NOISE AS A CONSTRUCTIVE ELEMENT IN MUSIC

Theoretical and Music-Analytical Perspectives

Edited by Mark Delaere

Noise as a Constructive Element in Music

Music and noise seem to be mutually exclusive. Music is generally considered as an ordered arrangement of sounds pleasing to the ear and noise as its opposite: chaotic, ugly, aggressive, sometimes even deafening. When presented in a musical context, noise can thus act as a tool to express resistance to predominant cultural values, to society or to socioeconomic structures (including those of the music industry). The oppositional stance confirms current notions of noise as something which is destructive, a belief not only cherished by hard-core rock bands but also shared by engineers and companies developing devices to suppress or reduce noise in our daily environment.

In contrast to the common opinions on noise just described, this volume seeks to explore the *constructive* potential of noise in contemporary musical practices. Rather than viewing noise as a 'defect', this volume aims at studying its aesthetic and cultural potential.

Within the noise music study field, most recent publications focus on sub-genres such as psychedelic post-rock, industrial, hard-core punk, trash or rave, as they developed from rock and popular music. This book includes work on avant-garde music developed in the domain of classical music as well. In addition to already well-established (social) historical and aesthetical perspectives on noise and noise music, this volume offers contributions by music analysts.

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Makis Solomos was born in Greece in 1962 and is now living in France. He is Professor of Musicology at the University Paris 8 and Director of the research team MUSIDANSE. He has published many books and articles about new music. He is also one of the main international Xenakis specialists, to whom he has devoted many publications and symposiums. He is the co-founder of the review *Filigrane. Musique, esthétique, sciences, société*. His last book deals with an important transformation in today's music: *From Music to Sound. The Emergence of Sound in 20th- and 21st-Century Music* (Routledge, 2019). His recent research focuses on sound ecology and on performing Xenakis's music (both instrumental and electroacoustic). His new book *Exploring the Ecologies of Music and Sound. The Living, the Mental and the Social in Today's Music, Sound Art and Artivisms* (working title) will be published by Routledge. He is co-organizing the *Xenakis 22: Centenary International Symposium*.

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Introduction

The Blessings of Noise Music

Mark Delaere

In keeping with the setup of the Routledge book series *Musical Cultures of the Twentieth Century*, the present volume originated in collaborative research. The volume was conceived during editorial board meetings at the Institute of Music of the Fondazione Giorgio Cini in Venice. As a result of this, a full-day online workshop was held on 27 February 2021, replacing the conference on noise music originally planned at the University of Leuven from 8 to 10 October 2020 but cancelled because of the pandemic. A mix of internationally recognised authors and some junior researchers in noise music were invited to contribute papers on the theoretical perspectives or music-analytical case studies selected by the editorial board in view of their topicality and potential to contribute to a deeper understanding of noise music. The draft papers were distributed two months before the workshop amongst the contributors and editorial board members. Since all participants had read the papers beforehand, the research workshop was, right from the start, an in-depth discussion rather than a presentation of the findings. Authors received constructive suggestions which subsequently enabled them to develop their work for publication in this volume.

The more wide-ranging a book in terms of disciplines, theoretical traditions, methodologies and repertoires, the more useful an introduction aiming at creating some coherence. All chapters approach noise – in one way or another – as something constructive and not as something unwanted or even threatening. Its constructive potential may reside in its communicative, epistemological or ontological function, in its musical function or in its capacity to question music's implicit assumptions. This wide variety of positive interpretations is multiplied by different understandings of the concept and history of noise. Hence, the first part of this Introduction deals with different theoretical contexts in which the idea and phenomenon of noise have been approached. In musical terms, pitch, sound and noise cannot be clearly separated from one another but are understood as existing on a continuum. *Pitch* is a periodic frequency that combines with other pitches to form intervals and melodic, harmonic and contrapuntal relationships in most Western popular and classical music traditions. *Sound* is used in two ways in this volume. It either broadly signifies the totality of sonic events embracing both

pitch and noise or more specifically indicates the shift to saturated textures replacing pitch constructions in music from the twentieth century onwards. *Noise* is an essential part of that shift but it is actually more, since it also indicates a certain roughness of timbre or the 'grain' of the sound (Barthes 1999). Given the multifarious responses to this concept in different research (sub)disciplines, the reader will certainly not expect a clear-cut definition of noise. What follows is consequently more of a theoretical background for the many applications of the term 'noise' in this volume rather than its strict delineation. The same can be said about the sketchy history of noise music that follows. Its concise presentation in this Introduction merely serves as a sort of historical foothold for the reader to understand the many references to repertoires of noise music across genres in this volume. Although engaged in the much more ambitious project of writing a global history of philosophy, Julian Baggini reminds us of the function of an Introduction, and more broadly of a book such as the present one:

> When introduced to somebody, you are not told everything about them, rather you are given the opportunity to begin an acquaintance. This introductory book, then, is a prelude to closer examination, a first step in a longer, open and open-ended project.
>
> (Baggini 2018: xix)

The thus conceived theoretical and historical introductions are followed by a brief presentation of the individual contributions to this volume.

The Concept of Noise: Theoretical Traditions

No better starting point for advocating the constructive potential of noise than Michel Serres. The French philosopher highlights the importance of noise for literature, painting, music, communication and all human activities. One cannot but evoke his book *Genesis* (1995, but originally published in French in 1982) in this respect. Starting from the old French word 'noise' and referring to the 'noisy' painting in Honoré de Balzac's short story *The Unknown Masterpiece* (1831), Serres explains how fragile formations of beauty and sense can be found in the seemingly chaotic and tumultuous:

> Background noise is the ground of our perception, absolutely uninterrupted, it is our perennial sustenance, the element of the software of all our logic. It is the residue and the cesspool of our messages. No life without heat, no matter, neither; no warmth without air, no logos without noise, either. Noise is the basic element of the software of all our logic, or it is to the logos what matter used to be to form. Noise is the background of information, the material of that form.
>
> (1995: 7)

In addition to pointing out its epistemological and existential function, Serres refers to the role of noise in communication and information theories in the above quotation. He attempts to revert the notion of noise put forward in Claude Shannon and Warren Weaver's mathematical model of communication (1949), arguably perceived as one of the most effective categorizations of noise as unwanted sound because it disturbs the signal and thus prevents the message from being clearly transmitted. In the first chapter to the present volume, Michael Goddard offers a more nuanced interpretation of Shannon and Weaver and points out recent developments in cybernetics. James Whitehead (2013) had already added another dimension to the idea of noise as a communicative medium stemming from the widespread use of computer technology and the internet. For computer sciences, noise is not only meaningless and irrelevant but also potentially destructive, since it may lead to computer crashes: 'Such a definition of noise from within computer science defines noise as essentially destructive and not as some effect or affect' (2013: 19). Based on ideas from the recent philosophical trend of 'speculative materialism' in which the process of thinking and its object have to be correlated in order to create meaning, Whitehead claims that the quantity of (auditive) data available on the internet today exceeds our understanding and thus creates noise.[1] Two conclusions can be drawn from this: contrary to Serres, Whitehead sees noise not as a prerequisite for logos but as its opposite, and he considers noise as detached from sound in his account. In describing noise as a differential, Mary Russo and Daniel Warner (2007) add another aspect to the signal versus noise problem. As soon as a sender does not want to transmit or a culture does not want to hear noise, this in itself is significant and thus 'signals' something. Consequently, there is no absolute presence or absence of noise in communication, culture or life. Noise is ambiguous, meaningful and full of social content and hierarchies: 'Noise is not, as information theorists would have it, a signal that *we* do not want to hear. It is a signal that *someone* does not want to hear. Noise is pain' (2007: 53).

In addition to concepts of noise in communication theory, the shift from visual to auditory culture as a predominant or at least re-evaluated mode of perception at the end of the twentieth century also had an impact on our understanding of noise. As so often before, media theorist Marshall MacLuhan was one of the first authors to observe this shift in the late 1970s, at a time when computer technology and the upcoming internet gradually turned the world into a 'global village'. Whereas visual space is characterized by symbolic order, linearity and one-dimensionality (one sense perceiving one thing at a time), acoustic space by way of radio, sound recording and the computer returns to the conditions of orally transmitted culture: unpolished, discontinuous, heterogeneous, in the moment and with superimposed layers of meaning (MacLuhan 2007). At this point, one cannot but invoke Luigi Russolo's exhortation in his 1913 futurist manifesto on the art of noises: 'Let us cross a large modern capital

with our ears more sensitive than our eyes' (Russolo 1986: 26). In musical practice, this transition comes with a shift from score reading to dealing with recorded sound. Numerous authors have proposed tools that enhance the necessary sonic literacy: Pauline Oliveros (2011), for example, created a vocabulary for deep listening and tried to replace visual by auditory metaphors ('imagination' by 'auralization', for instance). In presenting the eponymous anthology, Christoph Cox and Daniel Warner registered the impact of audio culture that emerged from this shift and the developments in sound studies, sound art and other modern musical practices since the late 1990s (Cox and Warner 2007). David Hendy pursues more ambitious goals. His anthropology of noise traces the social history of mankind from prehistoric times until today through sound and listening (Hendy 2014). Greg Hainge, on the other hand, approaches noise from a philosophical rather than a historical perspective. His 'relational ontology' finds noise far beyond the audible, a more general phenomenon rooted in the relational conditions of contemporary culture (Hainge 2013: 14).

In music studies drawing on acoustics, the definition of noise has been self-evident for a very long time (for an excellent overview, see Lalitte 2008). Hermann von Helmholtz's distinction between noise as irregular, non-periodic vibration and 'pure musical sound' (pitch) as its opposite (Helmholtz 1863) is still referred to today. It allows for an unambiguous and straightforward understanding of noise, one that is sealed by natural science, unaffected by musical developments and changing listening strategies or interpretations. Helmholtz's exclusion of noise from the musical domain acted as a challenge to others (Busoni 1907; Russolo 1986 [1913]; Varèse 1966 [1936]: the 'liberation of sound'). However, there is no such thing as pure musical sound. Stability is lacking altogether in sound production, as the finer analysis of the ADSR phases (attack – decay – sustain – release) of any sound envelope demonstrates. Frequency, amplitude and tonal spectrum are not constant even in the putatively most stable sustain phase. The number of non-periodic noise components in the attack phase even prevents pitch from being perceived. No one intuited the 'messy' beginning of any musical sound better than Franz Schubert in the last song of his *Winterreise* cycle. The *A–E* dyad imitating the hurdy-gurdy player's drone at the end of this journey of despair was even in Schubert's time a well-tempered fifth instead of a perfect one. Its *E* is preceded by a *D#* appoggiatura symbolizing the noisy onset of any musical pitch to perfection.

In addition to non-periodic frequency, loudness is another physical attribute often implied when speaking of noise. But not in every language! Whereas 'noise' (English), 'bruit' (French) or 'rumore' (Italian) generally point to loud, unpleasant sounds, the unambiguous expression for the latter in German is 'Lärm' or 'Krach'. In contrast, 'Geräusch' may signify both boisterous and soft, rustling non-periodic sounds. A case in point is composer Peter Ablinger who explored both extremes: harsh static white noise and barely audible sounds. His *Weiss* / *Weisslich* cycle (initiated in 1980), for

example, presents sounds at the threshold of perceptibility (see Barrett 2009; Gratzer 2012).[2] The question whether there is noise in Helmut Lachenmann's music is answered in Chapter 8 of this volume with the use of dozens of sound event types ranging from extremely soft to extremely loud. However, the specific genre of noise music that emerged in the 1990s in the wake of postpunk and industrial music is typically associated with electronic amplification and exceedingly loud dynamic levels. Technology and in particular electronic amplification are 'directly vital to all developments in the history of noise and noise music' since they change our understanding of the relationship between the energy of a physical action and the resulting sound (for the impact on production and perception of music, see Hegarty 2007: 21–37, quote on p. 21). For a volume that aims at discussing noise across musical genres, beyond the narrowly defined noise music genre and in different aesthetic and social contexts, loudness is often at stake, but not always.

Whether based upon roughness of non-periodic vibrations or loudness, noise is more often than not associated with excess, transgression and disruption. In their introduction to the volume *Reverberations. The Philosophy, Aesthetics and Politics of Noise*, the editors express this association strikingly: '[…] noise operates on the thresholds of normative social interaction as a potentially disruptive agency, but this tells us very little about what noise in its sonic forms really constitutes' (Goddard et al. 2012: 2). These sonic forms are often perceived as chaotic and ugly intruders in well-established systems of meaning such as language and music. What seems destructive only at first may, nevertheless, carry constructive moments with it as well: '[…] in its annoyance (of others) it also provides new forms of pleasure, not least of which are the pleasures of transgression and subversion' (Goddard et al. 2012: 1). One of the recurring topics in the theoretical debate on noise is its subjective and/or intersubjective nature. What constitutes noise for one person does not necessarily have the same meaning for another. For normal hearing subjects, the physiological thresholds for sounds (too soft, too loud or traumatic) are quite equal. The subjective perception of sounds that are too loud ('noise'), however, can be variable (Moore and Glasberg 2004).[3] Musical perception, indeed, depends on a lot more than physiology: it involves previous listening experiences, focus, types of temporal experience, stream segregation and other structuring strategies or conversely abandons full control to immersion or shows different degrees of openness to non-familiar musical styles, types of musical expression, sound characteristics and so on. Sonic experience and literacy vary individually, and this may account for descriptions of the same sounding object as 'noise' and 'music'. At the same time, the above quotation from *Reverberations* ('normative social interaction') highlights that noise is a social construct as well, evaluated by groups of people. Its acceptance or rejection is an eminently social and cultural phenomenon (Lalitte 2008).

The social dimension of noise has been studied from different perspectives, including the creation of acoustic territories (LaBelle 2011) and the

development of new artistic formats that redefine the collective experience
of music and noise (Schafer 1973; Eno 1996 [1978]; Chambers 2007; Voegelin
2010 and many other examples). In this context, I can only briefly mention
three specific forms of noise as a socially constructed positive phenomenon.
The first one is the gender perspective, which has reinforced other aspects
than loudness or violence superficially associated with noise. Performers
such as Jessica Rylan represent the future of female noise by building their
own sound production devices:

> No longer will the machines dream through women, but will instead be
> built by them. They will be used not to mimic the impotent howl of aggres-
> sion in a hostile world, but to reconfigure the very matrix of noise itself.
>
> (Powers 2009: 103)[4]

Secondly, the ethical potential of noise has also been emphasized recently.
In a book tellingly entitled *Beyond Unwanted Sound*, Marie Thompson
(2017) connects various manifestations of noise and noise music by affec-
tivity instead of negativity. She understands affect as the uncensored reac-
tion to an extreme and initially disturbing situation that can elicit new or
alternative ways of sensuous experience (Thompson 2012). Starting from
a description of the bodily impact of a concert by the metal band Sunn
O))), Thompson interprets noise music as shared intensity, a shared sensu-
ous language of the flesh. Its ethical potential lies in the disruption of fixed
binary categories and its replacement by a Deleuzian 'becoming'. This state
of instability in between purportedly fixed identities is exemplified by the
electronic transformation of Maja Ratjke's voice (on her 2002 debut solo
album *Voice*), a prime example of a cyborg blurring the difference between
voice and machine (Thompson 2012).

