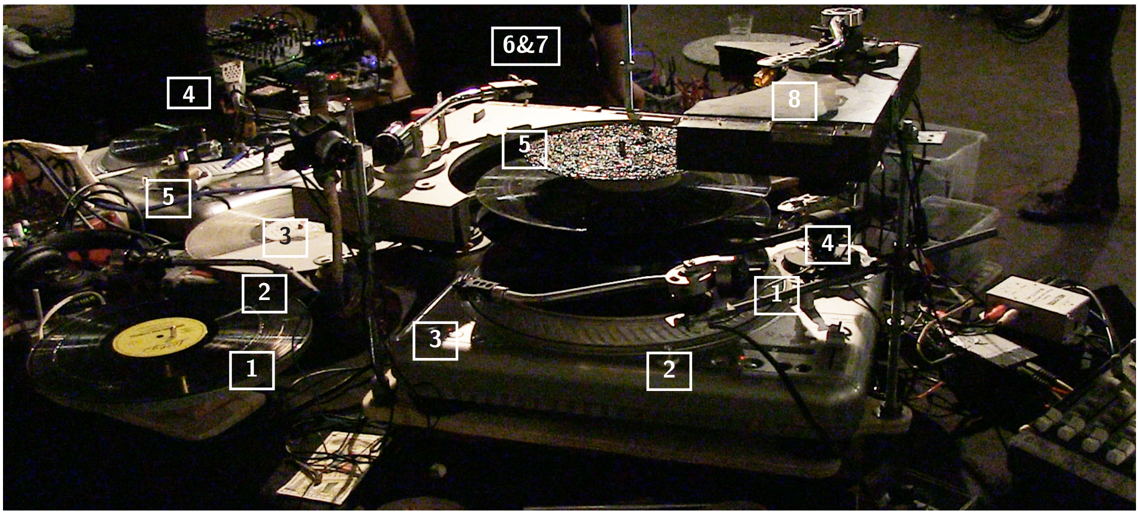

Figure 4.3 Vinyl -terror & -horror's concert setup as used in the performance in London, 8 March, 2014 (see Part II). Numbering of pickup cartridges as in the schematic overview.

The following description of Vinyl -terror & -horror's setup serves as an indicative example, since the specific instrumentation is in constant change (see Vinyl -terror & -horror's own documentation; Vinyl -terror & -horror, 2013a). The setup of the concert in London (Fig. 4.2) is nevertheless similar to their common setup. The Vestax turntables were borrowed from the venue. Particularly remarkable is the high number of pickup cartridges – five cartridges in Sørensen's setup and seven in Christensen's setup – which facilitates a texture of multiple simultaneous sound layers.

Turntables

Turntable brand and type have little relevance for Christensen and Sørensen. When performing in Berlin they usually use turntables by the brand Stanton (e.g. Stanton T120; see Appendix A); when travelling they usually seek to borrow turntables from the performance venues, limiting their equipment weight to 20 kilos each. In contrast to Joke Lanz's setup, the position of their turntables is primarily not rotated to facilitate manipulations. The performers receive visual and tactile feedback through the position and behaviour of the tone arms and cartridges, discs or pieces of discs, and knobs and sliders. Christensen's sculpture additionally provides tactile responsiveness to the performer's actions through its customised and extended centre spindle. Due to the setup's complex combination of a high number of devices, the audience might not be able to follow the sound source.

Greta Christensen's turntable sculpture (Fig. 4.4, left) is a vertical construction made of several parts of record players capable of playing several record stacks simultaneously (up to 8 stacks).[6] This construction originates from Christensen's work on turntable installations. Since a performance in Göteborg in 2010 she has deployed a slightly rebuilt and more flexible version in live concerts (G. Christensen, personal communication, 17 May 2016). In comparison to using several turntables, this compact vertical solution saves space in the performer's suitcase and onstage. Her construction can be built up on top of a turntable provided by the venue. In order to erect this tower she places tape rolls between the discs and adds an extension of the centre spindle. The turntable-halves with additional tone arms are lifted up with stands. In the case study concert Christensen piles four record layers on top of each other.

This ramshackle turntable construction presents distinct material properties and restrictions, which deviate from those of usual record players. Firstly, the assemblage of records affects the record selection prior to and during the performance. Spontaneous decisions or responses during the concert, such as record changes in the bottom layers, are not possible unless all layers on top are removed first. Christensen's instrument prohibits, therefore, certain of the benefits of improvisation and demands pre-planning of the record selection. The bottom layers can still be controlled and muted on the mixing desk, of course, but it is necessary to take stock of and learn to deal with this restriction. In this regard the group's loose musical structures, discussed prior to each concert, assist Christensen in choosing how to position records within the construction. In the course of these pre-concert decisions, Christensen sketches in a draft an ordering of her records for the bottom layers.[7]

A further implication of this construction is that any manipulation of the rotation, either in speed or direction, affects all the playing records in the stacks rather than just one record. The performer is therefore restricted in the use of such manipulations, which might affect the record choice or compositional decisions. However, such limitations correspondingly prompt alternative solutions and new ideas. For individual speed changes within the tower construction, Christensen plans to develop a separate motor for the top layers. For a reverse playback mode, Christensen has developed an upside-down-cartridge that plays a record from below and, therefore, reversed; technical problems such as recurring feedback, however, restrain her from using this tool frequently.

A prepared cartridge for a reverse mode was earlier applied by DJ Ivan 'Doc' Rodriguez in Manhattan at the beginning of hip hop turntablism (Katz, 2012, p. 68, see Chapter 2). The majority of turntables are not provided with a reverse-function. In order to receive backwards playback from one of his cheap and available record players, DJ Ivan 'Doc' Rodriguez glued the needle upside-down on the tone arm so that it pointed upwards. As with Christensen he had to elevate the record, for which purpose he used a cut cardboard toilet paper tube. In this way the modified needle plays the record from below and therefore counter-clockwise, producing a reversed playback (Katz, 2012, p. 68). This trick of using an elevated record to get reversed playback has been applied several times since the early days of turntablism: sound artist Janek Schaefer, for example, also describes this preparation (Schaefer, 2001, pp. 73-74). Christensen's invention from 2010, however, expanded these first ideas by stacking several records on top of each other to create a turntable sculpture.

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[6] See this video documentation: Vinyl -terror & -horror, (7 February 2011) studiomix [Video file]. Retrieved from www.vimeo.com/34338112.

[7] The draft for the concert was shown to the author during the interview in Berlin, 28 August 2014, but was not meant to be published.

Christensen's ramshackle construction and extended spindle give a specific allowance for decentralising the records. By steering the spindle sideways the playback sound of the upper records becomes off-centred (see Fig. 4.4).

Christensen also modified a headshell and equipped it with two styli instead of one (see Fig. 4.4, right, or pickup cartridge 6 & 7 in Fig. 4.2 and 4.3). This prepared headshell allows two grooves to be played within a small distance of each other. The loose attachment of the styli facilitates their being scratched over the record in a specific way, as the performance analysis will show.

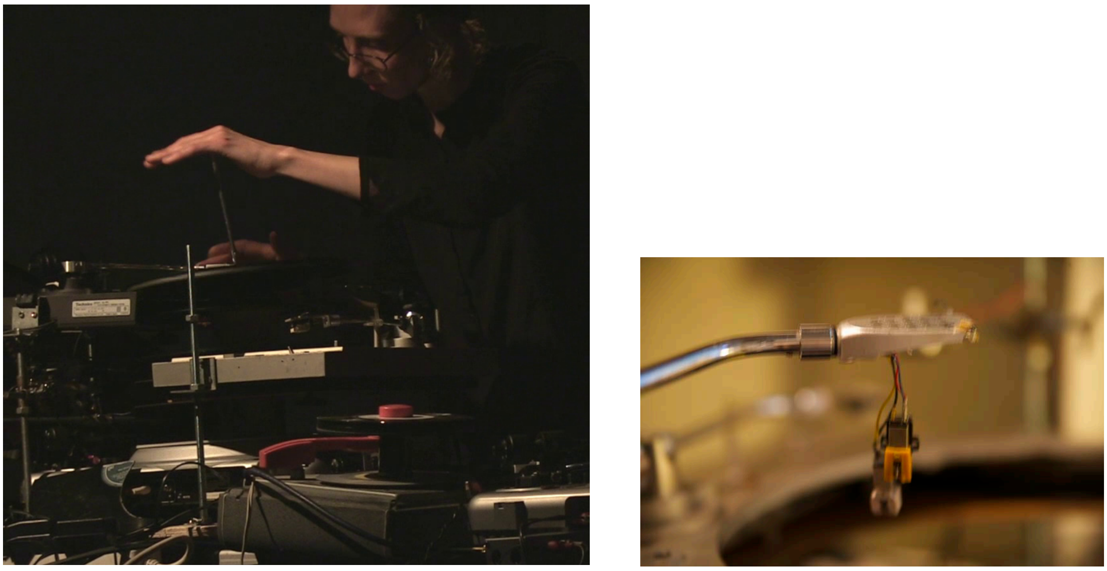

Figure 4.4 Left: Greta Christensen steering the centre spindle in concert. Right: Headshell with two styli.

Camilla Sørensen's setup features diverse turntables: for example, a two-armed record player and an old vintage record player for 7-inch records. The idea of superimposing multiple sound layers led Sørensen towards the use of several record players and tone arms, though not in a compact vertical shape, as several turntablists modified their record players (see Chapter 1).

Sørensen juxtaposes a high number of samples, too, with the use of a malfunctioning record player that plays 7-inch records: a Harting 45T model from the 1960s (see Fig. 4.5, left). This record player was manufactured to play several records, one after the other, in a durational stream: after one record has ended, the Harting 45T switches automatically to the next record placed on the central spindle. The enlarged diameter of the central spindle enables the 7-inch singles to be played without a separate adaptor. Sørensen's device is faulty, however, and has stopped playing records from beginning to end: instead the needle drops at a random spot on the record to play a groove for just a few seconds before then switching to the next record. This broken device became part of the concept for live performances of producing automatically cut samples in a random order. The Harting 45T's faulty playback cuts the samples into a length that, for the audience, only allows a vague identification. This lets Sørensen create a melting pot of various genres, which might evoke feelings of nostalgia and trigger the audience members' memories:

> [T]he 7-inch tower sometimes plays a German *Schlager*. It can be OK for one short moment that someone sings a strange line or this song but you don't want to listen to it for more than just a few seconds. It adds up to this crazy mix of lots of genres melting together (C. Sørensen, personal communication, 28 August 2014).

The sample's referentiality is therefore left to chance. At times the device will play the 7-inch single discs in its ordinary mode, so that Sørensen needs to poke it to force it back into its 'malfunction mode' (Sørensen, 2014).

Since 2014 Sørensen has deployed an external potentiometer to control a turntable's motor (Fig. 4.5, right). This extension allows her to change the speed of a record player gradually and across a wider range, influencing the pitch of the record's playback.[8]

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[8] Sørensen could not give a detailed speed range but described it as going 'from very slow to very fast' (personal communication, 16 May 2016).

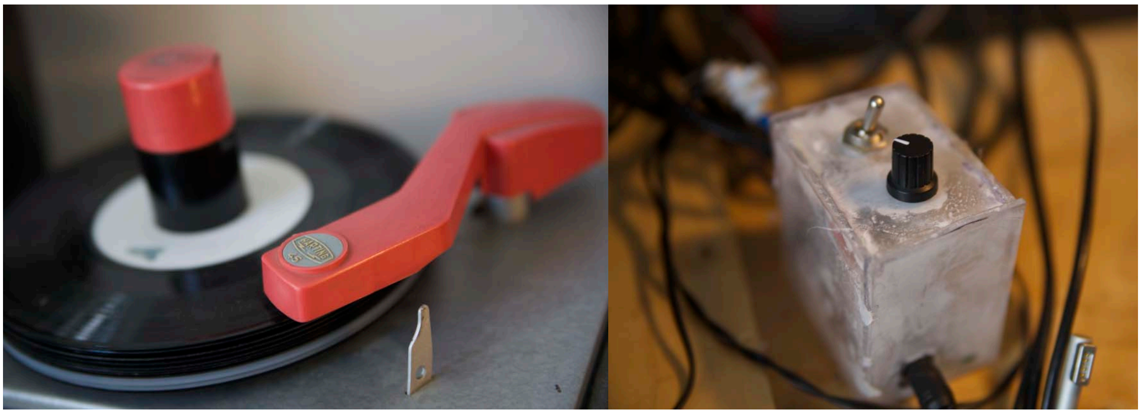

Figure 4.5 Left: Camilla Sørensen's 1960s automatic record player. Right: A potentiometer attached to the control motor.

Vinyl Records

Records

- Distributed Records
- Self-released records
- Dubplates

Record Preparations

- Cut-ups/Record shards
- Record shards
- Off-centre hole discs
- Miscellaneously prepared disc material (e.g. baked record)

Distributed Records

Both artists use movie sound effects from LPs such as the BBC sound effects library series released in the 1970s. These records are archives of diverse noises. The BBC record *Disasters* (1977, Sound Effects No. 16, UK: BBC Records – REC 295), for example, features among its track listing: 'Explosion sounds' (from several distances), 'Crash Of Bricks', and 'Swarming Insects'; while the record *Death and Horror* (1977, Sound Effects No. 13, UK: BBC Records – REC 269) features 'A Cat Howl' and 'Ghostly Piano Sound (Low Pitch)'.[9] Christensen and Sørensen's collection also includes sound effect records from Germany such as *Geräusche für den Amateur* (Falcon – LST 7118), featuring the sound of squeaking doors, bird calls (crows), footsteps, clocks, air planes, and vehicles.

Samples used for emotional values such as fear or suspense can come either from soundtrack records or from records from various genres, such as Western classical music (especially opera), film music, or tango. German *Schlager* or jazz records are embraced for their samples' nostalgic qualities. A more recent interest of Sørensen's is records of barrel organs or music boxes, such as that shown in Fig. 4.6, right. Outside of these specific uses, records in diverse musical styles are potential sound material for the duo, such as the record *RRR-1000 Lock Grooves* (LP, 2009), for example, which gathers short samples in locked grooves by 20 artists (amongst them turntablists Otomo Yoshihide and Joke Lanz as Sudden Infant).

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[9] For example: [karager23] (24 April 2012) BBC Sound Effects – Monsters And Animals (Vinyl) [Video file from BBC record No. 13 – *Death & Horror*]. Retrieved from www.youtube.com/watch?v=_h3gtMm75N0.

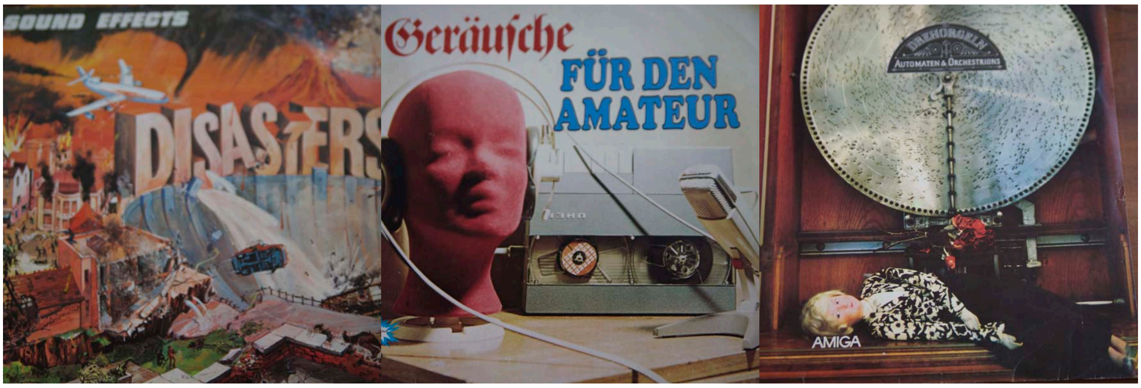

Figure 4.6 *Disasters* (BBC Sound Effects No. 16, LP, 1977) and *Drehorgeln, Automaten & Orchestrions* (AMIGA, East Germany, GDR, 1980).

Dubplates

Vinyl -terror & -horror cut their own recordings on dubplates. Their sound material is gathered during rehearsals or via compositions and recorded in a studio; it is also gathered via own sounds (as digital files) that cannot be found on distributed records. Vinyl -terror & -horror also use recordings on dubplates to retain and archive found sounds that might not be possible to reproduce live. Dubplates therefore provide additional sound material as well as composed structures in concert, independent of those on distributed records.

Self-Released Records

Vinyl -terror & -horror released several records between 2004 and 2010 (one 7-inch and five 12-inch records). These self-released LPs provide them in concert with predetermined structures and a mix of multiple sound layers. Such recontextualisation of their music in concert creates a continuous recycling circle of their own sound material (Sørensen in Engström, 2013).

Vinyl -terror & -horror translate the processuality and open state of improvised performances into their released records. *To be continued...* (2007), for example, is a 12-inch disc with a picture on the disc's surface, fractured into four quarters as if the disc were a cut-up (see Fig. 4.7, left); in order to display the picture correctly the record has to be cut into four quarters and glued back together in another order (see Fig. 4.7, right, showing the cut-up of Vinyl -terror & -horror). The duo intentionally leaves the question open as to what the correct order is: either the record content is in the correct order with the fragmented picture on the original disc or only after the picture is corrected by creating a cut-up. The *To be continued...* picture disc is an art object in itself and demonstrates the discrepancy between the sound's visual and tactile representation via a record disc and the intangible sound. The creation of a cut-up would be a performative element for the buyer and listener of this media-specific record, whereby the materiality – the arrangement of the quarters – determines the sound. However, Vinyl -terror & -horror themselves use this released record in several versions: the cover picture of the subsequent release *Loosing Track* (2008, 12-inch white vinyl) shows the picture disc separated, with single quarters in each stack of the turntable sculpture.

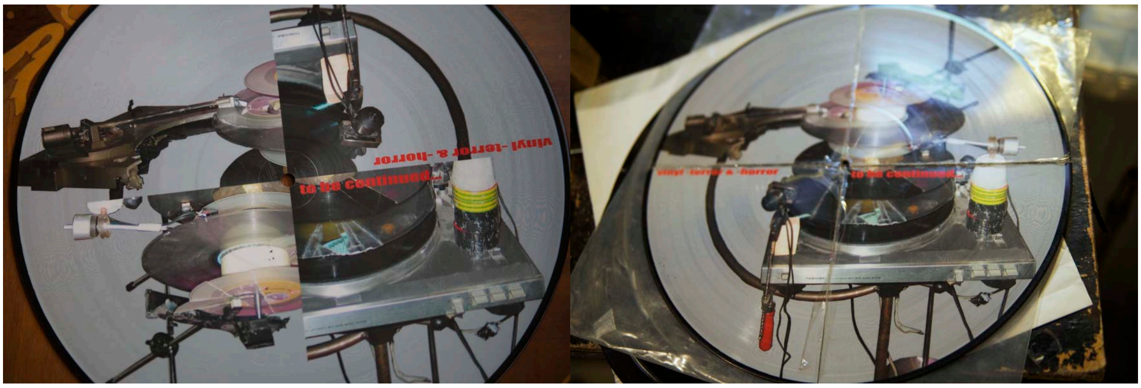

Figure 4.7 *To be continued...* (2007), picture disc by Vinyl -terror & -horror. On the left, the original as released; on the right, the disc as a cut-up with the quarters of the record rearranged and glued back together so that the picture is complete.

Cut-ups and Prepared Records

As their released records indicate, Christensen and Sørensen push the idea of the record as art object in numerous directions. The cut-up is a core element in their project, serving as an intermediary between visual and sculptural aspects and sound. For a future project Vinyl -terror & -horror are considering reversing the breaks of cut-ups. This compositional idea – to complete the musical fragments from the cut-up records – would involve notating the music and then collaborating with acoustic instrument players (G. Christensen, personal communication, 10 December 2016).

The duo's criteria for the creation of a cut-up often follow visual inspirations – from record covers, for example – which become translated into a prepared record, as the following examples illustrate. Prompted by its cover, which shows a hammer smashing glass, the duo combined record shards from the BBC record *Off Beat Sound Effects* (1975, UK: BBC Records – REC 198) with pieces of broken glass to create a new disc (see Fig. 4.8, middle). Although the motivation behind this cut-up was purely visual, the sculptural object generates interesting sound results (Vinyl -terror & -horror, personal communication, 28 August 2014). Another visual idea for a record preparation came from a portrait on an LP cover, a portrait with a dotted texture (see Fig. 4.9): using specific drills and tools (see Appendix A), Greta Christensen created a perforated disc reproducing the dotted portrait featured on the cover (see Fig. 4.9, right). Marcel Duchamp's 1935 *Rotoreliefs* – rotating paper discs – inspired the creation of black and white cut-up discs (see Fig. 4.8, right). Further sculptural objects show the analogue shapes of sound waves, toothed wheels, and crop circles (see Appendix A for further illustrations). These records' engraved grooves visually still refer to the sonic dimension.

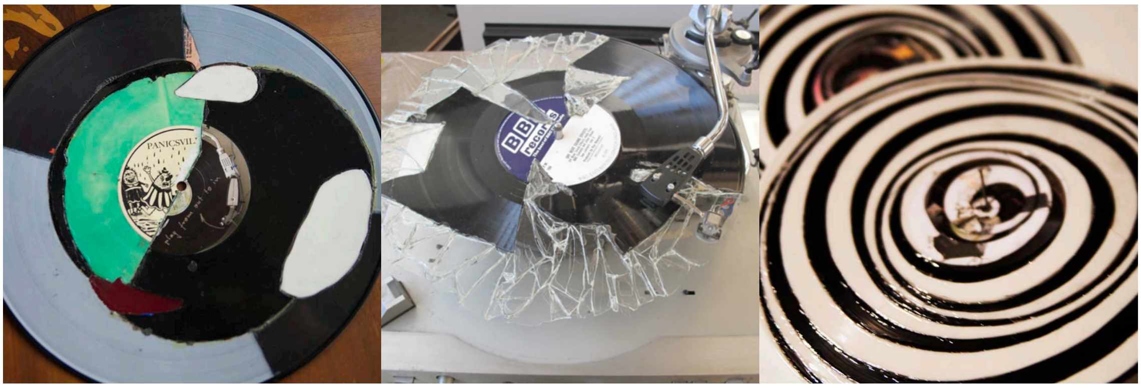

Figure 4.8 Cut-up records by Vinyl -terror & -horror.

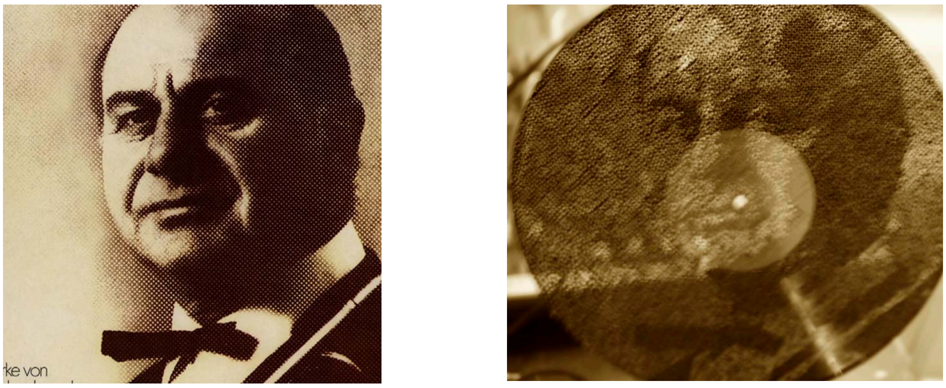

Figure 4.9 Portrait of trumpet player Adolf Scherbaum (1976, Werke von Delalande und Mouret, Germany: ETERNA – 8 26 766) on an LP cover (left) and in the disc (created by drilled holes) (right).

Prior to such rearrangement, however, the sound result of a cut-up or record preparation is not fully predictable. Translations of visual aspects into the record material might lead to the records therefore remaining exclusively sculptural objects without producing a useful sound effect. In concert, Vinyl -terror & -horror's cut-ups operate as tools for chance processes and for the mixing of various samples. The duo's cut-ups unite multiple records, stringing together in this way various music styles or sounds (e.g. see Fig. 4.8, left).

Another approach is the use of a pile of loose record shards, Christensen deliberately pursuing the cut-ups' unpredictability and random sound selection. These shards have not been glued back together on a disc and remain 'semi-permanent cut-ups'. Their destruction is permanent but their assemblage remains open for producing new and random combinations in concert. Each shard edge disrupts the needle, in the main producing harsh distortion noises and scratch sounds. As the shards are not fixed as a disc they require a particular handling, as will be discussed in the Performance analysis.

A further preparation that Vinyl -terror & -horror deploy are off-centre holes in records, creating a modification of the playback similar to that seen in the case study of Joke Lanz with 7-inch records without an adaptor (this will be further explained in Part II).

More innovative is Christensen's creation of a 7-inch disc from melted record splinters. These are leftovers from preparing cut-ups and record shards, which are baked in the oven (see Fig. 4.10). This form of destruction erases the pre-recorded sound of the records and creates a completely new surface. Christensen's bricolage brings visual and material properties to the fore and demonstrates the use of the vinyl plastic as a raw material. In his sculptural work *Five Cubes* (1989) Marclay melted vinyl records into cubes; but in contrast to Marclay's sculptures, Christensen's baked record serves as a sonic object as well. When played, this unique disc texture produces corresponding noise textures (as will be seen in the concert analysis in Part II).

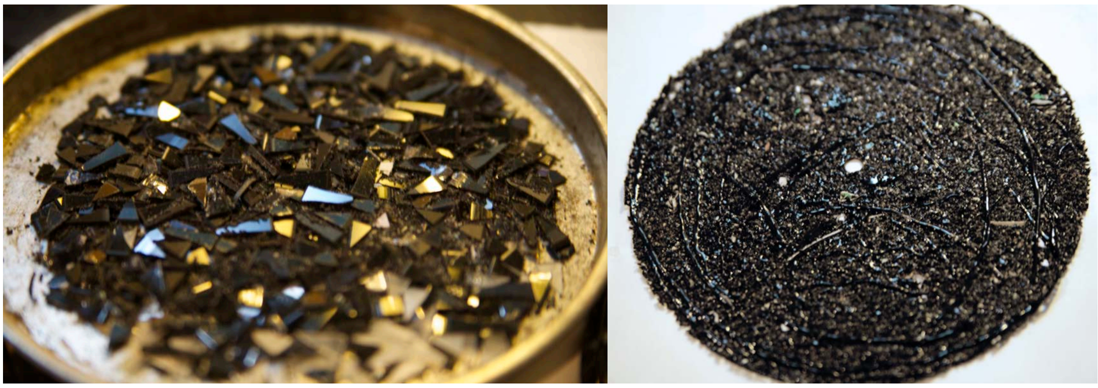

Figure 4.10 A baked 7-inch disc made from vinyl crumbs (from cutting up other vinyls; see left) melted and baked together in the oven (see right).

Mixing Desk

Each artist’s mixing desk provides control over multiple channel inputs from several tone-needles. The mixing desks have volume faders and equalisation knobs for ‘high’, ‘medium’ and ‘low’ frequencies, influencing the timbre. The faders and the mixing desk also provide visual and sensual feedback to the artists. Each channel is marked at the bottom by notes on stickers. In contrast to Joke Lanz’s concert, the position of the mixing desks at the side of each artist, and the high number of simultaneously running records, makes it more difficult for the audience to determine the onstage source of particular sounds.

The External Study showed that Vinyl -terror & -horror’s bricolage is not purely related to sound exploration; they approach discs and devices, too, in terms of their materiality using sculptural and visual concepts. Both turntables and records are modified to extend their limitations (e.g. by preparing extra styli, tone arms, motor controls, or turntable-parts). Although pragmatic reasons are one factor here, this bricolage also fosters specific conditions related to compositional considerations prior to each concert concerning sample selection or loose structures. The assemblage of their devices provides the following underlying strategies for extending sound possibilities:

- playback of a high number of simultaneous sound layers (extra styli, extra tone arms, high number of turntables, vertical turntable construction)
- a wide range of manipulations (gradual speed range with the external potentiometer, reversed playback, off-centred playback with turntable tower)
- cutting and arranging samples automatically and randomly (malfunctioning 1960s record player).

The duo’s records and record preparations contribute via:

- samples (referential) creating cinematic soundscapes and frightening atmospheres (distributed records of movie soundtracks or emotional passages from musical works; dubplates, self-released records)
- distinct abstract sounds (samples as abstract tools from distributed records, dubplates, self-released records); often distortion noises via unique surfaces or unevenness of the disc material (baked disc, transitions of cut-up records, edges of record shards, record crackling)
- pitch manipulations of the samples (e.g. off-centred playback)
- cut/fragmented samples (cut-up records, record shards, dubplates, self-released records)

- structural re-arrangements of samples, loops (e.g. cut-up records, record shards dubplates, self-released records.
- superposition of samples (self-released records, dubplates).

Vinyl -terror & -horror's instrumental setup therefore provides many individual features, requiring specific handling and interaction in the performance.

Part II Performance Analysis

The following analysis will give concrete examples of Vinyl -terror & -horror's interdependence of personalised instruments and artistic concepts, as described in the External study, in a performance situation with an audience. With the superposition of multiple sound layers, the duo puts less of an emphasis on the musical relationship between two or three sound sources, as was seen in Joke Lanz's concert. Instead, they contrast manipulated aural images with 'material' sounds produced by their collection of prepared record material and deconstructed record players (as shown above). This reflects the contrast between the imaginary dimension of the sounds and the physical reality of the sounds tied to the disc objects in the here and now of the performance.

The analytic framework developed in Chapter 2 is enriched here with film soundtrack theory in order to examine the duo's cinematic soundscapes and mood setting. As the analysis of the 20-minute-long event shows, various methods of sound production (sample choice, manipulations, abstract sounds), performative aspects, and structural decisions are all aligned in Vinyl -terror & -horror's concert with the support of imaginative soundscapes and a contradictory emphasis on the medium's materiality.

The accompanying graphical representation in the software EAnalysis (see Appendix C, Video Case Study 2) separates the performers' sound production via a colour code (blue for Greta Christensen, red for Camilla Sørensen) and assists in conveying the analytic findings. The ascertaining of each performer's sound production is based on a separated audio recording from the venue's PA system with one output channel for each performer; due to the high number of sound layers, the sound production could hardly be ascertained from the video recording. Distinct playing techniques and abstract noises have similar iconic forms here as in the graphical representation of Joke Lanz's concert. Various degrees of dynamic and the presence of foreground/background sounds are indicated by the differing opacities of the colours.

Vinyl -terror & -horror's performance took place on Saturday 8 March 2014 at Cafe Oto in London, UK. The occasion was the fiftieth anniversary of the Swedish

Electronic Music Studio EMS (curated by Joachim Nordwall and the studio's director Mats Lindström). Cafe Oto is a café and venue with a regular evening programme for live music;[10] it is located in Hackney, an increasingly gentrified area of East London (Watt, 2013, p. 101). The venue's interior gives the impression of being alternative and improvised, without, for example, having any pedestal for the stage, though a concert piano on a side wall marks the stage and the venue's musical focal point. The presence in the room of this traditional instrument helps convey therefore a more formal atmosphere in comparison to the underground venue West Germany in Berlin. Large glass windows onto a quiet side street provide a view outside to passing pedestrians and give the venue an open feeling. The evening in question of 'SWEDISH ENERGIES LONDON: EMS 50!' was part of a two-day event featuring artists such as Hanna Hartman, Mats Gustafsson, and Thurston Moore (Sonic Youth's former guitar player). The same programme took place two days before in France. The evening concert in London with Vinyl -terror & -horror was sold out, and the room was filled with around 200 people. Approximately half of the audience was seated on chairs in front of the stage, with the other half standing at the back. Sørensen and Christensen welcomed the atmosphere at Cafe Oto, wherein the presence of seating promised to facilitate a focused listening situation.[11] Next to the entrance in the same room, a bar faces the stage. All the instruments of the evening's musicians were from the outset positioned onstage and visible for the audience. Next to Vinyl -terror & -horror's instruments, Hanna Hartman's amplified objects, including flower pots and straws, stood out as a conspicuous setup. In the darkened room only spotlights onstage and tea-light candles on the front row tables created isolated light spots, so that the audience members at the back nearly disappeared in the darkness. In general, the distance between audience and artists was close and personal in the room, similarly to Joke Lanz's concert. Vinyl -terror & -horror's setup was placed on a central table on ground level, the same level as the audience, and was therefore clearly visible. Their concert was the second of the evening. After the concert, audience members bought all seven vinyl albums that the duo had brought for sale.

4.3 Sound Possibilities/ Sample Selection

During the concert the Danish artists used around 33 vinyl records (distributed records, self-released records, dubplates, and prepared records) featuring samples of spoken word, music and various noises. With regard to these pre-recorded sounds, there seems to be two main categories pursuing Vinyl -terror & -horror's concept of creating 'cinematic soundscapes': 1) identifiable film sound effects most likely originating from movie soundtrack records (vocal sounds: for example, laughter, coughing, breathing, screaming, and throat-clearing; clearly recognisable noises are footsteps, ticking clocks, water dripping, and animal sounds) and 2) backdrop sounds. Backdrop sound layers – often music excerpts or unidentifiable sounds – might operate to set a mood or atmosphere. Fragmented music samples seem to cross Western classical music, tango, Dixieland, and jazz without citing any musical pieces in particular. We find samples of female choirs, short piano melodies, and fragmented melodies from brass instruments. Stringed instruments are prevalent throughout the concert, sounded with *unisono ordinato* (Disc 1), glissando (0:55 min of Disc 2), pizzicato, and tremolando (5:00 - 5:30 min, 5:55 min, 11:55 min). The musical samples remain obscure and fragmented. The intelligibility of the sounds seems restricted for the most part by the superposition of multiple sound layers, and the presence of manipulations and abstract noises from prepared records.

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[10] The programme is managed by OTOProjects, a not-for-profit Community Interest Company (CIC). See Cafe Oto, About Us. Retrieved from www.cafeoto.co.uk/info.

[11] In a conversation with the author after the concert both artists remarked on the concert situation (8 March, 2014).

After exploring the interplay of samples, manipulations and abstract noises from the medium in the greater context of the performance, a more detailed analysis of the single sound possibilities and their contributions to the performance follows in the sections 4.5 - 4.8.

4.4 Musical Context/Formal Constructions

Vinyl -terror & -horror's strategy is focused on the creation of narrative and visual soundscapes. In the concert the evocation of visual associations appears to be supported by the musical context. Single noises, musical fragments, and irregular repetitions of conspicuous sound elements appear and disappear without establishing a clear narration or musical structure. Visual cues that might indicate the entry of a new sound layer and convey a structural organisation, as observed in Joke Lanz's concert with the record changes, are rare in Vinyl -terror & -horror's concert. However, on a more abstract level, isotopies create coherence between the heterogenous sounds, similar to Lanz's concert, uniting several samples with manipulations or abstract sounds from the medium.

Although the concert has various intensifying moments, most noticeable are those in which a sudden break or appearance of tranquillity resolves the preceding suspense and leads into a new textural development. These abrupt changes in dynamic and texture can generate a feeling of structure (Flückiger, 2012, p. 237). They indicate four greater sections starting at around 6 minutes, 11:57 min, and 17:10 min (with a transition until around 17:23 min):

Section I	Section II	Section III	Section IV
0:11 - 5:57 min	5:57 - 11:57 min	11:57 - 17:23 min	17:23 - 23:26 min

Vinyl -terror & -horror contrast extreme loudness and silence, which seems to support the emotional aspects of the cinematic soundscapes. Although such dynamic oppositions could be observed in Joke Lanz's concert, here the loudness seems moreover to fulfil dramaturgical purposes in supporting fear and suspense. Most noticeable in this regard are the strong contrasts between intense sound walls and moments of silence in Sections II/III at 11:57 min and in Sections III/IV at 17:10 min, which might be considered the 'heavy points' in the structure that the artists discussed prior to the concert (see Part I/External Study).

Section I seems to prepare for the intense parts in the middle section and deploys many soundtrack sounds for visual associations. Yet despite some momentarily uncomfortable atmospheres, the overall texture resolves and the events appear autonomous (e.g. at 4:25 min). The few visual sounds from soundtracks (mischievous laughter at 3:03 min and footsteps at 3:39 min) only develop weak cinematic scenes; overall the frightening associations pass quickly, as the texture feels permeable and the numerous sound events are moreover sequenced. Many musical fragments (such as a short piano melody and string pizzicati) appear temporarily without any development. Distinct and dense moments of anxiety (for example, at 3:40 - 4:10 min) are inserted piecemeal by an intermittent crescendo of filtered noise, the composed element of a choir and a string tremolo, as well as noise bursts (especially at 3:45 - 4:00 min, Christensen), backwards sounds (e.g. 4:52 min, Sørensen) and speed manipulations (e.g. 3:41 min, Sørensen). These temporarily intensifying moments, especially at the end of the section with a combination of a vocal sound and string tremolandi (at 5:58 min), seem to convey a presentiment of what approaches in the next sections.

In Section II the cinematic soundscapes might develop visual scenes more clearly (with the slow footstep and ticking sounds, see 4.5 Cinematic Soundscapes – Visual Sounds). Initially the texture with fragments of shorter lengths feels animated, incorporating moments of surprise with a potpourri of different randomly selected music styles (the cut-up record at 6:21 min) or several manipulated samples (the sped up voices at 6:08 min and 6:59 min, the wobbling brass music at 7:15 min). Yet from 7:43 min on, the section proceeds into a feeling of tension and anxiety, the severity of which exceeds the suspenseful moments of Section I and amplifies the established cinematic images. Recurring crescendos, tremolandi and non-resolving dissonances from diffuse, superimposed sound layers, together with 'unidentifiable' low frequencies accumulate, especially at 11:20 min - 11:57 min; they accompany in an 'empathetic' way longer passages of visual film soundtrack sounds (slow footsteps, squeaking door, clock ticking, female scream), as will be explained in section 4.6 Cinematic Soundscapes – Backdrop Sounds. This intense passage forms one of the heaviest parts of the concert. In cinema, a climax expressed through extreme volumes can be often observed in war scenes and chase scenes (Flückiger, 2012, p. 243). Furthermore, if one is exposed to high volumes (such as over 60 dB) a direct bodily reaction, such as a raised heart rate or blood pressure, is possible and the processing of other information might become restricted (Flückiger, 2012, p. 239). Vinyl -terror & -horror use loudness to bring their dense atmosphere of constant suspense to a peak. In accordance with Flückiger's (2012) observation, the build-up of a dense sound wall in contrast to the sudden drop at 11:58 min might facilitate an amplification of negative feelings (p. 242). In this regard studies show occurring the opposite to a cathartic experience – Aristotle's term for a feeling of relief and cleansing that, with regard to media consumption, is believed to follow the massive intensity of stimuli and aggression (Flückiger, 2012, pp. 241-242). In Vinyl -terror & -horror's concert both effects can be useful, as the following section (III) develops another fearful scene.

Section III is a variation of Section II, building up an intense feeling of anxiety towards the end, similar to Section II, but by using bird calls in a similar way to the soundtrack for Alfred Hitchcock's *The Birds* (1963). Following the sudden drop of the dense texture (at 11:58 min), Section III starts a completely new scene with soft dripping sounds. The new context of narrative sounds facilitates a cinematic structural experience (Frisius, 2002, p. 177). Single visual sounds (for example, a door squeaking sample) and low frequencies of double basses recall the preceding moments of unsettledness, though the recurrent sound material is embedded into a different texture. The interlude of piano sounds sustains an in-between state until the first cries of birds gather from 15:35 min on. The bird clusters might evoke negative emotions and an increasingly uncanny mood similar to Section II. But instead of low frequencies at high volumes (as in the previous section), Vinyl -terror & -horror create the intense horrifying effect with bird cries, which manifest in the sharper, high frequency area (see further details in 4.5 and 4.6). As a transition at around 16:52 min, the atmosphere of bird cries de-escalates and leads into a more abstract soundscape at 17:23 min.