   Thirdly, in addition to gender and ethics, politics has been a privileged
field to stress the social construction of noise. Beyond its historiographic
narrative – more on this below – Jacques Attali's book *Noise* (1985, originally
published in French in 1977) has been influential in that it compares music
to politics in their shared attempt to domesticate dissidence, the subver-
sive, all things that deviate, in other words: noise. Totalitarian regimes use
music as a strictly controlled concept and practice in order to stay in power
and suppress the other. They do so by gradually incorporating unfamiliar
sounds into the consecrated idea of music, thus making noise harmless. By
advancing uniformity and mass consumption, capitalist democracies apply
the same tactics to first marginalize and subsequently take possession of
noise. Attali argues that music moves faster than economics and politics and
hence prefigures new social relations (Attali 1985). Before its appropriation
by music, noise can, indeed, act as a form of social protest by representing
outcasts, immigrants and the underclasses. Small wonder that the social his-
tory of 'dirty sound' has been chronicled (Castanet 1999). The politically
inspired resistance to commodification, slick virtuosity and technology

by post-rock punk and industrial bands has been well documented (Russo and Warner 1988; Worley 2017, amongst others). In embracing noise, free jazz and improvisation practices within experimental music have opposed predominant economic and political values as well. Its ethereal nature furthered non-repeatability and non-marketability,[5] whilst the non-hierarchical relationships between music makers have been understood as a prefiguration of an egalitarian, anti-authoritarian society (Iles 2009). This is frequently opposed to other musical usages within contemporary classical music. Edwin Prévost (2009), for example, argues that both Stockhausen and Cage served capitalism, paraphrasing the title of a well-known essay by Cornelius Cardew (1974).

A Bird-Eye's View on the History of Noise Music

Although its strained relation to Western contemporary music has often been invoked, noise music is generally perceived as a *sui generis* musical genre with origins in post-rock popular music. This volume presents a wider understanding of noise music in that it includes examples from spectral music, sound poetry, free jazz and extended techniques within classical contemporary music, in addition to what we usually describe as noise music. Consequently, the reader will find references to widely divergent musicians and composers. This Introduction cannot possibly offer a comprehensive overview to serve as a music historical backdrop for such variety. But it can refer to such exhaustive studies (Hegarty 2007; Solomos 2020) and help the reader to get a handle on how to deal with this multiplicity. Luigi Russolo's futurist manifesto *The Art of Noises* (1913) is often cited as one of the first attempts to acknowledge the musical potential of urban and industrial sounds until then considered unmusical (Russolo 1986). It is part of a series of European avant-garde movements in literature and visual arts (Dadaism, Futurism, Surrealism; for a useful 'portable guide' to the historic European avant-gardes, see Bru 2018) to which musical modernism is often presented in opposition. The Italian Futurist view on the referential nature of industrial sounds and on noise as a mere timbral extension of pitch indeed sits uneasily with musical modernism's predominant aesthetic beliefs, not to mention this artistic movement's subsequent involvement in fascism and glamorization of war and militarism. The media art specialist and one of the early influential theorists on noise and music Douglas Kahn identified four conditions for musical modernism to accept noise as a revitalizing contribution: the strictly non-imitative use; the tuning in with musical features already in place (dissonance, percussion, timbre) and thus paradoxically musical modernism's betrayal of its inherent conservatism; the attempt at dealing with 'resident noises' containing traces of the extra-musical world and, finally, the celebration of new forms of aurality (John Cage's exhortation 'to hear sounds in themselves') and the selection and manipulation of recorded sounds to 'fit' into musical modernism's aesthetic frame

(Kahn 1999: 68–139). All of this leads Kahn to conclude that music did not adequately respond to the incentives of artistic developments such as Futurism. Noise was accepted only to the extent that it did not question music's long-established integrity and autonomy. One of the many constructive uses of noise is, indeed, that it has the potential to shake deeply rooted music aesthetic beliefs. Paul Hegarty characteristically distinguishes the musical avant-garde from proto-experimental noise music composers such as Erik Satie, Russolo, Charles Ives, Kurt Schwitters, Cage or the Fluxus artists who introduced 'non-musical sounds' in their work, 'something we are forced to react to' (Hegarty 2007: 3–19).

In liberating percussion from rhythmical articulation and – to a certain extent – sound from pitch in works such as *Amériques* (1918–1921) and *Ionisation* (1930–1931), Edgard Varèse is a key figure in the exploration of noise at an early stage. He was also amongst the first to imagine a completely new musical language based on the electronic medium (Varèse lecture in 1936, published 1966). Electronic sounds, indeed, represent a major breakthrough when it comes to the use of noise in classical contemporary music. Volume may immediately spring to mind since it no longer results from the intensity of a musician's physical action. But the nature of the sound material is even more decisive, be it electronically produced sounds as in the early electronic music studios such as Cologne (Iverson 2019) or pre-recorded acoustic sounds electronically transformed as in the Parisian *musique concrète* studio (Schaeffer 1952). The director of the Paris studio Pierre Schaeffer assiduously categorized all sounds available to the tape music composer (Schaeffer 1966), a desire that was already prefigured on a much more modest scale in Russolo's typology of six families of noises (Russolo 1913). The extent to which this can be considered a liberation rather than a domestication of sounds has been questioned (Solomos 2008). It is, however, beyond doubt that electronic music prompted music analysts to study recordings rather than scores (Emmerson and Landy 2016), a challenge that had already been taken up earlier in ethnomusicology and popular music studies. Since then, authors have developed a workable version of Schaeffer's aural analytical method (Chion 1983) and – in spectromorphology – an approach to analyse formal relationships and transitions between sonic shapes (Smalley 1997).

Free jazz and experimental music produced by musicians such as AMM, Cornelius Cardew, Derek Bailey or Anthony Braxton not only represent a decisive step towards noise music but also bear the missing link between practising noise in popular and contemporary classical music. As Hegarty puts it

> […] as I am interested in noise as a mediation, this chapter needs therefore to find other ways of relating rock to its experimental fellow travellers in other genres. This would be the pursuit, by other means, of suggestions offered by Bailey and Zorn as to the value of improvisation. This will still entail consideration of central moments and figures

in 1960s rock – Cream, Hendrix, the Grateful Dead, Zappa – but hopefully, in situating this music in the context of electricity, and the differences between the approaches of those artists, the creation of a canon can be avoided.

(Hegarty 2007: 61)

In addition to improvisation, the critical stance towards the virtuosity and commodification of rock music boosted the development of noise music practices in genres such as punk and industrial music. The combination of DIY ethics, self-proclaimed ineptitude and cultural resistance to the economic and political establishment since the mid-1970s has furthered energetic 'dirty' sound as an expression of rebellion in punk music, the musical and political ramifications of which are well documented (Worley 2017). From the Sex Pistols, the Clash, the Ramones to Black Flag, Dead Kennedys and riot grrrl bands such as Bikini Kill, punk and post-punk bands made a difference in popular music: another example of the constructive use of noise through loud, unpolished sounds and 'destructive' anti-political lyrics. The same can be said about early industrial music's focus on the ruins of late capitalism whilst being '[…] the first music to offer the possibility of all-engulfing noise' (Hegarty 2007: 110). SPK, Throbbing Gristle, Cabaret Voltaire and Einstürzende Neubauten can be cited as representative examples. Throbbing Gristle's aesthetics of transgression – noise/music, man/machine, but also gender transgression – has been compared to George Bataille's philosophy, and its celebration of noise and violence to the history of media technology (Kittler 1995; Kromhout 2011). However, the origin of noise music as a specific musical genre is usually linked to the circulation of Japanese underground music based on extreme volume and distortion amongst listener communities in the United States and Europe from the 1990s onwards, a phenomenon aptly described with the help of ethnographic methods by David Novak (2013). Merzbow, the central figure in Japanoise and the only musician to enjoy a dedicated chapter in the master narrative of noise music's history (Hegarty 2007: 153–165), is overstepping the limits of music for some commentators: 'The music of Merzbow is of course not music at all, but rather the intensive expenditure of sound and silence in a whirlpool of electronic catharsis' (Thacker 1999: 64). It is no coincidence that the chapter on Merzbow in this volume is focused on a stretched form of musicality emerging from his harsh noise walls.

With Varèse as their main inspiration, contemporary music composers from the 1950s onwards created dense layers of sound and oversaturated textures that have been related to noise music. For listeners obstinately holding on to the desire of perceiving all constituents of the musical fabric separately, the musical results of their products can, indeed, come across as an excess of information. The aesthetic potential of sound masses moving in musical space is, however, undeniable as evidenced

in works by composers such as Iannis Xenakis, György Ligeti, Olivier Messiaen or the Polish 'sonoristic' composers Krysztof Penderecki and Witold Lutoslawski. The noisiness of their music primarily resides in the density of pitched sound masses, although Xenakis explores non-periodic sounds as well. The latter has been developed in a very refined way by Helmut Lachenmann since the 1960s. Early examples of extended techniques through which the pitch component of sounds recedes in favour of more complex spectra include Gustav Mahler's use of flutter-tonguing in wind instruments or Béla Bartók's pizzicati and a plethora of alternative bowing techniques. Lachenmann reconsiders instrumental technique in a more radical way: he 'builds a [new] instrument' out of the existing ones to create an unheard-of sound universe. The fact that most listeners rejected his works as 'mere noise' instead of music might be responsible for his dislike of the term. In a volume in which noise is thematized as a constructive factor with great musical potential, the subject should be re-opened. Out of the many applications of noise in twenty-first-century contemporary music, the work of 'saturationist' hyper-spectral composers can be cited as well as the artefacts produced through digital interface and the internet, the latter blurring the distinction between composer, performer, the virtual and the real. I realize that 'noise' is construed here in a much broader sense than in the narrowly defined genre of noise music. It is hoped, however, that the approach from many perspectives and musical genres yields new insights into the nature of noise.

When it comes to interpreting noise as a historical phenomenon, the name of Jacques Attali pops up in many a contribution in this volume. In addition to his political and economic analysis of the relationship between noise and music mentioned above, Attali (1985) created a historiographic model for understanding noise as temporary disturbance gradually losing its provocative and subversive power to finally be fully absorbed as a valuable musical element. Arnold Schoenberg's expression of 'the emancipation of the dissonance' becomes Attali's 'the emancipation of noise' so to speak; it is equally imbued with an ideology of progress. This model, like any (music) historical construction of the past, does allow a certain amount of insight to be gained, notwithstanding its major drawbacks. The latter include the 'failed' integrations of noise in the past and present, and the fact that the wrapping up of noise in music destroys the former's potential to counter the latter's complacency or lack of self-criticism. 'Failure' is a key word in Paul Hegarty's more nuanced historical interpretation of noise (2007): on the one hand, the failure to stay noise and become music instead – this is in keeping with Attali's model – but, on the other hand, the failure to become music and thus hold a mirror up to music and deconstruct its very idea. Hegarty succeeds in drawing the historiographical consequences from this double perspective when composing his historical account and discussing tricky issues such as the 'gen(t)rification' of noise music or the creation of a musical canon.

Chapter Overview

The volume has two parts counting five and six chapters, respectively. The first part presents theoretical perspectives on noise and noise music from different disciplines. Its title – *The Joys of Noise* – is borrowed from an eponymous essay by Henry Cowell (2007) who considered the relationship of noise to music as comparable to the one between sexuality and mankind: essential for the preservation of the species, but impolite to talk about (in 1929!).

Michael Goddard's opening chapter traces the interpretation of noise in communication theories from Claude Shannon and Warren Weaver (1949) to the more recent activities of the Cybernetic Cultures Research Unit. The latter's 'hyperstitional' aesthetics is not unlike Ernst Bloch's idea of a concrete utopia (Bloch 1978) in that it believes in imagery's potential to become real. The prophesizing power of noise lies in its allegedly disturbing factor in communication processes: noise as a harbinger or premonition of the future. The chapter looks at 'hyperstitional' aspects in punk and industrial music. It argues that this 'noise of the new' in popular music is neither a purely sonic phenomenon nor a mere transgression of a dominant musical regime. It is rather a form of communicational noise that overwhelms the current limits and norms of communication and ushers in unanticipated futures that extend beyond the purely musical or sonic. In presenting a constructive epistemic of noise, this opening chapter lays a solid foundation for the volume.

Karin Bijsterveld's chapter registers the recent shift in Sound Studies to approach noise as a productive force rather than mere unwanted sound or something to be suppressed. She makes a plea for studying the changing meanings attributed to the sound of one type of sounding object across time. Her case in point is an internationally contextualized history of the siren sound in the Netherlands. Later interpreted as musical instrument, code to signal air-raid alarm and 'mere noise', the siren, including Henri Adrien Naber's rendering of it, served different purposes eliciting the author's appeal to protect sounds out of place: save our noise!

Drawing on Tim Ingold's concept of 'tracing earlines' (2019), Barbara Titus signals the revaluation of noise in ethnomusicological research. In using recording equipment with directional microphones, ethnomusicologists in the past aimed at reducing 'background noises' when making recordings for archival or study purposes. This stemmed from preconceived Western notions of what music consists of, which were more often than not contrary to the musical meaning attached to 'background' sounds by local communities. This chapter offers a reconsidered, postcolonial view on noise. Titus adds an example from her own ethnographical research on South-African maskanda music, self-critically exposing remnants of her 'eurogenic' epistemologies, which in the end were replaced by sonic selections and aural differentiations that allowed her to hear what is going on in

maskanda according to those who perform, compose, produce and listen to this music.

At first sight, Paul Hegarty's chapter can be read as an update of his history of noise music (2007) since it focuses on new developments in noise music during the last two decades, as exemplified by Richard Ramirez, Vomir, Aaron Dilloway, the sound art of Maria-Leena Sillanpää, Pharmakon or the Kenyan metal band Duma. By creating harsh static noise walls these and other musicians and bands resist the integration of noise in music, and thus its normalization, commodification and transformation into something innocent and harmless. As such, the chapter is much more than just an update. It reminds us that music needs noise not just to constantly revitalize itself, but more importantly as an oppositional force ('noise *not* music'). The existence of a sound culture that cannot be recuperated helps music to understand its often unarticulated assumptions better. In a volume in which the musical potential of noise is advocated more than once, this is an unexpected but most welcome constructive function of noise.

The first part concludes with a chapter in which Makis Solomos retraces how noise gained importance in avant-garde music. From Stravinsky and the American 'bad boys of music'[6] until recent examples by Agostino Di Scipio and Hildegard Westerkamp, this historical evolution is interpreted from a twofold perspective: as creative morphological research by composers aiming at expanding their sound spectrum and as social criticism that protests against political repression and economic exploitation. Each perspective may gain the upper hand in turn, but the final case study on Iannis Xenakis shows how morphological research and social criticism are merged to perfection.

The second part of this volume deals with music-analytical studies of noise music. It opens with Simon Emmerson's chapter on the analysis of non-score-based music. More often than not, scores are lacking altogether in noise music. Even when they are available, noise music's dense multi-layered textures and complex configuration of musical elements can hardly be represented by traditional music notation. Some 'scores' even consist of production protocols only – indicating performer actions rather than resulting sounds or technical scripts for electronic sound production. In short, most examples of noise music either have no score or have a score that is unable to represent how the music really sounds. Consequently, noise music analysts study recordings rather than scores. With analytical examples of music by Ryoji Ikeda, Carsten Nicolai, Hildegard Westerkamp, Merzbow and the author, this chapter functions as a methodological foundation for the analysis of noise music. The chapter argues for an approach in which the musician's and listener's perspectives interact.

In the first analytical case study, Ingrid Pustijanac discusses noise in spectral music. She starts with the first generation of spectral composers' concept of sound as a living being, including all dimensions of sound from the sine tone to non-periodic sounds. Analytical examples from Gérard Grisey, Tristan

Murail and Hugues Dufourt help us to understand this hypothesis of a timbral continuum not just from the composer's (a new syntax) but also from the listener's standpoint (a new aesthetics). Music of the post-1980 spectral generations from Kaija Saariaho up to today's 'saturationist' composers Raphaël Cendo and Franck Bedrossian is also dealt with, if only to highlight the changes occasioned by the increased role of computer-assisted composition.

Provoked by the composer's rejection of the concept of noise (see above), research on Helmut Lachenmann's music has until now neglected the importance of this category, while conversely, this composer's achievements have been largely excluded from noise music and audio culture studies. And yet a work such as the string quartet *Gran Torso* pre-eminently features noise in the most refined, subtle and varied way imaginable. In his analytical chapter, Christian Utz highlights two functions of noise in *Gran Torso*: as musical material of a different kind that is, nevertheless, capable of fulfilling the musical functions associated with the string quartet's conventions of musical form and – contrastively – as sounds that create the halting of musical time and the concentration on the fragmentary and the discontinuous.

The next chapter on Henri Chopin's audio poems may come as a surprise, yet it represents an important contribution to a better understanding of vocal noise and raw vocality. Jannis Van de Sande analyses two recordings spanning different phases in Chopin's artistic trajectory. He questions the received wisdom in Chopin scholarship that the artist's extensive use of tape manipulations represents a move away from the spoken word to the mere sound aspects of the audio poems. Van de Sande argues instead that Chopin's work, rather than passing from *saying* to *sounding*, amplifies the voice as their ambiguous in-between.

An analytical chapter on free jazz and improvisation could not be missing in this part. Diederik Mark de Ceuster analyses a recording of a solo improvisation by the contemporary American drummer Chris Corsano. At first glance, music produced on non-pitched percussion instruments could be considered too self-evident a choice for a volume on noise music, and even more so since Corsano's 2016 performance at the Manhattan Inn seems to be lacking the explicit oppositional stance that had characterized a lot of the noisy free improvisational music. And yet noise as a constructive aesthetic tool looms large in this performance, be it in the 'prepared' drum kit that makes the music even more noisy or in the subtle subversion of rhythmical expectations.

The last chapter focuses on 'the behemoth of noise music' (Hainge 2013: 258), 'the paragon of noise music, its godfather, its master' (Hegarty 2007: 155): the Japanese musician Akita Masami, alias Merzbow. Apart from an earlier short contribution by John Latarta (2010) on Merzbow's laptop composition *Cow Cow*, Marina Sudo's chapter may well be the first musicological analysis of some of Merzbow's works. The chapter sheds light on a stretched form of musicality emerging from a multitude of sonic strata, registral and timbral balances and rhythmic interactions within Merzbow's characteristic noise walls.

Notes

1 For composer Aaron Einbond this overload of available analog and digital sound material is, on the contrary, what sprouts his creativity. He considers the internet an inexhaustible source of sound data that can be explored by techniques such as Music Information Retrieval. The artist today creates individual works by filtering the white noise of sonic data available on the internet, a process he calls 'subtractive synthesis' (2013).

2 Furthermore, Ablinger distinguishes between 'Rauschen' (the totality of sound, white noise, comparable to Kazimir Malevich's black square paintings) and 'Geräusch' (discrete sound objects, comparable to Marcel Duchamp's bottle rack). He appreciates white noise's potential to provoke the listener's projection of meaning into static noise (see Ablinger 2013; Sudo 2020).

3 I wish to thank Pierre Delaere and Nicolas Verhaert from the University of Leuven's otorhinolaryngology department for this information.

4 In 2010, Suzanne Thorpe and Bonnie Jones founded TECHNE, an educational organization that introduces young women in the United States and Mexico to technology via electronic music. The incorporation of noise is an important part of their activities, addressing how noise can serve as an empowerment tool for the progression of feminism.

5 For the relationship between repetition and mass consumer society, see Fink (2005).

6 *The Bad Boy of Music* is the title of George Antheil's autobiography (1945). Part of the instrumental setup of his composition *Ballet Mécanique* (1923–1924) including airplane propellers and sirens, is used as the cover image for the present volume.

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Part I

The Joys of Noise

Historical, Theoretical, Aesthetic
and Cultural Perspectives

1 Noise Annoys, Noise is the Future

Noise in Communication and Cybernetic Theories and Popular Music Practices

Michael N. Goddard

Introduction

> We are surrounded by noise. And this noise is inextinguishable. It is outside – it is the world itself – and it is inside, produced by our living body. We are in the noises of the world, we cannot close our doors to their reception, and we evolve, rolling in this incalculable swell […] In the beginning is the noise; the noise never stops.
>
> (Serres 1982: 126)

Noise has always been a slippery concept, at once a sonic phenomenon and a concept that transcends soundwaves to apply to all communicational processes (Goddard et al., 2012); noise is also both an unwanted excess or transgression of clear expression subject to various measures of 'noise reduction' and essential for any form of communication to take place. Despite attempts to quantify urban noise, for example, in terms of decibels or other objective measures, ultimately noise is highly contextual and situational, and one person's musical comfort zone is someone else's intolerable noise depending on a range of factors as much aesthetic, social and cultural as objectively about sonic volume (see White 2012: 234–236).

This chapter will introduce some of these different approaches to noise from Shannon and Weaver's information theory (1949) that was at the heart of the post-World War II cybernetic project to Michel Serres' more sophisticated account of noise as a parasite (1982) – a third term complicating any direct transmission between two positions in a system. If for Shannon and Weaver noise was a disturbance of a signal caused by the resistance of a channel, and ideally subject to elimination, for Serres, this complication is inevitable as all points within a system are already involved in other dynamics, and there is always a 'third party' appearing to disrupt in simple linear transmission between two points.

In terms of music, Jacques Attali (1985) has raised similar issues and also points to the ways that all innovations in music are initially perceived as noise in relation to dominant orders and as such operate as a harbinger or premonition of the future not only on the musical but also on the social and

political planes. This can be clearly seen in the case of popular music where every new style from jazz and rock and roll to industrial and noise music is initially perceived as an intolerable and unmusical noise before becoming assimilated and subsequently overtaken by ever new forms of noise (see Goddard et al., 2013).

This chapter will argue that this 'noise of the new' in popular music is neither a purely sonic phenomenon nor a mere transgression of a dominant musical regime, but rather a kind of communicational noise that overwhelms the current limits and norms of social communication and ushers in an unanticipated future that extends beyond the purely musical or sonic. Referring to case studies of UK punk band The Clash and industrial group Throbbing Gristle, the chapter will argue that these groups, however noisy they appeared in a sonic sense, were, in fact, engaged with a communicational noise announcing unprecedented futures in a 'hyperstitial' manner that amount to nothing short of an 'information war'.

Negentropic Feedback Loops: Theories of Communicative Noise

When Shannon and Weaver introduced their 'mathematical model of communication' in 1949, both communication and noise were seemingly considered an engineering issue, while at the same time presented in a highly generic and abstract form. Specifically, this meant abstracting the message from its material context and from any questions of meaning or quality. In analysing the dynamics of sending any symbolizable message from a transmitter to a receiver through a channel, via processes of encoding and decoding, the relationship with noise was complex and ambivalent. While misread in engineering contexts as providing the basis for processes of noise elimination or at least reduction, in fact noise is fundamental to information in Shannon and Weaver's theory and enters this process in two distinct ways. As Su Ballard states, 'noise is both the material from which information is constructed as well as the matter which information resists' (Ballard 2011: 62). More concretely 'noise' refers to elements added to a transmission of information like sonic distortions, static, picture deformations, etc. that were not part of the intended message and which interfere with its clear transmission and decoding. These additions, sometimes referred to as errors, accidents or glitches, are inevitable as all messages are transmitted via some physical medium that necessarily resists the pure transmission of information, due to laws of movement and thermodynamics. But the situation is more complex than this exterior resistance as noise is also fundamental to the form of information and thus appears twice in the process of communication.

While Shannon and Weaver's initial problem was noise reduction, and, in fact, this is how their theory was taken up in several fields, their theory, in fact, posited noise as fundamental to communication processes

in two distinct ways; as external resistance, noise is introduced into a communication channel as the resistance of the material components that distort and deform the original message from the outside, producing 'unexplained variation and random error' (Ballard 2011: 67). But noise also enters the system from the inside as entropy encoded within the message and plays a more positive role, allowing for continual reorganization and the overcoming of redundancy. Despite the original meaning of entropy as loss of organization and information, in Shannon and Weaver's model entropy actually produces a greater quantity of information and becomes the very measure of information. As Weaver put it: 'If noise is introduced, then the received message contains distortions, certain errors, certain extraneous material [and] an increased uncertainty. But if the uncertainty is increased, the information is increased, and this sounds as though noise were beneficial!' (Shannnon and Weaver 1949: 19). It is the very abstraction of this theory from any physical constant that differentiates it from entropy in thermodynamics and perversely refigures it as generative and productive of order out of disorder, organisation out of chaos or in a certain sense a source of negative entropy or negentropy. That is, despite noise appearing initially as a loss of organization through interference, internally noise actually increases information, variety and self-organization in an emergent process. When applied as second-generation cyberneticists would do to problems of self-organization, noise appears as even more fundamental than in Shannon and Weaver's theory. As Cécile Malaspina puts it:

> In a self-organising system a compromise is needed between redundancy and variety: to reduce noise and enable the transmission of information, without which the system would break down, and yet allow noise which introduces variety, which in turn augments the number of possible responses of a system to random fluctuations of the conditions imposed on it by its environment.
>
> (Malaspina 2011: 69)

This was, indeed, the key shift between the problematics of control of first-generation cybernetics for which noise was a disturbance to be minimized and the second generation for which it was fundamental to processes of self-organization as a potentially negentropic feedback loop allowing for the autopoietic processes of living organisms, for example. Malaspina has more recently expanded on this reading to emphasize the importance of Shannon and Weaver's theory not only for conceptualizing noise but also for the inter-relations between culture and technics more generally:

> Shannon's 'entropic ideas' thus have a profound philosophical and, more broadly, cultural importance, if only we are willing to consider their conceptual evidence beyond the technical realm. [...] The redundant opposition between technology and culture atrophies not only the

quality of the engagement between the arts, the sciences and technology, but in turn also atrophies the status of creativity attributed to science and technology. […] To place Shannon's 'entropic ideas' within this cultural frame of debate thus means overcoming the consensus that there is an opposition between technology and culture.

<div align="right">(Malaspina 2018: 19–20)</div>

This quote resonates strongly with both the ways these ideas were, indeed, interpreted within a cultural framework by second-generation cyberneticists like Gregory Bateson and more recent philosophical developments such as Simondon's thinking of individuation (see Malaspina 2018: 43–50) as well as ideas of 'cultural techniques' emerging out of media archaeology.

This 'equivocation' at the heart of information theory has led later theorists to cast noise in much more positive terms as fundamental to all communication processes and, therefore, neither possible nor desirable to eliminate. For Michel Serres, noise is the 'parasite', the third term that is always arriving to disturb any linear communication between two points. Serres can be seen as part of a French cyberneticist scene revolving around the 'Groupe des dix' led by Henri Atlan and also involving Edgar Morin and significantly Jacques Attali. While a looser grouping than previous generations of US cyberneticists, they were linked by a similar desire to understand a broad range of phenomena in a trans-disciplinary manner through extending the theories of information, noise and entropy first developed by Shannon. In Serres' case, this involved developing what he would call the logic of the parasite. Using Aesop's fable about the country and the city rat whose meal is interrupted by the noise of a third party, he shows how all meals are, in fact, interrupted with a shifting distribution of roles between guest, host and parasite:

> The tax farmer is a parasite, living off the fat of the land: a royal feast, ortolans, Persian rugs. The first rat is a parasite; for him, leftovers, the same Persian rug. […] at the table of the first, the table of the farmer, the second rat is a parasite. […] But strictly speaking, they all interrupt: the custom house officer makes life hard for the working man, the rat taxes the farmer, the guest exploits his host […] A given parasite seeks to eject the parasite on the level immediately superior to his own.
>
> <div align="right">(Serres 1982: 3–4)</div>

Tellingly the parasite that appears in the fable presents itself as a noise and Serres uses this to extend this fable to the complex relations of communication and noise which are for him always a parasitic process, taking place in a single direction. Expanding this with reference to Leibniz's monadic philosophy in which the subjects are always ignorant of the whole, Serres argues that all messages, knowledge or harmony are predicated on a fundamental repression of noise which is then disavowed, in order to constitute all kinds

of systems whether technical or social based on one-way communication. But without noise there is only death:

> Noise destroys and horrifies. But order and flat repetition are in the vicinity of death. Noise nourishes a new order. Organisation, life, and intelligent thought live between order and noise, between disorder and perfect harmony. If there were only order, if we only heard perfect harmonies, our stupidity would soon fall down toward a dreamless sleep.
>
> (Serres 1982: 127)

For Serres, both pure chaos and pure order are distinct forms of stupidity, but intelligence and life take place in the liminal zone between them 'on the fringe' or 'crest' (127). The distribution and contestation of roles of host, guest and parasite therefore is purely partial and dependent on a certain blindness, or rather deafness to the parasitic process which keeps them mobile. This, far from being an agent of destruction, entropy and death is what enables any life, thought or feeling to take place at all. Noise is, therefore, negentropic when not consigned to the black box of an unwanted disturbance to be eliminated. Noise is, therefore, freed from the dynamics of a linear transmission between two points and becomes a kind of primordial generative soup out of which any information or communication must first emerge through a process of subtraction of all the infinite potentials of primordial noise.

Noise and Music from the Extra-musical to Premonitory Hyperstition

As already suggested here noise escapes confinement to any single medium, as well as to any single valuation. Nevertheless, the sphere of popular music is an exemplary one for tracking the operation of noise in communicative systems more generally. On the one hand, it inherits from the banal engineering interpretation of Shannon and Weaver the mania for 'perfect sound' and noise reduction across successive recording and playback apparatus's from the analog to the digital, while also depending on successive waves of what is originally perceived as non-musical noise in order to drive development across and within various musical styles and genres.