The last section (Section IV) is generally lighter in tone. The development moreover appears to be sequential again, dissipating the suspense of the preceding parts. In general the focus on sound effects decreases and the texture thins out slowly towards the end. The humorous and abstract passage at the beginning, with random mixes of music styles and diverse soundtracks achieved through cut-up records, is accompanied by a male voice speaking in a neutral tone. The male speech, presumably originating from a test record, provides technical instructions to follow in order to test an equipment's performance of loud sound. This humorous detail was probably not recognisable in the concert, though, due to the masking effect caused by the simultaneous sound layers. Two more slightly uncanny soundscapes develop again at 18:34 min - 20:06 and at 21:38 - 22:28 min. The first passage mainly features glissandi: a slowly falling glissando of a nearly pure frequency (starting at around 16 kHz and gradually falling lower than 30 Hz) and a downwards string glissando created via backwards playback (at 20:06 min). The second passage consists of soft crescendos of unidentifiable narrow-band noises in the middle frequency area. These slightly mysterious soundscapes with soft distortion sounds are predominantly contrasted, however, with more humorous elements. The short sound snippets from the automatic 1960s record player (starting at 22:14 min) in particular break the severity with a bizarre and ridiculous male voice sample, which recurs in irregular cuts until it ends the concert.

Although the concert was improvised (and also performed without stop watches), all four sections are nearly equal at six minutes in length. This proportionately balanced timing might indicate, on the performers' part, the presence of cues for temporal orientation via the composed structures on dubplates, as well as Christensen and Sørensen's long experience of working together as a duo. The lighter beginning and end sections build energy up and down and thereby frame the severity of the middle sections. In the graphical transcription (see Appendix C), the separation of each artist's sound production via a colour code presents visually the dominance of Sørensen's sound material in the first and last sections (red signs) while Christensen's contribution is prevalent in the middle sections (blue signs).[12] This allocation suggests that the performers limit the superposition of several turntables and take leading roles in each section (as mentioned in Part I/External Study).

In this concert instrumentation and record selection prove to be crucial compositional tools and their choice predetermines structural features. As described in the External Study, the multiple record players and extra tone arms facilitate the superposition of sound layers; however, the numerous tone arms seem to be used more sequentially than simultaneously. Moreover, whereas Joke Lanz's concert progressed sequentially from disc to disc, Vinyl -terror & -horror's concert operates less in such a linear way. The concert's focus lies on the creation of visual scenes and emotional atmospheres rather than on single sound events, dialogic structures and their musical development. This is demonstrated in Vinyl -terror & -horror's use of dubplates with pre-composed recordings of superimposed and arranged sound layers (see Table 8.2 in Appendix A). A dubplate's structure becomes especially noticeable at the end of Section III. The dense soundscape of the bird calls seems to originate mainly from one record. A disruptive moment at 13:33 min also reveals the deployment of dubplates with a prefabricated assemblage of visual sounds and accumulating sound layers: as Christensen takes down the upper stacks of her construction, the needle of one record player seemingly jumps back into a groove from earlier, repeating sounds that were already played in Section I at 4:38 min; the repeated samples appear in the same order as before, yet in a different context with other samples. Vinyl -terror & -horror's dubplates therefore provide predetermined but incomplete structures serving as a basic grid of samples and facilitating the duo's focus on cinematic soundscapes in fearful passages. These pre-recorded compositions can be compared to Joke Lanz's fixed sound layers from the sampler, which he puts into dialogue with live produced sounds. But where Lanz uses the sampler to record the sounds live on stage, Vinyl -terror & -horror compose and record their sound material independently from the concert. This crucial relationship between composition and improvisation through the use of dubplates also influences the obscurity of the sound production. In most situations of Vinyl -terror & -horror's performance, the playback of a sample is not directly linked to the action of releasing the tone needle on a record's surface (as, for example, in Joke Lanz's concert). The superposition of several sound layers via dubplates in combination with several other records denies the visual attribution of a specific sample to one of the many rotating turntables. Apart from clearer situations with a playback of single samples (such as at 17:23 min) or abstract sounds, this auditory complexity might lead the audience members to focus instead on the imaginary dimension (especially in Sections II and III). Yet the use of dubplates decreases the feeling of liveness due to the weak embodied link between sound and movement.

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[12] In Sections II and III, the graphical representation mainly shows Christensen's sounds. In the audio file, separating both artists via two channels, Sørensen's sound material could be detected: yet, due to Christensen's more dominant sound events, during the concert Sørensen's sounds might have been partly masked in the stereo mix.

On a microstructural level Vinyl -terror & -horror seek the opposite of logical continuity by deploying pre-composed samples from dubplates, several types of manipulation (e.g. needle drops, cut-up records, and the automatic record player) and irregular abstract sounds from the medium (e.g. noise bursts of record shards and the baked disc). This caters to amplify unsettledness and fear, as Link (2010) argues:

> We can hear the most effective soundtracks for horrific threat by way of musical analogues to Carroll's terms in the ambiguous superseding the defined, the fragment displacing the whole. Monstrosity resides in denying musical orientation toward the categorically complete human body, exceeding its limitation, avoiding simplicity, remaining aloof from rhythmic certainty, and so on (p. 43).

The avoidance of musical orientation, clarity and rhythmical anticipation helps establish a soundtrack of 'horrific threat'. Vinyl -terror & -horror's prepared records and turntables intentionally demonstrate randomised processes and irregularity similar to Jean Tinguely's sculptures. As with Tinguely, their function is to create mechanical chaos (von Herrmann, 2008, p. 315). Similar to Tinguely, with his imprecise cogwheels and incorporation of found objects (such as bottles), Vinyl -terror & -horror incorporate ramshackle turntable sculptures, irregular record objects (such as record shards and cut-ups) and a failing automatic record player intentionally to disturb the consistency of the mechanical playback (see further in 4.7 Manipulations). The performers' intentional destruction of musical orientation is partly materialised in the shape of their curious objects as 'synergies of functionality and dysfunctionality' (von Herrmann, 2008, p. 325).

In Vinyl -terror & -horror's concert, loops and periodic repetitions of noise bursts appear only as temporary rhythmical figures and cannot really be said to develop rhythmical cues that build-up expectations. Recurring passages occur at long intervals and also slightly irregularly. For example, the distinct crescendo of a filtered noise in Section I starting at 0:58 min (from a composed dubplate structure) increases the frequency of its repetition (from every twenty seconds to every five seconds) as well as its intensity and length (from one second at the beginning to seven seconds). A repeating choir fragment combined with a string tremolo and noise bursts appears at irregular intervals of between two and six seconds during its six occurrences (between 4:48 - 5:42 min). Another quite noticeable recurring element is the falling major third of a sharp resonating bell sound in the higher frequency area (approximately G6 - D#6) at 4:09 - 4:57 min and again at 13:36 - 13:58 min. The interval of the bell sounds' repetition varies between five and six seconds. With the repetitions' inconsistency, their beginning and end becomes unpredictable. No visual link between repeating sample and turntable movement contributes to the understanding of the sound production. The recurring elements seem to originate from a composed dubplate structure, since a looped record would create more regularity due to the turntable's mechanic rotation. The disorientation and lack of structural cues, built up on chance, unexpected cuts and irregular repetitions principally denies the spectator's anticipation of musical development and contributes in developing a horrific effect.

Another effect of sample repetitions (via composed structures on dubplates) might be inducing a certain form of boredom, which would provide the spectator with space to discover her or his own thoughts (Glasmeier, 2002, p. 33). This seems to match with a passage in Section III. For one minute (from 14:31 - 15:31 min) this section provides little suspense or action in comparison to the preceding parts and might therefore create a subtle feeling of tediousness. A repeating figure of a piano melody in F# minor at 14:20 min recurs four times in a shortened version and remains in unison with a background string sound (mainly C#5 and partly F#), yet without continuing to the anticipated resolution (until 14:55 min). Instead, an ostinato of a soft piano chord (C#5 and F#5) in the background occurs as well as other melodic elements from preceding passages. The melody remains slightly unresolved and prepares the emotional backdrop for the coming scene of bird cries.

Vinyl -terror & -horror's use of samples is also focused on the sounds' abstract qualities, using the samples as tools to create isotopies (a series of similar sound fragments) or transitions via their shared acoustic properties. Within each section isotopies establish coherence amongst the numerous heterogeneous sound effects (Flückiger, 2012, pp. 292-293, see also Chapter 2), similar to Joke Lanz's approach when he shortens and 'musicalises' samples to create imitative relationships. In Section I several sharp high-pitched sounds fill the soundscape, starting with a constant high frequency drone on a stringed instrument (around 2520 Hz, 0:36 - 2:50 min). The door squeaking at 4:22 - 4:23 min (frequencies of around 1670 and 2000 Hz), the recurring church bells (4:46 min, recurring every six seconds), a figure of two falling notes on a bell (approximately 1540 Hz/G6 and 1200 Hz/ D6 with inharmonic overtones) starting at 4:08 min as well as another element of several bells (at 5:26 - 5:47 min) occurring around every seven seconds, all show connecting sound qualities in a higher register and establish an isotopy (see Table 4.1). In Section II between 9:13 - 10:17 min, several samples share similarities with musical fragments or other sound sources. For example, the irregular chirps at higher frequencies (bird sounds at 9:16 min; their origin is ambiguous though) create connections with a woman crying (at 9:36 min), fragments of a manipulated female opera singer (9:46 - 9:48 min) and scratches from the record shards (10:15 min). These high-pitched squawks constitute smaller structural elements and link each formal section with the other. In Section II, the lower bell sounds (5:59 - 6:18 min) become a transitional element recalling the characteristic of the previous section and they accompany the visual sounds (see 7:08 min, with slow footstep sounds before, and at 7:32 min after the coughing sample). A sharp piano sound (approximately 1820 Hz) and various repeating bell sounds at 12:40 - 12:58 min, already heard in Section I (at 5:26 - 5:47 min), re-emerge in Section III, as do the squawking bird sounds from Section II (at 14:15 min).

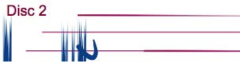
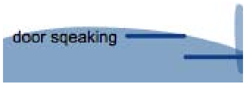
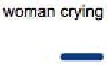
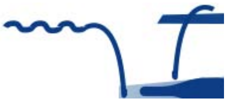
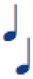
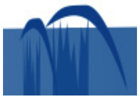
Section I		**Section II**	
high frequency drones (0:36 - 2:50 min)		bird sounds (at 9:16 min)	
door squeaking (4:22 - 4:23 min)		woman crying (at 9:36 min)	
recurring church bell (4:46 min)		manipulated female opera singer (9:46 - 9:48 min)	
falling notes on a bell (4:08 - 4:57 min)		scratch sounds from the record shards (at 10:15 min)	
several bells (5:26 - 5:47 min)			

Table 4.1 Overview of similar sound elements in Section I and II forming an isotopy of sharp high-pitched sounds. The graphical signs are excerpts of the concert's graphical representation (see Appendix C, Video Case 2 Vinyl -terror & -horror).

After the use of crow calls for a horror soundscape in Section III, Christensen creates a conspicuous transition to Section IV by emphasising the mixed references of the crow call sound effect to nature, horror movies and abstract electronic sounds. As mentioned before, the cawing of crows in the concert resemble Hitchcock's soundtrack for *The Birds.* In *The Birds*, the crow calls were created from a mix of recorded bird voices and electronically synthesised sounds (based on sawtooth tones) that Oskar Sala produced with his Mixtur-Trautonium (Lensing, 2009, p. 171).[13] Christensen accentuates the abstract sound dimension of her similar bird voices by superseding them with a purely electronic sound possessing a related spectrum (see Fig. 4.11; close to sawtooth or square waves at 17:02 min). Randomly chosen samples from this new record follow, through dropping the needle, spinning the record or tapping on it with the finger tips to mix with the bird sounds. Finally, another looped sample of an electronic sound with comparable acoustic properties to the bird sounds is played in a brief solo passage, leading as a transitional element into a more abstract context of a new section (Section IV at 17:23 min). The electronic sound samples originate from a special record of locked grooves: the disc *RRR-1000 Lock Grooves.*[14] This performative action of the random needle drop is also one of the moments which demonstrates a direct link between the record playback and the sound. The record on the top layer of the artist's construction is only stabilised by tape rolls underneath rather than by a turntable platter. Fragile actions such as tapping the disc lightly with the finger tips can therefore resonate more strongly (especially at 17:53 min). With the slightest movement of the record the needle slides out of its groove to create scratches or to play arbitrarily another groove (see 17:32 - 19:16 min). The direct correspondence between Christensen's tapping actions and the sound results accentuates that these sonic products of technological modification (resonating record stacks) are specific to her turntable tower.

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[13] With this invention Sala enhanced Friedrich Trautwein's early electronic instrument from the 1930s, the Trautonium. Sala's 'Mixtur' is based on a principal frequency with four subharmonics (Holmes, 2008, p. 33).

[14] The record *RRR-1000 Lock Grooves* (2009, US: RRRecords – RRR-1000) gathers short loops (via locked grooves) created by 20 artists (50 grooves each), featuring for example Joke Lanz, Otomo Yoshihide and Lasse Marhaug.

A detailed view on the concert's cinematic soundscapes in the following sections further investigates this dialogue between media and material reality in the context of horror soundtracks.

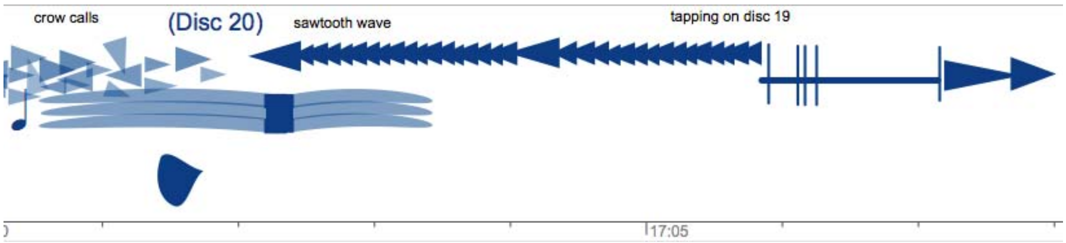

Figure 4.11 Transition from Section III to IV starting at 17:02 min from crow calls to sawtooth waves.

4.5 'Cinematic Soundscapes' – 'Visual Sounds'

Vinyl -terror & -horror's selection of identifiable film sound effects seems to refer more or less subtly to filmic scenes or noises:

> We never reference a specific movie but want to just give a feeling of a story being told. And this is why we try to use as little as possible to illustrate the sound so that you are transported somewhere else in your imagination. The sounds build up expectations of what's going to happen, increasing a sense of tension as if your worst nightmare could be around the corner (Vinyl -terror & -horror in Harris, 2017).

The use of these sound effects and their relation to reality in this concert is complex. The generation of movie sound effects is generally conceived in terms of the audiovisual combination in movies and the sounds' reproduction in the cinema. Their design considers the sound's purpose in the movies together with the audience's psychological responses. Flückiger (2012) highlights how criteria for attaining a quality of realism are linked with the development of media technology and our listening behaviours, since movie sound effects are documents of the technological standards of their time (p. 86). Sound effects' verisimilitude is not in a direct relationship with the similarity to the original sound: it is dependent on several implicit rules that determine recording, post-production, and reproduction (Flückiger, 2012, p. 85). Vinyl -terror & -horror's sound effects originate mostly from vinyl records from former decades, so that their verisimilitude might be interfered, particularly from the accompanying surface crackling.

In concert, the sound effects' main purpose seems to be focused on eliciting visual associations, linked with the listeners' knowledge and experience of reality and movies. Certain sound effects might, in fact, have been learned solely from movies, such as bomb detonations (Flückiger, 2012, p. 113). Visual associations are therefore related to the listener's inner imagination. In concert these recognisable movie sound effects might invite visual associations in a similar way to, for example, Walter Ruttmann's radio drama *Weekend* (Vowinckel, 1995 p. 60). This is also related to electro-acoustic composers such as Luc Ferrari or Trevor Wishart, who work with concrete sounds, mostly sound material from field recordings; these composers allow a 'reality content' to remain, in opposition to Pierre Schaeffer's encouragement of a reduced listening abstracting away from the original sound source (Emmerson, 2007, pp. 7-8). Over the course of several decades, composers and sound artists have developed various aesthetic concepts concerning such samples' relation to reality (Emmerson, 2007; Flückiger, 2012). It can be stated, though, that Vinyl -terror & -horror primarily apply film sounds for their *visuality.*

Chion's notion of 'negative images' emphasises the imaginative effect of film sound effects. These images are '"present" solely in the suggestion the soundtrack makes' (Chion, 1994, p. 192).[15] Although Chion's study *Audio-Vision* (1994), and his other theoretical texts on sound design and film music, are especially focussed on the audio-visual synergy in the filmgoer's perception, many of his observations prove useful for this performance analysis. Vinyl -terror & -horror's cinematic approach might be comparable to the situation Chion describes whereby, with the images of a movie removed, 'we now "see" with only our ears' (Chion, 1994, p. 4).

Nonetheless, a key difference is the live performance and the presence of audience members, which demands that we also address specific performative aspects of the music:

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[15] Michel Chion uses the term 'soundtrack' to indicate the general audio component of movies without providing a clear definition. He writes, for example: 'Now let us take some sounds to go with the shot—direct sound recorded during filming, or a soundtrack mixed after the fact: the woman's breathing, the wind, the chinking of the bamboo chimes' (Chion, 1994, p. 19).

> There are lots of references to horror movies in our works, but the sounds from them – creaking doors, footsteps, raindrops – are often combined with samples from records, which might be visibly playing (Vinyl -terror & -horror in Harris, 2017).

As the duo indicate, next to the imaginary scenes, the contradictory references linking back to events onstage and the medium's materiality, such as the visible record playback, are just as much part of their concept.

The samples' evocation of aural images is linked to several considerations concerning the samples' referentiality. The ability to identify sounds and noises has evolutionary importance for humankind as a means of survival and recognising danger; in this context audition often involves an immediate behaviour control that has been developed throughout life on base of the integration of various sensations (Flückiger, 2012, p. 102). Within complex sonic environments of superimposed sounds, as found in this concert, the semantic dimension of a sound fragment can guide the listeners' selection and focus on single acoustic events, something related to the so-called 'cocktail party effect' (Flückiger, 2012, p. 87). The cocktail party effect describes our ability to focus on a single acoustic event in a sound complex (see Bregman, 1990). 'Causal listening', as Chion (1994) defines, can lead to a clear identification but also to a categorisation of the sound source, such as human or mechanical, even in ambiguous situations (p. 27). Additionally we might perceive the sound's progression in terms of speed or amplitude, which Chion (1994) refers to as its 'causal history' (p. 27). Flückiger (2012) presents slightly different categories, such as 'obligatory qualities', which are necessary for a sound's identification, and 'facultative (or accidental) qualities', which describe any further idiosyncrasies such as references to the sounding body's material (p. 112).[16] Chion (1994) seems to name these details in the sound 'materialising sound indices', which 'cause us to "feel" the material conditions of the sound source, and refer to the concrete process of the sound's production' (p. 114, see also Introduction). References to diegetic or emotional qualities, appear equally relevant; they extend our knowledge of the sound fragment by giving it further context (Flückiger, 2012, p. 158).

In their performance Vinyl -terror & -horror use 'visual sounds' to create obscure narrative plots. Short and incomplete scenes can develop without there being a clear or logical succession of sounds. The following examples consider the syntactical order of the visual sounds (such as footsteps, ticking clock). The accompaniment of the backdrop sounds will be further discussed in the next section. The contributions of manipulated and abstract sounds from the medium are discussed in the separate sections afterwards.

At the beginning of the concert (Section I), a conspicuous soundscape develops based on footstep sounds occurring between 3:39 min and 3:56 min; these follow each other rapidly with changes in reverberation time as well as in the resonance of higher or lower frequency areas. From this, audience members might deduce that the footsteps originate from a running person. It is furthermore possible to detect clues concerning the quality of the floor and space on which the person runs, as well as information about the type of shoes. The materialising sound indices of the steps suggest an asphalt surface such as a road, and heeled shoes. After two seconds, at 3:51 min and later again at 4:27 min, the footstep sounds gain more reverberation while the dynamic decreases, which might indicate the running person's growing distance. An empty or silent space can also be assumed, since otherwise footstep sounds are usually masked (Chion, 1994, p. 58).

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[16] These terms were translated by the author from the German terms 'obligatorische Merkmale', 'fakultative Merkmale' and 'akzidentielle Merkmale'.

Between 6:55 - 7:41 min in Section II (see Fig. 4.12), footstep sounds follow one another slowly. Distinct acoustic properties, such as slight reverberation and energy in the low frequency area, might suggest a resonating wooden floor and heeled shoes. First, the footsteps seem to belong to an anonymous person, but listeners might connect the footsteps with the subsequent coughing of a male person at 7:27 min. As a result of this syntactical order, not only does the sound source become identified but a short narrative develops accordingly. The coughing male person might have been the person whose footsteps could be heard. An image of a man walking through a room might be imagined. The sample at 7:38 min appears to be the squeaking of a door opening or closing. The imaginative scene fosters many questions, stemming from 'knowledge or logical prognostication' (Chion, 1994, p. 26). Is the coughing man opening or closing the door? Is somebody entering a room (as might be a typical scene from a horror movie)? Might the door also have been opened by an invisible force? In this way the audience member's memories of horror movies might feed their fantasies. Door squeaking sounds of various kinds are used as a typical sound element in horror films for their anxiety-creating effect; they occur frequently in the thriller *The Silence of the Lambs* (1992), for example, and are used as a 'leitmotif' for the murderer in the biopic *Wilson* (1944) (Flückiger, 2012, p. 117).

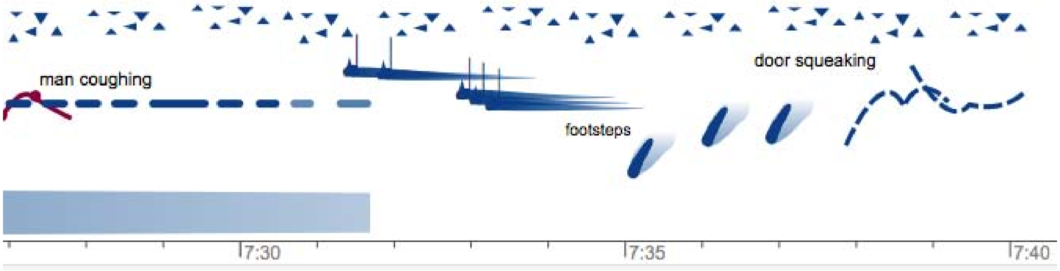

Figure 4.12 Cinematic scene at 7:27 - 7:40 with a male person coughing, footsteps and door squeaking.

After this passage, the footstep sounds continue again at 8:28 min in the context of new visual sounds, conveying diegetic qualities which indicate a specific environment (see Fig. 4.13). For example, the ticking sounds at 8:33 min and the call of a cuckoo clock at 8:34 min might prompt listeners to imagine a quiet room furnished with a clock. The cuckoo call could be generally seen as a signal, similar to a telephone ringing or a door bell. Yet in the context of movies, sound effects' diegetic or affective qualities can take precedence over the signifying aspect a fixed communicative function has when found in daily life (Flückiger, 2012, p. 161). Signals, such as the cuckoo call, in cinema activate an internal reference in the spectator and can be used as a tool to create emotional reactions, such as negative feelings of stress, anxiety or danger (Flückiger, 2012, p. 161).

In the concert, this negative impression is strengthened via the ticking sounds. The use of clocks to indicate mortality and evanescence might be one of the most typical symbolic uses of sound effects (Flückiger, 2012, p. 166). As these quiet impulses usually afford attention to be perceived consciously, they can create silence (Chion, 1994, p. 57; Flückiger, 2012, p. 233). In movies such as *Das Boot* ('The boat', 1981), the uneventfulness evoked by ticking sounds prepares the expectation of a sudden devastating event (Flückiger, 2012, p. 171). Flückiger (2012) calls this effect of silence 'anticipation of danger' or the 'circus effect' (p. 236).[17] In the concert the ticking sounds could therefore be heard in reference to danger and suspense. Yet, the modification of these impulses can additionally amplify tension in the listener and an alert state. In Ingmar Bergman's film *Face to Face* (1976), for example, such impulses gradually increase in volume:

> The ticking of the alarm clock on the night table, which had previously gone unnoticed, becomes louder and louder. Paradoxically we end up with an anxiety-producing impression of silence, all the stronger because the only sound there is is so intense, and heightened by the lack of other sounds, bringing out this emptiness in a terrible way (Chion, 1994, p. 58).

In Vinyl -terror & -horror's performance, the speed of the ticking impulses (two beats per second) is twice as fast as the common clock's ticking (1 beat per second); this might resemble moreover a raised heart rate. The anticipation of an uncanny horror scene is confirmed in what follows (see further in 4.6 Cinematic Soundscapes' – Backdrop Sounds/Accompaniment).

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[17] Flückiger refers to the break of the drum roll that occurs before a spectacle at the circus.

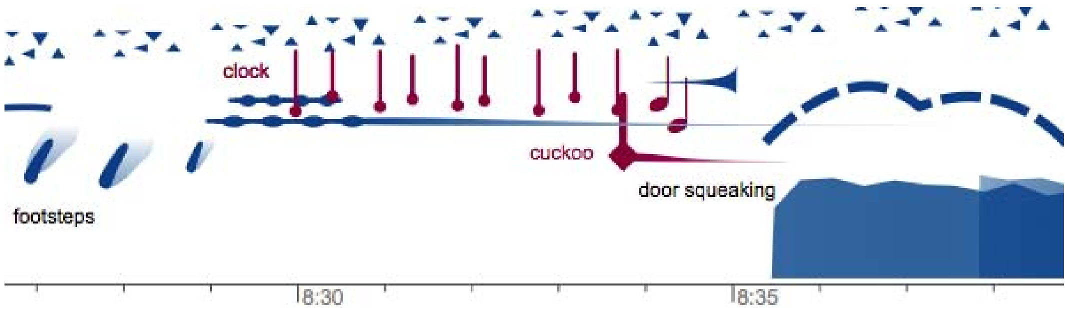

Figure 4.13 Cinematic scene at 8:27 - 8:39 min with footstep sounds, clock ticking, call of a cuckoo clock and low door squeaking.

Vinyl -terror & -horror use the cawing of crows in their concert (Section III) to create anxiety and fear. Crows can generally be seen symbolically as representing death, which might be related to the sound quality of their cry but also their black colour and the fact that they are scavengers (Flückiger, 2012, p. 172). As mentioned before, the duo's bird voices show strong similarities with scenes from Hitchcock's thriller *The Birds*. Although the bird sounds in Vinyl -terror & -horror's concert might have a reference to that movie, the samples' main purpose is the emotional impact, the same effect as that of a horror soundtrack. Flückiger (2012) sees the sharp bird cries in *The Birds* as signals referring to human screams, creating a similar thrilling effect to Bernard Herrmann's string-tremolandi in *Psycho* (1960) (p. 223). We find similar scream-related bird cries in Vinyl -terror & -horror's concert: for example, at 15:58 min, with a frequency of around 2200 Hz.

The gradual build-up of a seemingly endless cluster of bird crows in Hitchcock's *The Birds* furthermore seems crucial for the anxiety-creating effect:

> Giving an impression of inevitable unfolding, the insistently rhythmic nonsense of the song [the children's song 'Risseldy Rosseldy'] accompanying the purposeful flocking of birds reflects an obscure process threatening to become hypertelic—growing without goal or end. The effect is cancerous (Link, 2010, p. 48).

This irrevocably intensifying clustering of crow calls is also applied in Vinyl -terror & -horror's concert, which might evoke a similar psychological reaction and elicit fearful images of masses of birds. From 15:35 min onwards, Christensen's samples of several bird sounds from horror movies (originating from a composed dubplate) in particular build up an increasingly menacing and dense atmosphere through samples of multitudes of bird calls. The first cries at 15:35 min accumulate in a higher frequency area (around 2400-2800 Hz). From 15:51 min on, the bird soundscape gains additional fluttering noises and extremely sharp cries, and (from around 16:00 min on) it expands its spectral density with a lower pitched component to a range of around 930-2700 Hz over a period of nearly one minute until 17:09 min (see Fig. 4.14). The anxiety-creating effect of the flocking crow calls might also be explainable by their similarity to a string tremolo and established cinematic and cultural codes. According to Chion (1994), a suspenseful or alarmed feeling, such as conveyed in dramatic music by a string tremolo, can also be achieved with a sound effect such as the stridulation of insects (p. 20). In this concert the culmination of chirps and high-pitched piercing cries develops a comparable soundscape.

The general obscurity of the sound production, especially concerning the sample playback, serves to support the imaginary dimension. Background sound layers alter the visual sounds' perception, and this will now be further analysed in the next section.

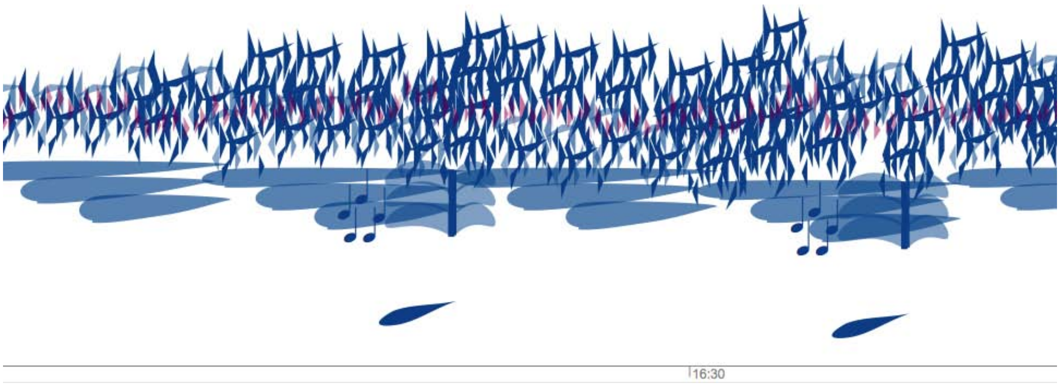

Figure 4.14 Cinematic scene at the end of Section III with a cluster of crow calls (around 16:10 - 16:40 min).

4.6 'Cinematic Soundscapes' – Backdrop Sounds/Accompaniment

Vinyl -terror & -horror enhance the sounds' relationship to movies and their emotional qualities using accompanying sound layers to locate the visual sounds in a certain mood (Garro, 2012, p. 105) and to influence the audience's ways of listening. As the soundtrack samples in this concert are not presented with visual information, they can be compared to the use of sound effects in radio dramas. Used in this 'stylized' way they might develop symbolic attributes and 'lead inward to realms of thought and emotion' (Cory, 1994, p. 338). The accompanying sounds 'add a value' that might engage the listeners emotionally through 'cinematic and cultural codes' (Chion, 1994, p. 21) and at an almost subliminal level (Chattah, 2015, p. 81).

Typical musical elements towards generating a frightening effect are tremolandi (Chion, 1994, pp. 20f) and crescendi. According to Flückiger (2012), 'unidentifiable sound objects' can create tension or trigger curiosity (p. 129). Since the 1960s unrecognisable sounds have been deployed to a high degree in science fiction and horror movies, often in relation to mysterious creatures (Flückiger, 2012, p. 128). Flückiger argues that a lack of information about a sound creates a feeling of uncertainty and of loss of control, and feeds the recipient's phantasy; also in relation to our instincts, unidentifiable sound objects and obscurity can create a feeling of fear. In nature noises can be a sign of danger and their identification might decide the hearer's specific reaction (Flückiger, 2012, p. 129). For emotional movie scenes connected to fear, threat or tension, bass seems to be a common tool too. In movies, noises in the low frequency area are generally used as a stereotype to characterise evil figures, as with Darth Vader in *Star Wars* (Flückiger, 2012, p. 179). Contributing to this stereotype of bass frequencies are two explanations, according to Flückiger (2012, pp. 209f): bass frequencies' general omnidirectional quality and their stimulation of the vestibular organ. Especially in combination with high volumes, the auditory stimuli become transformed into tactile sensations and envelope the audience. Furthermore, similarities with natural signs of potential danger, such as thunder, might increase the threatening effect. States of fear, discomfort or uneasiness can be heightened by the obscurity of the sound source, such as an unrecognizable rumble (Flückiger, 2012, p. 211). Although in electronic and experimental music, unfamiliar and low sounds are common on a more abstract level, however, in the context of Vinyl -terror & -horror's performance these sound elements might develop similar effects as in horror movies.

Chion describes two strategies for the musical accompaniment in movies. In an 'empathetic' relationship the music conveys 'a mood or rhythm match[ing] with the mood or rhythm of the action onscreen'; whereas 'anempathetic sound' is defined as:

> Sound—usually diegetic music—that seems to exhibit conspicuous indifference to what is going on in the film's plot, creating a strong sense of the tragic. For example, a radio continues to play a happy tune even as the character who first turned it on has died (Chion, 1994, pp. 221-222).

Although Chion refers to the relationship between sounds and visual scenes being projected on a screen, I see these strategies as also relevant for the imaginary scenes developed in this concert solely via soundtracks.

Vinyl -terror & -horror use such sound excerpts in a fragmented and collage form. Cut out of their original musical context – as tremolandi, crescendi and decrescendi of choirs, stringed instruments, sustained notes and noises, piano figures, or other short excerpts of string instruments (such as glissandi) – the samples are made to serve a new purpose. The arrangement of such fragments as ‘incomplete compositions’ on dubplates, as explained in the External Study, indicates that Vinyl -terror & -horror’s sample selection was guided by the criterion that the samples have a suspenseful effect.

A menacing soundscape with empathetic sounds, for example, occurs with the first entry of the footstep sounds at 3:39 min (Section I) (described above in 4.5 ‘Cinematic Soundscapes’ – ‘Visual Sounds’). The internal image of a running person is influenced by the crescendo of a narrow-band noise, which builds initially in the higher frequency spectrum but develops an intensifying component in the lower frequency area before the abrupt end. The temporal interval of the repeating crescendo, since its first occurrence at 0:58 min, has increased from every twenty seconds to every five seconds. At the entry of the footsteps sounds, the crescendo follows for the tenth and last time, and might now have established a strained or alarmed feeling in the listener. By the simultaneous addition of another unidentifiable sound effect – a glissando of a modulated sound at 3:40 min – a momentary feeling of suspense might be heightened (see Fig. 4.16, right, in section 4.7 Manipulations). When after a pause of half a minute the footstep sounds reappear at 4:27 min, audience members might still envision a person fleeing from a threatening or fearful situation. The duo’s backdrop sounds are empathetic in combination with visual sounds and match the mood of the scene (Chion, 1994, p. 222). They might evoke particular feelings and prompt listeners to imagine the emotional state of the running person.

However, these sound effects mainly develop their qualities in a complex context. At a passage between 6:55 - 7:41 min (Section II), samples of slower footsteps (at 6:55 min) first appear without any clear ‘empathetic’ background sounds and the emotional state of the walking person therefore remains indistinct. We hear a sped up spoken word sample, a wobbling piece of brass music, and pure pitches in an interval of around a perfect forth at 7:18 min (frequency1: 1226 Hz, ca. D#6; frequency2: 1673 Hz, ca. G#6). This new sound tapestry does not set a clearly fearful mood. The wobbling brass music seems partly humorous, for example. The pure pitches might work as alarming signals, yet the accompaniment of a crescendo of a lower pitched noise, starting at 7:15 min, subsequently disappears again and the tension disperses. Sounds of slow footsteps and a squeaking door (7:35 - 7:40 min) develop only temporarily an internal scene of a person in a room. From 7:43 min on, though, the stratification of various crescendi (until - 11:54 min) characterises a tapestry that is dense and generally uncanny again, framing the visual sounds of clock ticking, cuckoo clock and door squeaking (see soundscape described before in 4.5 ‘Cinematic Soundscapes’ – ‘Visual Sounds’). String and noise crescendi, several unidentifiable sound fragments (especially in the low frequency area at 8:02 - 8:12 min) and noise bursts (abstract sounds from the baked record at 8:12 min) frame the temporary scenes of visual sounds within an empathetic relationship. The momentarily build-up of menacing sustained sounds proceeds erratically and unexpectedly, featuring string tremolandi at 9:08 min and a female scream (at 9:11 min).

In certain passages, however, the background sounds also appear in an anempathetic relationship with the other sounds, presenting a ‘conspicuous indifference to the situation’ (Chion, 1994, p. 8). In the example of the clusters of crow cries (starting 15:34 min), the opposing relationship of the repeated naive fragments of a piano melody (14:20 - 15:00 min) and the repeated piano chord (15:00 - 15:35 min) might serve to intensify the horrific effect (see also 4.5 ‘Cinematic Soundscapes’ – ‘Visual Sounds’). The anempathetic relationship here might be compared to the contrasting effect of children songs used in horror movie scenes:

> [L]ike the monster, the music of the monstrous derives from its difficulty to apprehend with conceptual clarity. Thus the ‘innocent tune’ and its musical antitheses, although found in any cinematic genre, becomes doubly effective in horror, and redoubled by interplay with children (Link, 2010, p. 43).

The accompanying sound layers, however, condense the soundscape of clustering bird cries with empathetic sounds and support the feeling of suspense, see for example the falling ostinato of a string-related sound (approximately the pitches E4, D4 and C#4), the repeating fragment of a piano melody and the choir sample (approximately F4).

The focus in the duo’s concert on the emotions of fear and anxiety amplifies a particular inner imagery among its recipients. The accompaniment of the above-described visual sounds by background sounds in an empathetic or anempathetic relationship can influence the listener’s emotional state, and hence the imagery effect:

> With reference to Chion (1994) and Turri, Mustonen, and Pirhonen (2007), a listener in the grip of an intensely fearful experience would be more likely to respond to any sudden exosonic event with a physical reflex action (reflexive listening). He would also be expected to focus heavily on the identification (causal listening) and localization of the event source (navigational listening) so that he might have a greater chance to evade any potential threat. For this listener, the emergent perception is heavily shaped by particular virtual components of the sonic aggregate (in this case, intense affective state) (Grimshaw & Garner, 2015, p. 122).

The creation of cinematic soundscapes, especially in a horror movie context, and the strategy of bringing the listener into states of fear and anxiety, can amplify both specific forms of listening and the bind with inner images. Grimshaw and Garner’s postulation brings these virtual components of the sound close to the category of hallucinations. Bruce Kawin (2012) highlights in this respect that an ‘imagined horror provides entry to a made-up world’ (p. 3). Drawing on neurologist Oliver Sacks’s definition of hallucinations, Grimshaw and Garner (2015) consider that the ‘distinction here is between internal and external, not real and unreal’ (p. 118). Vinyl -terror & -horror seem to aim for such contrasts in their turntable concerts. The imaginative dimension they create might be of such intensity that it could be considered an internal reality. The sound effects’ references moreover activate the internal references of the listener (Flückiger, 2012, p. 161), although contrasting with the external reality onstage. The numerous manipulations and abstract sounds, referring to the mechanics and materiality of the medium, seem to contrast with as well as to complement the cinematic soundscapes. In Vinyl -terror & -horror’s performances the blend of internal and external realities seems therefore paired with the dialogue between media and material reality.

A detailed analysis of the sample manipulations and abstract sound production through the medium in the following sections will further explore the contribution of the specific turntable setup to the musical context and cinematic soundscapes. Each manipulation or prepared record figures as an element in the greater context of the performance. Although partly remaining in the background, these smaller contributions are media-specific and highlight the dialogue between media and material reality.