That this is not a new phenomenon is evident in Jacques Attali's *Noise* which, while more concerned with what he calls 'the political economy of music', has been fundamental for thinking about the noise and music relationship. Attali situates noise as a disruptive force traversing all musical regimes from the pre-classical music he associates with sacrifice, across the classical regime of representation to the modern technological era of repetition:

> With noise is born disorder and its opposite: the world. With music is born power and its opposite: subversion. In noise can be read the codes

of life, the relations among men [sic]. […] when it is fashioned […] with specific tools, when it invades man's time, when it becomes sound, noise is the source of purpose and power, of the dream – Music.

(Attali 1985: 6)

This is no simple binary opposition but as with the communicative theories mentioned previously a complex genetic process in which noise and music are intertwined and spiral around each other in a similar manner to RNA and DNA in a double helix. The codes of music emerge through an organization of what was previously the clamour or uproar of social life but also give rise to their own internal subversion through the very possibilities of differentiation that they make possible. It is by no means necessary to wait for the eruption of popular styles of the recording era like jazz and rock and roll for this transgression of music by noise to become evident. As Attali points out 'What is noise to the old order is harmony to the new: Monteverdi and Bach created noise for the polyphonic order. Webern for the tonal order. La Monte Young for the serial order' (Attali 1985: 35). But noise is not just the motor for the development of musical forms, in Attali's view, but in his most radical argument is prophetic of future forms of social organization. So it is not only the case that

> Mozart and Bach reflect the bourgeoisie's dream of harmony better than and prior to the whole of nineteenth-century political theory [and] Janis Joplin, Bob Dylan and Jimi Hendrix say more about the liberatory dream of the 1960s than any theory of [capitalist] crisis.
>
> (Attali 1985: 6)

Beyond mere reflection, music is a herald, a prophecy of future forms of social and political organization because it 'explores, much faster than material reality can, the entire range of possibilities in a given code. It makes audible the new world that will gradually become visible, that will impose itself and regulate the order of things' (Attali 1985: 11). While Attali cites the revolutionary aspirations of Berlioz and early Wagner in this regard as anticipatory of the not yet formulated communist project, we could also look at the slogan and attitude of 'No Future' that characterized first-generation punk in the United Kingdom. While the social welfare state was already in crisis, and certainly popular and rock music had become an elite activity cut off from any youth participation, the situation of there being literally no future in terms of the overthrow of the welfare state and the imposition of neoliberalism would only really begin in 1979 and become fully implemented in the new millennium. Recently, theorists like Franco 'Bifo' Berardi and Mark Fisher have proposed theories of the slow cancellation of the future applying both to music and socio-political life, but as Berardi acknowledges these developments in naming 1977 'the year of premonition' (see Berardi 2009: 14–16), they were

already seismically registered in punk music in 1977 across a whole range of semiotic expression.

The concept of noise as premonitory also resonates with the idea of hyperstition as developed by the Cybernetic Cultures Research Unit in the 1990s to account for the ways in which aesthetic works such as William Gibson's *Neuromancer* could not only anticipate the future but engineer it. Drawing on such legacies as the surrealist notion of the imaginary as that which tends to become real, and Burroughs and [Gysin's] multi-media cut-ups about which they famously claimed 'when you cut into the present the future leaks through', hyperstition as conceived at the CCRU is presented in the following terms: 'we are interested in fiction only so far as it is simultaneously hyperstition—a term we have coined for semiotic productions that make themselves real' (CCRU 2017: 63). Other than *Neuromancer* with its calling into existence of both cyberspace and cyberpunk Lovecraft's concept of the *Necronomicon* is an exemplar of this; a fictional 'evil' book alluded to within several Lovecraft fictions, it has now become the basis as a real text for several 'Cthulhu' cults, human-centred reality.

This might seem fairly far removed from questions of noise and music, but as channelled through the work of former CCRU members like Mark Fisher, Kodwo Eshun and Steve Goodman whether as 'sonic fictions' (see Eshun 1998; Goodman 2009: 2) or 'sonic hauntology' (see Fisher 2014), this has been a highly influential way of thinking the prophetic power of music, which is, in turn, inseparable from the disruptive force of noise. Nevertheless, there are perhaps other terms that come into play beyond Attali's interplay of noise and music. One of these is rhythm that is not really considered by Attali at all and yet is essential in almost all forms of music and extends beyond them to social relations and the production of subjectivity. This is discussed in Deleuze and Guattari's *A Thousand Plateaus* (1980) in which rhythm emerges out of repeated actions and gestures that generate a territory which they theorize in terms of the refrain – and as their reading of Proust shows even the most complex works of classical music are ultimately reduced in memory to a 'little ditty' or repetitive refrain. It is this repetition, this rhythm, which is, of course, at the heart of all styles of popular music and in a certain sense precedes both noise and music. This relates it to yet another term: vibration. According to Goodman, his project of *Sonic Warfare*

> the concept of noise will be steered elsewhere, investigating when it is not conceived as an end in itself but instead as a field of potential […]. By shunting the problem of noise onto one of the emergence of rhythm from noise, the power of a vibrational encounter to affectively mobilize comes into clearer focus.
>
> (Goodman 2009: 8)

This is not to argue against the fundamental nature of noise so much as to stress its hyperstitional powers in the process of becoming repeated as

rhythm and thereby organizing a range of territorial practices from military uses of sound as torture to the direct experience of vibration in bass heavy musical practices like dub. It is important to bear in mind that the most violent and destructive hyperstitional deployments of noise in techno-military contexts co-exist with potentially liberating uses of rhythmic noise in dub reggae and techno musics; hyperstition like noise itself being fundamentally ambivalent and often undecidable in advance. In Goodman's more recent project (see Goodman et al. 2019), the hyperstitional nature of this emphasis becomes even more explicit as existing and past practices of sonic warfare are traced forwards into a hyperstitional future via a range of performative engagements with 'unsound' or the not yet heard. This is both an enactment of hyperstition, as a form of sonic time travel and another example of the organization of sound as a herald or prophecy of the future.

Annoying Noise in Punk and Industrial Musics

To return to the example of the noise of punk, this chapter is arguing that it was able to construct out of the range of available media in a specific urban socio-cultural environment, an intense expression of both reigning dominant forces and resistance to them via a rebellious range of mediated performances from new modes of urban dress and behaviour, to aggressive live performances, to the generation of a range of artefacts extending well beyond the music itself (films, posters, record covers and home-made cassettes are only part of this extensive archive). In all of these arenas, punk, in relation to existing norms of rock music, operated very much in terms of noise, annoying the reigning status quo of both the established rock industry and wider cultural practices. This is not only in the obvious sense of producing 'noisy' music since psychedelic rock and heavy metal before punk were both exemplars of noise, sometimes produced more effectively than in punk. Punk, however, was noisy in a communicational sense precisely for its failure to meet a set of what had become standard requirements for rock music communication; technical proficiency and macho prowess over one's instrument, professional standards of recording and live performance and appropriate behaviour of fans and consumers. In all these levels of what Paul Hegarty qualifies as punk's ineptness (Hegarty 2007: 89–90), noise was generated in relation especially to the stadium virtuosity of progressive rock, leading him to affirm the Sex Pistols' *The Great Rock and Roll Swindle* despite or rather because of its obvious flaws and inauthenticity as a greater punk album than *Never Mind the Bollocks* (2007: 95–97). This position, adopted from Stewart Home (see Home 1996), flies in the face of writers like Jon Savage, Dave Laing or Greil Marcus who celebrate tracks from *Never Mind the Bollocks* such as 'Holidays in the Sun' as sophisticated works of punk rock authenticity, as opposed to the lack-lustrely performed bad cover versions of *The Great Rock and Roll Swindle*, expressly designed to promote manager Malcom McLaren's version of the Sex Pistols as his own fraudulent

creation, a version of events John Lydon (aka Johnny Rotten) would only be able to contest through the formation of the decidedly post-punk Public Image Limited (PIL). But punk noise was not limited to ineptness in relation to rock norms, nor the refusal to produce a quality product, even where it came to rebellion (something that bands like The Clash and Crass would certainly depart from). Rather, punk noise was a short circuiting of mainstream media channels both by producing punk's own forms of media and especially by presenting the mass media with messages and content it was unable to easily assimilate. The Bill Grundy 'obscenity' interview with the Sex Pistols and its subsequent tabloid amplification is one example of this, but on a smaller scale so was the refusal of the Clash to go on Top of the Pops leading their singles like 'Bankrobber' to be presented in the form of interpretive dance. At its height, punk was a disturbance to norms of both media communication and the music industry, by being popular enough to be in the charts while remaining unrepresentable in terms of both radio airplay and televisual representation, while also forcing a reluctant music industry to engage with material that was directly critical of its own practices. Examples of this include the Clash's 'Complete Control', which forcefully expressed the band's direct rejection of their record label CBS's decision to release the relatively user-friendly single 'Remote Control' from their first album, or the Sex Pistols' even more direct 'EMI': 'Too many people support us/An unlimited amount/Too many of them selling out'.

If The Sex Pistols and The Clash were the most prominent examples of punk as communicational noise, there were other groups that went further where it comes to the hyperstitional aspect of punk music. If the Sex Pistols slogan of 'no future' led many groups to focus on the grimness of the present, other groups imagined all manner of apocalyptic future scenarios, often involving nuclear annihilation. The Clash began this trend in their 1977 track '1977', which ends with a countdown of future years towards 1984, the announcement of which is followed immediately by the sound of an explosion that ends the song. On 'London Calling' (1979), Joe Strummer expanded on this hyperstitional anticipation, by assembling all the apocalyptic scenarios he had heard about within a single song:

> The ice age is coming, the sun's zooming in
> Meltdown expected, the wheat is growing thin
> Engines stop running, but I have no fear
> 'Cause London is drowning
>
> (The Clash, 1979)

The point was not to make these scenarios happen but the reverse to serve as a warning, including of the dangers of becoming caught up in apocalyptic conspiracy theories, and to call up resistance to these possibilities which was not only anti-state or anti-military but profoundly ecological. Matthew Worley has written about the profound dystopian streak running

through both punk and industrial culture, informed by reading such dystopian novelists as George Orwell, Aldous Huxley and J.G. Ballard and imagined both in terms of nuclear apocalypse and impending fascism and authoritarianism:

> All but from the outset, dystopian punk visions intersected with prophesies of impending authoritarianism. 'Fascist' and 'Fascism' were early punk trigger words, verbal accompaniments to the swastika's symbolic reminder of a previous descent into socioeconomic and political crisis.
> (Worley 2017: 229)

But while groups like Crass that embraced anarchism as a political philosophy offered hope in the prospects of resistance to authority, enslavement and nuclear destruction, others fully embraced apocalyptic scenarios as an unavoidable near-future reality. If Kirk Brandon's Theatre of Hate was already anticipating a new age premised on the destruction of western civilization, Killing Joke went the furthest in fully anticipating an array of doomsday scenarios which they proved themselves willing to act upon. When vocalist Jaz Colman had the sense that London was on the brink of apocalypse, he and the guitarist suddenly disappeared to Iceland, despite various obligations and the perplexity this caused to both other band members and the music press. They described their music as 1980s 'tension music' (see Reynolds 2005: 359) which in the track 'Eighties' is presented as the compulsion to push and to struggle. With direct political references to leaders like Thatcher and Reagan, this song can be seen as a premonitory critique of the destructive powers of neoliberalism coupled with the imminent threat of Cold War destruction. For Reynolds, this embrace of apocalyptic premonitions and the irrational and primal more generally 'could stray into troubling territory […]. Coleman's rhetoric – revelling in male energy, describing war as the natural state of the world, jubilantly heralding Armageddon – veered dangerously close to that dodgy zone between Nietzschean and Nazi' (Reynolds 2005: 360).

It should be borne in mind that the members of Killing Joke like Burroughs and Gysin before them and the later CCRU had strong interests in magic and the occult, specifically Crowleyan magic, and this influenced some of their seemingly bizarre decisions such as Coleman's sudden departure to Iceland and later New Zealand, which were based on visionary revelations. More than this they claim to have all had magical experiences, including one during a live performance in which for an undefinable period of time the pounding music of the band and the audience was suddenly replaced by an eerie silence.[1] While one might be sceptical about the reality of these magical occurrences, they were clearly animated by a dystopian imagination that went beyond merely rehearsing various apocalyptic future scenarios but using their ritualistic and drone-like music to bring these visions into reality in a hyperstitional manner.

In these senses, punk functioned not only as literal, musical noise, or the sociological, subcultural noise identified by cultural studies accounts like Hebdige's (see Hebdige 1979) but also as communicational, media noise, short-circuiting dominant modes of representation and opening spaces for alternative modes of expression. This was even more the case for industrial music, which as I have argued elsewhere (see Goddard 2017: 163–167) was less a specific musical style or genre than a range of audio–visual strategies for destabilizing cultural norms through presenting anomalous phenomena from sound as a form of warfare, to serial killers, cults, 'modern primitivism', post surrealist anomalous art, the cut-ups of Burroughs and Gysin, 'incredibly strange' film and musical exotica.

In fact, this engagement with cultural anomaly can be seen as the equivalent in the realm of culture to the deployment of noise in relation to classical forms of music. Anomalies are noise in the literal sense of unassimilated and, in some cases, unassimilable sensations yet to be labelled or ordered under a coherent category of understanding. As Paul Hegarty puts it:

> Industrial music makes noise explicit, acting as cultural noise at many levels, and making sure these layers collide in collage […] to challenge not only prevailing aesthetics but the notion of aesthetics being its own domain, and also the notions of what is normal, rational, desirable, or true.
>
> (Hegarty 2007: 116)

If many of these anomalous phenomena have since been commodified in practices from neo-tribalism to music styles ranging from global esoterica to Techno, to the proliferation and extension of cut-up techniques into almost every sphere of cultural production, the anomalous impulse that animated these groups is still of significance for contemporary artistic and social practices today. The challenge is to find the anomalies that can be confronted and engaged with today, to produce new forms of cultural noise and new sensations in an era when it is perhaps much more difficult to do so than in the 1970s, now that the retro-processing of sonic and other forms that groups such as Throbbing Gristle pioneered has become the dominant and standardized technique of sampling as a mode of cultural production. Rather than fetishizing this past artistic experimentation by freezing it in a genre that betrays this impulse towards the anomalous and the future, as in most of what passes today for Industrial music, it challenges us to construct a plane of composition capable of assembling the 'noise' of our contemporary post-industrial environment and expressing its new and anomalous vibrations.

It is important to bear in mind that what made Throbbing Gristle so subversive was not simply generating noise as an extreme sonic experience through their use of so-called 'walls of sound', atonal and non-musical elements or highly processed found sounds passing through machines of their own devising which they referred to as 'Gristlizers'. While they did deploy

various strategies which were noisy on the level of content and have been taken up by a myriad of future noise and industrial groups, they were above all formally noisy going against expectations and dominant perceptions, including of their own work. So while they started out producing sonically grating non-musical material coupled with extreme imagery from death camps or hardcore pornography, subsequent releases would go against this completely, for example in the single 'United', which was a very pleasant sounding electronic pop track. However, in the context of their earlier work, it functioned very much as a form of communicational noise. They also had a fascination with different aspects of pop culture from Martin Denny's 'exotica' to Abba. There were homages to both of these on later Throbbing Gristle albums such as the Chris Carter track 'AB/7A', an engagement with the machinic nature of the Swedish ensemble, or 'Exotica' off *Twenty Jazz Funk Greats*, a clear Martin Denny reference. Even the naming of albums served as yet another level of noise, whether because of likening them to business reports, misnumbering them in various ways or giving false generic expectations. For example, *20 Jazz Funk Greats,* does not have 20 tracks, involves neither jazz nor funk, and the bucolic image of the group in a cliff-top field of flowers in the album art gives little idea of the futuristic and at times disturbing contents of the album, that is, unless you realize that it was shot at Beachy Head, one of the most popular locations for suicides in England.

What both punk and industrial musics at their best and most inspired were engaging in processes of hyperstition or prophecy that not only critically engaged with dominant orders in the present but also suggested both its future dystopian potentials and possibilities for resistance. This can be seen in the Clash's obsession with the radio to the extent of seeing themselves as a kind of alternative world service guerrilla radio station as imagined on 'This is Radio Clash', or Throbbing Gristle's notion that what they were engaged with was not the invention of a new style of music but information warfare: 'It's a campaign: it has nothing to do with art' (Throbbing Gristle, *Heathen Earth*). However, this hyperstition was not at all about imagining a distant future but instead an intense engagement with the now, considered a disruptive event, capable of opening different futures, to the Neoliberal one that was just materializing at the end of the 1970s. In this sense, both these musical phenomena grasped the insight that could be traced all the way back to Shannon and Weaver that the only way of overcoming the noise of the dominant order was through a different variety of desirable noise.

This would be carried through in a range of future musical practices including noise and industrial musics, albeit with more and more difficulty involved in creating genuinely transgressive and surprising forms of communicational noise. What is perhaps a more interesting legacy, however, specifically of punk noise, is not so much in the extremes but, in those moments, when it was able to cross over and enter into relationships with

the popular. For example, it is possible to trace a legacy of popular noise music from New York No Wave groups like Mars and DNA in the early 1980s, to more commercially oriented groups like Sonic Youth or Hüsker Dü that incorporated noise breakdowns into their otherwise melodic and rhythmic songs that set a kind of template for alternative post punk music in the 1980s that was both noisy and popular. Sonic Youth, in particular, brought together influences from the highly atonal negation of even punk and new wave music of no wave, the avant-garde experimentalism of Glenn Branca and Rhys Chatham and hardcore punk outfits like Minor Threat, to an amalgam that was capable of smuggling this experimental attitude into if not the mainstream then at least the new arena of 'alternative music'. This eventually got noticed by the music industry, leading to their signing by David Geffen Records after a decade of independence, but more importantly, they were also able to make this possible for a little-known noisy Seattle band called Nirvana who also got signed. Their subsequent album, *Nevermind*, would irrevocably alter the landscape of popular music and has to date sold 30 million copies. Just as with Throbbing Gristle's provocative games with popular and extreme music but on a massive scale, *Nevermind* represented a surprisingly massive entry of noise into the arena of popular music that has been reverberating ever since not only in the initial 'grunge' explosion but more significantly in the re-invention of punk music as pop punk and emo from the mid-1990s to the present. Beginning with groups like Green Day, the Offspring and Blink 182, punk music had a massively bigger audience and far more central position in popular culture than it ever did in the 1970s and 1980s. As Gina Arnold put it in what remains one of the most perceptive accounts of post Nirvana pop punk:

> Green Day don't sound anything like grunge rock—they sound, briefly, like the Ramones would if they were earnest teenagers instead of a group of jolly, monster-obsessed cartoon characters – but their story is still a direct repercussion of *Nevermind,* in particular, of Nirvana's punk rock associations. Nirvana accidentally brought certain punk rock subcultures [into] the strong light of day, which has in turn spotlighted the Green Days of this world.
>
> (Arnold 1997: 81)

While dismissed by many as 'selling out' or mere pop disguised as punk, what this actually revealed was the profoundly noisy nature of popular music in general, and its ability to assimilate, incorporate and express all kinds of noise. In the virtually post-genre digital context of the present, such noise can be heard not only in current manifestations of popular punk bands, like the more aggressively noisy yet still melodic The Story So Far whose label is ironically enough called 'Pure Noise Records', but also at the heart of popular culture in such phenomena as industrial hip hop, emo trap or other

previously unthinkable generic hybrids, and even in the music of Kanye West, as Paul Hegarty has recently explored (see Hegarty 2021: 73–98). As was already seen with Shannon and Weaver's entropic information theory, punk noise is not simply on the outside, or in the underground, but profoundly percolates through the main communication channels of popular music, at least in certain key transformative moments. Perhaps, this is not what John Lydon had in mind when he wrote the words 'We're the Future/ Your Future' (Sex Pistols, 'God Save the Queen', 1977), but in a sense, the entry into the mainstream popular music of pop punk, culminating perhaps in Willow Smith's 2021 Pop Punk album *Lately I Feel Everything,* featuring such pop punk luminaries as Avril Lavigne and Travis Barker of Blink 182, is the realization of this hyperstitial insight. In a sense, punk has not only always functioned as noise in relation to the music industry but also as an alternative vision of pop music much more so than of rock music which it only superficially resembles.

Conclusions

This chapter has aimed to present some key theories of noise both in terms of communication theories and their parasitic reworkings by theorists like Serres and more specifically sonically oriented theories of the relations between noise and music, from Attali to the CCRU's notions of prophecy, hyperstition and beyond. It has also looked at how this played out in practice, in different ways, in both punk and industrial musics, both of which have hyperstitial aspects whether in terms of premonitions of the dystopian cancellation of the future foreseen in punk, or the post-industrial technological anomalous viral deformations of social existence discerned in industrial music that are now being enacted in a range of twenty-first-century experiences from Anthropocene climate chaos to the emergence of neo-fascism and new forms of technologically mediated authoritarianism. At the same time, both punk and industrial musics anticipated mutant and noisy forms of twenty-first-century popular music from sampling and electronic modes of production to the defiant and noisy experimentalism of the 2010s pop punk, emo and screamo revivals. In all of these hyperstitial processes, noise is the fundamental energy that acts as both a creator and destroyer of worlds, that various forms of popular music, initially perceived as unlistenable and un-musical noise, use to compose new forms and new futures beyond the strictly musical or sonic spheres in which they predominantly operate.

Note

1 This is referred to in the recent Killing Joke documentary, *The Death and Resurrection Show* (2013). In the documentary there are further claims about magical happenings taking place when Coleman was in Iceland.

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2 Save Our Noise

When Sound Out of Place Deserves Our Protection

Karin Bijsterveld

Introduction: Swan Song for the Siren

It had been such a wonderful idea. Having learned that the Netherlands would abolish the air-raid siren as a sounding alarm intended to warn its citizens of disasters by the end of 2019, artist Miss Milivolt (alias Angela de Weijer) started composing a national swan song for the siren (Milivolt 2017). The song had to sound on the first Monday of December 2019, at noon, throughout the country, sung by the sirens themselves. It would mark the end of the siren and a new beginning at the same time. The swan song would celebrate the very last time the Dutch Warning and Alarm System (WAS) would sound *and* make something audible that was not widely known. The unknown issue was that the sirens scattered around the country, over 4,278 in total, had been – since 1998 – synthesizers able to produce a much richer pallet of sound than the standardized sequence of sound they had produced for many years. That standard sequence had been the sound that authorities had trained the population to recognize as an alarm.

The preparations for the event were in full swing. Siemens, the international corporation producing the sirens, and the Institute for Physical Safety (IFV), the Dutch agency responsible for the system's management, were willing to support the materialization of the idea. Intro in Situ, a Maastricht institute for sound art and research, funded the experimental work for the composition. The institutional support of those keeping the sirens' infrastructure up to date was rather surprising. When the sirens are sounding, Dutch inhabitants are supposed to check whether it is noon on the first Monday of the month. If so, the sound is signalling the monthly moment of national testing to see whether the system is functioning properly or not. If the sirens sound at another moment in time, it is to warn citizens of disasters such as a fire with dangerous emissions, a flood, or a high-risk accident with a vehicle loaded with explosive fuels. In those cases, citizens are supposed to close their doors and windows, turn on the radio, and wait for instructions. Having the sirens sound at a moment commonly used for testing, but with an unfamiliar sound emanating from them, would be quite a breaching experiment requiring an intense public campaign to prevent massive panic from occurring.

The event never came about. This, however, did not happen for the reasons one would expect. It was not because the swan song for the siren was too daring, too dangerous, or too expensive. What ended the swan song was that the Dutch government felt forced to postpone the final decision to abolish the sirens. Many of the authorities involved consider it too early to replace the system of air-raid alarms with the national mobile phone alert system that was to function as its alternative.

I will explain the rationale behind this sudden shift below. What is most relevant for now, however, is the intriguing series of transformations the sound of the siren would have undergone had Miss Milivolt's plan actually materialized. The sound of the siren would have mutated from warning signal into avant-garde music, panic-provoking sound, and senseless noise. Intriguingly, this would not have been the first time. In the Netherlands and beyond, the dominant meaning of the siren sound – its societal reading as signal, music or noise – altered multiple times in the twentieth and twenty-first centuries. This paper unravels how this happened. By doing so, it aims to illustrate a new approach to a much-discussed issue in music and sound studies: whether, where, when, for whom and how noise has transformative power. I will start by critically discussing three ways in which scholars in these fields have discussed noise as a socially and societally productive force – which is thus by no means an exhaustive discussion of literature on the relations between noise and music. I will then narrate the rise and fall of the siren in its shifting identities, notably in the Netherlands. Finally, I will unpack the implications of this case for what historians must do to contribute to the preservation of past noise as a change-inducing potentiality.

Pro noise

He was one of noise's biggest fans: Jacques Attali. A political economist and influential advisor to the French president François Mitterand in the 1980s, he did not shy away from bold statements. He went as far as to turn the Marxist assumption that material-economic substructures define cultural superstructures upside down. For him, music was not the echo of social change, but its herald. His argument in *Noise: The Political Economy of Music*, originally published in 1977, was that music foreshadowed crises in political economy through a 'dynamic of codes' in which noise posed a rupture of existing codes in music and music's networks of distribution – networks characterized by particular technologies and forms of social structuring – before these societal structures collapsed altogether. He distinguished between four networks, following each other in time. The first was the network of *sacrificial ritual* in which music was a ceremony that repressed marginality in symbolic societies with central ideologies of religion and decentral economies of courts, lasting until the fourteenth century. The second was the network of *representation* in which music became a spectacle produced by professionals paid by audiences embedded in a

crude mode of capitalism, remaining in place until the end of the nineteenth century. The third network was that of *repetition* in which recording allowed for commodification and a senseless individualized stockpiling of music, still in operation at Attali's time of writing. The fourth and final network was the still emergent and utopian network of *composing*, in which music would become an activity by and for everyone, non-commercial, for pleasure and self-expression, tolerant of differences and insecurities, and autonomous at the very same time.

It is important for my own claim to note that for Attali, noise did not so much stand for challenging existing codes, but for their *successful* liquidation. 'What is noise to the old order is harmony to the new' is a key phrase expressing this view (Attali 1996: 35). Claudio Monteverdi replaced the polyphonic order of court music by a tonal system, the system that would keep reigning deep into the Romantic concert hall, even though first Johann Sebastian Bach and then Richard Wagner tested it to its limits. Arnold Schoenberg and Anton Webern smashed the tonal system with their twelve-tone music, a system that meant next to nothing anymore to John Cage, one of the artists announcing the utopian network and phase of composing:

> When Cage opens the door to the concert hall to let the noise of the street in, he is regenerating all of music: he is taking it to its culmination. He is blaspheming, criticizing the code and the network. When he sits motionless at the piano for four minutes and thirty-three seconds, letting the audience grow impatient and make noises, he is giving back the right to speak to people who do no[t] want to have it. He is announcing the disappearance of the commercial site of music: music is to be produced not in a temple, not in a hall, not at home, but everywhere; it is to be produced everywhere it is possible to produce it, in what every way it is wished, by anyone who wants to enjoy it.
>
> (Attali 1996: 136–137).

Cage's work left Attali convinced that the end of his own era's code was near, murdered by constructed silence. Although he pointed to free jazz as another candidate for destructive noise, he felt the need to concede that free jazz 'failed to win real political power' (140).

By now, we know that *4'33"* did not imply the end of conventional concert life. In fact, *4'33"* has become highly popular both within classical music concerts and beyond. A few years ago, it was broadcast on Dutch television during the most popular evening show at that time. At home, I have a T-shirt with a phrase on its front in German that is hard to translate: *'4'33", ich kann es nicht mehr hören'*. It jokingly says not only that *4'33"* is inaudible to the person wearing the T-shirt but also that this person cannot stand it any longer. Of course, it is not a joke for everyone. In fact, the T-shirt is a sign of Cage's establishment as well as of the person wearing the T-shirt.

Not only did the future speak against his expectations concerning the societal Cage effect, but Attali did not redefine the concept of noise as such either. For him, noise was the opposite of code. Noise was the sound that cultural elites – ultimately without success – opposed as unwanted sound or simply tried to render meaningless. These definitions were fully in line with the most frequently used definitions of noise at his time. To Raymond Murray Schafer, the composer-environmentalist who published *Soundscapes* (first edition 1977) in exactly the same year as Attali issued *Noise*, 'unwanted sound' was the 'most satisfactory definition of noise for general use' (1994: 273), and so it was for the many acousticians involved in noise control in those years. Their colleagues in electrical engineering fostered another widely used definition, in which noise – as white noise – was the flipside of signal (Shannon and Weaver 1949). It was a notion to which Attali's 'code' seemed to allude as well.

Historians like Emily Thompson and I choose unwanted sound as an analyst definition of noise that has allowed us to trace various and shifting actor definitions of noise, such as noise as chaotic sound or noise as overly high sound pressure levels (Thompson 2002, Bijsterveld 2008). Other sound scholars started to define noise as 'sound out of place', after Mary Douglas's definition of dirt as matter out of place (Bailey 1996: 50, see Pickering and Rice 2017 for an overview). This is not only an elegant definition, but it also invites one to articulate the culture clashes about who is allowed to lay claim to sonically inhabiting which spaces exactly, be these physical, electronically mediated or virtual spaces. Cultural scholar Hillel Schwartz, therefore, approaches noise as 'a register of the intensity of relationships'. For him, the four issues to be studied are how each era and culture lives with its 'ambience of sounds', 'hears (or does not hear) and welcomes or disdains the sounds around it', 'reconstitutes the notion and nature of noise', and has 'enounced or defended' it (2011: 21).