4.7 Manipulations

The sample manipulations generally fuse with mediated sounds from the dubplates and other records, obscuring the sound production. The duo’s underlying concepts appear to defamiliarise the samples as well as interrupt the musical direction to increase suspenseful atmospheres. As Link (2010, p. 43) indicates, the denial of structure and teleology, and the avoidance of completion, have a considerable potential for conveying ‘monstrosity’ and general unsettledness. These criteria correspond to several of Vinyl -terror & -horror’s strategies for manipulating the record samples via the alteration of playback speed and direction (turntable tower, off-centred record, backwards playback, separate motor) and via restructuring the samples’ order (skipping, cut-ups, record shards, faulty automatic record player).

With her turntable tower Christensen manually effects actions that create a disorientation of musical continuity. At the beginning of the concert (0:23 - 0:46 min), a distinct cut-up record of ‘famous Romanian tangos’ on the top layer (P4) (see Fig. 4.15, left) provides a random selection of cut musical passages and creates an off-centred playback. Christensen additionally skips in a significant way through the record, using her right hand to let the tone arm fall on random spots. These conspicuous actions, also used for the transition from Section III - IV, interrupt and re-arrange the musical samples. Christensen's manipulated playback allows only the identification of fragments, such as a single major chord at the beginning, pizzicati of stringed instruments, and short piano figures. Christensen highlights the simple and manual access to arbitrary positions on the record disc surface, and thereby to the record's ready-made sounds, which is specific to this phonographic medium. The instability of the extended central spindle, which is required to support the top layers, furthermore decentralises the records, resulting in an off-centred playback related to the visibly decentralised movement. If the distance between the disc's centre and tone needle decreases, the playback speed becomes slower, lowering the pitch of the samples; if the centre hole is closer to the tone needle, the grooves are played faster. The skewed movement causes a constant up and down glissando in the playback.

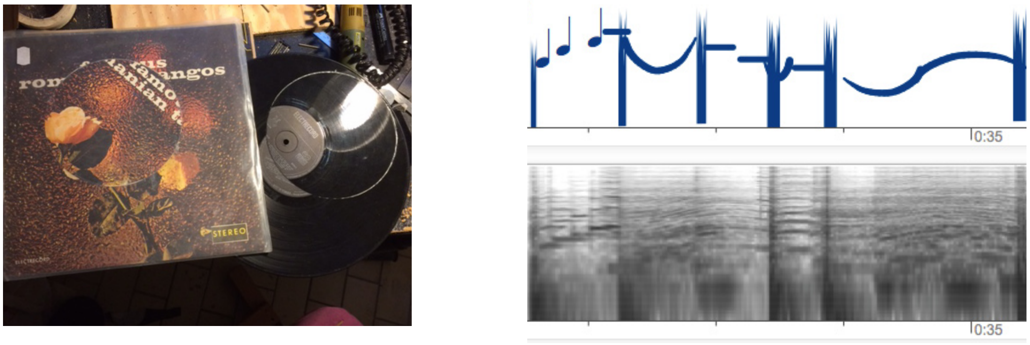

Figure 4.15 Left: Tango Cut-up Record with a relocated circular part. Photo © G. Christensen. Right: Excerpt of graphical representation.

At another point featuring wobbling playback via the turntable tower (at 17:35 min), Christensen steers the extension of the central spindle with the palm of her left hand to control the spindle's movements around the centre. This bodily interaction of the performer with the construction demonstrates the construction's qualities as an instrument, linking the manipulated sounds in a distinct way with the manual actions of the performer.

At 3:40 min, for example, Sørensen varies the speed with her separate motor, which allows gradual speed changes, in order to raise and lower correspondingly the pitch of the record content (see Fig. 4.16, right). The sped up voices at 6:58 - 7:12 min might have been created, too, with this motor; that defamiliarisation prevents recognising the speech content, although it is still identifiable as human speech. An off-centred record with a jazzy brass instrumental melody at 7:05 - 7:30 min (Disc

11, yellow label) is played at a varied speed and was part of the described cinematic soundscapes featuring footsteps.

The crescendi in the concert are mostly samples from dubplates, though they originate partly, too, from live backwards manipulations (C. Sørensen, personal conversation, May 16, 2016). The Vestax turntables borrowed from the venue are equipped with a reverse button; a reversed spin of the record transforms the envelope of the recorded sound; therefore a sample with a strong attack and decreasing energy in the decay becomes a crescendo with an increasing intensity followed by an abrupt decay. This reversed 'trajectory in time' leads to the recognition of the sound as 'backwards' (Chion, 1994, p. 19); for example, with the crescendi at 4:52 - 4:55 min (see Fig. 4.16, left). In this concert, however, it is nearly impossible visually to detect at which point this manipulation is applied. The blending of live and pre-recorded manipulations, as well as the minimal movement of pushing the reverse button, impede following this form of manipulation. However, the glissandi and crescendi resulting from backwards manipulations support the imaginary dimension by adding particular values to the cinematic soundscapes and atmospheres (as seen in the previous examples). Reversed phenomena convey a general 'strangeness' or 'other-worldliness', a tool also found in film post-production, as in the 'Black Lodge' scenes in David Lynch's TV series *Twin Peaks* (Toop, 1996, p. 268).

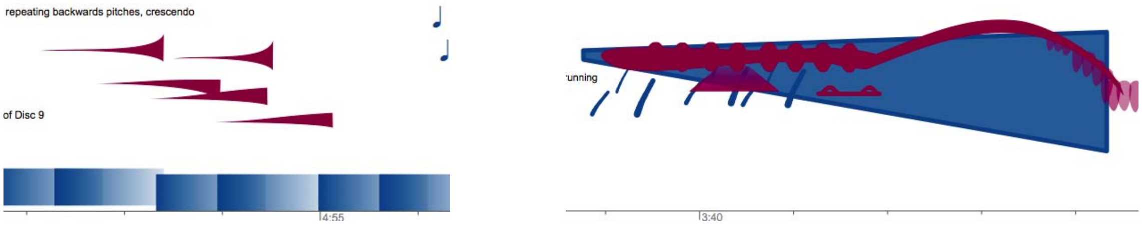

Figure 4.16 Transformed crescendi via reversed playback (red signs, left) and glissandi created via speed manipulations (red signs, right).

Other manipulations seem to follow the strategies of superimposing multiple shorter sound layers and of disrupting musical orientations (such as described in the transition from Section III - IV in 4.4 Musical Context/Structure). Christensen deploys the prepared double stylus cartridge, at 9:00 min for example, to play two nearby grooves of a disc simultaneously and eventually to produce scratching sounds, which are already described in the isotopy of Section II in 4.4 Musical Context/Structure. Generally, these manipulated samples are difficult to distinguish within the dense sound mix. At one of most suspenseful passages in the concert (at 10:15 min), though, Christensen drags the tone needles sideways over the disc surface, creating slow scratching sounds, which fuse with the following upwards sweep of the chirps (from 3 - 7 kHz). Such sharp frequencies, in the most sensitive area of human auditory perception (1 - 5 kHz), might convey a thrilling effect (Flückiger, 2012, p. 224). In this way, at this passage in the concert the uncomfortable high pitches and manipulations of the samples assist in heightening the uncanny atmosphere of the background sounds; yet when the doubled cartridge is guided over the disc surface, the scratching sounds are linked with that visually conspicuous movement. This form of embodiment simultaneously contrasts with the imaginative dimension and might bring the focus back to the performer's actions onstage.

In Vinyl -terror & -horror's concert, cut-up records and Christensen's record shards blend, in random order, short samples with abstract noises from the record material. By restructuring their discs asymmetrically (e.g. see Figs. 4.8 and 4.17) they create an irregular sample order and remove any form of narration or logical continuity, something that might convey a feeling of discomfort in support of the duo's horror movie effects (for example, at 6:19 - 6:37 min with Disc 10, or at 10:25 - 10:45 min with Disc 15). The unevenness of the cut-ups' surface causes the unpredictable re-arrangement of samples: the needle might jump back into the groove from before, creating a loop, or else into a random new groove. Each skip is accompanied by a noise burst from the glued borders of the different parts. Sørensen's cut-up record passages, however, skipping through several music styles (6:20 - 6:40 min, 10:25 - 10:45 min), might be considered humorous elements.

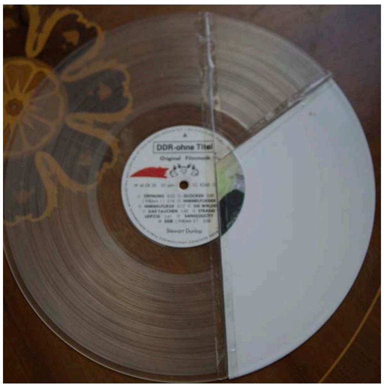

Figure 4.17 Cut-up (Disc 10) used at 6:19 - 6:37 min by Camilla Sørensen.

Christensen's record shards seem to amplify the feeling of unsettledness, as they destroy the samples' existing structure due to their broken shape and uneven surface. At 5:57 min in Section I and again at 21:23 min in Section IV, the record shards are arbitrarily distributed in a tremendous stack on top of the platter (P5), piled on top of each other. Furthermore, due to the rotation the record shards are likely to fall off the platter and seem therefore difficult to control. The tone arm has to be steered and stabilised to remain in a groove and to prevent it from popping off. Predominantly random scratches and occasional noise bursts are the product of these harsh and, for the needle, harmful actions. Here, this deliberate deployment of chance procedures is prevalently connected to the denial of musical disorientation to create discomfort in the audience members and serve for a horrifying effect. At the same time, these prepared records contradict the imaginary scenes with their emphasis on the specific physical sound production and the dependency on the here and now of the performance.

The failing playback of the small 1960s record player (e.g. at 20:30 min) contributes to musical disorientation with brief, randomly chosen samples. The vintage record player succeeds in playing a single record automatically, but only for a short snippet of the record content, before the tone arm removes itself from the record's groove; the next record on the spindle then falls down and the tone arm repeats the procedure. The automatic movement of the tone arm is clearly visible, as are the single discs gathering on the centre spindle. This chance-related manipulation only requires the performer Sørensen to reload new single discs on the spindle. As this device is used to end the concert, Sørensen deliberately reconceives the record player's dysfunctionality as a desired feature. Similar to a worn down or scratched vinyl record, the record player's malfunction can be considered as a trace of its age, a vulnerability viewed anthropomorphically as a quasi-human quality (Bartmanski & Woodward, 2015, p. 20). The record player's failure to play the single records in full length generates its individual acoustic signature and distinct phonographic embodiment. The device's behaviour is unpredictable: as Sørensen says, it 'makes its own kind of composition' (Sørensen, 2014). Vinyl -terror & -horror's setup emphasises such technological idiosyncrasies because they establish links with the medium's specificity. The process of composition and sound production is left to a faulty reproduction device.

In the concert the majority of the manipulated sounds have an ambivalent role. They contribute to the background texture to create suspense and to assist in the build-up of fearful cinematic soundscapes. Manipulated samples often work in the background and remain at times hardly recognised. The off-centred record at 15:47 min (Disc 21), for example, hardly emerges from the overwhelming cawing of birds. The prevailing deployment of automatic manipulative processes fosters the obscurity of the sound production. Several manipulated sounds thus might appear as 'unidentifiable sound objects', which supports the creation of uncanny atmospheres (see previous sections, Flückiger, 2012, p. 129) as well as training the spectators' focus on inner images. Some conspicuous physical movements, though, draw the attention to the sound production and physical materials onstage (e.g. Christensen's turntable tower, record shards, faulty record player). This similarly ambivalent role of abstract sounds from the medium and the focus on the materiality and mechanical functions of the instruments will be further discussed in the following section.

4.8 Abstract Sounds from the Medium

In Vinyl -terror & -horror's performance, pops, crackling and other abstract sounds from the medium are mainly caused by their prepared objects: for example, an unevenness in the vinyl material (e.g. scratched disc surfaces, record shards, baked record surface) or other mechanical disturbances (e.g. letting the needle drop) (as introduced in the External Study). The record preparations in part create unique links between their materiality and the sounds. The audience can follow the sound production and discern these prepared objects as a sonic documentation of the bricolage and sculptural sound exploration the artists have engaged in prior to the concert. These embodied sounds provide a form of knowledge about the materiality, the mechanical operations, and the underlying compositional ideas.

Regarding the noises of malfunction and distortion from their 'broken' devices and artefacts, Vinyl -terror & -horror seem to tie this to the paradoxical feeling of fear in horror movies that unites at once distress and joy (Carroll, 1990; Hanich, 2010). In the concert, distortion noises, such as in playback media are often unwanted and avoided, gain here a desirable sense, as the duo themselves state:

> The convergence of these sounds, materials and performance techniques builds up an unpredictable narrative which is mixed with a disastrous paranormal picturesque horror soundscape that includes all the sounds that you might under other conditions prefer to avoid hearing from your record player (Vinyl -terror & -horror, 2013a).

This paradox uniting pleasure and distress leads to the ambivalent role that the diverse abstract sounds from the medium play in the dialogue between media and material reality. The low-frequency rumbling of an uneven disc surface, for example, supports the unsettled atmosphere of the cinematic soundscapes; but at the same time it contrasts imaginary dimensions with references to the materiality and mechanic processes of the sound production and thus to the here and now of the performance. Here such noises distract and abstract away from the cinematic soundscapes. They confront the immaterial sounds of the record discs with live produced sounds. The 'terror and horror' of the duo's name, too, is not only represented in the use of horror movie soundtracks: the high amount of distortion, appearing as unwanted subjective noise, as well as the broken or modified discs and turntables themselves can be considered as horrifying (the latter will be further explained in the next section). In the confrontation of material and media reality the abstract noises have associations with both inner and external realities.

The baked disc demonstrates this ambivalent status (see Fig. 4.10 in Part I; for example, at 7:55 - 8:26 min). The disc's pronouncedly uneven and distinct surface generates a specific texture of noises; its visibility is restricted due to dimmed light, though, which obscures the reference to its material texture. On the other hand, the abstract noises in the low-frequency spectrum contribute to intensify an uncanny atmosphere in Section II. The intention of using these live produced sounds in addition to the mediated sounds can be observed in their syntactic order. Christensen waits until 7:55 min for the entry of these noises so that they follow a series of mediated sounds of irregular reverberated noises in the low-frequency spectrum. A similar purposeful supporting role of the low rumbling noises can be observed in the most menacing soundscape after the ticking sounds at 10:57 - 11:57 min. The harsh constant texture of noise bursts accompanies the crescendo of string tremolandi. As a combined sound element they build up an intensifying section before this powerful sound wall abruptly drops (see Fig. 4.18). As soon as the crescendo of the mediated sound ends, Christensen also removes the tone head of the prepared disc to stop the low noise fabric. Her action coordinates with the sounds and transforms the material sound of an uneven record surface into an integrated element of the cinematic soundscape; the noise texture, though, retains its reference to the record's materiality. The performer's actions link these noises to the instrument and to the here and now of the performance. The abstract sounds' material reality supports the scene of fear and the listeners' internal processes, while at the same time opposing them as a distinct external reality.

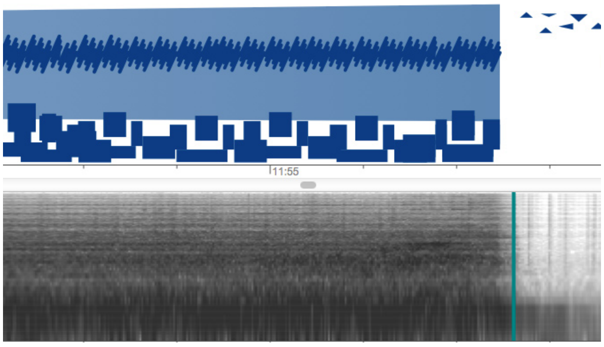

Figure 4.18 Low-frequency noise texture (irregular squares) produced by the baked record accompanied by a crescendo and string tremolandi.

Noise bursts produced by cut-up records also contribute to the general unsettling horror atmosphere. Noise bursts mainly occur in less eventful parts, though, such as at the beginning and end of the concert, so that their references to the records' materiality appear more distinct. Each time the needle crosses a cut section of a cut-up record, a broadband noise burst of a length of less than 100 milliseconds occurs with a decrease in energy towards the higher frequencies. If the tone arm remains in a nearly stable position the bursts can occur in short, crooked loops and temporarily convey a structural feeling, such as at 0:50 min, 3:45 min, and 15:10 min. Noise bursts from cut-ups can also mark each entry of various musical samples from different disc pieces (at 6:20 - 6:40 min). In their irregularity and sound quality the abstract noise bursts of Christensen's loose record shards generate an unpleasant feeling, especially at the section of the record shards at 5:57 - 6:50 min, where the shards also cause scratch sounds (see also the section 4.7 Manipulations).

The distorted sounds merge with the mediated backdrop sounds, assisting in amplifying the uncanny atmosphere, while at the same time highlighting the process of producing these sounds in an embodied way. These cross-references from narrative sound to abstract sound, from imaginative to real, from immaterial to material facilitate the occurrence of multiple levels of listening. The oscillating role of obscurity in this concert will now be further discussed in the following.

4.9 Presence – Mediality

Vinyl -terror & -horror's equipment has the appearance of a uniquely sculptured plenitude of partly broken record players, which seems to engender a 'sculpted presence' (Bartmanski & Woodward, 2015, p. 94). The presence of self-made devices onstage can even dominate the human presence of performers (Barthelmes & Osterwold, 1996, p. 237, see Chapter 2), and this appears applicable to Vinyl -terror & -horror's performance. In respect of the duo's background in creating various installations, it seems the duo present moreover a hybrid between installation and performance. The dominance of the conspicuous setup with abundant record players might support in two ways the strategy of the duo to focus on the creation of uncanniness and cinematic soundscapes. First, the assembled objects might convey monstrosity solely by their sculptural appearance. Second, inner imaginative sound worlds might become amplified by obscuring the sound production via the superimposed playback of multiple turntables and the dominance of automated manipulations

The duo's horror theme thereby applies, in addition to the acoustic dimension, also to the performative aspects. This assumption is supported by the article title: 'Watch in horror – and awe – as these artists mangle vinyl records and turntables to make music' (Ediriwira, 2015). Vinyl -terror & -horror's objects and devices are characterised by destruction and malfunction in numerous respects, especially through the turntable tower, the baked record, the loose record shards and the faulty vintage record player. The destructive and sculptural approach amalgamates with the instruments' appearance, in this almost representing an act of violence. Christensen's sculpture particularly maintains a visually conspicuous tension between destruction and construction, as the cut, mutilated turntable-halves are still functional and play records. It might be imagined by what force and which tools these record players could be cut into halves. The object's crude and rough-looking shapes demonstrate an 'abnormality', which might be comparable to monsters in horror movies. In Carroll's (1990) argument concerning the 'paradox of horror', horrifying creatures emanate an ambivalent effect between attraction and deterrent:

> Obviously, the anomalous nature of these beings [monsters] is what makes them disturbing, distressing, and disgusting. They are violations of our ways of classifying things and such frustrations of a world-picture are bound to be disturbing. [...]
> But for the self-same reason, they are also compelling of our attention. They are attractive, in the sense that they elicit interest, and they are the cause of, for many, irresistible attention, again, just because they violate standing categories. They are curiosities. They can rivet attention and thrill for the self-same reason that they disturb, distress, and disgust (p. 188).

Considering the context of horror movies in Vinyl -terror & -horror's concerts, as provided by their project name as well as their soundtrack samples, the audience might well consider there to be a connection between the abnormality of the instruments and the horrifying creatures in movies. Vinyl -terror & -horror's record objects and turntable sculptures might therefore function as curiosities, garnering attention and interest with their brute materiality while their destroyed appearance might irritate and disturb. This ambivalence and paradox of horror, uniting unsettledness and joy, has already been discussed in relation to the abstract noises of the objects' materiality (see 4.8 Abstract sounds from the medium). Other unusual and uniquely modified instruments were also presented during the concert evening (for example, Hanna Hartman's set using amplified clay pots and straws), which might have weakened the duo's object's conspicuousness and their possibly disturbing appearance.

Vinyl -terror & -horror's setup's similarity to music boxes and sculptures (such as Tinguely's mechanical sculptures) might bring the performance closer to a sound installation. Rather than focusing on manual interactions and playing techniques (as in Joke Lanz's case study), which would emphasise the performer's body, Vinyl -terror & -horror have created a setup that produces manipulations mainly through automatic and chance-related solutions. With their conspicuous appearance and enduring autonomous functioning comparable to music boxes, the record players are brought into the foreground, conveying a form of ‘phonographic presence’. This might correspond to Christensen and Sørensen’s strategic planning. The numerous record players and conspicuous discs in motion might support the duo’s cinematic soundscapes, since they obscure the sound production. In this way the listener’s focus might be less drawn to actions and sound sources onstage. The high number of active record players, records that are partly hidden in the tower construction, and two performers using similar instruments and sounds, confuse the comprehension of the sound production and sustain a lack of transparency. In solo concerts the actions onstage can be followed more easily than in concerts with several performers, such as here. The fixed structures on dubplates with superimposed sound layers additionally restrict the detection of single sounds sources. Through the combination of dimmed light in the venue and limited visual information regarding sound production, the visitors’ attention seems invited to momentarily drift away from the events onstage without the feeling of missing any distinct actions.

Generally speaking, a strong presence of engaged performers and embodiment of the sound production might lead the listener’s attention to the events onstage and away from internal associative processes. However, Christensen and Sørensen generally do not consider themselves as engaged ‘performers’ (G. Christensen, personal communication, 28 August 2014), which seems to provide another reason for the foregrounding of their sculptural turntable setup. In this study’s performance, the duo’s interplay appears more coordinated than dialogical, with little eye contact or other signs of non-verbal communication occurring during the concert. As mentioned in 4.4 Musical Context/Structure, the impression of the performers’ separated and individualistic roles in the concert might be conveyed through their autonomous inventions, ‘unfinished compositions’ on dubplates, and prearranged concert structures. In comparison to the vital style of Joke Lanz, Christensen and Sørensen appear rather subdued – in Hegarty’s (2013) terms relatable to a ‘still focusedness’ type – and they even allow short verbal exchanges during the concert (at 11:30 min and again at 16:45 min).[18] Their temporarily less engaged performing style might generate moments of disconnect and appears less dependent on a feedback loop between performers and audience members. Directness in interacting with the devices, too, as highlighted in Joke Lanz’s effective manner of switching to sleeveless records prepared in a record stand next to him, is not underlined in Vinyl -terror & -horror’s performing style. Dubplates and the use of a high number of record players facilitate the presentation of a constant sound layer, so that a record change is less noticeable within the overall sound (at 9:35 min, for example). This prevents forms of embodiment such as linking the sound with the playback of a particular record. At times the artists nearly disappear behind the table onstage to pick out the next records and spend time taking the records from their covers and sleeves (at 14:25 min, for example). At 20:55 - 21:29 min Christensen prepares conspicuous, stencil-like record parts but then changes her mind; the visually conspicuous action, though, might have created expectation or curiosity in some audience members about the sound of such an object.

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[18] In an interview with the author (Berlin, 28 August 2014) they explained that this only happens either to confirm following the agreed structure (at 11:30 min) or to end the concert (at 16:45 min).

The balance between human presence and phonographic presence, however, shifts occasionally. In sections featuring random and spontaneous actions caused by the performers, the performers' presence appears more prominent. Christensen's onstage presence is accentuated, for example, by the use of the record shards (at 5:57 min) and the movable cartridge (at 9:00 min); she prevents the shards from falling down and manually redirects the tone arm so that it remains on the uneven record surfaces. In general Christensen seems to have chosen more objects to interact with manually than her partner Sørensen. Sørensen's interaction with the automatic 1960s record player, though, is conspicuous (e.g. at 20:30 min). This small device attracts much attention through its independent role towards the end of the concert. Highlighting an aged device in this way draws focus to its materiality and mechanics. By constantly 'feeding' the device with new single records in short intervals in order to change the automatic sample selection (nine discs within two minutes), Sørensen establishes a short ritual presenting a dynamic interaction between human and machine. The concert ends only after Sørensen switches the device off rather than fading its sound out. This underlines the autonomous character it gained onstage during the concert.

The mix of disembodiment and embodiment in the predominantly obscure sound production can generate phonographic and human presences that are in a dynamic relationship to the imaginative and material sounds. By the reduction of human actions onstage and the preference for automatic solutions underlining the phonographic and machinistic presence, the turntable setup reduces embodied actions. However, in its obscuring of the sound production, the setup appears to support imaginary scenes. In the setup, the destruction of the devices and objects highlights their specific materiality and monstrous appearances; contrasting the imaginative scenes by referring the sound events back to the here and now of the performance.

Conclusion

The case study of Vinyl -terror & -horror highlights a sculptural approach in experimental turntablism. In their performance, the duo reveal the media-specificity in a dialogue, in which the objects' material reality alternately complements and contrasts with the media reality of the samples. As shown in Part I, Camilla Sørensen and Greta Christensen's encounter with the phonographic medium results in a rich collection of sculptural experiments. Inspired by their background in visual arts and the encounter with the Berlin DIY music scene, the duo's concepts encompass optical or pragmatic criteria related to the medium's specific link to visual, sensual and aural dimensions. Alongside this, the group's sample selection (based on dubplates, released and self-released records) with a focus on the sounds' abstract qualities, as well as on their referential aspects for the creation of 'cinematic soundscapes' mirrors their strong tie to the horror movie genre.

Regarding my research questions, the performance analysis shows furthermore how the artists' strategies, their bricolage and playing techniques intersect in the performance situation. The horror topic's impact is not only epitomised in the record collection but also in the manipulated and abstract sound production, the structural decisions, and the presence of the instruments. By drawing on the samples' visual and emotional aspects – especially focused on fear and suspense – Vinyl -terror & -horror seem to construct fictional worlds and nightmarish horror scenes (conspicuous examples are samples of footsteps, crow calls and 'unfinished compositions' of empathetic sounds). They simultaneously engage in a distinct way with the embodied and abstract sound production resulting from the record players and vinyl disc preparations themselves (such as the turntable tower or baked record). Their individual bricolage, galvanised with aesthetics of failure and destruction accentuates the medium's materiality and determines a distinct sound production: their objects and curiosities automatically randomise the sample playback (cut-ups, vintage record player), manipulate mediated sounds (off-centred playback from turntable tower or off-centred records), and generate abstract noises from the medium itself (baked record, resonating record disc by tapping). The material aspects of their instrument setup appear as sonic and structural tools to intervene with or support the cinematic soundscapes. These performative aspects of manipulated and abstract sound production in the context of the horror theme reveal the medium's specific versatility to act on an imaginative, embodied and sculptural level. Due to the overall predominant obscurity of the sound sources, the objects' presence and the use of composed elements (through the duo's released records, dubplates, and loose structural ideas communicated before the concert), the performance's feedback loop between audience and performers fades into the background. A fusion between composition and improvisation, in combination with sculptural preparations, will be explored within a completely different musical context in the following case study on Graham Dunning.

5. Graham Dunning

The focus of this final case study is London-based sound artist Graham Dunning and his project 'Mechanical Techno – Ghost in the Machine Music'.[1] Although strongly inspired by Vinyl -terror & -horror's sculptural setup, Dunning pursues different concepts and has created a phonographic 'rhythm and drone' machine. Using electronic and electro-acoustic sound production, the British turntablist generates a 'live dubbed rhythmical collage'[2] with repetitive beats in looped patterns, inspired by electronic dance music (EDM).[3] In this way he explores the fringes of experimental and popular music using a mechanical techno machine prone to inaccuracy and faultiness. Dunning's unusual sound production, using patterned record discs to trigger instruments and synthesisers, sees the dialogue between media and material reality expand into synthetic and acoustic dimensions. The prepared disc surfaces interact with external instruments such that each stack provides a distinct set of rhythmic figures corresponding to the discs' surface patterns.

In this chapter, following the methodological framework of Chapter 2, the External Study explores Dunning's music box-like automaton and its sequencing function, with a focus on his modular stack system. The chapter's performance analysis, accompanied by a graphical representation and concert video (see Appendix C, Video Case Study 3), draws on Mark J. Butler's (2006) theories of rhythm and meter in EDM in order to tackle the ambiguous rhythmic patterns in Dunning's concert. One might compare the rhythmical inconsistencies of Dunning's 'Mechanical Techno' machine to Jean Tinguely's 'meta-mechanical' sculptures. As this case study will show, the creation of irregular beats, the blend of mediated and live produced sounds, and the structural organisation, all depend entirely on the material objects and the operative aspects of Dunning's ramshackle mechanical apparatus.

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[1] While Graham Dunning chose this title for his turntable project, it was not named as such on the concert flyer. See Dunning, G. Projects – Mechanical Techno: Ghost in the Machine Music. Retrieved from https://grahamdunning.com/portfolio/mechanical-techno-ghost-in-the-machine-music.

[2] Graham Dunning uses this description in the programme notes for several concerts.

[3] Hereafter this chapter uses the abbreviation EDM for electronic dance music.

Part I External Study

5.1 Artist Portrait

Graham Dunning (born 1981 in Burnley, UK) studied physics and humanities in Manchester before moving to London in January 2011.[4] He has been based in London since then where he is primarily active as a self-taught musician and sound artist. As a child Dunning learned the keyboard and in his teenage years, as a member of a punk band, he taught himself bass guitar and drums. During his studies, he developed an interest in electronic music and started to purchase devices such as second-hand synthesisers and MiniDisc recorders. In the band Blood Moon, which he founded together with performance artist Louise Woodcock, Dunning started experimenting in improvisations with DIY electronics and synthesisers,[5] aiming for an industrial sound:

> Blood Moon was loud, Dionysian, primal. Doom, feedback, motoric rhythms, sub-bass, screaming. We made our own amps and distortion pedals. We practised and recorded in a derelict Victorian mill, it felt very industrial (Dunning in Smith, 2016).

Since then, influences such as his collaboration with Gary Fisher have led Dunning to further sound art-related projects in various formats (Smith, 2016). In 2009 Dunning deployed modified vinyl discs for the first time; at the same time he is interested in electronic dance music and occasionally plays DJ sets. Since 2010 his installations and sculptural works for exhibitions have incorporated found objects (for example, diverse household objects) and media devices (for example, tapes, Walkmans, radios and home-made electronics). As a member of the British art group AAS Dunning has explored themes concerning ritual and cult, in performances, installations and participatory art (Smith, 2016).[6] On his radio show ‘Fractal Meat on a Spongy Bone’ on NTS Radio London, which has run since 2012, Dunning often features artists he has collaborated with over time or met during his music career. Additionally, he has run several workshops concerning experimental practices, such as those pertaining to turntables, and has taught Experimental Sound Art at the Mary Ward Centre in London for approximately three years (at the time of writing). Until around mid-2015, Dunning’s main income was not related to his art, and this afforded him a certain freedom in developing his artistic projects (G. Dunning, personal communication, 11 April 2017).

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[4] He studied English literature, philosophy, politics and history, G. Dunning, personal communication, May 2016.

[5] He is still using the synthesiser Yamaha CS-5 from this time, as he mentioned in a personal communication, 30 March 2014.

[6] See, for example: Dunning, G. AAS | *The Cult of Possible Elements* – performance installation (London). Retrieved from https://grahamdunning.com/2014/03/17/aas-the-cult-of-possible-elements-performance-installation-london.

Today Dunning performs with the turntable in solo improvised concerts and in various collaborations. In his current duo project with saxophonist Colin Webster, for example, he focuses on a percussive sound production using just one turntable and a set of found objects such as brushes, dentistry tools, animal bones, marbles and pencils, which he deploys on the turntable base or on vinyl discs. Alongside this, Dunning has reduced his sample selection to dubplates of his own field recordings (Dunning, 2015).

Dunning's best-known turntable project, 'Mechanical Techno – Ghost in the Machine Music', sees him create techno music in live performance using a 'turntable music machine'. Several modified record discs are vertically stacked up and connected to synthesisers or electro-acoustic instruments in order to generate loop-based drones and rhythmic patterns. Dunning re-envisions the turntable and discs as a mechanical version of a sequencer. Similar to a common sequencer, this turntable sequencer allows him to programme a series of events to control the connected electronic instruments or devices at a specific time (Snoman, 2010, p. 179; Butler, 2006, p. 327).

The idea of machine-generated music is linked to his previous project, 'Music by the Metre' (2012) (G. Dunning, personal communication, 6 June 2016). Dunning initially aimed in that project to create an audio equivalent to Giuseppe Pinot-Gallizio's 'industrial painting' (1959). Pinot-Gallizio's industrial paintings on machine-painted fabric were meant to be sold by the meter in order to subvert the value of art objects (Sadler, 1999, p. 37). As with the Italian artist and Situationist, Dunning intended to emphasise the mass-production of art, and 'Music by the Metre' comprised spools of tape on which compositions of abstract and repetitive patterns in looped and collage-like structures were recorded and which could be bought by the metre (for example, at the Supernormal Festival in the UK in August 2014).[7] Alongside this project, Dunning followed up on the idea of machine-like music production. Aiming for machine-produced rhythmic figures, achieved through DIY electronics and loops, he has since 2009 experimented with various record preparations, such as scratched and blanked-out record surfaces (Dunning in Smith, 2016). From this his 'Mechanical Techno' project started to develop further. In 2013 he discovered how, bypassing a synthesiser's voltage control, one can trigger the synthesiser's envelope using an external signal from a record scratch (Smith, 2016). This routes the synthesiser's VCA and the VCF to allow the oscillator signal through. In the same year Dunning used pins glued on the record surface to hit, with each rotation, piezoelectric microphones hanging down from stands. Piezo microphones respond to vibrations from a solid surface (Holmes, 2008, p. 184); with each strike the contact microphones fire a voltage to trigger a connected drum machine (Dunning, 2015). This method lets Dunning receive a rhythmic figure by preparing a specific pattern of pins on the record surface to trigger the drum machine's sounds at distinct moments in the rotation (see further explanation in the next sections). For practical reasons, this 'Mechanical Techno' setup was originally meant as a studio solution. In January 2014, though, Dunning developed a live version (Smith, 2016) and performed with it at *Splitting The Atom* in Brighton on 2 February 2014.[8] The final crucial step toward the present shape of Dunning's setup was made with his shift to the vertical turntable sculpture, which has only one turntable motor. With several independent turntables, Dunning had difficulties synchronising the rhythmic patterns on the discs. After seeing a video demonstration of Vinyl -terror & -horror's vertical turntable sculpture, he realised that this stacked arrangement could solve his problem (Dunning, 2015).[9] As all records run on one spindle at the same speed on only one turning platter, he can align all patterned discs with each other in the same loop. The concert on 19 September 2014 at Power Lunches in London (which is the subject of this chapter's performance analysis) was one of the first performances where Dunning played with the vertical turntable construction.

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[7] See documentation: Graham Dunning (20 August 2014), Music by the Metre While-U-Wait at Supernormal Festival – documentation. Retrieved from https://grahamdunning.com/2014/08/20/music-by-the-metre-while-u-wait-at-supernormal-festival-documentation.

Dunning focuses not only on the functional role of this turntable machine, which produces sequenced patterns of electronic sounds via mechanically turning vinyl records. He furthermore applies techniques from dub music to provide the machine with the 'ghostly voices' (Toop, 1996, p. 118), the dub effects typically develop:

> [T]he basic idea was to build a music making machine, then to perform a live dub on its output to release the ghost in the machine. Lee Scratch Perry described Dub as 'the ghost in me coming out' – this informed the project. I use the mixing desk as an instrument and employ standard dub techniques and effects (and their cheap digital equivalents) to shape the sound: channel EQs, spring reverb, digital delay with analogue feedback, external EQ (Dunning, 2015).

Dunning's subtitle, 'Ghost in the Machine Music', refers in this way to Lee 'Scratch' Perry. Originating with Jamaican producers and considered a precursor of remix culture (Toop, 1996, p. 118), dub techniques generate sound extensions as a result of doubled layers and echoes of the original track. This kind of remixing works mainly via the control and overlap of several delay and feedback effects on the mixing desk.

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[8] See: Dunning, G. [Dullbedsitblogger] (14 February 2014). Graham Dunning live @ Splitting The Atom 18 February 2nd 2014 [Video file]. Retrieved from www.youtube.com/watch?v=X4xQdOtgkZs.

[9] Dunning refers to the video: Vinyl -terror & -horror (29 December 2011), studiomix [Video file]. Retrieved from www.vimeo.com/34338112. On 4 March 2014, Daniel Montesinos-Donaghy's posted this video in *Thump Vice Magazine*. Retrieved from https://thump.vice.com/en_uk/article/vinyl-terror-horror-are-making-djing-seriously-weird.

Dunning's title 'Mechanical Techno' was at first just a 'catchy name' for a demonstration video on YouTube (G. Dunning, personal communication, 31 May 2016).[10] It serves as a loose genre description and refers to the machine's principal functionality as a sequencer, based on mechanical features, of electronic sounds. Techno, as a genre of electronic dance music (EDM), is considered as starting in the 1970s, linked to the German band Kraftwerk,[11] and especially to a group of US musicians in Detroit, namely Derrick May and Juan Atkins, active in the mid-1980s and the 1990s (Poschardt, 1997, p. 325). 'Techno' was once the general terminology for electronic dance music (Sherburne, 2013, p. 319) but from 1988 on developed into a distinct separate genre (Snoman, 2010, p. 283). In comparison to its many variations and to similar genres such as house music, today techno is characterised by a minimal 'stripped down feel' with a 'complex interplay of rhythms' (Snoman, 2010, p. 284), also defined as 'metallic, brittle, and robotic' (Demers, 2010, p. 97). Dunning's dub-techniques based on reverberation and delay effects align his music with the subgenre of dub techno (Demers, 2010).

Dunning was not the first to use the turntable as a sequencer for the production of techno-style music. In 1979 German producer Thomas Brinkmann (whose pseudonyms include C.U.T., Ester Brinkmann, Jim Ingram, max.E, max.Ernst, Soul Center and Tom Assman) developed the idea of physically cutting the surface of vinyl discs with a cutter knife: these scratches produce clicks and pops – abstract sounds from the needle distortion. By cutting the discs during the disc rotation with a razor, Brinkmann changes their rhythmic patterns, which develop increasing complexity during the performance:

> I started to experiment with cutting records with a knife. I would take a regular record, the last loop [the run-out groove], and I would cut formations with a sharp knife. I did a lot of loops at that time, loops that had been made with geometrical forms. You make a cross on the label, and at the end of each point from the cross you make a deep scratch. When you play the record at 33 rpm, you have a beat like a bass drum at 133 bpm. 'Boom, boom, boom...' This is what I did on the '8+1' 12-inch (on Suppose). And if you put, between those four points, four little scratches, you have exactly the grounds for a techno track. 'Boom, tic, boom, tic, boom, tic...'. So these ideas weren't really new, but there was no context for them then (Brinkmann in Sherburne, 2009).[12]

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[10] G. Dunning (17 November 2015) MECHANICAL TECHNO DEMONSTRATION [Video file]. Retrieved from www.youtube.com/watch?v=wl1ZrEza7uY.

[11] Kraftwerk's albums deploying synthesiser instruments were for example *Autobahn* (1974), *Trans-Europe Express* (1977) and *Computer World* (1981) (Butler, 2006, p. 42).

[12] Brinkmann demonstrates his method: T. Brinkmann [Brandon Daniel] (9 June 2006). Thomas Brinkmann live clicks and cuts [Video file]. Retrieved from www.youtube.com/watch?v=t8dOo-jBkxM.