Although Attali did nothing to promote a new definition of noise, he did everything to present noise as a highly productive force. Did he have a point? To some extent. In classical music, for sure, 'noise' either featured as a proudly appropriated pirate name for those who wanted to shock their audiences with new music or as the omen of scorn for those who objected to these novelties. Such new music aimed at including the loud sounds of the city, the brutality of war sound, the infinite microtones of machine sound or a mysterious fourth dimension of art. In some cases, these innovations acquired momentum, such as the use of the siren by Edgar Varèse, whose compositions made it into the canon of classical music. In other cases, however, new instruments and music *did* only acquire fame on paper but not in practice. This was the case for Luigi Russolo's intonarumori – instruments not only welcomed as heralds of musical change but also condemned for being merely used to play classical music for the millions (Bijsterveld 2008, Novak 2015). Attali seemed to acknowledge this when he cites Russolo's noise as music that did not result in 'a real rupture of the existing networks' (136),

thus paradoxically sidelining the composer who explicitly self-identified with noise. However, it is exactly this remark that reveals a circular fallacy in Jacques Attali's argument. All the examples he used to underpin his claim that music *was* the herald of change are those widely remembered as having reset the scenes of music: Monteverdi, Bach, Wagner, Schoenberg and Webern. In other words, Attali could only substantiate his storyline by writing a winner's history, a finalist narrative. All the composers he lined up were those whose work is still on today's playlists of symphony orchestras and ensembles of new music, Spotify or its competitors. All survived, their music saved from oblivion.

Scholars in Science and Technology Studies (STS) have argued against finalist approaches in the history of science and technology because the sole focus on surviving scientific insights and technologies in such studies resulted in attributing success to the inherent qualities of facts and artefacts. This was exactly what Attali practised: attributing revolutionary force to the work of composers who happened to be the survivors in musical life. In contrast, STS-ers fostered the principle of symmetry: describing and explaining both the success and the failure of scientific insights and technological artefacts within one theoretical framework (Bijker et al. 1987, Latour 1987). This work has not only led to richer histories by attending to 'how things could have been otherwise' but also pointed out the relevance of the context in which a scientific view becomes a fact or a prototype of a working artefact. For the history of noise-as-productive-force, it would imply that we attend to both who *attempted* to resist or breach a code and those who succeeded in doing so, be these loud, such as in public protests, or soft. Such quiet forms of resistance were, for instance, the muted prayers of enslaved people conveying unheard information, or their soundless moving around which slaveholders might perceive as nerve-racking (Smith 2001: 67ff).

In fact, many sound scholars have underscored the fact that noise, especially when perceived as a protest against the status quo by society's establishment, signifies the seeds of *potential* societal change. This claim is, of course, much easier to underpin than proclaiming noise as the herald of change to come. Noise can be the 'voice' of the under-privileged through a 'deliberate act of subversion' (Novak 2015: 130–131), as in drumming with kitchen utensils during political protests against authorities – in such cases, the expected annoyance to the authorities is the intention built into the performance. Those in power can also paradoxically redefine sound as a threatening 'voice' when they use noise regulation with maximum sound levels as a pretext for repressing demonstrations of dissent – as South Korean authorities did (Kim 2016). At times, however, the analyst is doing most or all of the attributive work. When Brandon Labelle (2011: 152) intriguingly described the act of driving boom cars as 'attempts at occupation, a sort of territorial claim gaining force through the sub-woofer while also remaining mobile, and potentially beyond arrest', it was not entirely clear how this related to the actors' perspective. To the drivers, the boom-sound may not

be an act directed against the establishment, but – as Labelle himself *also* interpreted it – 'auditory latching' or a form of vibratory sensing (2011: 141). In interpreting noise in terms of its transformative potential for the societal powerless, one can thus easily conflate actor and analyst categories of noise – the definitions used by the subjects under study and the scholars studying them. This can make the argument a slippery slope.

This leads us to sound studies scholars who have presented noise as a productive agent by referring to the transformative *experiences* of those who celebrate the aesthetics of loud sound in the genre of noise *music*. An example is what Michael Heller has coined the 'listener-collapse', in which 'loud sound dissolves the ability to distinguish between interior and exterior worlds' (2015: 45). One of Heller's sources is David Novak's analysis of the 'affective responses' to harsh timbres and textures – so fundamentally different from the tonal consonance, rhythm and structural development in conventional genres – described by members in underground noise–music scenes (Novak 2015: 128). In those situations, listeners are not resisting something, nor do others resist their experience unless the neighbours start to complain; they are seeking an experience. There is a long tradition of discourse presenting loud sound in that way: as uplifting, enclosing, and agreeably immersive (Bijsterveld 2008). Examining the genre of noise music ethnographically is particularly enriching for understanding what those seeking noise gain through it. In this strand of research on noise music, however, the focus is usually more on the productivity of noise at the individual than at the societal level.

As we have seen, in writing histories of noise-as-societally-transformative-force, we might easily walk into the trap of writing winners' histories of those who happen to be able to make their mark through noise. By doing so, we miss those cases in which particular sounds were intended to create a breach in conventions but did not meet enough opposition to be widely noticed, let alone remembered. We might also miss cases in which attempts by authorities to transform particular sounds into signals such as alarms met resistance from those who considered that signal a sound out of place, but not enough to withstand the legal adoption of the signal.

To capture such cases, we should not write histories that merely follow those whose noise transformed into code, nor histories of those who fought against noise, but sound itself. We should write histories of the transformations of particular sounds from noise into signal, into music, or into noise again in the ears of those who wrote about or enacted it. In this chapter, protecting noise as 'sound out of place' thus not only means that our societies need to remain open to dissident sounds but also that we need to 'preserve' – to keep remembering – those instances in which noise remained just a transformative attempt. In his book on the relations between noise and music, musician and aesthetics lecturer Paul Hegarty stresses that noise is 'constantly failing – failing to stay noise, as it becomes familiar, or acceptable practice' (2018: ix, first edition 2007). Yet, rather than tracing the rise

of new composers or musical instruments, styles and genres over time, this chapter proposes to follow particular sounds across time. Let me try this for the sound of the siren.

The Siren in and Out of Music

In 1923, the Dutch newspaper *De Amsterdammer* featured an article claiming that the siren had 'deeply fallen'. A legendary, be it dangerously seductive instrument of great melodiousness in antiquity, it had disappeared entirely along with the culture that had reported about it. No one ever since had been able to reconstruct it. Oh yes, the siren was in use on large steam ships, especially in foggy weather, in which steam-driven rotations of a disk with holes produced a kind of 'lion roar', a 60-partitioned chromatic scale up and down: the classic siren with its wailing and seducing love songs had been 'degraded' to a 'mist signal'! For sure, the gifted scientists Charles Cagniard de la Tour and Hermann von Helmholtz had done their best but had not been able to rebuild something out of the ruins of antiquity. Their sirens only had a place 'in the physical laboratory'. Yet now there was the Dutch mathematician and physicist Dr. Henri Adrien Naber, a man inventive and acute, whom some expected to become the second Christiaan Huygens. He had built many a measurement instrument – a calorimeter, a few variation barometers, a vapour density meter, a hydrogen voltameter – even though he was only a teacher in mathematics. In 'a moment of insight', however, he had constructed his siren, an instrument enabling him 'to play anything that was also playable on any other instrument' (Anonymous 1923a).

Three images accompanied the article's text: an illustration of Naber playing his 'magic flute', a drawing of the instrument itself, and a scheme of the scale the instrument was able to produce. The instrument had, as any siren, a horizontally positioned disk with holes printed in a concentric circle. The disk revolved around a conic pipe that functioned as the disk's axle. An airstream from below, driven by a wind bellow with a tube, made the disk revolve around the pipe. The sound resulted from the air puffing regularly through the holes. This created impulse sounds that the ear would perceive as one sound once the disk was at high velocity, the pitch depending on the speed of the disk rotation (Figures 2.1–2.3).

What was new, however, was that Naber could control velocity through a wire around a flywheel driven by an electrometer and a rod blocking the disk at a certain speed when it moved up and down the pipe. In this way, the instrument could – so the anonymous author of the article had it – produce tones of any pitch 'with mathematical precision', and in any timbre, as this was dependent on the form of the holes in the disks. For sure, the musical instrument still had its weaknesses. It was not yet possible to create bigger intervals, such as the octaves for which the speed had to double or halve, without also creating glissandi in the transitions from one speed to the other. Yet that would be solved in due time (Anonymous 1923, see also Anonymous 1922).

Figure 2.1 'Dr. Naber plays his magic flute', from Anonymous (1923a).
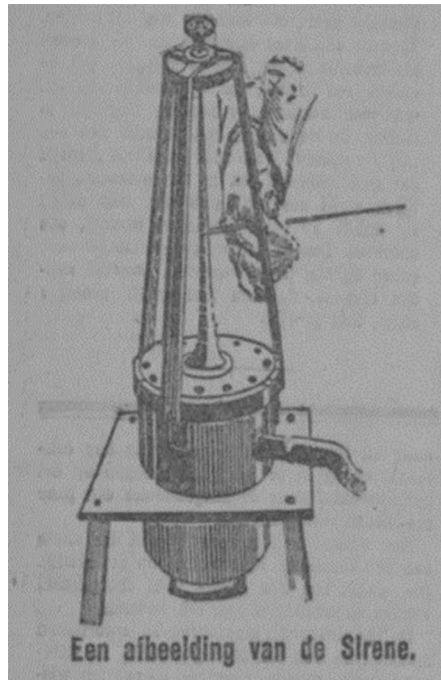

Figure 2.2 'An image of the Siren', from Anonymous (1923a).

De „as der gelijkmatigheid".
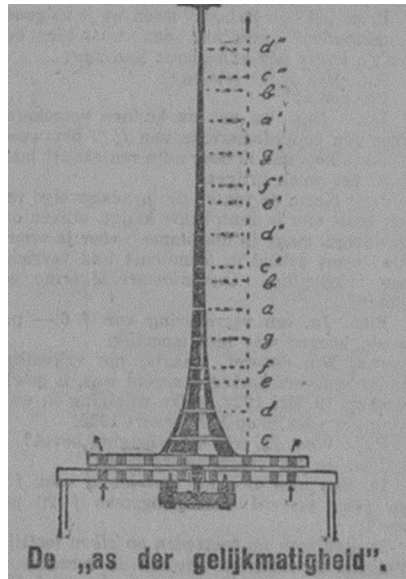
Figure 2.3 'The axle of equability', from Anonymous (1923a).

In fact, the siren had originally been an instrument for pitch measurement. Built in the eighteenth century by the Edinburgh professor of physics John Robison, the French engineer Charles Cagniard de la Tour redesigned the instrument in 1819 to use it for his work on underwater sound transmission, coining the term 'sirène' for the instrument (Jackson 2012: 205, Welsh 2018: 213). Knowledge of the number of holes and the number of revolutions per second enabled users to calculate the number of puffs per second, and thus the pitch, which made it highly useful for the rising science of acoustics. A modified version made by the French physicist Félix Savart had a toothed metal disk, the Savart wheel, in which the tone's frequency was 'directly proportional to the velocity of the wind entering through the holes' (Jackson 2012: 206). With this instrument, Savart tested human hearing capacities. In 1841, August Seebeck, a German physicist, added a polyphonic siren, for studying the 'interference generated by two or three tones' (Jackson 2012: 206), while tax collector, amateur scientist and musician Friedrich Wilhelm Opelt developed a polyphonic siren with a densely punched cardboard disk that could sound up to 'four-voiced chords' that had to demonstrate the correlations between rhythmic patterns, pitch and intervals (Rehding 2020: 142). In the 1860s, Hermann von Helmholtz used a double siren, a siren with two disks that he could have rotating at the same speed but could also manipulate into slightly diverging in speed. This led to new claims about difference and summation tones and the conditions under which these

originate, such as interval, intensity and sustainment, as well as follow-up research on dissonance, spectra and the perception of harshness (Lalitte 2011; Kursell 2018).

When writing about Naber's siren in 1923, the author of the article in the *Amsterdammer* wondered when 'bandmasters' would introduce this instrument in their orchestras (Anonymous 1923a). That was the question indeed. Naber had already invented his instrument in 1901 (probably having worked on it since the late 1870s), the year in which he also received his PhD. In 1918, he presented the instrument at the Second Dutch Annual Fair in Utrecht (Berkel 2013: no page) and had it on display in a local shop in his hometown Hoorn. An ad about the last event advised its audience not to go to the opera in Amsterdam to see an 'imaginary' siren but to go for a cheaper option and see Naber's magic flute or siren in the shop, or in fact several versions of it. The ad distinguished between the type of siren that functioned as an alarm for factories, harbours, towers and air raids, a siren that could 'replace the double bass, bass and cello', an electric guitar siren, and a soprano siren (Anonymous 1918). Five years later, Naber demonstrated the instrument accompanied by piano and violin, performing Beethoven, Gounod, Verdi, Sullivan and Tosti (Anonymous 1923b). On 28 November 1924, Naber even had airtime on Dutch wire radio N.S.F., playing national anthems and music by Mozart, Verdi and Handel (Anonymous 1924a), a broadcast about which *De Telegraaf* wrote that it 'should be very musical' (Anonymous 1924b).

However, despite the presentation of the instrument together with a conventional instrument such as the piano, as in the 1923 illustration (Figure 2.1) and in the photo in *Popular Science* (Anonymous 1922) represented in Figure 2.4, the instrument did not flourish in the way Naber had hoped it would. It is still unresolved why this was the case, but it may not only have been due to the 'problem' of the glissandi. While the Dutch musicologist and music critic Herman Rutters considered the glissandi a major weakness indeed – glissandi should only *occasionally* be used as a method of expression – composer Percy Grainger valued it as highly interesting for new, experimental music (Rutters 1913). A bigger problem, at least at that moment in time, may have been the idea that the siren should do what any other instrument with any timbre could do, mimicking other instruments rather than envisioning a new musical idiom. Discussed as the Cinderella of music (Anonymous 1901), thus indicating that it *did* breach conventions in music, it did not fulfil its promise to become a musical princess. As a letter sent to a local newspaper in Naber's hometown stated in 1923, it hardly made sense to reconstruct the sound of a mythological nymph, and if the idea was to create a magic sound, this could never be a sound created by an unnatural, mechanical device driven by an electric source. Science and art had to stay apart, and it was unlikely that the Concertgebouw orchestra would have welcomed the instrument. Art, so the letter ended, simply had no need for the siren (Hartkoorn 1923).
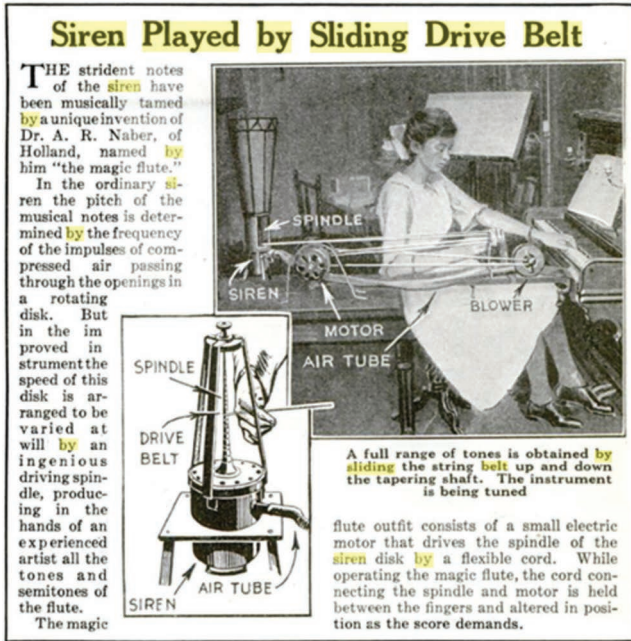
Siren Played by Sliding Drive Belt

THE strident notes of the siren have been musically tamed by a unique invention of Dr. A. R. Naber, of Holland, named by him "the magic flute."

In the ordinary siren the pitch of the musical notes is determined by the frequency of the impulses of compressed air passing through the openings in a rotating disk. But in the improved instrument the speed of this disk is arranged to be varied at will by an ingenious driving spindle, producing in the hands of an experienced artist all the tones and semitones of the flute.

The magic flute outfit consists of a small electric motor that drives the spindle of the siren disk by a flexible cord. While operating the magic flute, the cord connecting the spindle and motor is held between the fingers and altered in position as the score demands.

A full range of tones is obtained by sliding the string belt up and down the tapering shaft. The instrument is being tuned

Figure 2.4 'Siren Played by Sliding Drive Belt', from Anonymous (1922).

Interestingly, composers whose work with sirens is still played today, like George Antheil (*Ballet mécanique*) or Edgar Varèse (*Ionisation*) did not bother about the glissandi at all but instead appreciated them. *Ionisation*, with its unconventional instrumentation of just percussion instruments and two sirens, would have perfectly fitted into Jacques Attali's scheme – although he did not discuss it – as making the noise that announced the end of the code represented by the symphonic orchestra of the Classical and Romantic era. For Varèse, both the percussion instruments and siren allowed him to create a rich variety of timbres, while the siren and its glissandi also articulated his deep interest in microtones and their breach with tonality, an interest Varèse shared with his supervisor Ferruccio Busoni (Bijsterveld 2008). At the same time, the siren reflected his admiration for Helmholtz' experiments with difference tones, spectra and harshness, which inspired Varèse to approach music as organized sound and emulate acoustic phenomena in composition (Lalitte 2011).

The history of *Ionisation*'s reception shows that proponents of Varèse's work used the concept of 'noise' to underscore the piece's revolutionary effect. Although the general audience, according to newspapers, rejected *Ionisation* after its premiere in 1933 as not being music, it did not literally relegate it to the domain of noise – perhaps out of politeness. The world of professional

musicians and composers, in contrast, largely welcomed *Ionisation*, and music critic Paul Rosenfeld has been widely cited for claiming that he listened to New York's urban noise as music after leaving the concert hall where he had heard *Ionisation* (Martinez 2016). Varèse's interest in the siren also drew on his initial yet unfinished educational training in physics and engineering. For him, science, sound, and music belonged together. Science historian Myles Jackson, however, noted that 'rather than implementing a siren to provide a steady pitch as acousticians and physicists had in the nineteenth century, Varèse stressed the instrument's ability to elicit numerous tones with various pitches throughout an octave' (Jackson 2012: 215).

These examples show that Jacques Attali's belief in 'noise' as the herald of change in music depended too much on focusing on the winners in music history, neglecting those who did not succeed in having their new sound accepted as music. It also lays bare that Attali's 'what is noise to the old order is harmony to the new' makes it difficult to understand the strategic use of the label 'noise' for unconventional music by the *proponents* of that music. His work also provides no analytic tools to understand a figure like Naber, whose initial sympathetic reception by the press seemed to depend on his ethos as a scientist and who received the benefit of doubt in the world of avant-garde classical music (the siren as Cinderella). His instrument and its sound did not make it through, partially with the argument that science and art should remain apart. In the history of such innovations, several old orders may intersect or be rhetorically used for the justification and rejection of the object under discussion. Yet, what the author of the 1923 article had considered the cause of the deep fall of the siren, its use as an alarm, became its widest societal use. Naber himself had expressed the hope that one day the siren would replace the church tower's carillon as musical instrument (Anonymous 1923b). In practice, sirens and bells became wartime competitors as air-raid alarms.

Wailing, Terrifying, and as Irritating as Possible: The Siren as Air-Raid Alarm[1]

On 28 March 1940, during a conference on air-raid alarms, and about a month before the German air-raid on the Netherlands marked the beginning of World War II on Dutch soil, Cornelis Zwikker, professor of theoretical and applied physics in Delft, described a device that had to warn his compatriots of such air-raids. It had to create a 'wailing tone' with 'a terrifying character' that had to go up and down for six to ten seconds 'with an eye on an effect as irritating as possible' (Zwikker 1940: 5). The device that no one should be able to ignore was the electric siren.

Ever since World War I, national authorities had considered it highly plausible that in upcoming international conflicts, air-raids with airplanes would play a significant role. In 1927, the Dutch Minister of War, therefore, asked all mayors in the Netherlands to establish air-raid precaution

services in their municipalities. A nation-wide military organization would warn the municipalities about air-raids by radio, but these local communities themselves had to then check whether such air-raids actually posed a threat to them. This should be done by establishing posts for keeping watch and listening out for airplanes (*Kijk- en luisterposten*). Municipalities had to warn their inhabitants, preferably only during the day, by sounding church bells, steam whistles, or sirens, or by turning the lights on and off (Teeuwisse 1940: 2). As of 1934, the Dutch Society for Air-Raid Precaution (*Nederlandse Vereeniging voor Luchtbescherming*), led by military and public servants, assisted in informing municipalities and citizens to be prepared as best as possible, for instance, through distributing leaflets and posters, organizing courses with lectures and publishing their magazine 'Air Danger' or *Luchtgevaar* (Bosma 2006: 67–68). Two years later, in 1936, the Dutch government installed the Law for the Protection of the Population against Air-Raids, which assigned each municipality to one of three danger classes, and demanded the rise of local Air-Raid Protection Services.

This spurred the National Inspection for Air-Raid Protection to ask Zwikker to specify the criteria for a proper air-raid alarm, which resulted in his advice to go for the electric siren. The sounding alarm had to be loud without inducing hearing damage and should remain audible despite the potential of acoustic shadows due to high-rise buildings in urban environments – sirens thus had to be located on top of buildings. Their sound should be at least 60 dB (a rather low sound pressure level in today's terms), had to have a rising and falling tone (between 200 and 500 Hz, which was a frequency range that easily travelled, even through windows), in 6–10 seconds. Because of its electric source, the siren was now also able to produce a continuous high tone, which could serve as an 'end of danger' signal. The number of sirens should be enough to cover the entire municipality. This meant that the siren and its source of energy should still properly work after a long absence of its sounding, which affected the choice of the type of machine that had to drive the sirens. While steam could produce lots of energy, keeping kettles under pressure all the time would be unfeasible. Instead, electric motors of 5.5 PK with high safety circuits should do this work, also if they were not to be used for a long time or affected by wear and tear due to bad weather. Zwikker presented his advice in the late 1930s. The government, however, failed to find a Dutch company that could make the sirens. This left the Netherlands dependent on foreign producers until, in 1939, subsidies were provided to three Dutch machine-building companies in order to develop home-grown sirens after all (Teeuwisse 1940: 2). These companies, indeed, produced a series of sirens. The widespread use of the device, however, was actually secured by the occupying German forces – fearful as they were of counter-air-raids – rather than the Dutch authorities alone.

Producing the sirens, or even putting them in place, was not enough, however. As Michael Bull has discussed for the United Kingdom and beyond, 'sonic training' of the civilian population into understanding

and responding properly to the air-raid warning system was considered a necessary dimension of the 'ideology of sonic protection' by the state (Bull 2020: 44–47, 37). In the Netherlands, it was the Dutch Society for Air-Raid Precaution which did most of this work, although newspaper items about sirens being installed on high buildings also contributed to informing the population (Anonymous 1938a; Anonymous 1938b). The accompanying photos are fascinating. We see a few men behind or close to the siren's machinery, with several men or women situated near the siren's horn. A photo of a siren installed on the Bijenkorf, a luxury warehouse in Amsterdam (Figure 2.5), suggests that the siren is actually sounding by showing those on the roofs closing off their ears by putting their hands against or fingers in their ears. It was hopefully – mind the ears – only a staged event, but the message is clear: the siren is loud, and its sound will reach you.

In many European countries, the siren became the preferred official air-raid alarm. In World War I, fear of work interruptions had been a reason

De Luchtbeschermingsdienst te Amsterdam nam Woensdag weer eenige sirene-proeven, waartoe o.a. op het dak van de Bijenkorf aan het Damrak een installatie geplaatst was

Figure 2.5 Testing a newly installed siren on the roof of the Bijenkorf, Amsterdam (Anonymous 1938b).

that led the government of the United Kingdom to put a hold on introducing the siren as an alarm for Zeppelin air-raids (Bull 2020: 46). During World War II, however, it regulated the sound of the siren as the sole warning signal for air-raids, and even issued a Control of Noise Order that banned the use of 'sirens, hooters, whistles, rattles, bells, horns and gongs' by anyone but the authorities as of 1 September 1939 (Mansell 2017: 151). By doing so, the government hoped to ensure that everyone would hear and respond properly to the air-raid sirens. They hardly allowed any exceptions – even forbidding the use of sirens to signal the beginning and end of factory working days. As of June 1940, however, the British government decided that the ringing of church bells – 'national in its coverage and local in its applicability' (Mansell 2017: 153) – should be dedicated to warning the population of German ground invasions. This was much to the dismay of the church, while others objected because the bells positively signified standing united as a nation. Some opponents also stressed that bell ringing required particular skills. In fact, false alarms occurred. It was only in May 1943, however, when the threat of an invasion across the land diminished, that the authorities restored the old situation (Mansell 2017: 158).

In the Netherlands, the issue of whether church bells still had a role to play in air-raid alarms remained contested for a long time. During an exercise in the South of the Netherlands in 1938, the Inspection of Air-Raid Precaution noted with irritation that Maastricht still used bells for its situation-safe-signal, even though the guidelines did not allow this. Years into the war, the German occupiers felt forced to explicate that the use of church bells was a no-go, not even in Zeeland, a region with a deeply protestant population. Yet, even where sirens had an accepted position, practices diverged from ideals. In regional meetings of heads of the air-raid protection services, everyday reality was on the agenda. When to switch the alarm on? Officially, airplanes entering Dutch space would already be a reason to do so. Yet, many leaders were afraid of causing alarm fatigue, and only wanted to use the sirens in case of actual air fights or bombings. Even worse was that switching on the sirens did not always make them sound. At times, bombings damaged the electricity network, and those populating the commando posts did not always know that one could also empower the sirens manually. At other moments, the sirens kept silent due to rusty, non-working parts or were not audible in the entire community. What posed the biggest problem to the authorities, however, was that not everybody sought shelter once the siren had sounded. In 1943, the head of the air-raid precaution service of Heerlen noted that this happened particularly during the day:

> It is irritating to see how few people acknowledge the seriousness of the situation in such a case. Civilians should leave the street under all conditions with each air-raid alarm. Those who have plenty of jaw during the day, turn somewhat pale in their face when they hear the airplanes in the dark of the night, and then do flee to the shelter.[2]

Authorities elsewhere made similar observations. There were even complaints of people damaging the sirens, or mimicking the sounds of the siren, thus threatening the authority over the siren sound and creating confusion among those hearing it.

It is still not self-evident. Mexico City's 8,000 sirens sounded at the 'slightest tremor', causing a dangerous 'alert fatigue' among its population (Bull 2020: 50). A few years ago in the South of the Netherlands, the sirens sounded accidentally at another moment than at noon on the first Monday of the month. There was no panic. In fact, there was hardly a response by the population at all even though the Dutch are supposed to know what to do in such cases. It shows once again that sonic training is not sufficient for a signal to do its work; its audience may easily relegate its sound to the domain of meaningless noise. This is one of the reasons behind the idea to shift to mobile phone alerts, a system also assumed to be cheaper than maintaining 4,278 sirens. In the age of cyber-attacks, however, some mayors of big cities are hesitating. Moreover, while the sirens produce a collective sound, a sound for all, the privatized alert on mobile phones may not reach everyone because some citizens do not possess or use a mobile phone. The Dutch government, therefore, does not yet dare to silence the sirens forever.

Even if the end of the air-raid siren *might* be near, the siren's legacy may live on in music. In part III of Steve Reich's *The Desert Music*, we can hear a siren emulated by the violins, referencing the threat of nuclear war articulated in poetry by William Carlos Williams – poetry Reich draws on. It is a threatening sound, paradoxically more threatening perhaps than the siren's effect in everyday life.[3]

Conclusions: A New Way of Performing the History of Noise

As we have seen, noise's transformative power has been flagged in at least three ways. The first way, defended by Jacques Attali and his followers, comes down to the idea that noise is productive because it foreshadows and induces societal change through its position in music. As I have shown, however, this argument draws on a finalist version of music history, putting the now famous winners among composers central stage, thus overvaluing noise's transformative strength. The second is the claim that noise, especially when perceived as a protest against the status quo by society's establishment, signifies the seeds of societal change. This claim is much easier to underpin, but in doing so, not all authors clearly distinguish between actor and analyst categories of noise. The third version focuses on the transformative experience of noise and noise–music by listeners that celebrate it. This is a convincing strand of research – as long as it actually examines the experiences of those listeners – but also tends to reduce the productive effect to the 'affect' of music on individuals.

To enable research in the productive potential of noise beyond the individual level in ways that preclude finalism and the conflation of actor and

analyst categories, I have suggested a different way of performing history. Rather than following composers, protesters or those attempting to abate noise across time, we might follow particular sounds through time while capturing the moments in which these transform from noise – in its most elegant meta-definition of 'sound out of place' – to music or to signals, or the other way around. This enables us to pose and answer specific questions about when and where noise is productive to whom and for what.

My case in point has been the history of the siren sound, focusing in particular on the Netherlands. The examples of the siren in music underpin my critique on Attali's finalism and refer to the need to be aware of the strategic uses of the notion of 'noise' as well as of the variety of 'old orders' that mould innovation in music. The stories on the siren as air-raid alarm pointed at the shifting identities of the siren as signal and noise. Sonic training by the state had to make it into a working signal, yet Dutch authorities often forgot to train their own employees convincingly. In addition, and much to the authorities' dismay, civilians often treated the siren as noise, deciding not to respond to it, or even hacking the sound to create confusion. Thus, my wish to 'save our noise' or protect sound out of place does not only refer to the near truism that societies should be sufficiently open to those who aim to breach their conventions. It also implies that in writing histories of noise as a potentially productive force we should not only preserve those moments in time in which noise left its societal mark but also transitions in which sound out of place never made it *into* place or in which authorized signals were rendered into noise by many.