Brinkmann says that when he discovered this experimental method in the late 1970s, it seemed difficult to find acceptance (T. Brinkmann, personal communication, 2 December 2015). Brinkmann's *Studio 1 – Variationen* ('Variations', 1997, [CD]. Germany: Profan) and *Concept 1– 96:VR* (1998, [LP] Canada: Concept I, based on 'Concept I', a composition by Richie Hawtin) are based on this approach, using a two-arm turntable (Hutlock, 2007). Brinkmann's double-armed turntable facilitates the superimposing of two sound layers. Although Dunning's creation of rhythmic beats – using geometrical forms on the disc along with the periodicity of the turntable's platter rotating at a fixed speed – is based on the same principles as Brinkmann's approach, Dunning was not aware of Brinkmann's work when developing his 'Mechanical Techno' setup.

Other experimental and contemporary turntablists who have used the record player as a sequencer to produce looped beats are the Institut für Feinmotorik (a German-Swiss artistic group) and Christoph Hess, known as Strotter Inst. (based in Bern, Switzerland). Both projects were unknown to Dunning, and by contrast with him their rhythmic results are not associated with techno music. Another example of live techno music being created through alternative sound production is the ensemble Brandt Brauer Frick. This Berlin-based group has composed EDM tracks, such as *Mi Corazon* (2011) and *Bop* (2011), solely using traditional acoustic instruments (Schaubruch, 2016). Nevertheless, Dunning's combination of loop structures from the turntable-sequencer and varied means of sound production (for example, samples, electronic and electro-acoustic means) remains unique. Dunning's mixed background as a percussionist, occasional EDM DJ, and sound artist using DIY electronics amalgamates in his aesthetic concepts, which fuse techno music with elements of media art and experimental music.

There are several historical antecedents for creating looped structures with turntables. As mentioned in the introduction, Pierre Schaeffer created loops via locked grooves – and later tape loops – in 1948. Such repetitive structures, derived from modifying the medium's material, are an inherent characteristic of *musique concrète* (Schaeffer cited in Baumgärtel, 2015, p. 87). Before Schaeffer, Marcel Duchamp brought the mechanical repetition of the record player into the visual dimension in his *Roto Reliefs* discs (1935). Michael Glasmeier (2002, p. 9) considers Eric Satie's repetitive piano piece *Vexations* to be a precursor of loop structures, and also the work of comedian Karl Valentin, whose short movie *Der Zithervirtuose* (1934) shows a character getting lost in repeat signs while playing a piece of music. From the 1960s on loop structures became a fundamental area of exploration in minimalist music, for example in the compositions of Terry Riley or Steve Reich, conveying a 'stuck-in-the-groove quality' (Gann, 2013, p. 300). Other typical features of minimalist music are additive structures or linear processes (Gann, 2013, p. 301). Techno and classical minimalism share key ideas concerning patterns and repetition, although their connection seemed to become established only in the 1990s (Sherburne, 2013, p. 321). As Robert Klanten highlights, for Kraftwerk (who were inspired by Holger Czukay, member of the band CAN and a pupil of Stockhausen's) techno music was meant to be popular and therefore liberated from experimental music, similar in music to what Andy Warhol aimed for in the visual arts (Klanten, 1995, p. LOC 1.0 FEA 1.18 DUM). Today electronic dance music and experimental artists are occasionally programmed alongside each other in clubs or at electronic music festivals.[13]

Dunning's sound production in the 'Mechanical Techno' setup is partly based on samples from vinyl records, which are found or bought from second-hand shops (Dunning in Aniser, 2016). A more recent artistic decision is to limit his sample selection to anonymous 'white label' records. These undistributed records are often test pressings or early releases of records with a blank white label attached (Sicko, 1999, p. 121); record companies send copies to (famous) DJs for free as a form of promotion or to receive feedback (Butler, 2003, p. 59). For Dunning, who retrieves these white-labelled records second-hand, the composers of the records remain unknown. Rather than being used for musical citations, Dunning's samples are deployed as instruments:

> As a rule I don't identify what the records are that I use. The first (synth) record is labelled but apart from that they are all white labels, and don't have any identifying information on them. Generally they're from second hand shops but I have used white labels that people have donated to me too. When I pick up a batch of white labels I listen through them to see if there are any I want to keep for myself. The others just go in a pile and I select them fairly randomly to modify and use. I don't actually know who the music is by and I don't try to find out. I'm not sure why but it feels like this anonymity is important – I'm not sampling based on who the song is by, but by what it sounds like. It feels important to rescue these anonymous sounds from having otherwise been discarded (G. Dunning, personal communication, 6 June 2016).

Dunning's rediscovering of these forgotten records by taking them into a musical discourse again reanimates the original meaning of exchange of these rare DJ recordings. In contrast to some current platforms like social media, exchange via white label records works on a material level, as Bernie Hogan (2015) highlights:

> Much like posts, certain 'white label' vinyl albums are pressed in limited qualities [sic] and often first announced to friends, fellow DJs, and connected insiders. The albums are then played by fellow DJs who themselves release further white label remixes,

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[13] See for example the programme of music festivals in Berlin such as Berlin Atonal or Krake festival 2016, which invited Vinyl -terror & -horror to play.

> feeding back into a sort of many-to-many network mediated by the constraints of material distribution rather than algorithms (p. 1).

In dub music, remixing and recycling are central features, which build on the idea of exchange (Fikentscher, 2003, p. 306). In Dunning's dub techno, though, sampling is combined with a mechanical trigger-system based on an electro-acoustic or electronic sound production, revealing typical studio production processes live on stage. The emphasis on the mechanical plays a crucial role in Dunning's dub techno. By binding the composition of the techno track with the process of constructing the instrument in performance, Dunning further underlines the role of the live producing machine:

> [T]he main part of the composition is in building the machine itself. Each loop is selected to work with the others so that each part can be brought in and out in the live dub (Dunning, 2015).

Dunning's stack construction (which will be further explained in the next subsection) represents a flexible modular system of custom-made discs for the mechanical techno production. Yet certain restrictions are unavoidable, highlighting the interdependency of the artist's compositional decisions and the set-up's material properties:

> The way the machine works forces me to compose in a specific way, which keeps it interesting for me. For example, building from the bottom, the first layer is always a loop from a record, a rhythm from a modified record, or sending some audio to the synths or elsewhere. There's a normal tone-arm already there on the record player so it's a waste not to use it. I generally don't bring the drum-triggers in till the top layer, as the dangling contact-mics don't leave room to put anything else above them. So I have to write/build all the percussion, samples, melody etc. before the beats – the opposite way I would naturally compose if working with a step sequencer (Dunning in Chuter, 2016).

By developing this custom turntable sequencer with miscellaneous means of sound production, Dunning sets restrictions and parameters impacting in turn his compositional process. The machine's mechanical parts are based on found objects such as chopsticks and rolls of tape as dividers, and often cause frustrating moments. Computer-based technology and manufactured parts could avoid such frustration (Dunning in Rogatchevski, 2016), yet then the construction would '[lose] the "magic" that existed beforehand' (Dunning, 2015). This 'magic' is the product of Dunning's bricolage and provides not only an aesthetic incentive but also assists in the generation of unexpectedness and new sound material. The machine's wonkiness creates inconsistencies in the beats; a trigger might be missed, or mistakes might occur and physically move the tone arm or cable position, which might change a loop (Dunning, 2015).

This automatic production of mistakes gives impetus, too, to discoveries Dunning could not have planned in advance (Smith, 2016). Such discoveries underline the significance of experimentation and bricolage in the instrument's development:

> [T]here is something I like about unwanted sounds that seep in. If you are using your controller to control your computer, which is loaded with digitally generated sounds, you could, in theory, have a perfect-sounding orchestra, but there's not much room for noise. With tape and with records you get a lot of crackle and hiss and hum, and that sort of thing. Something like the 303 Bassline Synthesiser, which ended up being the basis of Acid House, was never intended for that really. It was supposed to sound like the approximation of a bass guitar for people who were composing in the studio, to put a rhythm track down, with a drum machine in it. Several years after it was initially released, the 303 went down in price and people got hold of them and started making DIY music. Acid House is a very much DIY thing. It was just an accident that the resonance of the filter and the cut-off gave it this kind of odd, squelchy sound that defined a whole genre. So that's a case of people taking technology that's cheap and available and making it do something it was never intended to do. Whereas I think nowadays people are very aware of what they want the outcome to be (Dunning in Rogatchevski, 2016).

This unpredictability caused by imperfection in the materiality and mechanics belongs to Dunning's aesthetic concept. Throughout each improvement or enhancement of his instrument, he tries to preserve the 'magic'. The choice of the turntable as the base has a pivotal role in the stability of the construction. A cheap belt-driven turntable, for example, tends to influence the precision of the looped patterns by slowing down with more resistance, such as more weight or movement in the stack construction (Dunning in Barry, 2015). Dunning recently switched to a Technics SL-1210, however, with a direct drive motor system guaranteeing a more continuous rotation of the stacks (Dunning in Chuter, 2016). Since September 2015 Dunning has also strengthened the stability of the machine by using wooden blocks instead of the tape rolls as more sturdy dividers. Yet he remains aware of the aesthetic features that this construction based on prefabricated materials provides.

Dunning's live concerts with the 'Mechanical Techno' project are mostly techno music-related, although his setup can vary depending on the context and atmosphere (Dunning in Chuter, 2016). For example, he has developed stacks that generate alternative rhythmic patterns based on prime-numbers, and chance-related constructions such as ping pong balls or marbles rolling on the rotating record while hitting piezoelectric microphones to trigger random beats of synthesizer sounds. He has also incorporated light sensors in combination with a dreamachine.[14] Future areas pursued with the 'Mechanical Techno' set-up might be more research into feedback systems (Smith, 2016) or collaborations with other musicians.

5.2 Instrument

The 'mechanical touch' in Dunning's techno setup originates from combining the rotation of the turntable platter with a triggering system to play other instruments. Several modified vinyl discs, organised on a vertical centre spindle, either strike acoustic or electro-acoustic instruments, or activate synthesisers using piezo microphones, scratches on records, or other systems. The following description of the setup is related to the concert analysed in Part II and explained by Dunning in his documentation (Dunning, 2015).

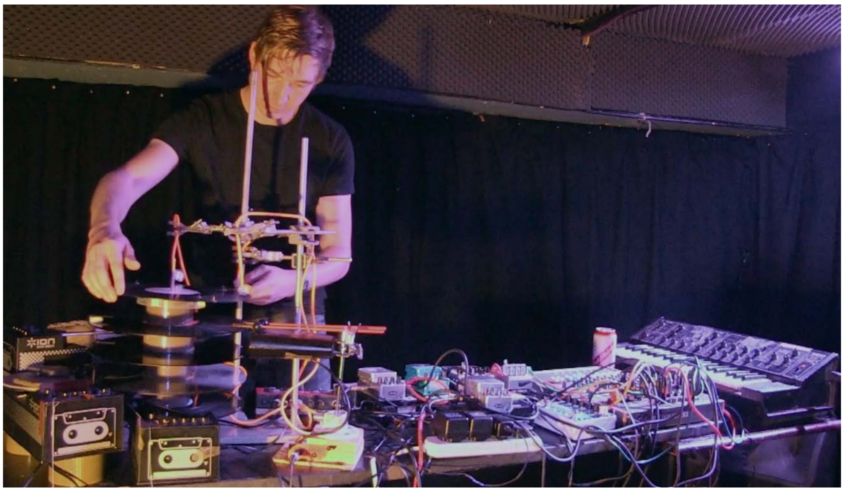

Figure 5.1 Graham Dunning performing with the 'Mechanical Techno' setup in the concert at Power Lunches, London, 2014.

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[14] The dreamachine produces rhythmic light flashes for hallucinatory effects. It is made of a cardboard cylinder with a pattern of holes rotating on a record player and a light bulb in the centre. This invention from the late 1950s by Brion Gysin and Ian Sommerville was developed in the context of the Beatnik movement (ter Meulen, Tavy & Jacobs, 2009).

List of devices

- 3 turntables (Ion Duo Decks) (Stack 1, 2, 3)
- Composer Pro Noise gate (Stack 2 & 3)
- Synthesiser Yamaha CS-5 (Stack 3), featuring a multi-mode 12 dB/Oct resonant filter, an LFO with sample and hold, and an external audio input to route through the VCF or VCA sections.
- Cowbell, electronically amplified (Stack 4)
- 3 piezoelectric microphones (Stack 5)
- Clavia Nord Drum Synthesiser (Stack 5): 3 sound generating sections based on tone, noise and click
- Electro Harmonix Cathedral Stereo Reverb
- 2 x Behringer Digital delays DD400 (stereo)
- Marshall digital delay
- Electro-Harmonix Memory Boy: Analogue Delay with Chorus/Vibrato; triangle or square modulation waveforms)
- Behringer US600 Ultra Shifter/Harmonist: Tremolo Bar, Flutter, Detune, Harmonist and Pitch Shifter
- Marshall Echohead
- Mixing desk: Soundcraft Spirit F1
  Channel 1: Stack 1
  Channel 2: Stack 2
  Channel 3: Stack 3 Yamaha Synth
  Channel 4: Stack 3 split signal
  Channel 5: Stack 4 Cowbell
  Channel 6: Stack 5 Drums
  Channel 7: Reverb
  Channel 8: Delay

Concert setup

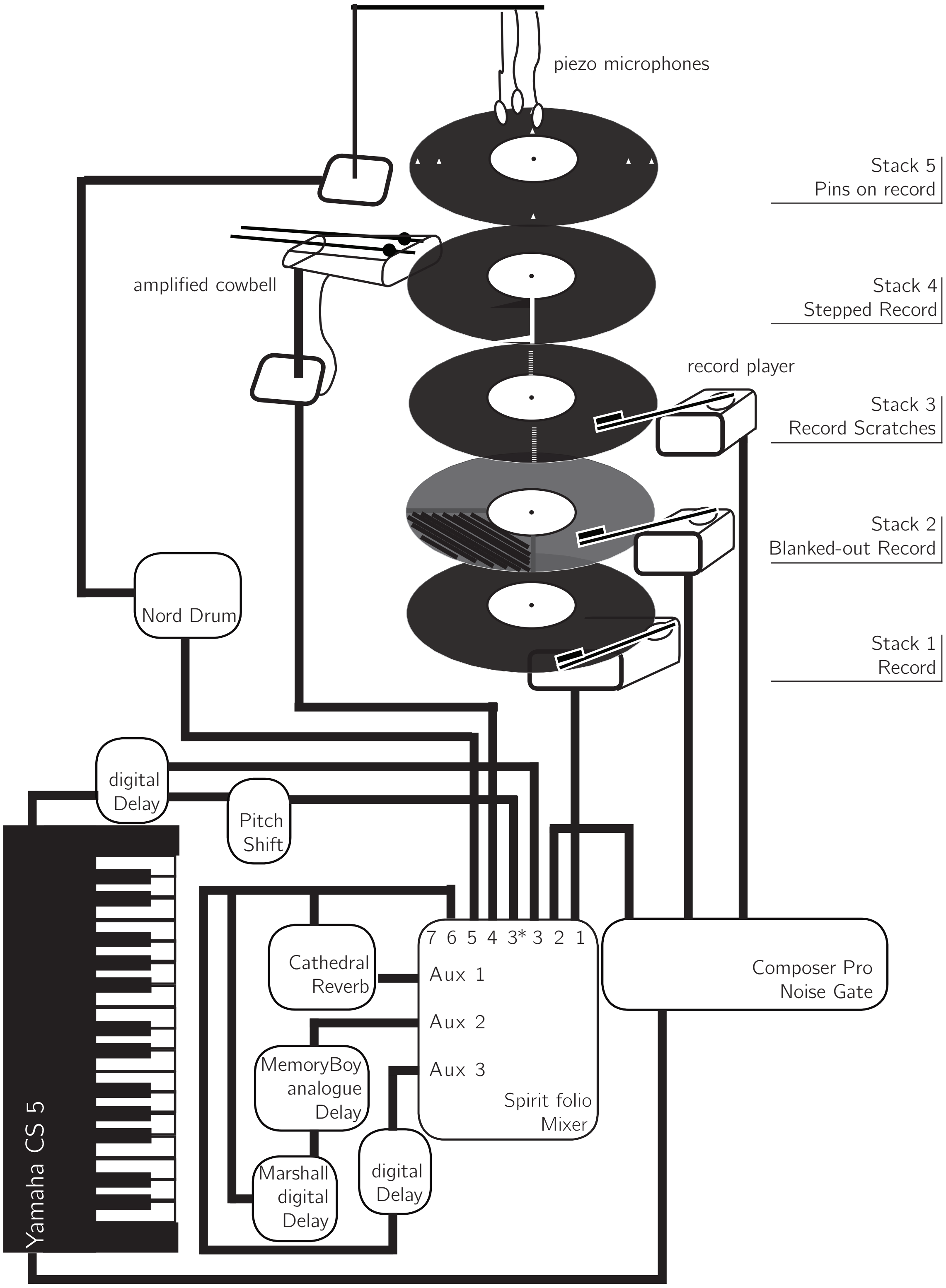

piezo microphones
Stack 5
Pins on record
amplified cowbell
Stack 4
Stepped Record
record player
Stack 3
Record Scratches
Stack 2
Blanked-out Record
Nord Drum
Stack 1
Record
digital
Delay
Pitch
Shift
7 6 5 4 3* 3 2 1
Cathedral
Reverb
Aux 1
Aux 2
Aux 3
Composer Pro
Noise Gate
MemoryBoy
analogue
Delay
Spirit folio
Mixer
Yamaha CS 5
Marshall
digital
Delay
digital
Delay

Figure 5.2 Graham Dunning's turntable setup in the concert at Power Lunches, London, 2014 (see analysis in Part II).

Turntables

In the concert setup from 2014, Dunning deployed three Ion Duo Decks, modern turntables with a belt-drive system. Only one turntable on the lowest layer in stack 1 provides the main rotating platter, on which the stack construction of several records is built (see Fig. 5.1 and 5.2). The vertical distribution of several records is a solution to synchronise multiple rhythmic layers created by the records, as mentioned in the section before. The record discs are piled up with parcel tape separators and chop sticks used as an extended central spindle (Dunning, 2015), similar to Greta Christensen's construction. Two turntables are lifted up on blocks or tape rolls to play records from the second and third stack of the construction. Their tone arms are prepared so that they reach the other platter of the upper stack instead of their own platter. Dunning fixes the furthest position of the turntables' tone arms with a thread on the base to create loops. The thread on the tone arm prevents the stylus from moving further inside the spiral groove; instead, the stylus is continuously dragged back into the former groove. As a variation (such in stack 3), Dunning secures the tone arm position with a heavy object on the turntable base. The upper stacks use alternative systems, as will be explained in the following.

Vinyl Records

Dunning uses the material properties of the discs to create an unusual mechanical and electronic trigger system. Except for the record in stack 1, all the vinyl records have modified surfaces. Most modifications shape a rhythmic pattern within a loop structure. Similar to the prepared records in Joke Lanz's or Vinyl -terror & -horror's setups, Dunning modified the records to generate needle distortion and to allude to the disc's materiality; Dunning's noise impulses, though, are quite structured and predictable, similar to Joke Lanz's 'sticker LP'. A pattern of four needle obstacles such as stickers or scratches, separating the disc into four quarters, would create four impulses of distortion noise and thus beats sounding a 4/4 time signature. Following Brinkmann's explanation in the previous section, the turntable's standard speed of 33 $^{1/3}$ rotations per minute would result here in 133 $^{1/3}$ beats per minute, a typical tempo for the techno music genre (the range is usually 130 - 150 bpm; Snoman, 2010, p. 285). Dunning uses this sequential characteristic, and similarly to Lanz and Brinkmann he modifies the discs with geometrical patterns of quavers or semiquavers (for alternative rhythms he creates other geometrical patterns). As with a step sequencer, Dunning achieves here the constant creation of regular temporally structured beats, a basic element in techno music production. With each rotation, the noise signal of the disc's obstacle triggers a synthesiser sound, or a reshaped record moves a stick to hit a cowbell.

The following technical discussion explains Dunning's sound production, which is based on prepared discs and turntables in a stack system. The setup description is based on the setup of the concert from 2014. Table 5.2 describes the mixed instrumentation and systems of sound production. Table 5.4 in the concert analysis (Part II) illustrates the modular loop system of rhythmic and drone elements, which Dunning establishes in the concert with the modified record in the stacks.

Stack construction

Stack 1) The lowest layer provides a sample of 'bad synths' (see Fig. 5.3) from the first record (Channel 1 on mixing desk). These synthesiser sounds could originate from a 1980s/1990s popular music track and might be associated with space flight or science fiction (Demers, 2010, p. 98f). As the sample contributes its own sounds and structures it usually starts the concert, and supplementary layers will be added. By preparing the tone arm with a thread, Dunning loops the sustained sounds and creates a constant drone. The distortion sound caused by the needle moving into the former groove provides a low popping sound similar to a bass drum.

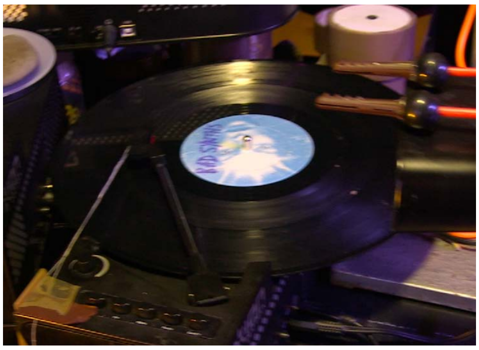


Figure 5.3 Vinyl record of 'Bad Synths' (as Dunning labelled the record) featuring a synthesiser melody. The thread preparation forces the stylus to remain in one record groove to create a loop.

Stack 2) The 'blanked-out record' (see Fig. 5.4) (Channel 2 on mixing desk) makes only one quarter of the record content accessible to the needle (Dunning, 2015). The smooth acetate surface contains no groove or unevenness that would produce a sound via the tone needle; three quarters of the record are therefore silenced. This modification cancels the grooves in a material way. The remaining, free quarter provides a fragmented sample of a Jungle music track, a cymbal sound. The tone arm is restricted with a thread, as in stack 2, to play the sample in a loop, which with the periodic rotation establishes the feel of a 4/4 meter. The audio channel passes through the noise gate Composer Pro, so that the crackles of the acetate surface are completely silenced and only the sample is audible.

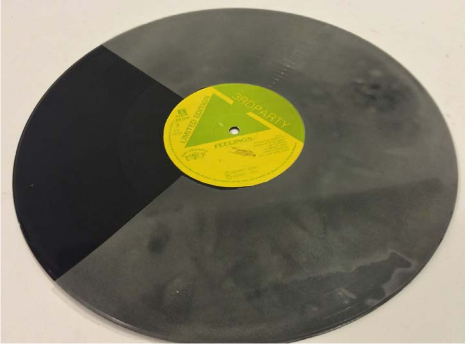


Figure 5.4 Blanked-out record, providing a sample from only one quarter of the disc. (Photo © G. Dunning).

Stack 3) Figure 5.5 (left) shows an uncut record with symmetrical scratches from the centre across the record surface, separating the disc into two halves. The record scratches shape the Synthesiser's oscillator (Fig. 5.5 right) (G. Dunning, personal communication, April, 2017). The channel output of the stylus is connected with the noise gate Composer Pro. This filters the peaks of the distortion sounds caused by the scratches and sends the signals to the external input of the Yamaha Synthesiser. Usually depressing a key on the keyboard would send this signal followed by a voltage control (CV) for the pitch (Snoman, 2010, p. 9). The analogue oscillator signal of the Yamaha synthesiser is solely controlled by Stack 3. The connected silver delay pedal splits the monophonic signal: one connection leads into the mixing desk (Channel 3) and the other one into a pitch shift pedal (green) (Channel 4). The pitch shift device changes the pitch of the delayed synthesiser sound to create the second note for a bass line. Alternatively, the distortion sounds of the scratches are used without the synthesiser simply as a clap or snare drum sound (Dunning, 2015), similar to Brinkmann's approach.

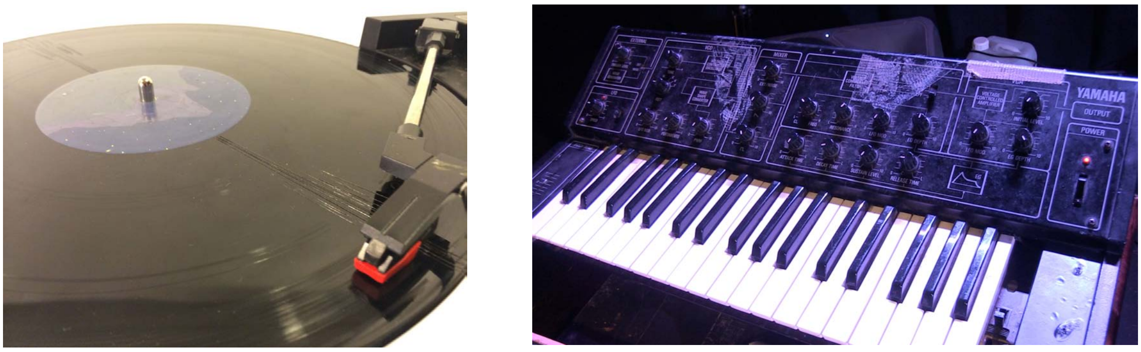


Figure 5.5 Left: Silent record with two scratches separating the disc into halves. Photo © G. Dunning. Right: Graham Dunning's Yamaha CS-5 Synthesiser (in use since 2003).

Stack 4) works with a prepared record that triggers sound production with mallets and an amplified cowbell (Channel 5). This prepared record is sculpted from two superimposed vinyl discs. At one spot the top disc is lifted to create a kind of step or ramp. At each rotation the mallets, which are fixed to the cowbell (see Fig. 5.6), strike the cowbell at the moment the ramp ends abruptly to drop the beaters. Two quickly following beats occur in a 4/4 meter with the periodic repetition created by the rotating disc. The cowbell is electronically amplified with a contact microphone and connected to the mixing desk. This electro-acoustic sound production, based on acoustic as well as electronic sound sources (Holmes, 2008, p. 184), also allows Dunning to manipulate the signal using effects connected to the mixing desk. Further variations of the beats are controlled by changing the cowbell's position. The cowbell can be placed so that only one beater strikes the cowbell, for only one beat per rotation, or so that none of the mallets are in touch with the record. Dunning has also prepared similar discs with one step at each half of the record.

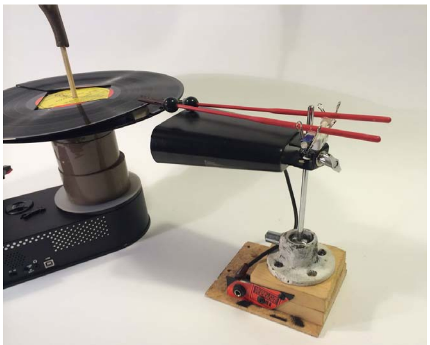


Figure 5.6 Stepped record to let drop beaters on a cowbell (Photo © Graham Dunning).

Stack 5) In this stack the prepared record surface triggers percussive sounds (Channel 6) resembling generic 16th note patterns from EDM genres. On the record's surface pegs are attached, which we can consider as arranged in three concentric rings (see Fig. 5.7). At each rotation a peg hits one of the three piezoelectric microphones hanging with cables from a stand. The impulsive contact between one of the pegs and the piezo microphone in this way sends a signal, which Dunning utilises as a voltage source to activate the connected drum synthesizer set (Drum Nord). On the Drum Nord the microphones are set to trigger, respectively, a bass drum, a hi-hat, and a snare drum. Ring 1 on the outside, with four symmetrically distributed pegs, creates one beat at each quarter and is mainly used with two contact microphones to trigger a bass drum and hi-hat sound (see Fig. 5.7). Ring 2 can create a beat on off-beats 2 and 4 (or 5/13 in a 16th note pattern) or on beats 1 and 3 (or 1/9 in a 16th note pattern, see Table 5.1). The third ring inside creates only one beat per rotation. The three different rings of pins are adapted so that they hit the pins at a specific time in the loop. The position of the piezo microphones determines whether or not the sounds appear simultaneously. In relation to the clockwise rotation of the record, for the hi-hat sounds Dunning moves the piezo microphones into an offset position of Ring 1, so that the hi-hat sounds appear 1/8th or 3/16th (or an odd multiple thereof) apart from the bass drum on unaccented beats (see Piezo mic 2 in Fig. 5.7). Table 5.1 summarises Dunning's typical use of 16th note patterns in a 4/4 signature (G. Dunning, personal communication, July 15, 2016): Dunning gains a regular bass drum pattern of 1/5/9/13 and a hi-hat pattern of 3/7/11/15; typical patterns for techno genres (Butler, 2006, p. 82).

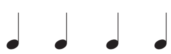
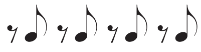
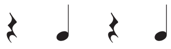
Instrument	Rhythm in notation	Attack position of rhythm	Position of prepared record & piezo microphones
Bass drum		1/5/9/13	Ring 1 (Piezo mic 1 in Fig. 5.7)
Hi-hat		3/7/11/15	Ring 1 (Piezo mic 2 in Fig. 5.7)
Snare drum		5/13	Ring 2

Table 5.1 16th note patterns created using the pegs on the Stack 5 record and piezo microphones (see also Fig. 5.7).

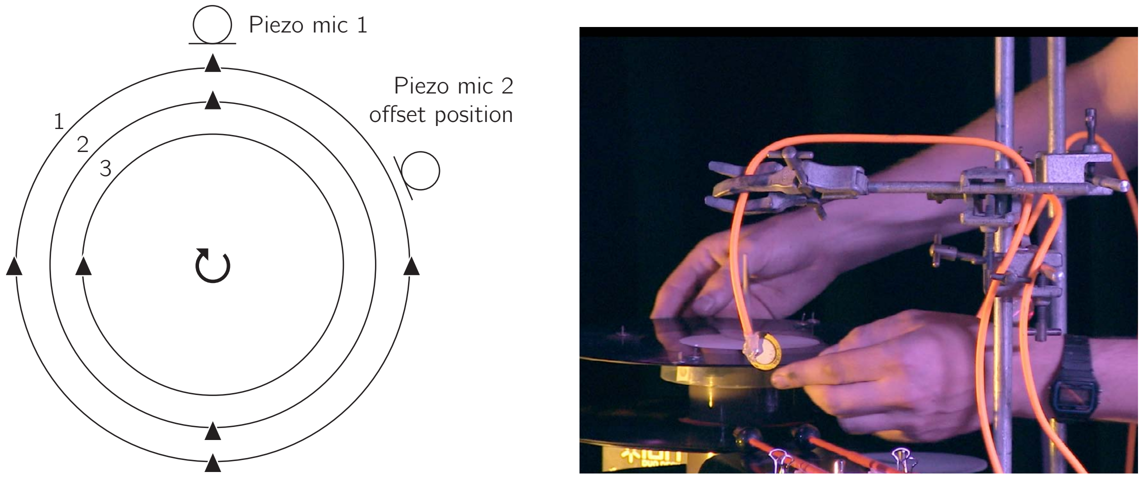


Figure 5.7 Left: The pattern of the pins (▲) on the prepared record can be imagined as lying on three concentric rings. This illustration shows the position of the piezo microphones for the bass drum and hi-hat pattern and is based on a drawing by Graham Dunning, sent in a personal email to the author, 15 July 2016.

Other stack modules

In the 2014 concert on which this documentation is mainly based, the 'Mechanical Techno' setup was in an early stage of development; since then, Dunning has researched more preparations and modules:

> [T]he mechanical techno system is very flexible, and that's the exciting thing about it. I can make a bass drum sound in lots of different ways, for example: triggered drum module, mechanically played speaker-as-drum, modified record with clicks/drops, triggered and gated analogue synth. How I choose to generate the bass drum either opens up or closes other options. So if I use a modified record for the bass drum I can use the drum-synth to generate tones for a bass line, but have less options to sample audio from a record for another layer (Dunning in Chuter, 2016).

As an alternative way of controlling a synthesiser sound that depends on the disc rotation, Dunning captures a light beam with a light sensor; this beam is then refracted by transparent prisms onto the record surface (see Fig. 5.8 below). During a September 2015 residency at the Machines Room in London, in particular, where access was provided to 3D printers and laser cutters, he developed new record modifications and trigger systems. The 'copper disk sequencers', for example, demonstrate a completely new principle.[15] Using a laser cutter, Dunning created a wooden tone arm and custom-built headshell for a copper stylus. The touch of the copper stylus and the copper foil on the record's surface creates an electrical contact, which sends signals to activate a synthesiser. The pattern of the copper foil on the disc surface additionally controls the duration of the synthesiser sounds, which was not possible when producing on/off-signals via the peaks of the piezo microphones and record scratches. Dunning also implemented other variations using acoustic or electro-acoustic instruments in his setup, such as a tambourine, a shaker, a snare drum, and a loudspeaker turned into a microphone, each triggered with a similar mechanism to the cowbell.

With reference to Lévi-Strauss's dualism (1968; see also Chapter 1), Dunning not only appears as a bricoleur but also as an engineer: his creations are planned and constructed on the basis of raw materials, yet are also partly based on experimentation and chance:

> Things are constantly recycled, breaking down and reconstituting. Everything is fuzzy at the edges, so this chaos allows things to change form, slide around and regrow (Dunning in Smith, 2016).

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[15] See: Dunning, G. (9 September 2015) Day 7: Copper disk sequencer with laser cut stylus. *Rhythm & Drone // Research & Development.* Retrieved from https://rhythmanddrone.wordpress.com/2015/09/09/day-7-copper-disk-sequencer-with-laser-cut-stylus.

Dunning documented the development of his instrument and his experimental research in the blog *Rhythm & Drone*, and it was also presented in a demonstration video, produced by Michael Forrest in the context of the Machines Room residency. Presumably due to the unusual way it presented of producing a techno track, within a short amount of time the video gained wide interest after being uploaded to Dunning's YouTube channel on 17 November 2015.[16]

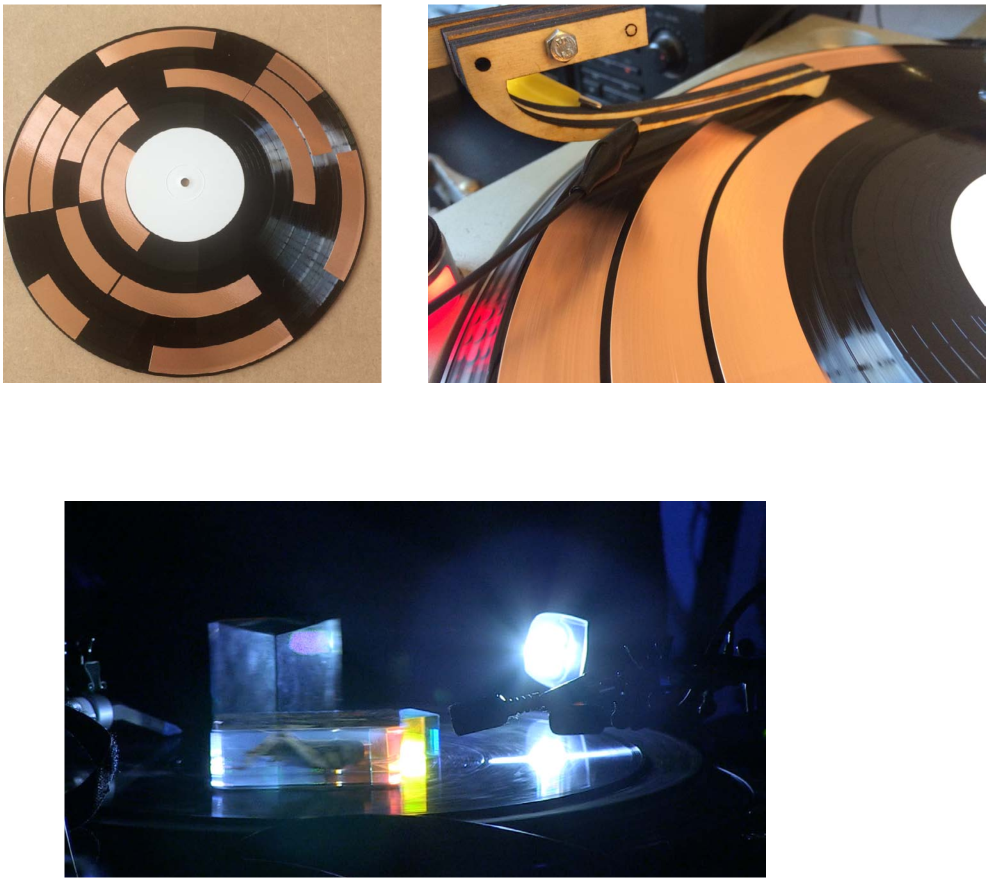

Figure 5.8 Graham Dunning's 'copper disk sequencer' (top) and transparent prisms with light beam and sensor (below).

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[16] G. Dunning (17 November 2015) MECHANICAL TECHNO DEMONSTRATION [Video file]. Retrieved from www.youtube.com/watch?v=wl1ZrEza7uY. The video has over two million views at the time of writing (15 July 2017) and featured in several reports in online publications, such as at *Synthopia* (29 November 2015), *Create Digital Music* (18 November 2015) *Thump Vice Germany* (20 November 2015), *Thump Vice Netherlands* (21 November 2015), *Thump Vice UK* (20 November 2015).

Mixing Desk

The mixing desk provides eight input channels and three auxiliary channels (Aux). This allows the arrangement of stereo signals from numerous delay and reverberation devices, and changes to the equalisation. Via the auxiliary channels, Dunning can resend delayed signals through further delay devices. The effects send output (Aux 1) is connected with the reverberation device (Cathedral pedal) (see Fig. 5.2 and 5.9), which Dunning uses to generate long droning notes as a stereo signal. Aux 2 goes through the analogue delay pedal (Memory Boy) on the effects send. The digital delay (Marshall) is in the same connection with the analogue delay pedal (Memory Boy) to create a stereo signal and a ping pong delay. Aux 3 is connected with a digital delay. By sending one delayed signal into another delay device via the auxiliary channels (for example, from Aux 2 to Aux 3), the signal develops a 'feedback circuit' that generates electronic feedback by recirculating the output back into the input (Holmes, 2008, p. 187). The delay, however, prevents the temporal superposition of the feedback and the original signal, the result being a slightly delayed recurring signal. This typical dub effect of echo and feedback allows the development of extensively delayed signals. The signals' timbres are additionally coloured through the equalisation controls on the mixing desk.

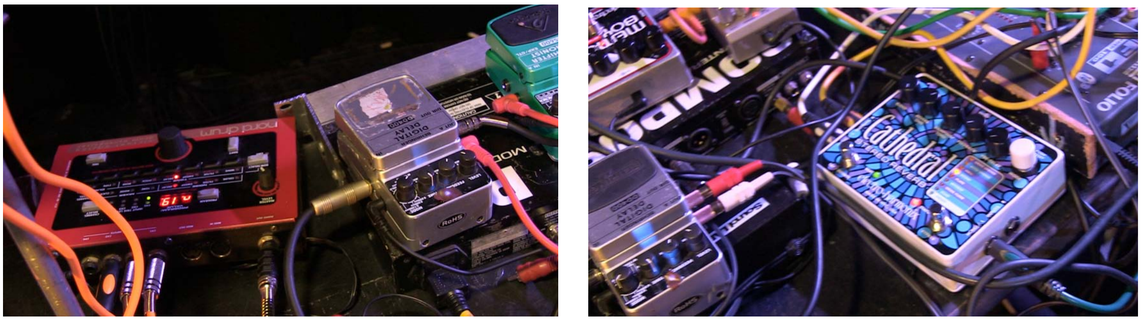

Figure 5.9 Left: Nord drum (red), digital delay (silver), pitch shift device (green).
Right: Reverberation pedal (Cathedral), digital delay (silver).

Table 5.2 summarises some of Dunning's vast possibilities with his modular stack system:

Module	Instrument voice	Type of sound production	Trigger system
Pins on Record e.g. Stack 5	Electronic percussion instruments	Electronic	Piezoelectric microphones triggering variable percussive synthesiser sounds: e.g. bass drum, snare drum, hi-hat
Stepped Record e.g. Stack 4	Amplified percussion instruments	Electro-acoustic	Amplified cowbell, rewired speaker as microphone (mallet hits speaker) creating a bass drum sound
	Acoustic percussion instruments	Acoustic	Cymbals, tambourine, shaker or snare drum
Scratched Record e.g. Stack 3	Bass lines	Electronic	Scratches on vinyl record surface trigger via noise gate variable synthesiser sounds
	Bass Drum sound	Electro-acoustic/ Abstract sound from medium	Scratch or pop via loop of record surface
Blanked-out Record e.g. Stack 2	Sample (Cymbal sound)	Mediated	Blanked-out record with one free quarter to play a sample of cymbal sounds (dependent on record content)
Vinyl Record e.g. Stack 1	Bass Drum sound	Electro-acoustic/ Abstract sound from medium	Distortion sound from stylus jumping back into former groove
	Sample (Synth)	Mediated	Samples of variable sounds (mostly from white label records), e.g. synthesiser sounds from a 1990s track
Prism on Record	Synth	Electronic	Transparent prism (e.g. with insects inside) and light sensor connected to an oscillator creating high frequencies
Ping Pong balls on Record	Synth	Electronic	Ping pong balls hitting piezo microphones, triggering synthesiser sounds randomly
Mixing desk + dub techniques	Mixed	Electronic	Effect devices (reverb, delays, feedback) create drones or rhythmic echoes

Table 5.2 Overview of Graham Dunning's field of possibilities for creating basic sound elements with various forms of sound production.

Part II Performance Analysis

The concert took place on Saturday 19 September 2014 at Power Lunches, a venue near Cafe Oto in East London (the venue closed in December 2015).[17] The stage of the venue was located in the small basement and the bar was upstairs. The concert evening's line-up started with Steph Horak, continued with the trio SDF, and ended at around 11 p.m. with Graham Dunning's show. For the first two performances the lights were set up to follow the beats or mood of the music, but not for Graham Dunning's performance. Although for techno in clubs changing lights are a key supportive element to immerse all the senses (Baumgärtel, 2015, p. 328), Dunning preferred a constant white light on stage.[18] In the video recording, audience members can at times be heard talking and cheering during the concert. The high amplitude of the music makes these audience voices more tolerable and is common in a club or bar atmosphere. In order to fit with the 'party' context of the evening, especially regarding the group SDF performing immediately before him, Graham Dunning aligned his setup with a techno music production (G. Dunning, personal conversation, 31 May 2016).

The accompanying graphical representation and video recording give a guide through the concert. All time designations in the following refer to the timeline in the graphical representation (see Appendix C, Video Case Study 3). The colour code of the graphical signs is allocated to each stack as a different sound source. Bar lines indicate likely perceptions of a metrical system and are represented in the colour of the stack whose role appears the most prevalent for the structuring effect. See also Table 5.4 for an overview of the relationship between graphical signs and rhythmic patterns.

5.3 Structure

In techno, structure and development are based on rhythm, meter, texture and timbre (Butler, 2001, [2]; Snoman, 2010, p. 284). Dunning expresses these musical features with his turntable construction to mechanise the music, introducing the features of dub-techno into an experimental performance situation. The concert's total length of 22:25 min relates it to the framework of the improvised performances so far seen in this study.

In the first half of the concert, the successive addition of stacks structures the musical result (see Section A in Table 5.3). This demonstrates how the physical construction of the turntable machine determines the parts of the musical composition (see External Study). At around 1:04 min, Dunning introduces a cyclical structure based on the loop from Stack 1. With the addition of each stack, the music and the construction both take more and more shape. In roughly equal intervals of around three minutes (Stack 2 at 3:30 min, Stack 3 at 6:46 min, Stack 4 at 9:17 min), the texture gains new sound material through the incorporation of each stack until the last stack completes the construction at around 12:00 min.

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[17] Dunning released a recording of the live concert at the Power Lunches from 19 September 2014 as a CD. Studio versions of more recent 'Mechanical techno' tracks: Graham Dunning (2016). *Auxon* [SR030]. UK: Seagrave [cassette tape].

[18] The light was furthermore presumably slightly brighter for filming purposes.

In Section B, Dunning subtracts single modules of the stacks via controls on the mixing desk (he displaces the cowbell manually), while shaping the timbre and the rhythmic profile with the effects and synthesiser features. As mentioned in the External Study, the drum-triggers based on the Stack 5 piezo microphones require Dunning to compose in a reversed way, as they can only be positioned last on the top stack. Yet in Section B the automaton is completed, so that the rhythmic layer of the kick drum and hi-hat can be used as a starting point to compose as he 'naturally [would] if working with a step sequencer' (Dunning in Chuter, 2016).

The physical sculpture determines not only larger-scale structural divisions but also smaller-scale developments. In Section B, though, some moments emerge that are independent of the machine's limitations, since by this stage the automaton is finalised and the performer can mostly regulate the sound layers via the mixing desk. With the support of the clear metrical layer of Stack 5, Dunning first removes the synth loop of Stack 1 and replaces it by developing supplementary drones and extensions using dub effects (see, for example, 15:55 - 16:51 min). Due to the subtraction of several sound layers, the track develops a stripped-down character (Snoman, 2010, p. 284) and focuses on more subtle variations, such as in the bass line (15:09 - 15:38 min). The timing of the live manipulation with EQs and effects, providing the energy flow, is generally a key characteristic of techno arrangements (Snoman, 2010, p. 292); Röhrig suggest that this is because it implements the organic feeling of a human as being behind the machines (Röhrig, 1995, LOC 1.0 FEA 1.8 3PH).

In two moments, at around 12:31 min and 16:45 min, Dunning's manipulations are especially conspicuous and serve to intensify the mood. Before introducing Stack 5 at 12:25 - 12:31 min, Dunning is still in the process of completing all stacks; therefore, the first entry of the kick drum pattern on every beat at 12:25 min and with increased volume at 12:31 min generates the impression of a musical enhancement. A pervasive tool in techno music, especially deployed live by DJs, is temporarily to drop out the bass drum to create tension and raise the audience's expectation; the return of the bass drum reinforces the metrical feeling of the four-to-the-floor rhythm and usually leads to cheers among the audience and more energy in their dancing movements (Butler, 2006, p. 92). Butler (2006) terms this formal event a 'breakdown' or, specifically with regard to DJ manipulations, ‘withholding the beat’ (p. 92). However, in Dunning’s case the bass drum enters at a late point in the concert (after more than half of the concert has elapsed), as for the kick drum pattern the construction first needed to be completed with Stack 5. Despite this delayed preparation of the clear beats, the audience notices the increased rhythmic intensity and appreciates the entry of the bass drum, as indicated by their cheering at 12:34 min. At a second and third example (see 13:51 -14:06 min and 16:28 - 16:45 min), Dunning withholds the beat in a more common way by decreasing the amplitude of the bass drum. After varying the timbre of the bass line, at 16:45 min he returns the bass drum beat in tandem with a crescendo in the chain of snare drum reverberations Dunning introduced before at 15:55 min. Judging by the lack of feedback from the audience, this particular breakdown emerged in a less noticeable manner.

In the final Section C, Dunning adds the sound layers of the stacks again via the mixing desk, yet in a reversed order with partly varied rhythmic patterns (the cowbell pattern provides only one beat per bar, for example, at 17:38 min). Around one minute before the end, at 21:22 min, Dunning reintroduces the synthesiser sounds from Stack 1 as a form of Coda. The sample refers back to the intro of the concert but additionally serves a pragmatic purpose by providing a continuous sound layer so that the upper stacks can be dismantled. Significant also are two passages of spectrum-filling drones (18:17 - 19:32 min and 19:42 - 20:41 min) that Dunning creates with the Yamaha synthesiser. With their related pitches and timbres, they seem to prepare for the return of the synths in F-major from Stack 1 and at the same time introduce the return of the bass line from Stack 3. From 21:53 min on, Dunning physically deconstructs the kinetic stack system onstage and reduces the sound layers by stripping down the sculpture stack by stack.

Section	**Time** min:sec	**Stack(s)**	**Development**
A – Additive	0:03	1	Synth melody, F-major, loop creates synth drone
	3:30	1 +2	
	6:46	1 +2 +3	(- 2) at 8:08 - 8:35 min, short variation of envelope length of Stack 3
	9:17	1 +2 +3 +4	
	12:00	1 +2 +3 +4 +5	at 12:31 min Bass drum 'drop in'
B – Subtractive	13:29	-1	Removal of synth layer until 21:21 min
	13:40	-1 -4	Breakdown at 13:51 - 14:05 min
	15:17	-1 -2 -4	
			Breakdown at 16:28 - 16:45 min
	17:15	-1 -2 -3 -4 (5)	
C – Additive (reversed)	17:38	+4 (5)	
	18:17	+ 3 +4 (5)	Bass line variations
	21:21	+1 +2 +3 +4 (5)	
	21:54 - 22:30	-5, -4, -3, -2, -1	Dismantlement of construction, synth drone of Stack 1 remains until the end

Table 5.3 Sections in relation to the physical stacks of the construction.

In the performance, Dunning's onstage construction processes emphasise the dependency of the techno track not only on the patterned discs' sound production but also on the physical shape of the construction. The artistic decision to integrate into the composition the physical process of building gives the musical composition a visual dimension and demonstrates its formal concept to the audience. Reconsidering the tripartite production side outlined in Figure 2.1 in Chapter 2, Dunning imports the process of making from outside the performance situation into the specific live concert. Integrated within the performance, the making processes become at the same time the actual composition. The implementation in techno music of the experimental setup of modified discs, as well as representing the composition with a physical body directly linked to the perceptible sound layers, invites the audience to reflect on the technological re-use of the turntables. 'Building-the-construction' as a compositional strategy provides the audience with additional insight into the process of artistic creation.

For the audience the observation of the building process further creates transparency. The concert structure and how it is bound up with the patterned discs can be comprehended more easily in this way than if Dunning played with the complete stack system from the outset. Dunning could presumably play a techno track without physically intervening and changing the stacks, as mainly seen in Sections B and C; however, proceeding step by step from the simple to the more complex structure guides the audience's comprehension. This is especially the case at the beginning of the concert. As an introduction, Dunning demonstrates several dub effects on the sound layer of Stack 1 alone before the complexity then increases with multiple stacks. First he transforms the synthesiser melody from the first vinyl disc in Stack 1 into a drone, via the constant loop that the thread on the tone arm causes (at 1:05 min). The needle creates a distorted impulse sound at the moment it skips back into the previous groove, which upon successive rotations turns into a repeating beat and introduces the feeling of a pulse. Dunning then applies reverb (at 1:15 min) and delay effects (1:30 min) to create echoing signals that overlap in complex polyrhythms (at 1:46 - 1:53 min, for example), solely on the basis of the looped drone, which supports the audience's understanding of the sound production and of manipulation via dub techniques.

In what follows, the addition of new stacks alongside Dunning's adjustments for the synchronisation of the patterned discs demonstrates the conditions of the techno track's loop structure. It becomes apparent that each modified record in a stack has 'a certain job' (Dunning in Chuter, 2016) and contributes a specific instrumental layer in regard to the categories synths, percussion and bass line (see Table 5.2 in the External Study). The record stacks function as modular rhythmic cells in the composition of the techno track. The prepared discs evince compositional decisions made prior to the performance. The arrangement of predictable 'pinned' sounds makes Dunning's machine comparable to the automatic music boxes of the early twentieth century. Similarly to a pinner of automatic music boxes, Dunning prepares his record discs physically according to an outlined plan for a specific musical result. In the concert he can leave it to the machine to 'play' these modified discs, which trigger or activate instruments automatically in a loop. As the rhythmic pattern is integrated into the disc, the position of each disc in the stack is crucial for its synchronisation with the other stacks.

An overview of Dunning's modular system, represented by each stack, is shown in Table 5.4. Excerpts of the accompanying graphical representation are transcribed into traditional Western notation to outline more clearly the basic rhythmic patterns of the modular stacks. The following brief descriptions explain their prevalent functions.

Stack 1 provides synthesiser sounds in the key of F-major and also a bass drum effect via the impulse following the thread preparation (as explained earlier). This impulse, or pop, provides a structural element within the loop. The periodic repetition of the pattern might create a temporal pattern with a weak metric feeling. After applying several effects to this stack, Dunning arrives at a fixed pattern from around 2:32 min on. The pop can be heard as the downbeat followed by two peaks of delay-signals on the second and third beat of the bar in a 4/4 signature.

Stack 2, with the blanked-out record, provides cymbals as part of the record's recorded content and a pop from the needle hitting the rim of the acetate surface. Dunning positions Stack 2 so that the free quarter of the record is synchronised with the delay-signal on the 2nd beat of the bar, which he achieves at 3:50 min. From 4:23 min on, Dunning delays the cymbal sound, so that it occurs doubled on the 2 and 4.

Stack 3, the silent record with scratches, activates the pitch F3 through a square wave oscillator from the Yamaha synthesiser. Dunning creates variations in length and in timbre through equalisation and wave form manipulation on the synthesiser. A syncopated bass line develops with accents on the quaver upbeats 1+ and 3+, especially in the first section of the concert at around 7:27 min; irregularities, though, result in slightly deviating accents before or after those beats. Later in Section B at around 15:17 min, the bass accentuates the 2 and 4 beats, as shown in Table 5.4.

Stack 4, via the amplified cowbell, contributes two beats in quick succession. The second beat seems to accentuate beat 3 of the bar, whereas the short beat before can be interpreted as a grace note. In a different musical context at 17:38 min, Dunning varies the cowbell's part to only one beat per rotation. This beat could be interpreted as the downbeat; yet due to a short break at 17:39 min, the following kick drum beat appears more dominantly as the downbeat with the cowbell beat on the 3.

Stack 5 provides three different percussive sounds from the drum synthesiser, as outlined in Table 5.1 in the External Study. The bass drum on every quaver shows accuracy, while the hi-hat and snare sounds turn out to be the most irregular sounds; they often miss a beat and hardly describe a precise 16th note pattern. Dunning explains the unreliability of these rhythmic figures in regard to the ramshackle design of his construction:

> At around 15:30 min [...] you can hear the snare – it's kind of on the 5th and 12th of the 16th notes, rather than 5th and 13th as you'd normally expect a snare drum to be – it's very sloppy though and not really hitting exactly on any 16th note. I think this is due to the bouncing around of the contact mic on the cable, swinging about and hitting at a different time than you might expect (G. Dunning, personal communication, 15 July 2016).

Numerous variations of these basic figures are possible. The overview in Table 5.4 presents a selection of generic figures, which appear during the performance. The analogies between sound and mechanical properties as well as material properties are a crucial element in the presentation of the ‘Mechanical Techno’ setup: without the performance, vital elements of the sculptural corporeality, insights into the production dimension, and the interdependency between musical development and physical making-process would be absent from the audience’s concert experience. Dunning intentionally emphasises the material constraints and correspondences of the physical record construction and the compositional structure in the music. This performative characteristic reveals therefore a turntable-specific techno music.

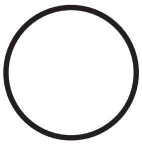
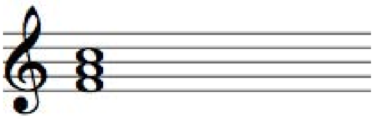
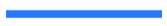
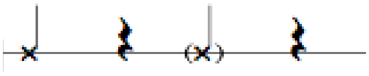
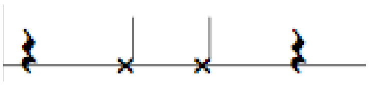
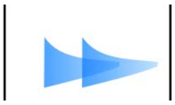
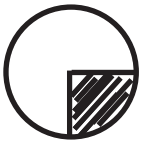
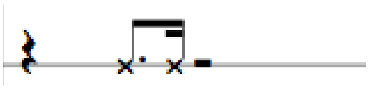
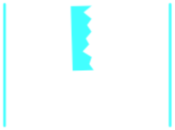
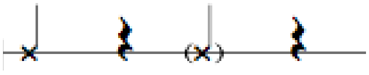
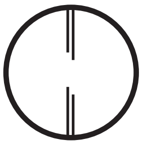
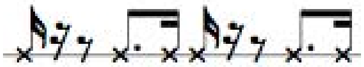
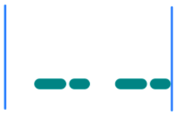
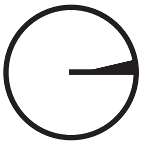
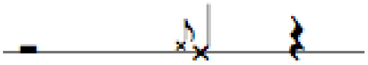
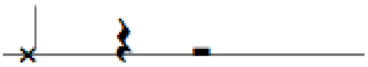
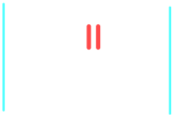
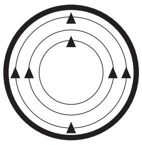
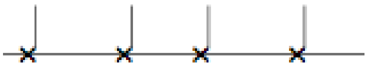
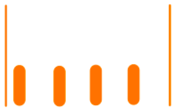
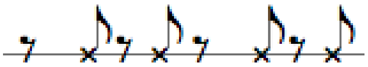
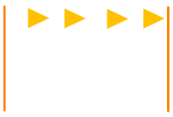
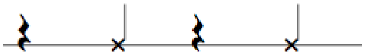
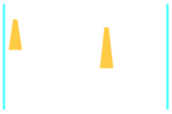
Stack 1/ Vinyl Record (blue) 	Synths (mediated sound)	Synth as drone– record content based on F-major		
	Percussion (abstract sound)	Bass drum – pop from needle distortion		
	Bass (electronic sound)	Accents of delayed synth signals		
Stack 2/ Blanked out disc (ice blue) 	Percussion (mediated sound)	Cymbals sample (with delay)		
	Percussion (abstract sound)	Bass drum/ pop from needle distortion		
Stack 3/ Scratched Disc (green) 	Bass (electronic sound)	Synthesiser/ scratches on record/ based on the pitch F3		
Stack 4/ Stepped Disc (red) 	Percussion (electro-acoustic sound)	Cowbell	 or 	
Stack 5/ Pins on Disc (orange) 	Percussion (electronic sound)	Kick drum / synthesiser/ piezoelectric (1st Ring)		
	Percussion (electronic sound)	Hi-hat/ synthesiser/ piezoelectric (1st Ring)		
	Percussion (electronic sound)	Snare drum/ synthesiser/ piezoelectric (2nd Ring)		

Table 5.4 Modular system of rhythmic cells based on the setup for the concert. The coloured graphical signs on the right are taken from the graphical representation. The patterned circles on the left represent the modified discs. The repetition circle of one rotation is equivalent to the duration of | 𝅝 | in a 4/4 time signature. Dub techniques and mechanical irregularities vary the patterns.

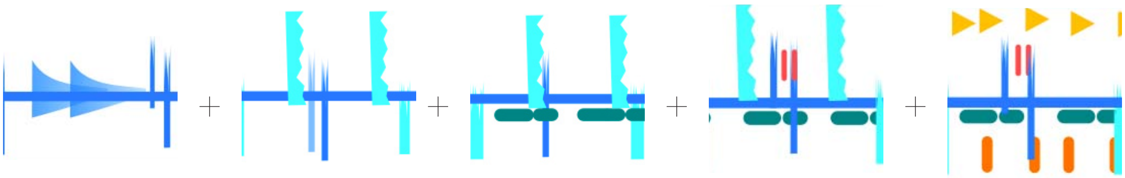


Figure 5.10 Additive structure (Section A) summarised in the graphical representation from the beginning until 12:31 min.

5.4 Ambiguous Sound Sources

The essence of this setup is the re-design of vinyl discs towards the triggering of other instruments. Strictly speaking, the records from Stacks 3 to 5 could be replaced with discs of similar sample material. Yet Dunning aims to reflect the playback medium by creating a synthesis of various systems: a unique alliance of purely electronic instruments (synthesisers in Stacks 3 and 5), electro-acoustic instruments (amplified cowbell in Stack 4), mediated sounds from vinyl records (samples in Stacks 1 and 2) and abstract sounds produced from the medium itself (noise impulses in Stacks 1 and 2). As the second column in Table 5.4 illustrates, synths, percussion sounds and bass lines can be produced from various sound sources. Mimetic references between the different sound sources are at the heart of the timbral interplay of rhythmic and drone elements.

With the fusion of various sound sources – electronic, mediated and electro-acoustic – in one apparatus, Dunning confuses and expands upon established sampling techniques. He blends the mediated sounds of the sample from Stack 1 with the live synthesiser sounds triggered from Stack 3 by intuitively tuning them pre-concert during the sound check.[19] As a result of the relatively unknown sample from Stack 1, the audience may only be able to categorise it as a snippet of 1980s or 1990s EDM; as explained in the External Study, the source is even unknown to Dunning (following his conceptual use of samples). The sample's acoustic properties, however, become especially significant in combination with the live produced sounds from the synthesiser. The bass of the synthesiser drones from the record sample of Stack 1, especially accentuated at the passage at 1:55 min, is reminiscent of a sawtooth wave with a base frequency at around 90 Hz, which is close to the note F2. Dunning creates a related timbre with his Yamaha synthesiser from Stack 3 by using a sawtooth waveform, which is tuned to the frequency 176 Hz (F3), an octave higher (see, for example, at 7:27 min). This confusion between the electronically produced square wave and the sample might be understood in the first half of the concert, when the piecemeal build-up of each stack provides visual guidance. In the second half of the concert in Section B, though, for example at 15:30 min, the sculpture is completed and the performer controls the sound sources mainly on the mixing desk, and the lack of visual feedback might therefore support the confusion of the different sound sources. At 18:17 - 20:40 min, Dunning accentuates this relationship with the use of dub techniques and imitates the mediated drones from the sample, with long extensions of the electronic synthesiser sounds of Stack 3, growing in the spectrum with more and more harmonic partials. The effect derives from a combination of the Yamaha synth and the Cathedral reverb pedal, as Dunning explains:

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[19] The drones of the record sample contain the following frequencies: approximately 177 Hz F3, 224 Hz A3, 263 Hz C4, 357 Hz F4, 448 A4, 528 C5; whereas the square wave sound of Stack 3 contains 176 Hz F3, 159 Hz D# 3, 135 C#3. F3 seems to be the foundation.

> I set the reverb time on the pedal to infinite then fade in a note off the yamaha, which makes a sustained monophonic drone play back from the reverb. Then I change the octave switch on the yamaha and repeat, adding a second note towards making it a chord (G. Dunning, personal communication, 15 July 2016).

Dunning uses these dub effects as tools to produce generally similar acoustic properties to the drones of the first sample. Hence he creates significant relationships between the different means of sound production. Equalisation along with reverberation and delay effects colour the textures and create movement or varied spaces of wet and dry sounds by lengthening and reshaping the envelope (e.g. at 8:08 - 8:35 min to accentuate the bass line). The dub techniques generate continuous chains of delays. Demers' (2010) observations about dub techno are pertinent here:

> In particular, dub techno replaced EDM's mechanization with a way of muffling the sense of time's passage, despite the persistence of the four-on-the-floor beat. Sound in dub techno appears to linger thanks to processing techniques that make it seem as if a clearly defined pitch or drum attack is traveling through a large space before dissipating several moments later. With this reverberance, dub techno approaches the endlessness of drone music (p. 97).

Dunning's dub techniques in the concert seem to open spaces within the sound layers and move delayed sounds through the harmonic spectrum, also changing the pitch (see for example at 5:05 - 5:46 min with the sample from Stack 2, or at 10:00 - 10:45 min with the cowbell sound, or at 16:10 - 16:50 with Stack 5).

In Dunning's turntable construction, the abstract sounds from the needle distortion, too, are inherently linked with the electronic sound production of the techno track. Dunning achieves a percussive bass drum sound, for example, not only via the synthesisers (Stacks 3 and 5) but also via the abstract distortion sounds of the record needle from the looped sample of Stack 1 and the blanked-out record of Stack 2. This dry ‘pop’ noise is a close equivalent to a kick drum sound, and something thus Brinkmann similarly used (see External Study). The distortion, caused by the unevenness of the record surface in Stacks 1, 2 and 3, creates noise and signal at the same time. The periodicity of the loops develop these distortions into structural beat elements. The noise impulses of Stack 3 are additionally translated into an electronic synth sound (noise gate and Yamaha synthesiser; see External Study). A scratch on the vinyl record’s surface destroys the groove’s shape and partially deletes the audio content of the record disc. In Dunning’s setup, however, the ‘pop’ of the scratch provides a signal itself to be transformed into another sound. As a result of this transformation, there is no direct link to the record material anymore, since the abstract noise itself cannot be heard. Nevertheless, the response of the electronic sound occurs synchronically with the scratches on the record. The trigger system partly fulfils the conditions of instrumentality outlined by Croft (2007, p. 64, see also Chapter 2), so that weak links still connect the bodily turntable machine with the immaterial sound dimension.

In summary, in Dunning’s setup abstract sounds from the playback medium are merged with electronic instruments and devices used for techno music to play with the ambiguity various forms of sound production generate (electro-mechanical, electro-acoustic, electronic).

5.5 Ambiguous Temporal Patterns

Dunning’s mechanical techno is predominantly organised by overlapping repeating loops of rhythmic patterns, as is generally common for techno music (Snoman, 2010, p. 284, Butler, 2006). The stacks generate individual layers, dub effects intervene in the feeling of time and mood (Toop, 1996, p. 116), and the mechanical sound production causes occasionally irregularities.

Butler (2006) focuses on the layering of rhythmic patterns and metrical contrasts in electronic dance music. His analytical findings contradict the general view that dance music requires a simple structural organisation to avoid an overly active listening to metrical details. Butler (2006) moreover states:

> Although most EDM can be transcribed in measures of pure-duple duration, and often with a 4/4 time signature, it cannot be reduced to a singular metrical type. The various kinds of rhythms that form its beats offer different windows into temporal experience, as listeners’ categorizations of rhythmic and metrical qualities illustrate. [...] the ways in which DJs and producers construct and deconstruct meter and

> texture reveal sensitivity to the components that constitute these musical dimensions as well as an interest in shaping time through gradually unfolding processes (p. 116).

Butler (2006) therefore proposes in his analytical examples more than one interpretation, claiming 'that listeners will hear differently depending on their own inclinations and that multiple hearings are viable' (p. 126). The perception of rhythmic patterns appears mostly conditioned by the identification of a meter; it is also conditioned by grouping processes that create an order of acoustic events through 'principles of grouping' known from Gestalt psychology, such as proximity, similarity, closure, and continuity (Auhagen, 2008, p. 438). Butler (2006) distinguishes three classes of rhythm in EDM:

1. The 'even' pattern consists of equal units, as in the four-to-the-floor rhythm.
2. The 'diatonic pattern' is not necessarily an asymmetrical temporal structure but 'share[s] properties such as maximal evenness and individuation with the diatonic scale', e.g. 3+3+2 (♪=1) (p. 85).
3. The 'syncopated pattern' – despite its accentuating weak beats – shows a dynamic role that 'reinforces' the meter at the same time (p. 87).

In discussing the alignment of superimposed patterns, Butler identifies the presence of 'metrical dissonance' as well as ambiguity. He adopts Harald Krebs and Maury Yeston's definitions of a 'pulse layer', orientated to the fastest regular layer of motion, and of 'interpretative layers' that group patterns according to the slower units. The number of pulse-layer attacks in the interpretative layers he terms 'cardinality' (Butler, 2006, pp. 139-166). If the interpretative layers of two individual patterns are aligned, they are metrically 'consonant'. Yet 'metrical dissonances' can occur with their non-alignment if:

1. the interpretative layers of the same cardinality are displaced from each other ('displacement dissonance') or
2. two layers of different cardinality are combined (e.g. in a piano piece with a 2-layer in the right hand and a 3-layer in the left hand) ('grouping dissonance').

In Dunning's concert modulations in dynamic, timbre and texture alter the perception of rhythms. The manipulations with the Cathedral reverberation and the delay pedals create 'smearing' effects (Demers, 2010, p. 98) that metamorphose into new sounds, moving from the background to the foreground and making the new accentuations compete with the established metrical background. The delay and dub effects in feedback circuits are clearest at the beginning from around 1:16 - 2:32 min over the looped synthesiser sample from Stack 1; several shifting and overlapping patterns occur, which create difficulties in establishing a stable meter. Butler (2006) describes this phenomenon as 'ambiguity of metrical type', which is mainly caused by ‘underdetermination’ when there are insufficient layers of motion provided to form a stable metrical background (p. 129f). Underdetermination appears typically at the beginning or end of EDM tracks (Butler, 2006, p. 130). The basic loop in Dunning’s concert, starting at around 1:16 min, provides mainly two accents: a pop or noise burst from the needle distortion and an emphasised bass sound in the pulsations of the synth sound at the midpoint of the loop. As the loudest accent, the noise burst can be interpreted as a downbeat. Together with the bass sound, a unity of foreground sounds develops with slow impulses in a metric framework of 2/2 meter (the bar lines in the accompanying graphical representation indicate this metrical structure). A crescendo of delay pulsations at around 1:24 min creates a 4/4 structure. From around 1:23 min on, however, an alternative focus on the delayed sound of the synthesiser drone is equally possible, which creates a pulse in a 4/4 meter starting with the bass sound as the downbeat. At around 1:45 min, a brief polyrhythmic accumulation occurs as the ostinato of accentuated delayed synthesiser sounds develops a more dominant deviating rhythm than the noise burst, and this seems to displace the former rhythmic feeling; it can further be considered a displacement dissonance, as the new rhythm does not enter on the downbeat of the 2/2 measure. The new interpretation allows a new beat, something Butler (2006) calls ‘turning the beat around’ (p. 141). De la Motte-Haber (1985) compares the superposition of two competing metric layers with the visual phenomenon of ambiguous figures or multistability from Gestalt psychology, and shows how listener focus can flip from a layer of slower impulses to the other layer with faster impulses (p. 116).[20]

In the group of bass drum accents at 2:17 min, a rhythmically diatonic pattern develops with the unit ‘X x . X x . . .’.[21] The first beat of this pattern occurs on the downbeat, yet three measures later the same accent appears to be the upbeat to the following beat. The missing repetition shifts the impulses into parallel patterns and an unstable rhythmic feeling results. The repeated pattern at 2:31 min, as also illustrated in Table 5.4 for Stack 1, furthermore allows two interpretations. Both patterns are present: the percussion layer with one beat and the bass/synth layer with two subsequent quarter notes. Their overlap results in a displacement dissonance, as both have the same cardinality; the downbeat is perceived as occurring with either the impulse of the needle distortion, with a unit ‘Xxx.’, or the first pulsating synth, with a pattern ‘Xx.x’. In sum, between 1:30 - 3:24 min rhythmic ambiguity is predominant due to the constant rhythmic shifts, and the perceptual process is accordingly dependent on the sound layer that the listener chooses to focus on (see bar lines in the graphical representation that indicate possible downbeats). A more solid beat develops with the cymbals of

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[20] De la Motte-Haber refers in this regard to contemporary pieces of minimal music in the 1970s, such as *Music with Changing Parts* (1970) by Philip Glass.

[21] X here stands for a strong accent, x stands for a sound without an accent, and the dot for a break.

Stack 2 at 3:25 min. The pulsating synths from the pattern starting at 2:31 min become masked and finally blended out, but audience members might experience difficulties in gaining the sense of a clear metre. At 3:50 min, for example, either the impulse of Stack 1 or the impulse of Stack 2 two quarter beats later could be heard as the downbeat of a 2-2 pattern. The type of loudspeaker, as well as the listener's position in the room or in relation to the loudspeakers, can also influence the listener's perception (Baumgärtel, 2015, p. 328) and alternative patterns that are not discussed here might have been recognized in the concert. In general, the ambiguous patterns appear mostly at the beginning of the concert or in moments with reduced musical layers. For Dunning, the reduced sound layers seem to provide conditions that allow him more liberation in varying the temporal patterns with delay and reverberation. Conspicuous too in this regard are the temporary layers of delay feedback that create grouping dissonances. At 5:04 min, for example, a pattern of delays, although slightly irregular, develops two groups of three triplet quarter notes against four metrical quarters. Using Krebs' framework, this would mean a 3 layer against a 2 layer and a grouping dissonance with a ratio of 3/2. Similar situations appear with the delayed signals creating varying dissonant layers, such as with the cowbell at 9:48 - 10:44 min, at 15:55 - 16:51 min with the delayed snare drum of Stack 5, and at 21:11 min with the cowbell again.

In contrast to composed rhythmic discrepancies in most EDM, in this concert the metrical ambiguity is partly caused by the irregularities of the turntable sculpture. Dunning's setup accentuates differences within the mechanical repetition. The steadiness of the setup is entirely linked with the synchronisation of the rhythm-creating stacks. Instability creates irregularity, imperfection and elements of unexpectedness in the looping beats. In these moments, the illusion of the regular and machine-driven techno track breaks and the relationship between the turntable apparatus and the sound comes to the fore. This imprecision in the mechanical turntable construction belongs to Dunning's key concept: 'The fertile parts are where the decay is happening, the noise, broken down parts, dying matter' (Dunning in Chuter, 2016). The inconsistencies in the repetition seem to deny something entirely inherent in machines. Precise and determined repetitions are associated with the rhythms of machines, factories, or even marching music (Emmerson, 2007, p. 68). According to producer Thomas Brinkmann, in techno music a loop might not bring any change with it: 'The loop is going on, and on, and on, and it's always the same.' (Brinkmann in Sherburne, 2009). Yet Dunning breaks this cyclic movement with the means of the mechanical itself. His invention is therefore more comparable to Jean Tinguely's 'meta-mechanical' sculptures (especially his series of méta-matic sculptures) than to Giuseppe Pinot-Gallizio's 'Industrial painting' machine. With his automata, Tinguely underlines the relationship between repetition and change – something art historian Pontus

Hultén sought to explain with the term 'méta-mechanical' – while ascribing the differences to an extension of the mechanical rather than to its contradiction (Hultén in von Herrmann, 2008, p. 313-315). Similar to Tinguely, Dunning's 'Mechanical Techno' machine automatically produces 'mechanical chaos' and little accidents. To produce variations in the repetitions, both artists include found objects and design mechanical movement that is prone to fail, partly as a form of parodistic machine art. As both of their works are rooted in the basic principle of repetition and change, a similar term such as 'meta-mechanical techno' could be applied for Dunning as well. Dunning furthermore seems to bear out Butler's (2006) observation that

> obsolete technology is just as much a part of EDM's fetishisation of the machine as is the latest gizmo, and the simple tool can be just as important as the most complex of devices (p. 68).

In order to present the beats' inconsistencies as interdependent with the ramshackle sculpture – and therefore the music's 'meta-mechanical' quality – the process of sound production must be transparent. The sound production is largely embodied in phonographic movements and systems that trigger mechanically electronic sounds. The setup provides limited visual feedback of this triggering system. Acoustic instruments in the sound production, such as the mallets hitting the cowbell with each rotation, might be familiar to the audience. The mediated and electronic sound production, however, especially in combination with the unusual triggering system using modified vinyl records, is unconventional. Delays, reverberation, and panning effects also impact upon the simultaneity of the link between physical action and sound. Without observing the process of building up the machine at the beginning of the concert, the sound production would likely appear incomprehensible. Yet the irregularities and peculiarities might provide further cues indicating the mechanisms in this apparatus. With the addition of each new layer, the stability of the construction seems to vanish, modifying the periodicity of the rotation and therefore the temporal patterns of the sounds. At 11:00 - 11:35 min, for example, the rotation slows down due to increased resistance and the weaker belt-driven turntables, resulting in slight downwards glissandi. At several times, the sample from Stack 2 seems to move out of sync (e.g. at 5:00, 5:56, 6:28 and 8:52 min). The bass line of Stack 3 in general hardly keeps up a regular rhythm, nor do the hi-hat sounds from the bouncing piezoelectric microphones of Stack 5. The single stacks require manual adjustment for synchronisation (e.g. 3:22 min or around 11:44 - 11:55 min) so that the patterned discs match with the beats from the other stacks. At 11:45 min, Dunning spins the record to speed the construction up again. These mechanical interferences visually link the sound production with the physical actions of the performer and the material constraints of the construction. The spin or push of the record in Stack 1, in particular, at the beginning of the concert, highlights the timbral change in the synthesiser sound as being dependent upon the mechanical disc rotation: the sped up rotation increases the pitch. This is a performative act that links the change in the sound of the record playback with the movement of the hand before the phonographic rotation takes over. In this regard it is significant that Dunning also finishes the concert with a manual action, stopping the rotation of the disc in Stack 1 with his hand. Such performative actions partly embody the mediated sounds and support the audience's understanding of intended, failed, and random actions or processes. For example, the audience might deduce that the opening synthesiser loop before 1 min arrives too early, because Dunning adjusts the thread construction so that the needle goes along the spiral groove again instead of jumping back into a loop.

Slightly deviating rhythms are generally a common phenomenon in musical concerts, for example with performers on acoustic instruments. Auditory perception shows tolerances for mathematically imprecise durations and breaks. In this perceptual process, categories or classes of temporal patterns seem to develop that remain constant within a certain threshold (Auhagen, 2008, p. 441). However, irregularities and surprising events, such as mistakes, can also cause an 'attentional shift', temporarily directing the listener's analytical focus to details, as Martin Pfleiderer (2006) describes on the basis of Jones and Boltz's work (p. 42). The imperfections in Dunning's music making process hence might direct attention away from automated repetition and demonstrate Dunning's implementation of spontaneity and improvisation. In this way he inserts features of human fallibility as well as of experimental music into EDM. This unusual hybridity reflects the technological sound production. The illusory spaces that techno tends to build up with electronic sounds gain tactility and a material signature from Dunning's ramshackle mechanical turntable construction. The grain of the performance, as Croft (2007, p. 65) defined it, is conveyed through the imprecise patterns and loops of Dunning's mechanical techno resulting from the 'sounding body of the instrument'. With Schaeffer's locked grooves (Chion, Dack & North, 2009), it was the record player that became known for creating precise loops in electronic music, although mechanical music boxes could use the principle of looping as well. In Dunning's concert the turntable's automatic rotation gains an instrumental use through its re-interpretation as a sequencer, yet ironically this occurs in the light of its fallibility.

5.6 Presence – Mediality

The interaction between performer and turntable construction, incorporating numerous electronic devices and instruments, generates mixed presences. The build-up of the mechanical turntable construction and the mechanical trigger system are the most noticeable events in the concert. The visual information provided by the modified vinyl records that accumulate, stack after stack, displays the sound production's operating system, similar to the internal mechanics of a clock, without forfeiting any fascination for the production of the EDM track. The mechanics of the prepared record discs operate in a similar way to cogwheels in a clockwork. Butler (2006) uses cogwheels as an analogy for the superimposed layers of motion in EDM tracks, whereby each cogwheel structures time in a specific way and moves occasionally apart from the others or without aligning (p. 138). In Dunning's concert, the resemblance to cogwheels applies not only analogically to the looped patterns but also physically to the prepared stacks aligned mechanically in a synced rotation. The 'turntable machine' displays therefore a pellucid and partly sensual sound production based less on conventional playback than on mechanical movements and strikes involving several instruments. The precedence of the machinistic over the sculptural here is, however, counterbalanced with deliberately implemented irregularities – nearly human qualities that might even create a sense of intimacy (Rogatchevski, 2016). Observing Dunning in interaction with his 'badly-oiled machine that is almost falling into pieces' (Dunning in Barry, 2015) might also add a certain appealing tension to the concert experience.[22]

Dunning compares the concept of incorporating the physical making process into his performances (as especially manifested in concert Section A) with a 'task-as-score', a path he solely needs to follow. This is a concept that has become more defined over time:

> I've also learned a lot from developing the live show. I build the machine twice with different setups, leading to a flow through two compositions. The physical building of the tower forces the shape of the resulting sound. It doesn't feel like I'm 'performing' as much as I'm completing a task. Working through a process. This kind of task-as-score is something I've drawn from working with AAS [Dunning's London-based collaborative project] (Dunning in Chuter, 2016).

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[22] A user comment under the video excerpt of the concert confirms this impression. Here the short conversation between user [Alphastare] and Graham Dunning in 2015 from the video platform YouTube:
"Alphastare: 'The precariousness of it is fun to watch, looks like it could all go spinning wildly out of control at any moment! Nice post.'
Graham Dunning: 'Thanks – it's pretty ramshackle, deliberately so – gives it a certain unpredictability.'
Alphastare: 'I can tell, it definitely adds to the excitement level for the observer!'."
See Dunning, G. [Karin Weissenbrunner] (16 December 2014) Graham Dunning's 'Mechanical Techno' (excerpt) live at Power Lunches London 19/9/2014 [Video file]. Retrieved from www.youtube.com/watch?v=80R2qcmC2Z4.

The following-a-task concept naturally can restrict the feedback loop with audience members in performance. For example, a dispute between two women about the noise of one woman's heckling overshadows the last minute of the concert; Dunning remains focused on his task of dismantling the stacks and only becomes aware of the argument after he has finished the concert. Notwithstanding the broken feedback loop between performer and audience, this unusual incident might still have contributed to the uniqueness of the audience's concert experience.

In Dunning's concert, the centre of attention generally oscillates between performer and machine. This is especially so during the process of completing the construction and in the moments when he 'wrestles' with the machine (Dunning in Chuter, 2016). These latter moments are mostly evident between 12:02 - 14:55 min, when the bouncing piezoelectric microphones require a considerable time span until they are in the right position. Although Großmann (2013b) generally observes in techno a fusion of the machine's idiosyncrasies and the human influence (p. 308), Dunning presents this subtle hybridity in a more literal version. Dunning goes so far as to describe the interaction with the automatic machine onstage more as an interplay with another performer than one with an instrument:

> The thing is, if you leave the machine running, things will inevitably go out of sync. With the mechanical turntable machine I made, it feels like playing with someone else or performing a live dub. It's more like the process of doing a dub mixdown than playing a live instrument; it's more about using the inputs and outputs to compose a piece rather than actually playing it like an instrument (Dunning in Aniser, 2016).

Modernist composers who incorporated record players and music boxes into their compositions – for example, Respighi's *Pini di Roma* (1924) with record player and George Antheil's *Ballet Mecanique* (1924) with player pianos – seemed similarly inspired by the autonomy of the mechanical instruments. Dunning's turntable construction particularly reveals its autonomous role in the second half of the concert, wherein the interaction between performer and turntable tower is reduced to brief adjustments (for example, displacing the cowbell).

In Sections B and C, the performer seems only to 'conduct'[23] the synthesis of the turntable construction's loops. The importance of Dunning's 'conducting' interventions using the mixing desk and effect devices manifests at certain moments when he prepares the next stack, leaving the rotating construction on its own (such as at around 3:20 min). Without the live control of the human performer, the mechanical repetitions of the machine, despite the propensity for mechanical faultiness, might lose themselves in monotony. The loops present the same patterns in the form of a 'moving stasis' (Glasmeier, 2002, pp. 17f), resulting in a similar steady stimulus, which might lead to habituation (Flückiger, 2012, p. 294). This ‘lifeless’ characteristic of the mechanical was already a common critique of automated music boxes and player pianos in the eighteenth century. At that time, the problem was tackled with the implementation of dynamic changes to create an impression of greater liveliness (Wolf, 2013, p. 85). Dub techniques provide an especially amenable tool for animating ghostly life within machinistic repetitions (Toop, 1996, p. 115), which Dunning apparently deliberately applies. His accentuation of distinct harmonic features and his control of the ‘feedback circuits’ is in this way crucial for an organic flow in his mechanical techno.

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[23] German Producer Sven Röhrig (1995, LOC 1.0 FEA 1.8 3PH) calls the DJ desk generally a 'conductor's stand'.

Although the mixing desk seems to take on the role of an instrument (Snoman, 2010, p. 285), techno DJs usually present an absence of virtuosity or expressivity and therefore of a musician’s ‘ego’, something that might flatten the hierarchy between artist and audience (Röhrig, 1995, LOC 1.0 FEA 1.8 3PH). Dunning’s ‘sound-accompanying’ movements (with his head, upper body and mostly one leg), which are executed nearly constantly in Sections B and C of the concert, indicate such a non-hierarchical equivalence with the dancing audience members. Researchers have postulated a dynamic perspective on pleasure in groove-based music, whereby the body feels first invited to synchronise with the meter and is thereafter rewarded with the subsequent movement (Witek et al., 2014, p. 8). In a social context, rhythmic entrainment and synchronisation via body-movement with a given meter may furthermore be emotionally contagious (Witek et al., 2014, p. 1). Therefore both parties, performer and audience members, might equally share a feeling of desire and pleasure in their synchronised dancing movements.

Conclusion

In this case study, the experimental turntablist Graham Dunning emphasises the media-specificity of his phonographic automaton by harnessing prepared records producing mediated, electronic and electro-acoustic sound as well as the mechanical system’s fallibility and imprecision. ‘Mechanical Techno – Ghost in the Machine Music’ creates contemporary electronic dance music using mechanical playback devices, reminiscent of music boxes from former centuries, in contrast to contemporary software-based technology. Dunning establishes with this project a kinship between techno and experimental music. As Part I demonstrates, the artist’s encounter with the phonographic medium follows distinct strategies to realise a blend of mixed sound sources; Dunning’s preparations of the record material blank out the sound of record grooves, strike acoustic instruments through a stepped record, and transform record scratches into a voltage control signal for electronic instruments. In the performance, the loops of his mechanical techno directly correlate with the physical spin of these record preparations. Dunning's modular stack system of modified disc surfaces provides a sound palette of drones, bass lines and percussive elements. The temporal organisation, vertically distributing the modules, stack by stack, on one turning platter, embodies the techno tracks' structure and allows the audience to watch and comprehend the physical process of the composition. The DIY and bricolage characteristics of Dunning's turntable automaton's imperfections break with the consistencies of the beat-driven structure. The amalgamation in Dunning's 'Mechanical Techno' of composition (task-as-score), material and context thereby generates tension between the predictability of the patterned discs and the unpredictability of the execution, and therefore between intention and chance. Instead of the performer's actions contributing to the concert's liveness, it is Dunning's automated yet partly unreliable machine that develops its own life on the stage. This meta-mechanical quality, such as is also seen in Tinguely's kinetic art, emphasises and visualises 'the ghost in the machine' (Dunning, 2015) and leaves the listeners with ambiguous rhythms and sound sources. Although numerous records are incorporated, the media reality plays at most an equal role alongside the equipment's material reality and the abstract electronic sound. Dunning's conducting role in controlling the dub effects still succeeds in establishing an organic flow in its interaction of layered timbres and textures, presenting distinct breakdowns and temporary metrical dissonances via the delayed and reverberated signals.

Conclusion

Following the detailed analyses of the previous chapters, the focus will now return to my research questions. I want to discuss the artists' encounter with the medium on a more general level by taking into account the findings of the analyses. Further relevant implications addressed in this conclusion are the general contribution of this study's methodology and analytical tools, the role of the instrument in experimental turntablism and other comparable music scenes.

This study initially focussed on the task for artists to reflect on the technological mediation of sound; in experimental turntablism this is realised through the artist's use of the medium's specificities, which brings the reproduction devices and objects themselves to the centre of attention. The turntable's distinct features permeate the artists' individual practices and unique performances in a diversity of ways. My methodological framework for the performance analyses in the case studies accordingly identified certain points of orientation for tackling the media-specificity as found in the sound production and distinct performative aspects. These points of orientation discuss the sound production in relation to the turntable's and performer's embodiment, presence and mediality. In tackling the turntablists' blend of composition, improvisation and indeterminacy, the methodology recognises the live performance as a process; it acknowledges a feedback loop as existing between audience, performance situation, and the artist and instrument; and frames the performance in relation to the artist's instrument-building processes prior to the concert (as illustrated in the schematic overview in Figure 2.1). Since the case studies addressed three different main approaches among the artists, with an emphasis variously on playing techniques (Joke Lanz), sculptural objects (Vinyl -terror & -horror), and mechanical operations (Graham Dunning), the analyses of the performances provide a rich collection of examples for answering my research questions.

The artists' encounter with the turntable manifests in their individual conceptualisation of the instrument setup, which implements their compositional decisions. In the case studies, the turntable functions at different times as a sampler, a sculpture, a sequencer, and a mechanical automaton. Sound research, artistic decisions, playful experiments, and bricolage determine the instrument's shape, which in turn affects the performer's interactive strategies in the improvised concert.

In Joke Lanz's case study, we find an emphasis on the turntable's specificities in his deliberately minimal approach. As the performance analysis shows, Lanz prevalently realises the sound production and manipulation in performance through his choice of playing techniques. His minimal turntable setup therefore avoids the need for complex operations and guarantees a direct interaction in the performance.

Lanz's limiting of the demands of the instrumental interaction seems to facilitate his participation in a feedback loop with the audience and performance situation; this was particularly evident at the end of Lanz's performance, when he imparted a site-specific aspect to the performance by incorporating the venue's table in his needle drop technique.

In comparison to Lanz's transparent interaction with only two turntables and a sampler, Vinyl -terror & -horror create obscurity with their sculptural assemblage of numerous record players and prepared objects. Working with the paradox of the horror movie genre whereby fear unites at once distress and joy, Vinyl -terror & -horror's destructive instrument design uses the specific materiality of the media objects to cater for the creation of an unsettling appearance and sound production.

In Graham Dunning's case study, the setup's imperfect repetition and synchronisation are factored in to create awareness of the turntable's specific mechanical rotation and the unconventionally physical way of producing techno beats. Dunning developed a modular design using turntables, records and (electro-acoustic and electronic) instruments. His prepared record objects trigger these accessory instruments and represent a corresponding palette of rhythmic patterns. Dunning's compositional work with this modular setup is comparable to the pinner of a music box, finding solutions to trigger a broad repertory of instruments for his studies in rhythms and drones.

The turntable serves as vehicle for various ideas in the case study performances. This suggests that the turntable is more than an instrument; it serves as the artist's fundamental concept. The conflation of instrument designer, composer and performer allows each artist to control several aspects at once. The instrument can not only become adapted to the individual artist's concepts and sound research but also to the respective performance situations.

The conceptualisation of the turntable can be observed in detail in each artist's instrument making processes and their preparation of pre-compositional elements. The case studies showed various applications of these material preparations and their distinct ways of generating forms of phonographic embodiment. As a result of the artist's encounter with the specific features of the turntable and record as material things, she or he inscribes ideas for the sound production and interaction in various ways. Chapter 1 discussed the possibilities available to the artists in their encounter with the physical material in the preparation of cut-ups, disc patterns and surface textures. I suggested that by preparing the record discs, the artist determines sculptural, structural, rhythmical and textural aspects. The artist can also manipulate the playback in specific ways by modifying the discs and/or the record players. In Lanz's concert, a sticker pattern on the record could imitate the stammering rhythm of a vocal sample. Lanz, though, following his minimal approach, hardly modified the devices and records. Instead he demonstrated an unconventional sound production by simply playing the label of a record to produce a distinct noise texture, and by using a 7-inch record without an adapter to alter the pitch of the sine tone samples. Vinyl -terror & -horror, by contrast, exploit a broad range of compositional elements through their object preparations. On the one hand, their cut-up turntables (moulded into a tower construction) and cut-up and baked records can be seen as sculptural art objects, while on the other hand they also foster indeterminate structures of samples and noises. The duo's 1970s record player, for example, with its faulty playback function disrupts samples and selects them randomly. The baked record's uneven surface yields irregular noise textures. With their cut-up records and loose record shards, Vinyl -terror & -horror implement chance processes and achieve the creation of irregular structures of samples accompanied by intermittent noise bursts. Their abundance of prepared record players, tone arms and pickup cartridges accentuates the object's corporeality and facilitates, too, a dense and polyphonic structure. Integrated for an ambivalent role in the duo's cinematic soundscapes concept, these preparations, through creating irregular musical structures and noises of malfunction, aim to interrupt as well as support the imaginary scenes of their soundscapes. In Dunning's approach, the compositional predetermination through record and turntable preparations, with an emphasis on periodic mechanical rotation, forms the bedrock for the creation of mechanical techno. Except for the record in the lowest stack of his performance setup, all Dunning's prepared records have regular patterns, such as the blanked-out record with a free quarter, or the pins mounted on the record surface splitting the round disc in halves and quarters. In a synchronised looping structure, each prepared record unfolds the composition of a rhythmic cell within a techno track. The whole modular assemblage of the instrument determines additive and subtractive structures within the performance and at the same time embodies the musical development.

For sound production based on the reproduction of pre-recorded sound, experimental turntablists use available distributed records (such as those found in thrift stores), but also dubplates and self-released records to increase their possibilities. Chion (2015) remarked with regard to Pierre Schaeffer's early *musique concrète* pieces that the inner conflict in sound samples between abstraction and narration should be embraced rather than denied in order to coalesce all of the sound's dimensions (p. 23). This multidimensionality of pre-recorded sounds is explored in the performances of the case studies. In Joke Lanz's performance, the use of samples and sample manipulations seems to oscillate between semantic meaning (to create comic moments with vocal fragments) and abstraction (to create noise/signal contrasts and similar acoustic properties). Vinyl -terror & -horror play with the cinematic verisimilitude of horror movie soundtracks and foreground their samples' visual and emotional values, particularly in the context of suspense and fear, which can affect the listeners' awareness of the sound sources. By incorporating 'unfinished compositions' – predetermined structures on self-recorded dubplates and self-released records – Vinyl -terror & -horror embed additional compositional aspects into the improvised concerts. This strategy decreases the generation of embodiment or instrumental links between sound and movement. On the other hand, the obscurity of the sound production is crucial for the development of a strong imaginative scene, which is deliberately contradicted by the physical actions on stage. Graham Dunning's concert applies samples mostly as instruments (as anonymous, abstract samples) that share an equal role with the electronic and electro-acoustic means of sound production. Here the conjunctions of acoustic properties are created via beats and textures.

The prepared objects, use of pre-recorded sounds, and playing techniques in experimental turntablism indicate underlying conceptual decisions by the artists. Among the case studies, Joke Lanz is the artist who mostly focuses on playing techniques. Lanz additionally underlines the specificity of the turntables in their unmodified state by reinterpreting standard features, such as the start/stop button or speed selection, for sound alterations. Lanz's playing techniques for sound manipulation (such as various forms of scratching, spinning, and interrupting the reproduced sounds) and abstract sound creation (such as dropping the needles and playing an LP with stickers) follow from the aim of creating a web of musical relationships of similar and contrasting sound categories (effected, for example, by transforming a sample of pure pitches into a noisy element using a chain of scratches). His particular ways of interaction with the turntable foreground the device's strong instrumental action-sound couplings and mostly embody the produced sounds. The turntablists' prepared instruments and objects engender new performative aspects and specific ways of interaction. Greta Christensen's turntable tower facilitates a specific off-centred playback, and her loose record shards require manual assemblage on the platter. Dunning's construction limits the modular assemblage of the stacks while also providing forms of phonographic embodiment that demonstrate a dependency on the material patterns and mechanical operations; Dunning's interaction with his setup, however, is also focused on the use of the mixing desk.

In the performance situation, the synergy of artistic concepts, material preparations and playing techniques enters into a feedback loop with the audience members and live situation. The making processes that take place prior to the concert manifest in the instrumental setup's distinct possibilities and limitations, so that in the improvised performances the performers can blend composed structures and chance processes. The performance analyses of the case studies showed that the musical styles of the experimental turntablists can vary strongly. Joke Lanz's performance presents a collage-like structure with rhythmic units, dialogical sections, and allusions to noise music. Vinyl -terror & -horror's performance uses a collage-like assemblage of film soundtrack samples to develop suspenseful and narrative soundscapes. Graham Dunning's performance presents dub techno through mechanical loops and delayed feedback sounds.

Most pertinent for comparing the synergies in performance, however, is the focus on a friction between material and media reality. As the analyses have shown, each artist follows strategies that in distinct ways relate the sound's mediation to the materiality of the medium and in this way foreground various specificities of the medium.

Within a framework based largely on a signal/noise dichotomy, Lanz finds elementary similarities in the acoustic properties of samples, manipulated samples, and abstract noises from the medium. These similarities create convergence and at times confusion between live and reproduced sounds, something Lanz fortifies through the use of an additional sampler device. The sampler, by recording and reproducing in concert the realised sounds, transforms an acoustic event into a new reproducible media reality, creating a third dimension. Lanz re-introduces these live recorded samples into the dialogue of manipulated and abstract sounds from the medium. The analysis of Lanz's concert presents a significant example, too, of the interdependency of performer, performance situation and audience. This interdependency is most clearly demonstrated in Lanz's extension of his needle drop technique using the venue's table while being spurred on by the audience's cheers.

Vinyl -terror & -horror's confrontation of media and material reality presents both dimensions with ambivalent roles. Although the duo's performance generates rather a disconnect than forms of embodiment in the sound production, the lack of performativity follows a distinct strategy. The duo's use of emotional and visual qualities in their cinematic soundscapes aims to increase the audience's focus on the sound's mediation, with the aim of developing in the audience's perception imaginative scenes. The effect of the fearful atmosphere, though, might increase the listeners' desire to identify the sound sources, directing attention towards the sound production and devices onstage. The duo's abstract sound production and disorientation via their material preparations, and the monstrous appearance of their sculptures, lets the focus return to the material objects. Yet through the obscured sound production, the material objects also support the imaginary scenes through the production of unidentifiable sounds and a sense of unsettledness.

In Dunning's concert the turntable automaton amalgamates sounds from several instruments (reproduced samples, and live produced electro-acoustic and electronic sounds) into a structure of rhythmic patterns and delayed voices, which in the sound production seems to dissolve the instruments' distinction. Yet this ramshackle 'music machine' highlights its materiality and mechanicalness through deviations in rhythmic accuracy and the physical movements of the rotating trigger system.

These meta-mechanical features generate a form of phonographic embodiment and link the techno beats with the machinist corporeality of the construction, foregrounding the interdependency between musical and physical processes.

In these experimental turntablism performances, media reality and material reality confront each other as equal agents. The production of abstract sounds is directly linked to the medium's materiality, whereas manipulations remain dependent on the record samples. The manipulated sounds are therefore intermediate: linked to the mediation but disrupting the reproduction process. When its mediation is interrupted the medium loses its transparent characteristic, which facilitates reflections on listening habits. In experimental turntablism the artists acknowledge the turntables and records in their specific two-fold nature: both as a medium and as a material thing. Materiality is not accentuated through a simple contrast with the reproduced sounds. As seen in the concerts, the artists play with confusions and similarities between reproduced, manipulated and abstract sounds of the medium (and at times also of further instruments and devices).

All three case studies demonstrate that the instrumentation with turntables and records belongs to the artist's general concept, something that impacts on more than simply sound production. In this way the specific performative aspects, such as the embodied playing or bodily presence of performer and instrument, belong to the concert experience just as much as the sound. In all three concerts, forms of embodiment (phonographic/human) and strong action-sound linkages seem to be achieved through material correspondences (such as patterned discs) or the performer's movements (such as scratching techniques) and particularly through the live production of abstract sounds of the medium (such as the needle drop technique and record shards). The presence can shift from performer to the phonographic medium and contribute in the artist's individual concepts. Joke Lanz, for example, mainly establishes a presence as a performer next to his less conspicuous turntables and records. Through this setup Lanz presents sounds that seem to directly embody his manual movements on the record (interrupting, scratching, spinning) or the automatic operations (stop button or crossfader). Embodiment through the performer's actions, is only partly observable in Vinyl -terror & -horror's concert. The phonographic movements are much more present – generating a phonographic presence –, and aim to draw the focus only to a limited extent to the actions on stage. In Graham Dunning's concert a similar dominance of phonographic presence is observable, in which the performer moreover conducts the mechanical sequencer. These performative aspects in the concert underline a feeling of liveness and support our understanding of the artists' unusual sound production. They are therefore key to comprehending how the artistic concepts negotiate media and material reality and facilitate our recognising the media-specificity more clearly. In these ways, in experimental turntablism the live performance and an insight on the sound production is therefore crucial towards reflecting on mediation. During the concert, an understanding of the sound production might not be completely attainable. After the concert, curious audience members often use the possibility to approach the artists, ask questions and gain a closer look at their instrument. It is also common that spectators create their own documentation by filming or taking pictures during the concert.

The findings of my analyses are not restricted to these performances but have general application. Although expressing individual concepts, the artists' strategies of negotiating mediation and materiality are applicable to experimental turntablism concerts in general, differences of musical style and context notwithstanding. This study's scope focused on artists using samples from vinyl records and the materiality of the medium itself. A considerable number of experimental turntablists, however, focus only on abstract and percussive sound production with the record player. As this study covers both dimensions – reproduced sound and abstract sounds from the medium – my methodology can also be applied to the latter type of concert. A general reference to mediating processes might in any case still be possible, as, regardless of the type of sounds produced, the playback device itself always implicitly refers to its common use in music reproduction. In making comparisons to other turntable artists, especially in chapters 1 and 2, this study has tried to reach a broader understanding of the artists' concepts. The analyses in this study contribute to a general enrichment of the field of knowledge regarding experimental turntable performances, a contribution that might shape future concert experiences.

The analysis results of the case studies test the holistic approach of my methodological framework. The diversity and instability of the artists' practices and concerts challenge traditional methods, necessitating an open approach as well as an extended set of tools. One of my contributions to knowledge is the development of a methodology that might help to establish a more solid methodological foundation for analysing performances with live electronics and improvised experimental music in general. Developed from a range of theories and methods, my analytical approach in this research offers a versatile framework that tackles practice-based art productions by focusing on the interdependencies between artist, making processes and performance situation. The framework's inheritance from theatre studies does not see the focus drift away from the sound but rather become appropriately broadened.

One characteristic of improvised experimental music is artists discovering objects as instruments (Keep, 2009 p. 114). Collins (2004, p. 1) has shown how David Tudor's emphasis on the 'object-specific, intrinsically electronic musical material and forms' inspired subsequent artists in electronic music. A fruitful and more general direction in the analysis of improvised music might therefore be to relate the specificities of the object to the musical performance. Objects, whether electronic or not, might equally be included in individual artistic concepts by focusing on their material constraints and physical properties.

Many of the analytical considerations of this thesis are transferable, in particular those regarding embodiment, presence, mediality and feedback systems. In this respect further research might assist in developing additional criteria for the assessment of instrumentality and embodiment for electronic instruments. Such criteria might also be seen as useful considerations for designing electronic instruments and for future research in this area concerning digital instruments and post-digital movements. In the past twenty years, the revival of vinyl records (Bartmanski & Woodward, 2015), the growing market for analogue and retro synthesisers (Patteson, 2016, p. 165), and the evolution of DIY and hacked solutions (Collins, 2010) attest to an increasing demand for music devices offering greater tactility. Devices with similar specificities to the turntable show how the turntable's specific material and/or mechanical properties can be implemented in other, new electronic instruments. Specificities similar to the idiosyncrasies of turntables have previously been adapted, for example, in CD player models produced to allow scratching manipulations[1] and in the spinning tops used in Canadian artist Myriam Bleau's *Soft Revolvers* (2014); in the latter, the spinning top's rotation speed transforms digital audio samples and activates the device's lights.[2] Hardware solutions that connect with music software also follow the idea of using a touch-oriented interface, instead of using a computer, both in live performances and in the studio environment (see the Hoxton Owl, for example).[3]

The interdisciplinary approach of my analyses included interviews with the artists and the use of tools such as video recordings and interactive graphical transcriptions based on the software EAnalysis (see Appendix C). As EAnalysis has only recently been developed, this study tested the benefits and drawbacks of this analytical tool. By offering the possibility of combining video and audio recordings, it provides key premises for studying performative aspects in concert. As an interactive analytical tool, in which graphical shapes accompany video recordings, EAnalysis allowed the possibility of noting and transcribing visual cues on the basis of the spectrogram's analytical imagery. To the best of my knowledge this has not been possible to date with other analytical software programmes. This study benefited from applying Couprie's (2004) suggestion towards developing graphical signs by following the contours in the spectrogram. These visual cues facilitate the identification of sound sources. However, the eclectic sounds in turntable performances required further abstraction to gain more distinct shapes and distinguish the sounds from each other. Reaching a better understanding of the sound production via the video recording assisted my detection of mediated, manipulated and abstract sounds from the medium itself in the performances and the assignation of these sounds to distinct materials and movements. It should be mentioned that the performance videos using graphical representation create a different impression than watching the performance video without a transcription. The graphical transcription accompanying the performance video allows the viewer to see graphical signs of coming events ahead of time, which creates expectations and reduces surprise. Certain suggestions in the graphical signs might prepare viewers, too, for detecting distinct properties of the sound. The software-based transcription suggests further domains of application in following performative elements in concerts and linking them with computer-based sound analysis. The preparation of video recordings is challenging, however, and entails more effort than an audio recording would. Given how time-consuming the preparation of a graphical transcription is, whether or not this is an effective analytical tool will depend on the scope of the study. Nevertheless, the efficacious results yielded and the possibility opened for studying this kind of musical practice justify the approach.

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[1] See, for example, the model Numark CDX CD Player.

[2] Myriam Bleu, SOFT REVOLVERS (2014). Retrieved from www.myriambleau.com/works.

[3] The Hoxton Owl is a hardware device on which compiled patches of the Max/MSP-related software PureData can be uploaded and executed without the use of a computer.

One of this study's central insights is that the material aspects of instrument design and object preparation can be considered on more equal ground to the notion of composition; in experimental turntablism, as shown, and DIY electronics the borders between these areas become blurred (Richards, 2013). The instrument particularly seems to disclose compositional ideas if the musical outcome or concept engages the device's instrumental specificity. Sound artists as composers, but also as performers and instrument creators, determine their ideas in more creative areas than only in musical ones; consequently, the extension of musicological focus from the sound towards the instrument creation and the performativity is a logical outcome. The acknowledgement of instrument design and object preparation would not only be essential for yielding insight on current practices in live electronics but also, as Patteson's study (2016) shows, for yielding a revised practice-based insight on historical music, such as that of Harry Partch and Luigi Russolo (p. 4). Through its cohesion of material implications and its orientation on the specificity of the medium's materiality, this study also has implications for the research area of material culture studies. Using the turntable's materiality is a key approach herein. At the same time, the turntable's link to mediation, and to the first principle of audio reproduction, is special; sound artists can contrast or question this phonographic medium and its role in sound reproduction. The specificity of the turntable, featuring limitation and versatility simultaneously, inspires artists to use the turntable in multiple ways.

Bibliography

Adorno, T. (1990). The Curves of the Needle. (T. Y. Levin, Trans.) *October*, 55, 49-55. doi:10.2307/778935. (Original work published 1928).

Adorno, T. (1990). The Form of the Phonograph Record. (T. Y. Levin, Trans.) *October*, 55, 56-61. doi:10.2307/778936 (Original work published 1934).

Anderson, L. (2004). [Foreword]. In R. L. Goldberg (Ed.), *Performance: Live art since the 60s* (pp. 6-7). London: Thames & Hudson.

Andrews, I. (January 2013). Lo-Fi Cartridge Construction and Function of the Constraint. *CEC – eContact!, 14.3*. Retrieved from http://econtact.ca/14_3/andrews_cartridge.html.

Aniser, M. (16 March 2016). Defy the Cult of Digital Perfection. *Electronic beats*. Retrieved from www.electronicbeats.net/maria-chavez-graham-dunning-conversation.

Armstrong, N. (2006). *An enactive approach to digital musical instrument design.* (Doctoral dissertation). Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.115.5347&rep=rep1&type=pdf. Armstrong, N. (2012). *An enactive approach to digital musical instrument design: Theory, models, techniques*. Saarbrücken: AV Akademikerverlag.

Attali, J. (2009). *Noise: The political economy of music.* (B. Massumi, Trans.). Minneapolis: University of Minnesota Press.

Auhagen, W. (2008). 5.3 Rhythmus und Timing. In H. Bruhn, R. Kopiez, A. C. Lehmann (Eds), *Musikpsychologie: Das neue Handbuch* (pp. 437 - 457). Reinbek bei Hamburg: Rowohlt.

Auslander, P. (01 January 2004). Performance Analysis and Popular Music: A Manifesto. *Contemporary Theatre Review, 14*, 1, 1-13.

Auslander, P. (2011). *Liveness: Performance in a mediatized culture*. London: Routledge.

Bailey, D. (1993). *Improvisation: Its nature and practice in music*. New York: Da Capo Press.

Baldry, W. J. (2016). *Turntablist Performance Practice*. (Doctoral dissertation). Retrieved from http://etheses.whiterose.ac.uk/13494.

Barry, R. (Apr 25, 2015). Ghosts in a Badly-Oiled Machine: The Mechanical Techno of Graham Dunning, *FACT*. Retrieved from www.factmag.com/2015/04/25/graham-dunning-mechanical-techno.

Barthelmes, B. (1995). Musikklitterung, Electronics und Klangaquarien – Klangbasteleien in der zeitgenössischen Musik, *Positionen*, *25*, 11-16.

Barthelmes, B. (2002). Music and the City. In H.-J. Braun (Ed.), *Music and Technology in the Twentieth Century.* (pp. 97-105). Baltimore: Johns Hopkins University Press.

Barthelmes, B. & Osterwold, M. (1996). Musik Performance Kunst. In H. de la Motte-Haber, Akademie der Künste Berlin & Sonambiente Festival für Hören und Sehen (Eds.), *Klangkunst*. (pp. 233 - 239). München: Prestel.

Barthes, R. (1977). The Grain of the Voice. In R. Barthes & S. Heath, S. (Eds.), *Image – Music – Text.* (Heath, S., Trans.). (pp. 179 - 189). New York: Hill and Wang. (Original work published 1972).

Bartmanski, D. & Woodward, I. (1 March 2015). The Vinyl: The analogue medium in the age of digital reproduction. *Journal of Consumer Culture, 15,* 1, 3-27. (Original work published 2013). Retrieved from http://journals.sagepub.com/doi/abs/10.1177/1469540513488403.

Bartmanski, D. & Woodward, I. (2015). *Vinyl: The analogue record in the digital age*. New York: Bloomsbury Publishing.

Battier, M. (2003). A Constructivist approach to the analysis of electronic music and audio art – between instruments and faktura. *Organised Sound, 8,* 3, 249–255.

Battier, M. (April 05, 2015). Describe, Transcribe, Notate: Prospects and problems facing electroacoustic music. *Organised Sound, 20, 1*, 60-67.

Baumgärtel, T. (2015). *Schleifen. Zur Geschichte und Ästhetik des Loops*. Berlin: Kulturverlag Kadmos.

Behne, K.-E. (1994). 6 Zur Psychologie der (freien) Improvisation (1992). In K.-E. Behne (Ed.), *Gehört – Gedacht – Gesehen – Zehn Aufsätze zum visuellen, kreativen und theoretischen Umgang mit Musik* (pp. 113-130). Regensburg: ConBrio.

Bell, P. (2010). *Interrogating the Live: A DJ Perspective* (Doctoral dissertation). Retrieved from ProQuest LLC (Accession No. U559512).

Bellenger, A. (January 2013). Alexandre Bellenger Gallery, *CEC – eContact!,* 14.3. Retrieved from http://econtact.ca/14_3/bellenger_gallery.html.

Benjamin, W. (2008). *The work of art in the age of its technological reproducibility* (2nd ed.), (E. F. N. Jephcott, & H. Zohn, Trans.) In M. W. Jennings, , B. Doherty, T. Y. Levin, & E. F. N. Jephcott (Eds). *The work of art in the age of its technological reproducibility, and other writings on media.* (pp. 19 - 57) Cambridge, Mass: Belknap Press of Harvard University Press. (Original work published 1935/1936).

Ben-Tal, O., & Wilkins, C. (01 January 2013). Improvisation as a creative dialogue. *Perspectives of New Music, 51*, 1, 21-39.

Bijsterveld, K. (2002). A servile imitation. Disputes about machines in music, 1910 - 1930. In H.-J. Braun (Ed.) *Music and Technology in the Twentieth Century* (pp. 121 - 135). Baltimore: Johns Hopkins University Press.

Bijsterveld, K. (01 January 2006). Listening to machines: Industrial noise, hearing loss and the cultural meaning of sound. *Interdisciplinary Science Reviews*, 31, 4, 323 - 337.

Bijsterveld, K. (2008). *Mechanical sound: Technology, culture, and public problems of noise in the twentieth century*. Cambridge, Mass: MIT Press.

Blazanovic, M. (2012). *Echtzeitmusik. The social and discursive contexts of a contemporary music scene*. (Doctoral dissertation), Retrieved from doi: 10.18452/16981.

Block, U. (1989). Broken Music or His Master's Noise. In U. Block, & M. Glasmeier (Eds.). *Broken music: Artists' recordworks* (pp. 8-9). Berlin: Daadgalerie.

Block, U. & Glasmeier, M. (1989). *Broken music: Artists' recordworks*. Berlin: Daadgalerie.

Boltz, M., & Jones, M. R. (1989). Dynamic Attending and Responses to Time. *Psychological Review,* 96, 3, 459-491.

Bosseur, J.-Y. (1996). Installation und Technologie (N. Singer, Trans). In H. de la Motte-Haber, Akademie der Künste Berlin & Sonambiente Festival für Hören und Sehen (Eds.), *Klangkunst.* (pp. 242- 246). München: Prestel.

Bossis, B. (01 January 2006). The Analysis of Electroacoustic Music: from sources to invariants. *Organised Sound, 11*, 2, 101-112.

Bossis, B., Marclay, Chr. & Dufeu, F. (2013). Le support sonore comme instrument de musique chez Christian Marclay [The Recording Medium As Instrument In Christian Marclay's Works]. In M. Castellengo, & H. Genevois (Eds), *La musique et ses instruments – Music and its instruments: Proceedings of the Fifth Conference on Interdisciplinary Musicology (CIM09).* (pp. 419-436). Sampzon, Delatour France.

Boutard, G., & Guastavino, C. (01 October 2012). Archiving electroacoustic and mixed music: Significant knowledge involved in the creative process of works with spatialisation. *Journal of Documentation*, 68, 6, 749-771.

Braun, H.-J. (2002). [Introduction]. In H.-J. Braun (Ed.), *Music and Technology in the Twentieth Century* (pp. 9-32). Baltimore: Johns Hopkins University Press.

Braun, H.-J. (2006). Musik, Technik, Spiel – Anmerkungen zu ihrem Verhältnis. In S. Poser, & Deutsches Technikmuseum Berlin (Eds.), *Spiel mit Technik: Katalog zur Ausstellung im Deutschen Technikmuseum Berlin* (pp. 50-55). Leipzig: Koehler & Amelang.

Brech, M. (2002). Sonografische Analysen elektroakustischer Musik. In E. Ungeheuer (Ed.), *Elektroakustische Musik (Handbuch der Musik im 20. Jahrhundert, 5)* (pp. 232-242). Laaber: Laaber-Verl.

Bregman, A. S. (1990). *Auditory scene analysis: The perceptual organization of sound*. Cambridge, Mass: MIT Press.

Brüstle, Chr. (2006). 'Performance Studies' - Impulse für die Musikwissenschaft, In C. Herr, & M. Woitas (Eds.) *Musik mit Methode. Neue kulturwissenschaftliche Perspektiven* (pp. 253-268). Köln: Böhlau.

Brüstle, C. (2013). *Konzert-Szenen: Bewegung, Performance, Medien: Musik zwischen performativer Expansion und medialer Integration 1950-2000*. Stuttgart: Franz Steiner Verlag.

Brüstle, C., & Risi, C. (01 January 2008). Aufführungsanalyse und -interpretation: Positionen und Fragen der 'Performance studies' aus musik- und theaterwissenschaftlicher Sicht. In A. Ballstaedt & H. Hinrichsen (Eds.), *Werk – Welten* (pp. 108-132). Schliengen-Liel: Argus.

Burroughs, W. S. (1998). *Die Elektronische Revolution*. Bonn: Expanded Media Editions. (Original work published 1970).

Busby, L. (2013). Guest Curator: Lisa Busby, *Her Noise Archive*. Retrieved from http://hernoise.org/guest-curator-lisa-busby.

Butler, G. (2000). *Prepared instruments in improvised music: precedents and purposes*. (Doctoral dissertation). University of Wollongong. Retrieved from http://ro.uow.edu.au/theses/1756.

Butler, M. J. (December 2001). Turning the Beat Around: Reinterpretation, Metrical Dissonance, and Asymmetry in Electronic Dance Music. *Music Theory Online*, 7, 6. Retrieved from www.mtosmt.org/issues/mto.01.7.6/mto.01.7.6.butler.html.

Butler, M. J. (2006). *Unlocking the groove: Rhythm, meter, and musical design in electronic dance music.* Bloomington: Indiana University Press.

Butler, M. & Hoppe, J. (2006). Technik, Innovation und ludische Kultur – Mark Butler und Joseph Hoppe im Gespräch über Aspekte der Ausstellung. In S. Poser, & Deutsches Technikmuseum Berlin (Eds), *Spiel mit Technik: Katalog zur Ausstellung im Deutschen Technikmuseum Berlin* (pp. 180 - 185). Leipzig: Koehler & Amelang.

Cage, J. (1992). A Composer's Confessions (An address given before the National Inter-Collegiate Arts Conference, Vassar College, Poughkeepsie, New York, 28 February 1948). *Musicworks 52*, 6 - 15.

Cage, J. (2013). The future of Music: Credo. In C. Cox & D. Warner (Eds.), *Audio culture: readings in modern music* (pp. 25 - 28). New York: Continuum. (Original work published 1937).

Camilleri, L., & Smalley, D. (1998). The analysis of electroacoustic music: Introduction. *Journal of New Music Research*. 27, 3-12.

Carroll, N. (1990). *The philosophy of horror, or, Paradoxes of the heart.* New York: Routledge.

Cascone, K. (01 December 2000). The Aesthetics of Failure: 'Post-Digital' Tendencies in Contemporary Computer Music. *Computer Music Journal, 24*, 4, 12-18.

Celant, G. (1977). *The Record as Artwork: From Futurism to Conceptual Art*. Fort Worth, Texas: The Fort Worth Art Museum.

Chattah, (2015), Film Music as Embodiment. In M. Coëgnarts, & P. Kravanja, (Eds). *Embodied cognition and cinema* (pp. 81-114). Leuven: Leuven University Press.

Chavez, M. (2012). *Of Technique: chance procedures on turntable – a book of essays & illustrations.* Brooklyn, New York: Maria Chavez.

Chion, M. (1994). *Audio-Vision. Sound on Screen*. New York: Columbia University Press. (Original work published 1990).

Chion, M. (2015). Die musique concrète ist nicht konkretistisch (C. Haffter, Trans.). In C. Hongler, C. Haffter, & S. Moosmüller (Eds.), *Geräusch - das Andere der Musik: Untersuchungen an den Grenzen des Musikalischen.* (pp. 21 - 32). Bielefeld: Transcript.

Chion, M., Dack, J. & North, C. (2009). *Guide to sound objects*. Retrieved from https://monoskop.org/images/0/01/Chion_Michel_Guide_To_Sound_Objects_Pierre_Schaeffer_and_Musical_Research.pdf.

Chuter, J. (11 June 2016). Interview Graham Dunning, *ATTN Magazine*. Retrieved from www.attnmagazine.co.uk/features/10000.

Clarke, M. (01 January 2012). Analysing electroacoustic music: An interactive aural approach. *Music Analysis, 31,* 3, 347-380.

Curiger, B. (2014). [Christian Marclay] In conversation with Bice Curiger. In J.-P. Criqui (Ed.). *On & By Christian Marclay* (pp. 23-28) London: Whitechapel Gallery. (Original work published 1997).

Cowley, J. (May 2012). Joke Lanz 'Münster Berlin', *The Wire*, 60-61.

Collins, N. (2004). Introduction: Composers inside Electronics: Music after David Tudor, *Leonardo Music Journal*, *14,* 1-3.

Collins, N. (2006). *Handmade electronic music: The art of hardware hacking.* New York: Routledge.

Collins, N. (2010). Improvisation. *Leonardo Music Journal*, *20*, 7–9.

Cook, N. (1997). Analysing Performances and Performing Analysis. In N. Cook, & M. Everist, (Eds.), *Rethinking music* (pp. 239-261). Oxford England: Oxford University Press.

Cook, N. (April 2001). Between process and product: Music and/as performance. *Music Theory Online.* 7/2. Retrieved from www.mtosmt.org/issues/mto.01.7.2/mto.01.7.2.cook.html.

Cook, N. (2009). *The Cambridge companion to recorded music.* Cambridge: Cambridge University Press.

Corness, G. (01 January 2008). The Musical Experience through the Lens of Embodiment. *Leonardo Music Journal, 18*, 1, 21-24.

Cory, M. E. (1994). Soundplay: The polyphonous tradition of german radio art. In D. Kahn, & G. Whitehead (Eds.), *Wireless imagination: Sound, radio, and the avant-garde* (pp. 331-371). London: MIT Press.

Couprie, P. (2004). Graphical representation: an analytical and publication tool for electroacoustic music. *Organised Sound*. *9*, 109-113.

Cox, C. (01 August 2011). Beyond Representation and Signification: Toward a Sonic Materialism. *Journal of Visual Culture, 10*, 2, 145-161.

Cox, C. (2014). The Breaks. In J.-P. Criqui (Ed.), *On & By Christian Marclay* (pp.161 -171). London: Whitechapel Gallery. (Original work published 2010).

Cox, C., & Warner, D. (2013). *Audio culture: readings in modern music.* New York: Continuum.

Criqui, J.-P. (2014). *On & By Christian Marclay.* London: Whitechapel Gallery.

Croft, J. (05 April 2007). Theses on liveness. *Organised Sound*, *12*, 1, 59-66.

Cutler, C. (2000). Plunderphonics. In Emmerson, S. (Ed.), *Music, Electronic Media and Culture* (pp. 87–114). Aldershot: Ashgate.

Dale, P. (2012). *Anyone Can Do It: Empowerment, Tradition and the Punk Underground.* Farnham: Ashgate Pub.

Dammert, H. (Oktober-November 1926). Grammophon-Konzerte. *'Musik und Maschine' [Special issue], Musikblätter des Anbruch*, 8, 8/9, 405-406.

Daniels, D. (1996). Der Multimedia-Paragone. In H. de la Motte-Haber, Akademie der Künste Berlin & Sonambiente Festival für Hören und Sehen (Eds.), *Klangkunst.* (pp. 247 - 250). München: Prestel.

Davies, H. (1996). A history of sampling. *Organised Sound, 1*, 1, 3–11.

Decroupet, P. (2002). Prinzip Montage – die andere Form des Zusammenhangs in der Musik des 20. Jahrhunderts? Ein Vorschlag. In Institut für Neue Musik und Musikerziehung Darmstadt (Ed.), *Konzert – Klangkunst – Computer* (pp. 241-254). Mainz: Schott.

Decroupet, P., & Ungeheuer, E. (01 January 1998). Through the sensory looking-glass: the aesthetic and serial foundations of 'Gesang der Jünglinge'. *Perspectives of New Music, 36*, 1, 97-142.

Delalande, F. (2002). Eine Musik ohne Noten: Einführung in das Hören und Analysieren elektroakustischer Musik (R. Frisius, Trans.). In Institut für Neue Musik und Musikerziehung Darmstadt (Ed.), *Konzert – Klangkunst – Computer* (pp. 225-240). Mainz: Schott.

Delalande, F. (1998). Music Analysis and Reception Behaviors: 'Sommeil' by Pierre Henry, *Journal of New Music Research, 27*, 1-2, 13-66.

DeLaurenti, C. (January 2013). The flap-o-phone, a Site-Specific Turntable. *CEC – eContact!, 14.3*. Retrieved from http://econtact.ca/14_3/delaurenti_flapophone.html.

Demers, J. (2010). *Listening through the Noise: The Aesthetics of Experimental Electronic Music.* Oxford Scholarship Online.

Diederichsen, D. (1996). Aufzeichnungstechnologien: Materialität und Immaterialität von Musik. In H. de la Motte-Haber, Akademie der Künste Berlin (Ed.) Sonambiente Festival für Hören und Sehen (Eds.), *Klangkunst*. (pp. 267-269). München: Prestel.

Dombois, F. (2008). Kunst als Forschung. In H. Schulze, (Ed.) *Sound Studies: Traditionen – Methoden – Desiderate: eine Einführung* (pp. 21-29). Bielefeld: Transcript.

Dudas, R. (2010). 'Comprovisation': The Various Facets of Composed Improvisation within Interactive Performance Systems. *Leonardo Music Journal, 20*, 29-31.

Dunning, G. (March 2015). Graham Dunning Gallery, *CEC – eContact!,* 16.4. Retrieved from http://econtact.ca/16_4/dunning_gallery.html.

Eastley, M. (2007). Interview with Janek Schaefer. In T. Gibbs (Ed.), *The fundamentals of Sonic Art & Sound Design* (pp. 55-61). Lausanne: AVA Books.

Ehlert, R. G. (2003). Knistern, Knattern, Rauschen... Von der provozierten zur komponierten Störung. In Kümmel, A., & Schüttelpelz, E. (Eds.) *Signale der Störung* (pp. 229-236). München: Fink.

Ediriwira, A. (11 September 2015). Watch in horror – and awe – as these artists mangle vinyl records and turntables to make music. *FACT*. Retrieved from www.factmag.com/2015/09/11/vinyl-terror-horror.

Elste, M. (2016). Hindemiths Versuche 'grammophonplatteneigener Stücke' im Kontext einer Ideengeschichte der Mechanischen Musik im 20. Jahrhundert. In M. Saxer (Ed.) *Spiel (mit) der Maschine* (pp. 347-366). Bielefeld: Transkript.

Emmerson, S. (01 January 1991). Live electronic music in Britain: three case studies. *Contemporary Music Review, 6*, 1, 179-195.

Emmerson, S. (2000). 'Losing touch?': The human performer and electronics. In S. Emmerson, (Ed.) *Music, Electronic Media and Culture* (pp. 194-216). Aldershot: Ashgate.

Emmerson, S. (2007). *Living electronic music.* Aldershot: Ashgate.

Emmerson, S. (2012). Live Electronic Music in Living Electronic Music? In D. Peters, G. Eckel, & A. Dorschel (Eds). *Bodily expression in electronic music: Perspectives on reclaiming performativity* (pp. 152-162). New York: Routledge.

Engström, A. (January, 2013). Worst Case Scenario – Interview with Vinyl Terror & Horror, *CEC – eContact!,* 14.3. Retrieved from http://econtact.ca/14_3/engstrom_vinylterrorhorror.html.

Eno, B. (2013). The Studio as Compositional Tool. In C. Cox & D. Warner (Eds.), *Audio culture: Readings in modern music* (pp. 127-130). New York: Continuum.

Ernst, T. (2008). Subversion – eine kleine Diskursanalyse eines vielfältigen Begriffs. *Psychologie und Gesellschaftskritik 32/4*, 9–34. Retrieved from http://nbn-resolving.de/urn:nbn:de:0168-ssoar-325773.

Essl, K. (2007). Wandlungen der elektroakustischen Musik. In T. Dézsy, S. Jena, & D. Torkewitz (Eds.), *Zwischen Experiment und Kommerz. Zur Ästhetik elektronischer Musik* (pp. 37-84). Wien: Mille Tre. Retrieved from www.essl.at/bibliogr/wandlungen-elak.html.

Estep, J. (2014). Words and Music: [Christian Marclay] In Conversation with Jan Estep. In J.-P. Criqui (Ed.), *On & By Christian Marclay* (pp. 39-47). London: Whitechapel Gallery. (Original work published 2001).

Fastl, H., & Zwicker, K. E. (2007). *Psychoacoustics: Facts and models.* (3rd ed.) New York: Springer.

Ferguson, R. (2014). Never the Same Twice: [Christian Marclay] In Conversation with Russell Ferguson. In J.-P. Criqui, *On & By Christian Marclay* (pp. 74-79). London: Whitechapel Gallery. (Original work published 2010).

Feuerstein, T. (2004). Sample Minds. In S. Bidner & T. Feuerstein (Eds.), *Sample Minds – Materialien zur Samplingkultur/Materials on sampling culture* (pp. 251-263). Cologne: König.

Fikentscher, K. (2003). There is not a problem, I can't fix, 'cause I can do it in the mix': On the Performative Technology of 12-Inch Vinyl. In R. T. A. Lysloff & L. C. Gay (Eds.), *Music and technoculture*. Middletown (pp. 290-315). Conn.: Wesleyan University Press.

Fischer, T. (July 2010). Interview with Joke Lanz / Sudden Infant, *tokafi*. Retrieved from www.tokafi.com/15questions/interview-joke-lanz-sudden-infant.

Fischer-Lichte, E. (2001a). Probleme der Aufführungsanalyse. In E. Fischer-Lichte (Ed.) *Ästhetische Erfahrung: Das Semiotische und das Performative* (pp. 233- 265). Tübingen: Francke.

Fischer-Lichte, E. (2001b). Wahrnehmung und Medialität. In E. Fischer-Lichte, E. (Ed.) & DFG-Schwerpunktprogramm Theatralität. *Wahrnehmung und Medialität*. Tübingen: Francke. pp. 11-40.

Fischer-Lichte, E. (2004). Culture as Performance. Keynote lecture at the Symposium *Performativity: A Paradigm for the Studies of Art and Culture*, Copenhagen, 30 November - December 2004. Retrieved from http://antropofagia-interculturalismo.blogspot.co.uk/2010/04/culture-as-performance-theatre-history.html.

Fischer-Lichte, E. (2008). *The transformative power of performance: A new aesthetics.* (S. I. Jain, Trans.) New York: Routledge.

Fischer-Lichte, E. (2009). Interweaving Cultures in Performance: Different States of Being In-Between. *New Theatre Quarterly, 25*, 4, 391-401. doi:10.1017/S0266464X09000670.

Flückiger, B. (2012). *Sound Design: die virtuelle Klangwelt des Films*. Marburg: Schüren Verlag.

Föllmer, G. (2004). Audio Art. In D. Daniels, R. Frieling, (Eds). *Medien Kunst Netz: 1* (pp. 81-117). Wien: Springer.

Fouchet, M-P. (17 June 1959). Pierre Schaeffer [Video file]. *Artsonores*. Retrieved from http://fresques.ina.fr/artsonores/fiche-media/InaGrm00200/pierre-schaeffer.html.

Fortier, S. (January 2013). Finalement, je me suis fait avoir... / Clearly, I've been had... [Video] *CEC – eContact!, 14.3*. Retrieved from http://econtact.ca/14_3/fortier_tetreault.html.

Foss, L. (01 April 1963). The Changing Composer-Performer Relationship: A Monologue and a Dialogue. *Perspectives of New Music, 1*, 2, 45-53.

Frank, A. (April 2002). Was loopt denn da im Schwarzwald? – Institut für Feinmotorik. *DeBug*, 58, 18.

Freeborn, A. (30 June 2014). Aleksander Kolkowski: Turning CDs Into LPs, With a Twist. *The Atlantic*. Retrieved from www.theatlantic.com/technology/archive/2014/06/how-to-turn-your-cds-into-lps/373596.

Frisius, R. (2002). Musikhören und Musikanalyse in einer gewandelten Wirklichkeit. In Institut für Neue Musik und Musikerziehung Darmstadt (Ed.), *Konzert – Klangkunst – Computer* (pp. 172-224). Mainz: Schott.

Fuchs, W. (January 2013). The Tu(r)ning of the (W)o(r)ld. *CEC – eContact!, 14.3*. Retrieved from http://econtact.ca/14_3/fuchs_turning.html.

Gann, K. (2013). Thankless Attempts at a Definition of Minimalism. In C. Cox & D. Warner (Eds.), *Audio culture: Readings in modern music* (pp. 299 - 303). New York: Continuum.

Garro, D. (August 19, 2012). From Sonic Art to Visual Music: Divergences, convergences, intersections. *Organised Sound*, *17*, 2, 103-113.

Gerlach, J. (Juni 2007). Körper & Musik – Körperbilder in der musikalischen Performance sowie intermedialer und partizipativer Musik. *Musik und Gender im Internet*. Retrieved from http://mugi.hfmt-hamburg.de/koerpermusik.

Glasmeier, M. (2002). *Loop – Zur Geschichte und Theorie der Endlosschleife am Beispiel Rodney Graham*. Köln: Salon-Verl.

Godøy, R. I. & Leman, M. (2010). *Musical gestures: Sound, movement, and meaning*. New York: Routledge.

Gordon, K. & Marclay, C. (2011). Christian Marclay and Kim Gordon in conversation – 2003. In C. Kelly (Ed.), *Sound* (pp. 157-160). London: Whitechapel Gallery. (Original work published 2005).

Grimshaw, M., & Garner, T. (2015). *Sonic virtuality: Sound as emergent perception*. Oxford, New York: Oxford University Press.

Gross, J. (March 1998), Christian Marclay. *Perfect Sound Forever*. Retrieved from www.furious.com/perfect/christianmarclay.html.

Gross, J. (April 2000). Steve Reich: Early tape pieces, *Perfect Sound Forever*, Retrieved from www.furious.com/perfect/ohm/reich2.html.

Großmann, R. (1997). Konstruktiv(istisch)e Gedanken zur 'Medienmusik'. In Hemker, T. & Müllensiefen, D. (Ed.), *Medien - Musik - Mensch. Neue Medien und Musikwissenschaft.* (pp. 61-78). Hamburg. Retrieved from http://audio.uni-lueneburg.de/webseiten/hyper3/htm/rgkons.htm.

Großmann, R. (2010). Distanzierte Verhältnisse? Zur Musikinstrumentalisierung der Reproduktionsmedien. *PopScriptum 9*. Germany. Retrieved from www2.hu-berlin.de/fpm/popscrip/themen/pst09/pst09_grossmann.html.

Großmann, R. (2005). Collage, Montage, Sampling. In Segeberg, H. & Schätzlein, F. (Eds.) *Sound. Zur Technologie des Akustischen in den Medien.* (pp. 308-331). Marburg: Schüren.

Großmann, R. (2012). Medienreflexion in der Musik im Anschluss an John Cage. In Schröder, J. & Straebel, V. *Cage & Consequences* (pp. 35-43). Hofheim: Wolke.

Großmann, R. (2013a). Die Materialität des Klangs und die Medienpraxis der Musikkultur – Ein verspäteter Gegenstand der Musikwissenschaft?. In A. Volmar & J. Schröter (Eds.), *Auditive Medienkulturen: Techniken des Hörens und Praktiken der Klanggestaltung* (pp. 61-77). Bielefeld: Transcript Verlag.

Großmann, R. (2013b). 303, MPC, A/D. Popmusik und die Ästhetik digitaler Gestaltung. In Kleiner, M. S., & Wilke, T. (Eds.) *Performativität und Medialität Populärer Kulturen: Theorien, Ästhetiken, Praktiken* (pp. 299 - 318). Wiesbaden: Springer Fachmedien Wiesbaden.

Hainge, G. (2013). *Noise matters: Towards an ontology of noise*. New York: Bloomsbury Academic.

Hansen, K. F. (2002). The Basics of Scratching. *Journal of New Music Research*, *31*, 4, 357-365.

Hansen, K. F. (2013). Expressivity and musical shape in turntablism: Response to Greasley and Prior. *Empirical Musicology Review, 8,* 1, 44 - 47.

Hansen, K. F. (2015). DJs and Turntablism. In Williams, J. A. (Ed.) *The Cambridge Companion to Hip-Hop* (pp. 42 - 55). Cambridge University Press.

Hansen, K. F. & Bresin, R. (2004). Analysis of a Genuine Scratch Performance. *Gesture-Based Communication in Human-Computer Interaction, 5th International Gesture Workshop, Selected Revised Papers, Lecture Notes in Computer Science, 2915.* Berlin: Springer Verlag, 519-528.

Hansen, K.F., Fabiani, M. & Bresin, R. (2011). Analysis of the acoustics and playing strategies of turntable scratching. *Acta Acustica united with Acustica, 97,* 303-314.

Hanich, J. (2010). *Cinematic emotion in horror films and thrillers: The aesthetic paradox of pleasurable fear*. New York: Routledge.

Harris, M. (4 July 2017). Vinyl Terror & Horror. *Artforum*. Retrieved from https://www.artforum.com/words/id=67589.

Hattinger, G. (1996). Klangmaschinen – Maschinenklang. In H. de la Motte-Haber, Akademie der Künste Berlin & Sonambiente Festival für Hören und Sehen (Eds.), *Klangkunst.* (pp. 264 - 266). München: Prestel.

Herrmann, H.-C. v. (2008). Meta-Mechanik. Jean Tinguelys Maschinentheater. In Schramm, H. Schwarte, L., Lazardzig, J., Lorber, M. (Eds), *Spuren der Avantgarde: Theatrum Machinarum* (pp. 313-326). Berlin, New York: Walter de Gruyter.

Hegarty, P. (2007). *Noise/music: A history.* New York: Continuum.

Hegarty, P. (2013). Brace and Embrace: Masochism in noise performance. In Thompson, M., & Biddle, I. D. (Ed.). *Sound, music, affect: Theorizing sonic experience* (pp. 133 - 146). New York: Bloomsbury Academic.

Hellbrück, J. (2008). 1.1 Das Hören in der Umwelt des Menschen. In Bruhn, H., Kopiez, R. Lehmann , A. C. (Eds). *Musikpsychologie: Das neue Handbuch* (pp. 17 - 36). Reinbek bei Hamburg: Rowohlt.

Helmholtz, H. v. (1954). *On the Sensations of Tone.* New York: Dover Publications.

Hodgkinson, T. (1987). An Interview with Pierre Schaeffer: Pioneer of Musique concrète – 2 May 1986. *ReR Quarterly 2/1.* Retrieved from www.timhodgkinson.co.uk/schaeffer.pdf.

Hogan, B. (April-June 2015). Mixing in Social Media. *Social Media + Society.* 1-2 doi:10.1177/2056305115580482.

Hoffmann, R. (2002). Musikalische Avantgarde in der elektronischen Tanzmusik der Gegenwart. In E. Ungeheuer (Ed.), *Elektroakustische Musik (Handbuch der Musik im 20. Jahrhundert, 5)* (pp. 95-111). Laaber: Laaber-Verl.

Holmes, T. (2008). *Electronic and experimental music: Technology, music, and culture.* New York: Routledge. 3rd edition.

Hutlock, T. (7 March 2007). Thomas Brinkmann: Studio 1 – Variationen / Concept 1:96:VR, *Stylus.* Retrieved from www.stylusmagazine.com/articles/on_second_thought/thomas-brinkmann-studio-1-variationen-concept-196vr.htm.

Iazzetta, F. (2000). Meaning in Musical Gesture. In M. M. Wanderley & M. Battier (Eds.), *Trends in gestural control of music* (pp. 259-268). Paris: IRCAM – Centre Georges Pompidou. Retrieved from www.music.mcgill.ca/~mwanderley/Trends/Trends_in_Gestural_Control_of_Music/DOS/P.Iaz.pdf.

Iddon, M. (2013). *John Cage and David Tudor: Correspondence on interpretation and performance.* Cambridge: Cambridge University Press.

Institut für Feinmotorik (2009). Zum kreativen Potenzial des Fehlers, *Positionen, 79,* 32-39.

Jensenius, A. R. (2007). *Action – Sound. Developing Methods and Tools to Study Music-Related Body Movement* (Doctoral dissertation). Retrieved from http://folk.uio.no/alexanje/phd/jensenius-phd.pdf.

Jones, D. (11 September 2015). Interview Vinyl -terror & -horror, *Electronic Beats.* Retrieved from www.electronicbeats.net/three-transgressive-artists-turn-destruction-into-music.

Jüttemann, H. (2000). *Phonographen und Grammophone.* Dessau: Funk-Verl. Hein.

Kahn, D. (2001). *Noise, Water, Meat: a history of sound in the arts.* Cambridge: MIT press.

Kahn, D. (2014). Early years: [Christian Marclay] In conversation with Douglas Kahn. In J.-P. Criqui (Ed.). *On & By Christian Marclay* (pp. 16-22). London: Whitechapel Gallery. (Original work published 2003).

Kastner, J. (2012). Insurrektion und symbolische Arbeit. Graffiti in Oaxaca (Mexiko) 2006/2007 als Subversion und künstlerische Politik. In Bandi, N., Kraft, M. G. and Lasinger, S. Kunst, *Krise, Subversion: zur Politik der Ästhetik* (pp. 37-62). Bielefeld: Transcript Verlag.

Katz, M. (01 January 2001). Hindemith, Toch, and Grammophonmusik. *Journal of Musicological Research, 20,* 2, 161-180.

Katz, M. (2004). *Capturing sound: how technology has changed music.* Berkeley, University of California Press.

Katz, M. (2012). *Groove music: The art and culture of the hip-hop DJ.* New York: Oxford University Press.

Kawin, B. F. (2012). *Horror and the Horror Film.* Cambridge: Cambridge University Press.

Keep, A. (2009). Instrumentalizing: Approaches to improvising with sounding objects in experimental music. In J. Saunders (Ed.), *Ashgate Research Companion to Experimental Music* (pp. 113-129). Farnham: Ashgate.

Kelly, C. (2009). *Cracked media: The sound of malfunction*. Cambridge, Mass: MIT Press.

Kenny, B. J. & Gellrich, M. (2002). Improvisation. In: Parncutt, R., & McPherson, G. (Eds). *The science & psychology of music performance: Creative strategies for teaching and learning* (pp. 117 - 134). Oxford: Oxford University Press.

Kittler, F. A. (1986). *Grammophon, Film, Typewriter.* Berlin: Brinkmann & Bose.

Klanten, R. (1995). Dumbo. In R. Klanten (Ed.), *Localizer 1.0: The techno house book* (p. LOC 1.0 FEA 1.18 DUM). Berlin: Die Gestalten-Verlag.

Klemm, D. (2009). Glitch in the system, *Positionen, 79*, 22-25.

Kleiner, M. (2012). *Acoustics and audio technology*. Ft. Lauderdale, Fla: J. Ross Pub.

Kopiez, R., Platz, F.and Wolf, A. (January 2016) Über die heilsame Wirkung der Nostalgie – Musik als Soundtrack unserer Lebenserinnerungen. *Neue Zeitschrift für Musik, 1,* 31-33.

Kopf, B. (October 1997). William S Burroughs: Spreading The Virus. *The Wire, 164*, 26-30.

Kostelanetz, R., & Cage, J. (1970). *John Cage.* New York: Praeger.

Krämer, S. (2004). Was haben 'Performativität' und 'Medialität' miteinander zu tun? Plädoyer für eine in der 'Aisthetisierung' gründende Konzeption des Performativen. In S. Krämer (Ed.), *Performativität und Medialität* (pp. 11-32). München: Fink.

Krämer, S. (2008). Medien, Boten, Spuren. Wenig mehr als ein Literaturbericht. In Münker, S., & In Roesler, A. *Was ist ein Medium?* (pp. 65-90). Frankfurt am Main: Suhrkamp.

Kühn, C. (1972). *Das Zitat in der Musik der Gegenwart – mit Ausblicken auf bildende Kunst und Literatur*. Verlag der Musikalienhandlung Karl Dieter Wagner Hamburg.

Kwastek, K. (12 December 2009). Embodiment and Instrumentality. In S. Penny (Ed.), *Proceedings of the Digital Arts and Culture Conference: After Media: Embodiment and Context,* 2009. Retrieved from http://escholarship.org/uc/item/0zg3t13v.

Lanz, J. & Marhaug, L. (2012). *Sudden Infant: Noise in my Head – The actionistic music and art of Joke Lanz* (2nd ed.). China: Marhaug Forlag.

Lehmann, A. (2008). 4.3 Komposition und Improvisation. In H. Bruhn, R. Kopiez, A. C. Lehmann (Eds.), *Musikpsychologie: Das neue Handbuch* (pp. 338-353). Reinbek bei Hamburg: Rowohlt.

Lensing, J. U. (2009). *Sound-Design, Sound-Montage, Soundtrack-Komposition: Über die Gestaltung von Filmton*. Berlin: Schiele & Schön.

Levin, T. (1990). For the Record: Adorno on Music in the Age of its Technological Reproducibility. *October, 55*, 23-47. doi:10.2307/778934.

Levin, T. Y. (2014). Indexicality Concrète: The Aesthetic Politics of Christian Marclay's Gramophonia. In J.-P. Criqui (Ed.). *On & By Christian Marclay* (pp. 97-103). London: Whitechapel Gallery. (Original work published 1999).

Levi-Strauss, C. (1968). *The savage mind.* Chicago: University of Chicago Press (3rd ed.).

Lewis, J. (2013). Dialogue As a Way of Knowing: Understanding Solo Improvisation and Its Implications for an Education for Freedom. *Psychomusicology. 23*, 4. 255-261.

Ligeti, G. & Wehinger, R. (1970). *Artikulation. An Aural Score by Rainer Wehinger*. Mainz: Schott.

Link, S. (2010). The Monster and the Music Box: Children and the Soundtrack of Horror. In Lerner, N. W. (Ed.), *Music in the horror film: Listening to fear* (pp. 38 - 54.) New York: Routledge.

Lippit, T. M. (4-8 June 2006). Turntable Music in the Digital Era: Designing Alternative Tools for New Turntable Expression. In *Proceedings of the 2006 International Conference on New Interfaces for Musical Expression* (pp. 123-45). Paris: IRCAM – Centre Pompidou. Retrieved from http://djsniff.com/press/LIPPIT_NIME06.pdf.

Livet, A. (1977). [Introduction]. In Celant, G. (Ed.) *The Record as Artwork: From Futurism to Conceptual Art*, Fort Worth (pp. 6-13). Texas: The Fort Worth Art Museum.

Mallinder, S. (2013). [Foreword]. In S. A. Reed (Ed.), *Assimilate: A Critical History of Industrial Music* (pp. ix - xiv). New York: Oxford University Press.

Massow, A. von. (1995). Live-elektronische Musik, Live-Elektronik. In H. H. Eggebrecht (Ed.), *Terminologie der Musik im 20. Jahrhundert* (pp. 235-241). Stuttgart: F. Steiner.

McAdams, S. Depalle, P. and Clarke, E. F. (2004). Analyzing Musical Sound. In Clarke, E. F., & Cook, N. (Ed.). *Empirical musicology: Aims, methods, prospects.* Oxford: Oxford University Press, pp. 157 - 196.

McLuhan, M. (2001). *Das Medium ist die Botschaft = The medium is the message.* Dresden: Philo Fine Arts, Verl. der Kunst.

Meulen, B. C. ter, Tavy, D. & Jacobs, B. C. (October 2009). From Stroboscope to Dream Machine: A History of Flicker-Induced Hallucinations, *European Neurology, 62,* 5. doi.org/10.1159/000235945.

Moholy-Nagy, L. (Oktober-November 1926). Musico-mechanico, Mechanico-otico.*'Musik und Maschine' [Special issue], Musikblätter des Anbruch*, 8, 8/9, 363-367.

Morris, J. M. (2008). Structure in the Dimension of Liveness and Mediation. *Leonardo Music Journal*, 18, 59–61.

Motte-Haber, H. de la (1985). *Handbuch der Musikpsychologie.* Laaber: Laaber-Verlag.

Motte-Haber, H. de la (1998). Soundsampling. In Richard, B., Klanten, R., Heidenreich, S. (Ed.) *Icons—Localizer 1.3.* (pp. 86-93). Berlin: Die Gestalten-Verlag.

Motte-Haber, H. de la (2002). Soundsampling: an Aesthetic Challenge. In H.-J. Braun (Ed.), *Music and Technology in the Twentieth Century* (pp. 199-206). Baltimore: Johns Hopkins University Press.

Motte-Haber, H. de la (2004). Realismus und Realitätsaneignung als 'Programm' in der Musik des 20. Jahrhunderts. In H. de la Motte-Haber & E. Tramsen (Eds.), *Musikästhetik* (pp. 151-160). Laaber, Laaber Verlag.

Müller, J. P. (2013). Schleifen knüpfen, Klangobjekte identifizieren. In A. Volmar & J. Schröter (Eds.), *Auditive Medienkulturen: Techniken des Hörens und Praktiken der Klanggestaltung* (pp. 287-320). Bielefeld: Transcript Verlag.

Nauck, G. (20 May 2012). Im Klang arbeiten – Innovationen in der aktuellen Improvisationsszene. *kunsttexte.de/ Auditive Perspektiven, 2.* doi: 10.18452/6875.

Nattiez, J. J. (1990). *Music and discourse: Toward a semiology of music.* Princeton, N.J: Princeton University Press.

Noglik, B. (1988). Wildhäger im Februar, *Improvised Music – Jahresübersicht 1988*, Free Music Production (FMP). Retrieved from www.fmp-label.de/freemusicproduction.

Norman, D. A. (1999). Affordances, conventions and design. *Interactions 6*, 3, 38-42.

Nyman, M. (2009). *Experimental music: Cage and beyond.* Cambridge: Cambridge Univ. Press.

Ody, J. (2009), Portrait: Abstrakter Turntablism. Das Institut für Feinmotorik. *Positionen,* 79, 44-45.

Oswald, J. (March 2015). Plunderphonics, or Audio Piracy as a Compositional Prerogative. *CEC – eContact!,* 16.4. Retrieved from http://econtact.ca/16_4/oswald_plunderphonics.html (Original work presented 1985).

Ouper, J. (2014). *From Machine to Instrument. A Composer's Perspective of Turntables Composition.* (Doctoral dissertation). Retrieved from ProQuest LLC: UMI (Accession No. 3619290).

Paine, G. (05 April 2015). Interaction as Material: The techno-somatic dimension. *Organised Sound, 20*, 1, 82-89.

Patteson, T. (2016). *Instruments for new music: Sound, technology, and modernism*. Oakland: University of California Press.

Patton, K. (04 August 2007). Morphological notation for interactive electroacoustic music. *Organised Sound, 12,* 2. 123-128.

Pelleter, M. & Lepa, S. (2007).'Sampling' als kulturelle Praxis des Hip- Hop. In K. Bock, S. Meier & G. Süß, (Eds.), *HipHop meets Academia. Globale Spuren eines lokalen Kulturphänomens* (pp. 199-213). Bielefeld: transcript.

Pelleter, M. (2013). 'Chop that record up!' Zum Sampling als performative Medienpraxis. In M. S. Kleiner, & T. Wilke, (Eds.) *Performativität und Medialität Populärer Kulturen: Theorien, Ästhetiken, Praktiken* (pp. 391 - 412). Wiesbaden: Springer Fachmedien Wiesbaden.

Pfleiderer, M. (2006). *Rhythmus: Psychologische, theoretische und stilanalytische Aspekte populärer Musik.* Bielefeld: Transcript.

Piekut, B. (01 January 2014). Indeterminacy, free improvisation, and the mixed avant-garde: Experimental music in London, 1965-1975. *Journal of the American Musicological Society, 67*, 3, 769-823.

Poschardt, U. (1997). *DJ culture: Diskjockeys und Popkultur.* Reinbek bei Hamburg: Rowohlt.

Prescott, S. (25 March 2011). Icons: Lucas Abela/Justice Yeldham. *Mess+Noise*. Retrieved from www.messandnoise.com/icons/4224165.

Pressing, J. (1998). Psychological constraints on improvisational expertise and communication. In Nettl, B. & Russell, M. (Eds.), *In the course of performance: Studies in the world of musical improvisation* (pp. 47–67). Chicago: University of Chicago Press.

Rancière, J. (2012). Eine andere Art von Universalität. In Bandi, N., Kraft, M. G. & Lasinger, S. *Kunst, Krise, Subversion: zur Politik der Ästhetik* (pp. 183- 194). Bielefeld: Transcript Verlag.

Reese, K. (2008). Geschlechtslose elektronische Musik? – PerformerInnen am Laptop. In: Oster, M., Ernst, W., & Gerards, M. (Eds.), *Performativität und Performance: Geschlecht in Musik, Theater und MedienKunst* (pp. 99 -109). Münster: Lit.

Reynolds, S. (2013). Noise. In C. Cox, & D. Warner (Eds.), *Audio culture: readings in modern music* (pp. 55 - 58). New York: Continuum. (Original work published 1990).

Richard, F. (2014). Music I've Seen: [Christian Marclay] In Conversation with Frances Richard. In J.-P. Criqui (Ed). *On & By Christian Marclay* (pp. 80-87). London: Whitechapel Gallery. (Original work published 2013).

Richards, J. (2008). Getting the hands dirty. *Leonardo Music Journal*, 18, 25-31.

Richards, J. (December 12, 2013). Beyond DIY in Electronic Music. *Organised Sound*, 18, 3, 274-281.

Röhrig, S. (1995). Wie man Techno macht – 5 statements by 3-Phase. In R. Klanten, (Ed.) *Localizer 1.0: The techno house book* (p. LOC 1.0 FEA 1.8 3PH). Berlin: Die Gestalten-Verlag.

Rogatchevski, I. (29 March 2016). Meet: Graham Dunning. Backseat Mafia. Retrieved from http://iliarogatchevski.com/post/141950203192/meet-graham-dunning.

Rouzé, v. Déon, M. (2013). Le Sampleur: De la machine a l'instrument. [Sampler: From machine to instrument]. In M. Castellengo, & H. Genevois (Eds), *La musique et ses instruments – Music and its instruments: Proceedings of the Fifth Conference on Interdisciplinary Musicology (CIM09).* (pp. 437-454). Sampzon, Delatour France.

Russolo, L. (2013). The Art of Noises: Futurist Manifesto (B. Brown, Trans.). In C. Cox & D. Warner (Eds.), *Audio culture: Readings in modern music* (pp. 10-14). New York: Continuum. (Original work published 1986).

Rzewski, F. (2013). Little Bangs: A Nihilist Theory of Improvisation. In C. Cox & D. Warner (Eds.), *Audio culture: Readings in modern music* (pp. 266-271). New York: Continuum. (Original work published 2002).

Sadler, S. (1999). *The situationist city.* Cambridge, Mass: MIT.

Samartzis, P. (2005). Surface Noise. In C. Hope & J. Marshall (Eds.), *Sound Scripts: Proceedings of the Inaugural Totally Huge New Music Festival Conference 2005*. Retrieved from http://ro.ecu.edu.au/csound/10.

Sanden, P. (2013). *Liveness in modern music: Musicians, technology, and the perception of performance*. New York: Routledge.

Sanio, S. (2013). Sound Studies – Auf dem Weg zu einer Theorie auditiver Kultur. In A. Volmar & J. Schröter (Eds.), *Auditive Medienkulturen: Techniken des Hörens und Praktiken der Klanggestaltung* (pp. 227-246). Bielefeld: Transcript Verlag.

Saxer, M. (2016a). Spiel (mit) der Maschine. Anmerkungen zur Historiographie musikalischer Medienpraxis in der Frühzeit der Reproduktions- und Übertragungsmedien. Eine Einführung. In M. Saxer (Ed.) *Spiel (mit) der Maschine* (pp. 9-23). Bielefeld: Transkript.

Saxer, M. (2016b). 'Grammophon-Konzerte'. Historische Medienkombinationen mit Schallplatte und der Wandel der Live-Ästhetik. In M. Saxer (Ed.) *Spiel (mit) der Maschine* (pp. 121-136). Bielefeld: Transkript.

Schaefer, J. (2001). AudiOh!: Appropriation, Accident and Alteration. *Leonardo Music Journal*, 11, 71-76.

Schaubruch, J. (March 2016). Von Menschen, Maschinen und dem Minimalen. Musikanalytische Überlegungen zum Techno-Projekt The Brandt Brauer Frick Ensemble, *Samples*, 14. Retrieved from www.gfpm-samples.de/Samples14/schaubruch.pdf.

Schick, I. (October 2009). [Preface]. In *TITO — The International Turntable Orchestra* (Unpublished Festival programme booklet). Akademie der Künste Berlin.

Schick (January 2013). Plastik Fantastik – Interview with Sebastian Buczek. *CEC – eContact!, 14.3*. Retrieved from http://econtact.ca/14_3/schick_buczek.html.

Schön, D., Magne, C., & Besson, M. (May 01, 2004). The music of speech: Music training facilitates pitch processing in both music and language. *Psychophysiology*, 41, 3, 341-349.

Schönfelder, C. & Cohnen, H. (May 2009). Fehler - Scheitern. Positionen, *Positionen, 79,* 2-6.

Schoonmaker, T. (2010). *The record: Contemporary art and vinyl*. Durham, N.C: Nasher Museum of Art at Duke University.

Schulze, H. (01 December 2003). Hand-Luggage: For a Generative Theory of Artifacts. *Leonardo Music Journal*, 13, 61-65.

SEVEN1878 (January 2012). Interview with Joke Lanz (Sudden Infant). Retrieved from http://seven1878.blogspot.co.uk/2012/01/interview-with-joke-lanz-sudden-infant.html.

Sexton, J. (2007). Reflections on Sound Art. In J. Sexton (Ed.) *Music, Sound and Multimedia: From the Live to the Virtual* (pp. 85 - 104). Edinburgh University Press.

Sharp, C. (January 2010). Janek Schaefer. *The Wire, 311*, 26-29.

Sherburne, P. (2003). [CD Companion Introduction]. Splitting Bits, Closing Loops: Sound on Sound. *Leonardo Music Journal, 13*, 79-81.

Sherburne, P. (29 December 2009). Thumbnail Music: Six Artists Talk about Minimalism [Interview with Thomas Brinkmann]. Retrieved from http://phs.abstractdynamics.org/2009/12/thumbnail_music_redux_part_sev_1.html (Original work published 1999).

Sherburne, P. (2013). Digital Discipline: Minimalism in House and Techno. In C. Cox, & D. Warner (Eds.), *Audio culture: readings in modern music* (pp. 319 - 328). New York: Continuum.

Sicko, D. (1999). *Techno rebels: The renegades of electronic funk*. New York: Billboard Books.

Smalley, D. (01 January 1997). Spectromorphology: explaining sound-shapes. *Organised Sound,* 2, 2, 107-126.

Smirnov, A. (2013). *Sound in Z: Experiments in sound and electronic music in early 20th century Russia.* Köln: König.

Smith, R. E. (24 February 2016). Graham Dunning – Mechanical Techno Wizardry. *The Attic*. Retrieved from http://the-attic.net/features/1669/interview:-graham-dunning-_-mechanical-techno-wizardry-.html.

Smith, S. J. (2006). *The Compositional Processes of UK Hip-Hop Turntable Teams* (Doctoral dissertation). De Montfort University Leicester, UK.

Smith, S. J. (2013). *Hip-hop turntablism, creativity and collaboration* [e-book]. Burlington, VT: Ashgate.

Snoman, R. (2010). *Dance music manual: Tools, toys and techniques.* Amsterdam: Focal Press.

Stevens, C., McKechnie, S., Glass, R., Schubert, E. Chen, J., Winskel, H., Healey, S. & Gordon, M. (12 June 2007). Three Techniques for Measuring Audience Reactions. Paper presented to AHRC ICT Methods Network Workshop, DeMontfort University, Leicester, UK.

Stockfelt, O. (2013). Adequate Modes of Listening. In C. Cox, & D. Warner (Eds.), *Audio culture: readings in modern music* (pp. 88 - 93). New York: Continuum. (Original work published 1997).

Straebel, V. (2003a). [Introduction] Wahrnehmung, Vorstellung und Erfahrung. Phänomenologische Betrachtungen zur Musik jenseits des Konzertstücks. In Donaueschinger Musiktage 2003, Saarbrücken: Pfau Verlag. [Programme booklet]. Retrieved from www.straebel.de/praxis/index.html.

Straebel, V. (2003b). Musik zwischen Konzert, Theater und Installation. Von der Darbietung Klingender Kunst. In MaerzMusik Berlin 2003, Saarbrücken: Pfau Verlag. [Programme booklet]. Retrieved from www.straebel.de/praxis/index.html.

Straebel, V. (01 December 2009). From Reproduction to Performance: Media-Specific Music for Compact Disc. *Leonardo Music Journal, 19*, 2, 23-30.

Straebel, V. (2010). Unique or reproducible: the performative aspects of media-specific artist records. Paper presented at the meeting of IMS study group 'Music and Media' (MaM), International Musicological Society (IMS), at Humboldt University Berlin, June 25-27, 2010. Retrieved from https://www2.ak.tu-berlin.de/~akgroup/ak_pub/2010/Straebel_2010_Unique_or_reproducible_The_performative_aspects_of_media_specific_artist_records.pdf.

Stuart, C. (2003). The Object of Performance: Aural Performativity in Contemporary Laptop Music, *Contemporary Music Review*, 22, pp. 59-65.

Stuckenschmidt, H. H. (1985). Musik am Bauhaus. In K. Maur & F. T. Bach (Eds.). *Vom Klang der Bilder: Die Musik in der Kunst des 20. Jahrhunderts* (pp. 408–413). Munich: Prestel.

Taylor, T. D. (2001). *Strange sounds: Music, technology & culture*. New York: Routledge.

Teitelbaum, R. (1973). Elektronische Musik 'live'. In R. Kostelanetz (Ed.). *John Cage* (pp. 194 - 197). Köln: M. DuMont Schauberg.

Thoresen, L., & Hedman, A. (01 January 2007). Spectromorphological analysis of sound objects: an adaptation of Pierre Schaeffer's typomorphology. *Organised Sound, 12*, 2, 129-142.

Toch, E. (Oktober-November 1926). Musik für mechanische Instrumente, *'Musik und Maschine' [Special issue], Musikblätter des Anbruch*, 8, 8/9, 346 - 349.

Toch, E. (May–June 1930). Über meine Kantate 'Das Wasser' und meine Grammophonmusik. *Melos 9*, 221-222.

Tone, Y. (01 January 2003). John Cage and recording. *Leonardo Music Journal,* 13, 11-15.

Toop, D. (1996). *Ocean of sound: Aether talk, ambient sound and imaginary worlds*. London: Serpent's Tail.

Toop, D. (2014). [Christian Marclay] In Conversation with David Toop. In J.-P. Criqui (Ed). *On & By Christian Marclay* (pp. 54-65). London: Whitechapel Gallery. (Original work published 2008).

Tuuri, K., & Eerola, T. (01 June 2012). Formulating a Revised Taxonomy for Modes of Listening. *Journal of New Music Research*, 41, 2, 137-152.

Ungeheuer, E. (2005). Elektroakustische Musik 1945 - 1975: Prisma musikalischer Originalität. In J.-W. Heister (Ed.), *Geschichte der Musik im 20. Jahrhundert: 1945 - 1975* (pp. 96 -101). Laaber: Laaber.

Ungeheuer, E. (2005). Karlheinz Stockhausen: ‘Gesang der Jünglinge’ 1955/1956. In J.-W. Heister (Ed.), *Geschichte der Musik im 20. Jahrhundert: 1945 - 1975* (pp. 101 - 106). Laaber: Laaber.

Vickery, L. (01 January 2014). The limitations of representing sound and notation on screen. *Organised Sound, 19*, 3, 215-227.

Vinyl -terror & -horror (January 2013a). Vinyl Terror & Horror [Gallery]. *CEC – eContact!, 14.3*. Retrieved from http://econtact.ca/14_3/vinylterrorhorror_gallery.html.

Vinyl -terror & -horror (30 April 2013b). Vinyl Terror & Horror – Deconstructed turntables and cut-up records, *Audition Records*. Retrieved from www.auditionrecords.com/ar081.php.

Vowinckel, A. (1995). *Collagen im Hörspiel: Die Entwicklung einer radiophonen Kunst*. Würzburg: Königshausen und Neumann.

Vuoskoski, J. K., Thompson, M. R., Spence, C., & Clarke, E. F. (01 January 2016). Interaction of Sight and Sound in the Perception and Experience of Musical Performance. *Music Perception*, 33, 4, 457-471.

Walton, K. L. Two Kinds of Physicality in Electronic and Traditional Music. In D. Peters, G. Eckel & A. Dorschel (Eds.), *Bodily expression in electronic music: Perspectives on reclaiming performativity* (pp. 114-130). New York: Routledge.

Watt, P. (February 01, 2013). ‘It's not for us’ Regeneration, the 2012 Olympics and the gentrification of East London. *City*, 17, 1, 99-118.

Witek, M. A. G, Clarke E. F., Wallentin M., Kringelbach M. L., Vuust P. (16 April 2014). Syncopation, Body-Movement and Pleasure in Groove Music. *PLoS ONE 9, 4* e0139409. Retrieved from https://doi.org/10.1371/journal.pone.0139409.

Weissenbrrunner, K. (January 2013). Experimental Turntablism: Historical overview of experiments with record players / records — or Scratches from Second-Hand Technology. *CEC – eContact!,* 14.3. Retrieved from http://econtact.ca/14_3/weissenbrunner_history.html.

Weissenbrunner, K. (March 2015). A Snapshot of My Deepest Psyche – Interview with turntablist Joke Lanz. *CEC – eContact!,* 16.4, Retrieved from http://econtact.ca/16_4/weissenbrunner_lanz.html.

Weschler, L. (December 1996). My Grandfather’s Last Tale. *The Atlantic*. Retrieved from www.theatlantic.com/magazine/archive/1996/12/my-grandfathers-last-tale/376730.

Wilke, T. (2013). Put the needle on the record! Zur Performativität und Medialität des Scratchens. In M. S. Kleiner & T. Wilke (Eds.), *Performativität und Medialität Populärer Kulturen: Theorien, Ästhetiken, Praktiken* (pp. 415 - 434). Wiesbaden: Springer Fachmedien Wiesbaden.

Wilkins, C. (2011). *The instrument in space: The embodiment of music in the machine age* (Doctoral dissertation). Retrieved from http://bura.brunel.ac.uk/handle/2438/6438.

Wierenga, S. (2016). *Searching for Sounds: Instrumental Agency and Modularity in Electroacoustic Improvisation*. (Doctoral dissertation). Retrieved from ProQuest LLC: UMI (Accession No. 10108623).

Wolf, R. (2013). Spieltechnik der Musik. Beispiele einer organologischen Kulturgeschichte. In A. Volmar & J. Schröter (Eds.), *Auditive Medienkulturen: Techniken des Hörens und Praktiken der Klanggestaltung* (pp. 79-98). Bielefeld: Transcript Verlag.

Worby, R. (2000). Cacophony. In S. Emmerson (Ed). *Music, electronic media, and culture* (pp. 138-163). Aldershot: Ashgate.

Young, R. (2014). The Souns of Christmas. In J.-P. Criqui (Ed.). *On & By Christian Marclay* (pp. 157-160). London: Whitechapel Gallery. (Original work published 2010).

Yochim, E.C. & Biddinger M. (2008). ‘It Kind of Gives You That Vintage Feel’: Vinyl Records and the Trope of Death. *Media, Culture and Society. 30*, no. 2: 183-195.

Zeller, H. R. (1990). Medienkomposition nach Cage. In H.-K. Metzger & R. Riehn (Eds.), *John Cage I (Musik-Konzepte Sonderband)* (pp. 107-131). München: Edition Text u. Kritik.

Discography

Thomas Brinkmann (1997). *Studio 1 – Variationen* [CD]. Germany: Profan

Thomas Brinkmann (1998). *Concept 1– 96:VR* [LP] Canada: Concept I

Ryoji Ikeda & Christian Marclay (2015). *Live At White Cube* [LP]. London: The Vinyl Factory – VF 153 Live 15, White Cube

Joke Lanz (2012). *Münster Bern* [CD]. Switzerland: Cubus Record

Christian Marclay (1985). *Record Without a Cover* [LP]. New York: Recycled Records

Phil Minton (1982). *A Doughnut in Both Hands* [LP]. UK: Emanem Records

NON [Boyd Rice] (1981). *Pagan Muzak*, [EP]. US: Graybeat Records – GB 3301

Various artists (1998). *Various 500 Lock-Grooves by 500 Artists* [LP]. Lowell, MA: RRRecords RRR-500

Various artists (2009). *RRR-1000 Lock Grooves* [LP]. US: RRRecords – RRR-1000

Glossary

Action
A unit of movements: for example, in sound manipulation techniques. See further explanation in Chapter 2, pp. 78-80.

Artistic Strategies
Strategies the artists follow in their exploration of the instrument and performance practice. These concepts might be concerned with sonic, visual, material, structural and/or conceptual aspects.

Autopoietic feedback loop
After Chilean biologist Humberto Maturana and Francisco Varela, the term autopoiesis describes a self-producing and self-generating living system; in the process of performance Fischer-Lichte describes a self-organising system between producers and co-producers which develops in a mesh of 'newly emerging, unplanned, and unpredictable elements' from both sides (Fischer-Lichte, 2008, p. 165).

Bricolage
After Lévi-Strauss, the assemblage of pre-fabricated and secondary material defined as an alternative to invention with planned and raw materials. See further explanation in Chapter 1.

Corporeality
After Fischer-Lichte (2008), in theatre studies describes 'processes of embodiment and the phenomenon of presence' (p. 77); in this study, applied to the turntable as electro-mechanical instrument and the vinyl records as material objects. See further explanation in Chapter 2 (1.1 Bricolage – Instrument Creation).

Cut-up (record)
A rearranged record created from parts of various records.

Drum machine
A synthesiser with an exclusively percussive sound generation.

Dubplates
Usually commissioned vinyl records that are single pressings of any audio recording.

Embodiment
In this study the term combines Fischer-Lichte's (2008) notion of embodiment in theatre with Croft's (2007) conditions for instrumentality and grain in electronic music instruments. Embodiment describes an emphasis on the materiality of the body in action-sound relationship without referring to communication, representations of feelings, and expressivity. **Phonographic embodiment:** A distinct form of embodiment that emerges via the automated and mechanical movements of the record player (see Chapter 2, pp. 78-86).

Experimental turntablism
Practices in which artists, composers and musicians use the turntable as an instrument in an extended way by including the medium's materiality. Individual approaches can physically modify the devices and artefacts. In performance, the artists most often include improvisation and chance processes.

EQ or equalisation
Controls, often on a mixing desk, for modifying the frequency spectrum of the audio signal. Control knobs modify the volume of a section of the frequency spectrum, generally divided into high, middle and low.

Interaction
An interaction refers to the reciprocal relationship between performer(-body) and objects (see Chapter 2, pp. 79-80).

Isotopy
Borrowed from Flückiger (2012), a series of similar sound fragments that create coherence. The sound fragments share similarities on the base of acoustic properties and sensory dimensions, such as timbre, pitch, envelope or rhythm. See further explanation in Chapter 2, p. 75.

Liveness

In theatre performances, liveness is dependent on the simultaneous bodily presence of performers and audiences in the same space. For performances with the turntable as an electro-mechanical instrument, I consider liveness in an embodied playing mode (fulfilling an 'instrumental relationship' after Croft's (2007) criteria, mapping aesthetically meaningful differences from the input to the output sound (Croft's 'aesthetic liveness'). See further explanation in Chapter 2, pp. 78-85.

Loop

A loop consists of a repeated sonic unit, for example of a sample or an instrumental pattern. The locked groove and tape loop are earlier technological predecessors.

Materialising Sound Indices

After Michel Chion (1994), sonic particles that indicate idiosyncrasies and/or resistances in the sound production such that awareness of the sound emitter (and hence of its materiality) arises. Chion applies this term in relation to 'film space', citing as examples the breathing of a pianist or his/her fingernails on the keyboard. This thesis uses the term for acoustic properties in the mediated, manipulated or live produced sound that refer to the specificity of the medium. See further explanation in the Introduction.

Materiality

Has two different meanings herein. Firstly, the materiality of the reproduction medium refers to the medium's physical properties (here I exclusively refer to the physical material). Secondly, after Fischer-Lichte, it refers to the corporeality in the performance (the conditions of embodiment and presence of performer and physical objects). See further explanation in Chapter 2, pp. 77-78.

Material Reality

After Christian Marclay, the term refers to the records and turntables as physical and tangible objects onstage. Different record player models and different-sized records, for example, provide correspondingly distinct material properties, limitations, and resistances (see Introduction).

Mediality

Concerns the live performance's medial conditions: for example, the bodily co-presence of performers and audience members, and the directness, liveness and process of the artist's performance. See further explanation in Chapter 2, pp. 89-91.

Media Reality

In this thesis, media reality refers to de la Motte-Haber's (1998) statement that products of electronic media, such as the reproduced sound from a vinyl record or digital sample device, create simulated events that dissolve the coordinates of the listener's here and now. See further explanation in the Introduction.

Media-specificity

Refers to features specific to a distinct technological medium such as radio, gramophone or turntable. The term is often used in artistic practices that emphasise these features by instrumental reuse or damage: the medium thereby provides something that could only be realised with its specific features and which is unrelated to the content or message it mediates. See further in Introduction and Chapter 1.

Medium and Mediation

In the following, along Rolf Großmann, mediation (see Großmann, 1997) will be used equivalent to mediatisation, such as in Fischer-Lichte (2008). Medium and media (pl.) solely refer to technological media (e.g. film, photography, audio reproduction and transmission devices) although I do not differentiate between electronic and electro-mechanical media. Turntables and vinyl records are considered here as instruments rather than solely reproduction media. See further explanation in the Introduction and Chapter 2.

Movement

Refers to the change of the physical position of a body part or of an object. In my study this also covers mechanical movements of a device. Movements can therefore be caused by either a person or an object. See further explanation in Chapter 2, pp. 79-80.

Performance

In this thesis (after Fischer-Lichte, 2008), performance describes a transient event in which a autopoietic feedback loop between performers and co-producers takes place. See further explanation in Chapter 2, pp. 67-71.

Performativity

In this study, the focus on the performativity in art performances is on the phenomena themselves and how their self-referentiality creates meaning without referring to a given message. Herein the performative aspects are addressed by analysing the materiality in performance, focussing on the corporeality, dependent on embodiment and presence. The corporeality emphasises the limitations of a body or material thing by understanding them in their self-referentiality.

Presence

Refers in this study both to the phenomenal body of the performer and to the instrumental setup onstage. After Fischer-Lichte (2008), presence is a performative (rather than expressive) quality that enables the performer or object to command space and hold the audience's attention (p. 96). See further explanation in Chapter 2, pp. 87-88.

Sample/Sampling

A 'sample' in digital signal analysis is a slice that separates a continuous signal into discrete steps. In this study the term sampling generally describes the practice of playing excerpts of pre-recorded sound and arranging them in a new musical context.

Sequencer

A device to play a selected series of sounds in a specific temporal pattern. Most typically connected via MIDI or audio and combined with effects.

Synthesiser

Generally refers to a type of electronic keyboard instrument, but can also refer simply to devices for sound synthesis (analog and digital).

Appendix A

Chapter 3 / Case Study 1 Joke Lanz

Overview of Vinyl Discs in concert

0:07 - 1:11	Disc 1	broadband noise with varieties of feedback	TR	noises/other
1:12 - 4:44	Disc 2	phonemes of a voice, recognisable vowels due to formant spectrum, also similarity with accordion	TL	instrumental or vocal
2:32:60 - 6:35	Disc 3	short diverse noises, then scratching	TR	noises/other
4:50 - 5:20	Disc 4	playback hardly recognisable, gong, impulse sticker pattern on surface	TL	diverse noises
5:31 - 8:35	Disc 5	diverse sounds, spoken word: ‘twelve’ by male voice, machine noise	TR	noises/vocal
6:45 - 8:05	Disc 6	high pitched noises, only inserted passages of around 50 ms at 7:33 needle drops, random noises, also female voice (7:44)	TL	noises/vocal
8:36:52	Disc 7	female voice creating diverse vocal and noisy sounds by shouting, rhythmically breathing, hissing, with repeating organ chord in background.	TL	noises, partly music/ vocal and instrumental,
9:08:38 - 10:33 & 21:10 - 22:53	Disc 8	digital noise, low, middle and high pitches in irregular impulses, melodic passages with high pitches, sounds similar to the dialing sound of an internet modem - leading voice and inserts - manipulation: stabbing	TR	noises/ technological
9:50 - 10:28	Disc 9 7''	syllables of male voice, fragments & words - inserted passages (9:50 - 10:00) - spinning (10:14 - 10:28)	TL	speech/vocal
10:34 - 11:26	Disc 10 7'' record without spindle,	sine tones - inserted passages - phonographic manipulation: wobbling effect creates similarity with prosodic characteristic - transposition (33/45 rpm), stop button - dynamic variation with volume fader on mixing desk	TL	noises / electronic sound
10:54	Disc 11	- scratching sounds, gibbering - deep sine tones followed by deep granulated noise - periodic noise with slow movements, deep frequency spectrum of low frequencies accompanied by a high pitched noise - inserted passages - periodic noise overlapped with loop 5, sound carpet	TR	noises

12:46:18	Disc 12	drop sounds, frequencies between 400 and 700 Hz - rotating disc manually forwards and backwards - mild scratches, more melodic up and down - continuous	TL	noises
13:32:60 - 15:52	Disc 13	rhythm of pitched unknown percussion instrument, sound could be wooden, small sound - continous overlap - manipulation: re-adjusting needle in groove	TR	music/rhythm
14:31:51 - 16:06:50	Disc 14	kick drum beats, could be techno music, low frequencies - asserted passages, continuous from 15:53 on		music
16:00	Disc 15	noise with a broad frequency spectrum, movement in higher and lower frequency spectrum, repeating in a loop of around 1,5 seconds - continuous sound carpet		noises
	Disc 16	child's voice with a hiccough, singing the song 'Over the Rainbow' - scratching for transition - recognisable part starts at 17:51:24		vocal/music
	Disc 17	solo deep male voice (bass) sings monophonic, melismatic melody, recurrent melodic units, vibrato, classically trained voice with dynamic variation		music/voice
25.58	Disc 18	electronic dance music (with deep male choir fragment), 4/4 beat, ~160 bpm	TL	music
23:05- 25.58	Disc 19	Rock music, e-guitar, instrumental and vocal (recognisable 23:32 & 24:37), (needle drops, broadband noise)	TR	music

Table 8.1 Samples of vinyl discs used during the performance. TL = Turntable left; TR = Turntable right from the audience's perspective.

Chapter 4 / Case Study 2 Vinyl -terror & -horror

Camilla Sørensen's Setup & Records

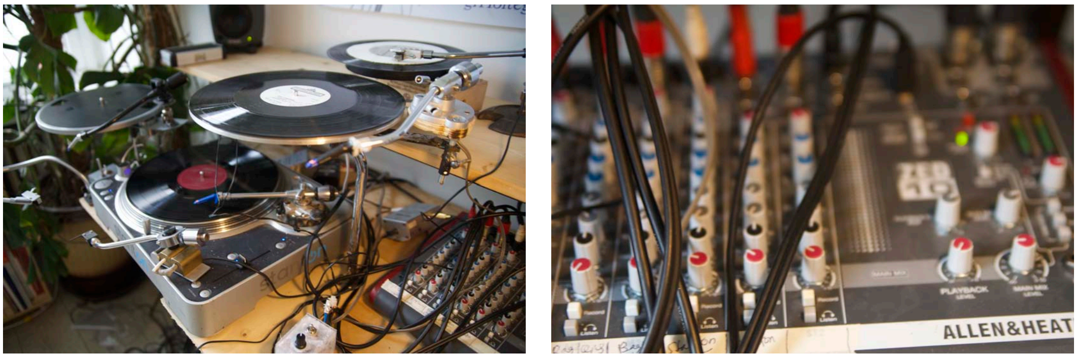
ALLEN&HEAT
PLAYBACK LEVEL

Figure 8.1 Record construction in 2014 (can vary constantly) and mixing desk Allen & Heath.

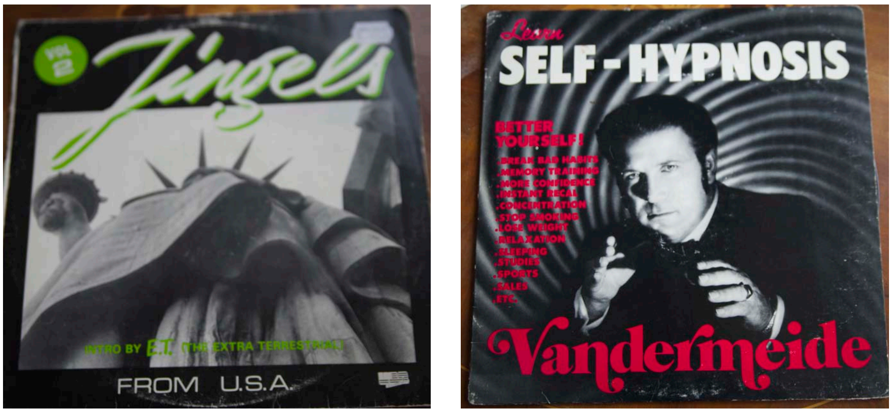
VOL 2
Jingels
INTRO BY E.T. THE EXTRA TERRESTRIAL
FROM U.S.A.
Learn
SELF-HYPNOSIS
BETTER YOURSELF!
Vandermeide

Figure 8.2 Selection of vinyl records of Camilla Sørensen's collection.

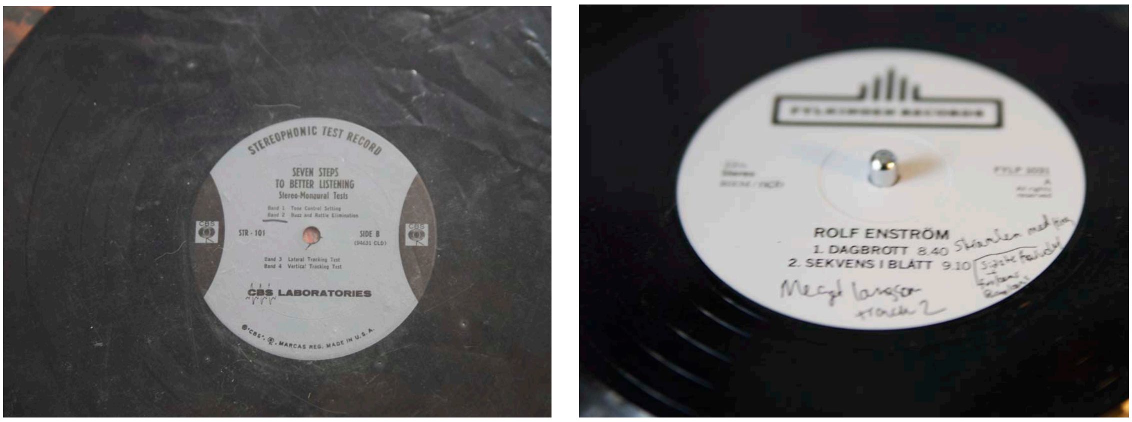
STEREOPHONIC TEST RECORD
SEVEN STEPS TO BETTER LISTENING
Stereo-Monaural Tests
STR-101
SIDE B
CBS LABORATORIES
ROLF ENSTRÖM
1. DAGBROTT 8.40
2. SEKVENS I BLATT 9.10

Figure 8.3 Selection of vinyl records of Camilla Sørensen's collection, Stereophonic Test Record, underlined Track 'Buzz and Rattle Elimination' (left), notes on the vinyl record (right).

Greta Christensen’s Setup and Records

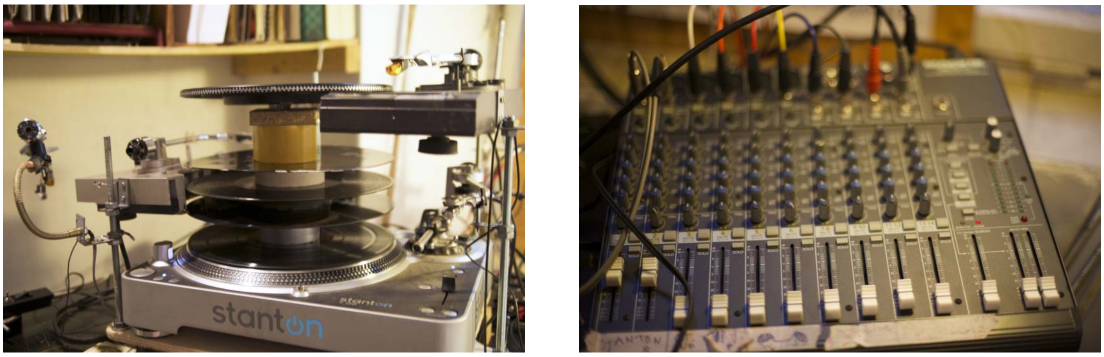

Figure 8.4 Record construction 2014 (can vary constantly) and mixing desk.

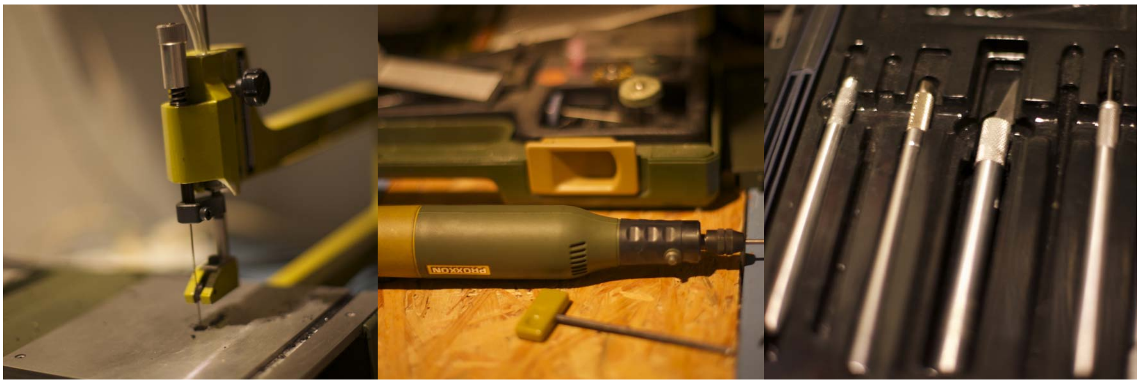

Figure 8.5 Tools to prepare the vinyl records (e.g. see following examples of her preparations).

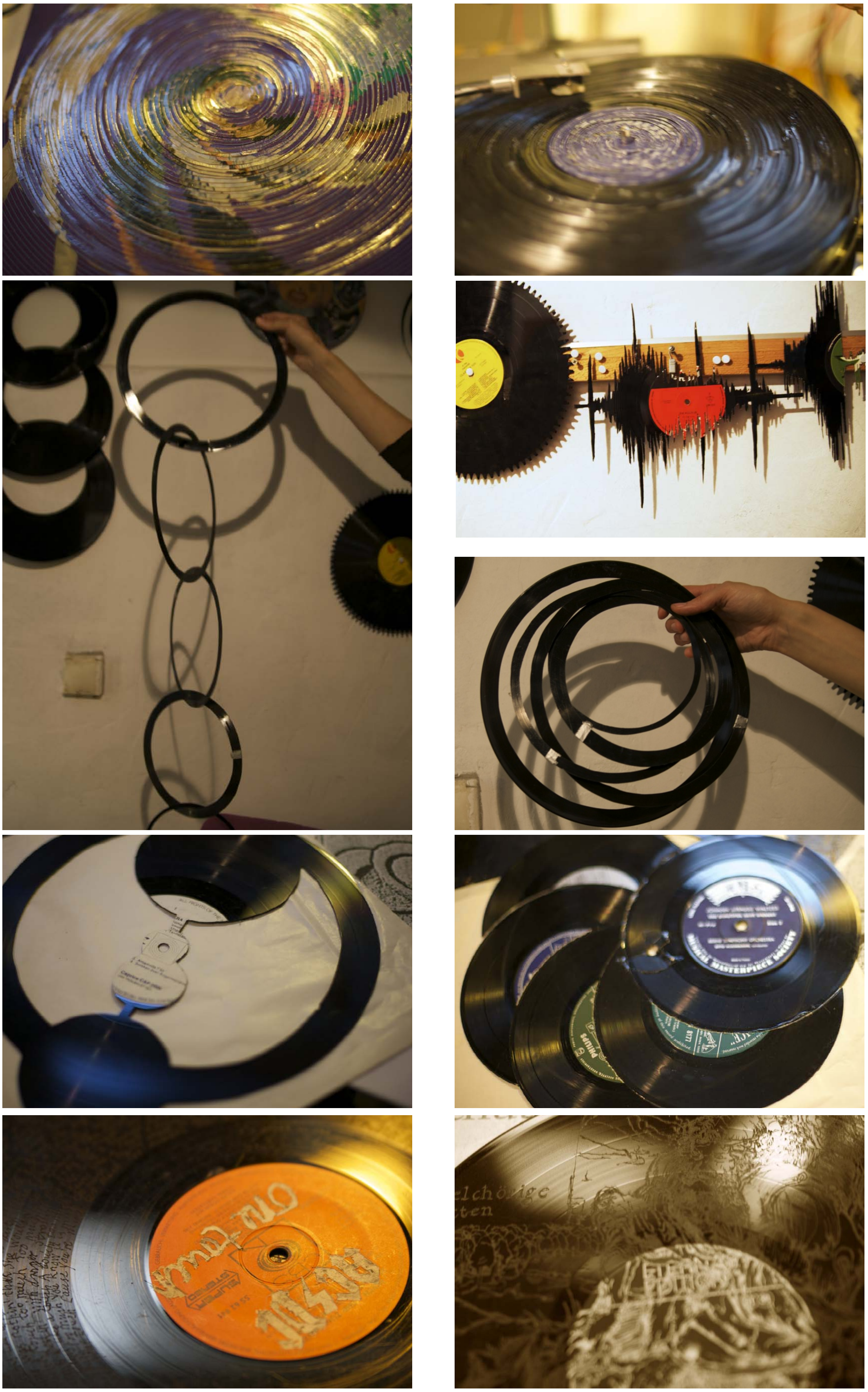

Figure 8.6 Diverse prepared records.

Overview of vinyl records used in the concert

Section I 0:11 - 5:57 min	0:11 - 1:46	Disc 1 Cut-up	tango music/strings & piano from 0:46 regular noise bursts via preparation (10 x loop)	G/TL/P4	music noise
	0:30 -	Disc 2 Dubplate	(black label) Few high frequency drones (strings), string glissandi up and down, pizz. (0:54)	C/TR/P4	music
	0:57	Disc 3	Recurring crescendo of filtered noise, other noises, probably record called ‘Exorcism’	G/TL/P3	noise/ music
	1:10	Disc 2*	low frequency ostinato, might be piano	C/TR/P5	
	1:52 - 2:05	Disc 4 7’’	7’’ blue/red: trumpet-like instrument, jazzy melody	C/TR/P2	music/ noise
	2:16 -	Disc 5	Piano melody, B-minor,	G/TL/(P1 or 2)	music
	2:25	Disc 6	diverse high frequency noises, crescendi	C/TR/P1	noises
	3:03 - 3:12	Disc 7	vocal, female mischievous laughter	G/TL/P4	vocal noise
	3:25	Disc 8	(cut-up/stickers) distortion sounds	G/TL/P5	
Section II 5:57 - 11:55 min	5:57	Record shards	mainly abstract noises, hardly any samples	G/TL/P5	
	6:08	Disc 9 7''	spoken word, sped up	C/TR/P1	spoken word
	6:20 - 6:40	Disc 10 Cut-up	(white) quickly following mix of various music styles (e.g. organ, hardly recognisable samples) (was visible from beginning on but not played)	C/TR/P2	music
	7:05 - 7:30	Disc 11 Off-centre hole disc	(yellow label) brass music, wobbling effect	C/TR/P2	music
	7:52	Disc 12 Baked 7’’ record	irregular noise impulses due to the uneven disc surface	G/TL/P5	noises
	9:00	Disc 13 Movable tonearm	scream of a woman, squeaking, low frequency distortions from mobile cartridge	G/TL/P6	vocal noises/ noise
	(9:35)	(Disc 14)	(not used)	C/TR/P4	
	10:25 - 10:45	Disc 15 Cut-up	diverse sound snippets, manual rotation	C/TR/P2	
	10:50 - 11:55	Disc 16	distortion sounds, uneven disc surface	G/TL/P5	

Section III 11:55 - 16:54 min	11:55 -	probably a disc of the tower’s bottom layers	drop sounds	G/TL/P1 or P2	
		Disc 14*	harmonic background sound	C/TR/P1	
	played after Disc 19	Disc 17+18 Prepared disc	(Disc 17 partly sticker surface) Disc 18 is on top of Disc 17, (Disc 18 cut-out parts)	G/TL	
	13:52	Disc 19		G/TL/P6	
	15:10 - 15:19	Disc 17+18*	rhythmical distorted scratch impulses	G/TL/P5	
Section IV (17:02 min - 23:26)	16:54	Disc 20 Locked grooves disc	only snippets of various noises, manipulations (tapping, spinning, off-centre at 17:32 min)	G/TL/P4	diverse sounds & noises
	15:47 - 16:49	Disc 21 Off-centre hole disc	yellow label (looks like Disc 11), rhythmical bird calls	C/TR/P4	noises
	18:07 -	Disc 22	Stereo Text Record, male voice explaining how to listen, but not intelligible in concert	C/TR/P4	
		Disc 23 Dubplate	black label, pure frequency decreasing from extremely high to extremely low spectrum, superimposed mix of different music styles, maybe opera, Dixie Music, later synthetic sounds	C/TR/P2	
	19:45 prepares	Disc 24		C/TR/P1	
		Disc 25 7’’	sounds are masked in concert	C/TR/P3	
	20:23 - 20:37	Disc 26 7’’	low female voice, spoken word, probably in English, intelligible	C/TR/P3	speech
	20:40	Disc 27 7’’		C/TR/P3	
	20:44	Disc 28 7’’	distortion noises	C/TR/P3	noise
	20:55	Disc 29 7’’	male voice, spoken word, probably in English, intelligible	C/TR/P3	
	21:05	Disc 30 7’’	masked	C/TR/P3	
	21:17	Disc 31 7’’	male voice, spoken word, in English ‘Repeat’ + eventually ‘Suspect’	C/TR/P3	
	21:21	Disc 32 7’’	musical fragment, but unclear	C/TR/P3	
	21:23	Record shards	distortion noises	G/TL/P4	noise
	21:36 - 23:26	Disc 33 7’’	male voice, spoken word, agitated character	C/TR/P3	

Table 8.2 Samples of vinyl discs used during the performance. G: Greta Christensen; C: Camilla Sørensen; TL = Turntables left; TR = Turntables right from the audience’s perspective; P1-8: Pickups (see technical scheme of setup).

Appendix B

List of turntable performers – experimental turntablists (since late 1970s)

1. Lucas Abela (AU) (started since early 1990s) dualplover.com/abela
2. Ian Andrews (AU) http://ian-andrews.org/
3. Claus van Bebber (Kalkar, DE) cvbebber.de
4. Alexandre Bellenger (Paris, FR) (started around after 1999) econtact.ca/14_3/bellenger_gallery.html
5. Thomas Brinkmann (DE) (C.U.T., Ester Brinkmann, Jim Ingram, max.E, max.Ernst, Soul Center and Tom Assman) www.max-ernst.de
6. Vicky Browne, (NZ), http://vickybrowne.tumblr.com
7. Esther Bourdages (CA) http://esthersophiebourdages.blogspot.de
8. Sebastian Buczek (PL)
9. Maria Chavez (Brooklyn, US) (started around 2003) http://mariachavez.org
10. dieb13 (Dieter Kovačič, also Takeshi Fumimoto, Echelon, Dieter Bohlen, Dieb 14) (Wien/Berlin, AT), http://dieb13.klingt.org
11. Hendrik Dingler (DE) www.hendrikdingler.de
12. DJ Olive (US) www.djolive.com
13. DJ Sniff (Takuro Mizuta Lippit) (JP/US) djsniff.com
14. Christopher DeLaurenti (US) www.delaurenti.net
15. Graham Dunning (London-based, UK) https://grahamdunning.com
16. Thomas Eisl (London-based, UK) https://vimeo.com/user7307252
17. erikm (Marseille, FR) www.erikm.com
18. Shiva Feshareki (London-based, UK) soundcloud.com/shivafeshareki
19. Wolfgang Fuchs (Linz, AT) http://turntabling.firstfloor.org
20. Mike Hansen (CA) http://mikehansen.tumblr.com
21. Julius Holtz (Berlin, DE)
22. Chulki Hong (Seoul, KR) www.balloonnneedle.com/chulkien.html
23. Institut für Feinmotorik (IFF) (DE) (Marc Matter, Mark Brüderle, Daniel van den Eijkel, Florian Meyer) (started since 1997, presumably not active anymore) http://institut-fuer-feinmotorik.net
24. JD Zazie (Berlin based, IT) http://jdzazie.tumblr.com
25. Philip Jeck (UK) www.philipjeck.com
26. James Kelly (UK) https://minimaljames.wordpress.com
27. Aleksander Kolkowski (London, UK) www.phonographies.org/about/aleks-kolkowski/
28. Joke Lanz (Berlin based, CH) www.suddeninfant.com
29. Yann Leguay (Brussels based, FR) www.phonotopy.org
30. Pedro Lopes (PT) plopesmusic.org
31. Christian Marclay (US/CH, London/New York based)
32. Katsura Mouri (Kyoto, JP)
33. Martin Ng (Sydney, AU)

34. James Eck Rippie (US, Houston) (since 1997) www.cronicaelectronica.org
35. Arnaud Rivière (Paris, FR) http://http.http.http.http.free.fr
36. Marina Rosenfeld (New York, US) www.marinarosenfeld.com
37. Ignaz Schick (Berlin-based, DE) https://zangimusic.wordpress.com/ignaz-schick
38. Janek Schaefer (London-based, UK) www.audioh.com
39. David Shea (New York based, US) www.scaruffi.com/avant/shea.html
40. Jacek Staniszewski (PL)
41. Strotter Inst. (Bern based, CH) (since 1998) www.strotter.org
42. Yuri Suzuki (London based, JP) yurisuzuki.com
43. Martin Tétreault (Montreal, CA)
44. Akiyama Tetsuji (JP)
45. Toshio Kajiwara (JP)
46. Vinyl -terror & -horror (Camilla Sørensen and Greta Christensen, Berlin based, DK) www.vinylterrorandhorror.com
47. Takahiro Yamamoto (JP)
48. Otomo Yoshihide (JP) http://otomoyoshihide.com

Appendix C

DVD: Concert videos and graphical representations of the case studies

Chapter 3 / Case Study 1 Joke Lanz
Chapter 4 / Case Study 2 Vinyl -terror & -horror
Chapter 5 / Case Study 3 Graham Dunning