Epilogue

When Miss Milivolt finally had to acknowledge that her swan song for the siren was unlikely to materialize, she was not prepared to give up the idea entirely. She came up with an alternative plan for a new work of art. Her current idea is to create an animation film that enacts what the nation-wide swan song for the siren *could* have been. The opening scene of the animation film might be a bird's eye view of the Netherlands, showing the thousands of sirens across the country. The sirens will likely start in unison, as they normally do on the first Monday of the month, but over time, their sounds might diverge and multiply in an orchestra of different musical instruments. These will tell, through sound and visual means, the story of an instrument that made composers question the musical conventions of their time, prompting others in the musical world to relegate this to noise, and of a device that could only be heard as a signal by populations that appropriated the sonic training as the authorities meant it to be.

Notes

1 I would like to thank Kaoutar Ashour and Justine Camps for assisting me in the archival research for this section.

2 Archives Luchtbeschermingsdienst der gemeente Heerlen, 1934–1951, Notulen van de leiding, hoofden van wijk- en blokploegen, 1940–1943, 'Verslag van de Bijeenkomst van Commandanten en Blokhoofden van de Luchtbeschermings-dienst op Maandag 25 October 1943 (…)', p. 2.
3 I would like to thank Robert Adlington for bringing this musical staging of the siren to my attention.

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3 Tracing Earlines in Ethnomusicology

Barbara Titus

Reporting on his ethnomusicological expedition to the Indonesian island Nias in the early months of 1930, Jaap Kunst (1891–1960) articulated a clear distinction between sound that he considered to be worth preserving and sound that he did not:

> Central and especially southern Nias are very impressive with their beautiful traditional costumes worn by their chiefs and warriors, the strict and controlled rhythm of their dances, the sweet sounds of their songs. People from northern Nias, on the other hand, appear in dirty pyjamas and imported costumes, leap about and yell with no rhythm and no melody […] their music […] consists solely of psalms and hymns.
> (Kunst 1930: 7 as quoted and translated in Frijn 1994: 54)

Kunst's distinction between the strict and controlled rhythm and sweet sounds of the people from southern Nias and the incoherence of the sounds from those of northern Nias comes down to a dichotomy that all early music ethnographers endorsed: of traditional, indigenous culture versus hybrid and (in Kunst's very words) 'contaminated' culture (1947: 26). Kunst observes that the people from northern Nias have music, but this music has been imported or imposed on them through (European) missionization (psalms and hymns sung in imported costumes and dirty pyjamas). If they attempt to express themselves sonically on their own account, their sounds are incoherent (no rhythm, no melody) and uncontrolled (leap about, yell).

The dichotomy of the pure and the hybrid was functional to colonial societies in which colonizers and colonized were supposed to occupy separate realms, and the terms of their encounters were prescribed. Being and remaining 'indigenous' put those being colonized at a safe experiential distance from those who set these terms of encounter. One does not want to colonize those human beings that sound like you, speak like you and use the same musical instruments as you. Moreover, this dichotomy features in many European epistemologies generally, ranging from everyday theological norms to scientific disciplines of biology and botany. Not surprisingly, then, it became central to the academic establishment of ethnomusicology

in the mid-twentieth century – a discipline eventually adopted in the whole Anglophone academic world (Nettl and Bohlman 1991: xi). Kunst is widely considered to be a founding father of this discipline, since he coined its name (Kunst 1950).

The importance of sonic purity and self-sufficiency in Kunst's distinction between sonic practices from southern and northern Nias (see also Kunst 1939) resonates with widely shared European distinctions between sound and noise, or *Klang* and *Geräusch*, articulated most elaborately by Hermann von Helmholtz in his *Lehre von den Tonempfindungen* from 1863. Helmholtz situates this distinction in the realms of sensation (*Empfindung*) and perception (*Wahrnehmung*), not in the realm of intention and creation. Noteworthy is Helmholtz's further distinction between sensation as an embodied and sensory capacity (*sinnliche Empfindung*) and perception as more conscious, analytical capacity (*bewusste Wahrnehmung*) (Helmholtz 1863: 556; see also Kursell 2018: 342). Not all noises (*Geräusche*), sounds (*Klänge*) and tones (*Töne*) that are *sensed* are consciously *perceived* as such (*ibid.*). Yet, the distinction between sound (*Klang*) and noise (*Geräusch*), according to Helmholtz, is both sensed and perceived instantly (Helmholtz 1863: 14). Sound is perceived as organized, periodic, intended and intrinsic to the sound source. Noise is perceived as non-periodic, unintended or unwanted and external to the sound source of our attention (*ibid.*, see also Kromhout 2020: 42).

Although Kunst does not employ the word noise for the sonic leaps and yells of the people from northern Nias, he does associate these sounds by implication to dirt (through the dirty pyjamas). This association is not coincidental. In his 2019 essay on noise, sound and silence, anthropologist Tim Ingold describes noise as a sensory equivalent of dirt. Whereas dirt is matter out of place, noise is sound out of place: undefinable and undefining, withdrawing from categorical boundaries. Both are sense-out-of-place: non-sense. Ingold observes that this sheer impossibility of definition harbours an unlimited creative potential, affording multiple options for differentiation:

> To get a sense of it, take a sheet of paper and crumple it up into a tight ball; then spread it out again. It will reveal a dense and irregular mesh of folds and creases, not unlike the surface of the ocean ruffled by the wind. A characteristic of folds and creases is that they emerge from the surfaces in which they are formed, but never part from them. Where the paper or the ocean is crumpled on the surface, the air is crumpled in its volume. Noise is equivalent to the volume's 'crumpledness'. And while the overall impression may be one of chaos, every crease or fold potentially affords a line that can be followed. Just like the crease in the paper or the ruffle in the sea surface, however, the line is in the noise, and never parts from it.
>
> (Ingold 2019: 55)

Ingold dubs this an 'earline'. Tracing an earline is an effort of continuous aural differentiation, listening out for something to follow in the crumpled noise. Ingold compares this act to a carpenter following grains, a tailor following creases or a walker following pathways. They all cut along lines of interstitial differentiation – lines that are within the wood or cloth or forest. Ingold enriches and complicates Helmholtz's distinction between sensation and perception. Like light, sound is not an object of perception. Rather, it erupts into our awareness, enabling our senses to expand and pervade the entirety of visual and acoustic space. In sensing light and sound, Ingold argues, our eyes and ears become affective dispositions rather than organs (see Deleuze and Guattari's 'Body without Organs', 1987: 165–184). Thus, tracing earlines is a kind of immersion in the noise with our bodies 'becoming ear' (*ibid.*).

Dichotomous Taxonomies of Aural Differentiation

In this chapter, I engage with the practices of aural differentiation that underlie the concept of noise (and by implication the concepts of sound and music) rather than with these concepts themselves. I provide an overview of ways in which ethnomusicologists, cultural musicologists and sound studies scholars have registered and documented their practices of aural differentiation (their traced earlines) during the past century. They have conceptualized these in an abundance of written sources. Whereas the overview provides insight into changing attitudes towards distinctions between noise, sound and music, it is not an integral history of ethnomusicological engagements with these concepts. Rather, it aims to emphasize the diversity of aural sensations, perceptions and registrations. This diversity indicates that conceptual distinctions between noise, music, sound and silence are culturally situated serving the specific cultural and epistemic interests of those that use these concepts. Thus, my account can be read as an ethnography of a community (music and sound scholars) that traces earlines on a regular and sustained basis. I conclude by reporting on my own practices of tracing earlines during my fieldwork research into South African maskanda music.

In tracing earlines, we make out meaningful sounds from an acoustic space.[1] It is a creative practice that resonates with earlier sonic experiences, memories and aural imaginations. It can be an individual practice of aural differentiation as much as a collective and socially negotiated practice of categorization and taxonomy. It constitutes embodied as well as institutional archives of sound specimens that serve specific interests and agendas, such as the establishment of cultural distinction and social stratification, or the sustenance of individual and cultural identities. One way of making out meaningful sounds from an acoustic space is to classify the former as music and the latter as noise, in other words: to set the creases and folds of contingent crumpling in (conceptual) stone.

Kunst's differentiation between the sweet sounds of southern Nias and the yells without rhythm and melody from northern Nias comprises such a taxonomy. It is important to note that this taxonomy not only pertains to Kunst's aural experience but also extends itself to the sonic practices of the people from Nias. Moreover, this taxonomy is dichotomous: it separates sound to be preserved from sound not to be preserved. Kunst assembled one of the world's foundational ethnomusicological sound collections during his expeditions in the Indonesian archipelago between 1919 and 1934. This collection is now located at the University of Amsterdam under my curatorship. No fewer than fifty out of the 300+ wax cylinder items in the collection stem from the relatively small island of Nias (Lamsweerde 1994: 252 and 254–256). None of them stems from northern Nias. Had we not had access to Kunst's research report cited above, we would not have known of any sonic expression from northern Nias at all. We might have assumed that people do not have music there.

Around the same time as Kunst recorded and documented many musics from the Indonesian archipelago, Frances Densmore (1867–1957) recorded a wealth of sonic expression from Native American communities. Kunst and Densmore were among the first music researchers to use technologies of sound recording, and the affordances of this equipment (phonographs inscribing sound on wax cylinders with copies on disc) determined to a large extent what was acceptable sound and what was not to those who were in a position to buy a gramophone and replay the discs. The number of people that could afford such a machine, and the places in the world where they lived, increased enormously over the course of the twentieth century, especially with the advance of increasingly cheaper electronic recording techniques in the 1920s. In his book *Noise Uprising*, Michael Denning outlines how the global mobility of sound recordings led to a diversification of listening attitudes and appreciations of sound that constituted a 'decolonization of the ear' (Denning 2015: 135 and further). What may have sounded 'weird' or 'primitive' to the ears of one may have been 'exciting' and 'sophisticated' in the ears of others. Musicians in Batavia took equal note of musics from Hawai'i and the Middle East in their conception of *kroncong* (155). Ghanaian musicians re-appropriated Cuban *son* in their conception of *highlife* (4). Cultural purity was not an issue for their listeners.

Technologies of sound recording were, however, also seminal in the singling out of wanted from unwanted sounds, the intrinsic from the external in Helmholtz's terms, thus controlling 'the noisy chaos of real life' (Lysloff and Gay 2003: 3). In commercial realms, musicians and bands were increasingly recorded in soundproof studios (Denning 2015: 212–213). In scholarly realms, ethnographers were adamant editors and modifiers, staging 'their' field for the perfect recording that would provide an optimal listening experience to those who intended to store and preserve the sounds as objects of investigation (García 2017: 11). In his master thesis about technological applications in the cross-cultural study of music, Samuel Harper

cites a letter from Frances Densmore to anthropologist John M. Cooper on 4 August 1940. She outlines the changes she pursues in the makeup of a performance of Native American song for the sake of the recording. She insists that 'all yells must be strictly forbidden' and that 'an Indian drum does not record well, and a rattle does not record at all, a short stick on a pasteboard box gives the percussion without resonance' (Densmore as cited in Harper 2019: 35).

Densmore and Kunst, like their consociates, were trying to salvage musical, ritual and sonic expressions that they considered to be on the brink of extinction through, in Kunst's words, Western contaminations, mass culture and missionization (Kunst 1947: 26). Their rescue attempts enable current communities to continue and revive their indigenous sonic and ritual traditions, but over the past decades, ethnomusicologists have increasingly deliberated what they are actually 'reviving' (Hilder 2012; Gunderson et al. 2019). As Kunst's and Densmore's accounts reveal, the sources for such repatriation and revival have been constructed by ethnographers who imposed their ideas and preferences about what should be heard and what should not. Such preferences pertained not only to the technical affordances of the recording equipment but also to culturally situated aesthetic preferences presented as universal values. Kunst and Densmore both ground their aesthetic decisions in the distinction between sound that 'belongs' and sound that does not. However, rather than the practitioners, they are the ones taking charge of this belonging. Moreover, Helmholtz's apparently transparent distinction between sound intrinsic to the sound source and noise external to the sound source is used capriciously by both Kunst and Densmore: even if the yells of Native American singers are intrinsic to their song, these should be kept out as noise. Even if the people from northern Nias have music, it is externally imported and therefore should be kept out. Thus, the multiple options for tracing earlines in crumpled and creased acoustic spaces are reduced to singular dichotomies: in or out. An increasing number of (ethno)musicologists acknowledge this reduction as a form of epistemic violence that complements rather than counters the epistemic violence of colonial conquest and mission (Western 2015; García 2017; Hoffmann 2018; yamomo 2018).

Situated Listening

Whereas Densmore and Kunst did not question their decisions pertaining to desirable and undesirable sounds, their successors became increasingly aware of the implications of such decisions. Anthony Seeger has reflected extensively on the agency of the ethnographer in the constitution of the field and has dwelt in particular on the situatedness of the recording equipment:

> In 1981 I was recording a song sung in the midst of a month-long ceremony of the Suya Indians of Brazil. For several days on end they sang basically the same sequence of songs. In these songs a few men sang a

unison song, while the rest shouted, whooped, and made animal and bird cries. [...] I used a directional microphone and followed the older singers around, thus eliminating many of the shouts from the recording. Feeling very pleased with myself, I played the recording to the assembled men and women that night. They hated it. 'It is so sad' they said [...]. 'We can't hear the birds; we can't hear the animals. There is no happiness'. Here, with all of the best intentions in the world, I had 'produced' a recording that neither simply froze the sounds as they occurred, nor adequately captured those sounds considered essential to a Suya performance of that song. While I made a good analytic recording – I can use it for linguistic transcription – it is not really a recording 'as it was'. Virtually no recording is. As a check on my own biases, I have also given cassette tape recorders to the Suya and traded blank tapes for their recorded ones. Their recording strategy is different from my own in instructive ways. We can learn a lot about our respective musicologies from our respective recording strategies.

(Seeger 1986: 275)

It is necessary to cite Seeger at length because he addresses how recording equipment invites the selection and foregrounding of some acoustic information at the cost of other acoustic information. Listeners also make such selections without recording equipment. We aurally differentiate in order to navigate through the acoustic information we perceive on the basis of our preferences, internal embodied sonic archive, memories, associations and more. Thus, Seeger demonstrates how different people from different cultural backgrounds trace different earlines in the very same acoustic space. He also addresses the position of power in which recordists find themselves through their equipment. Seeger mitigates this unequal distribution of power by transferring recording agency to the practitioners of the sounds he wants to register and he indicates how much he learns from hearing them hear. In decentring his own aural perception, Seeger suggests that conceptual distinctions between sound, noise and silence based on such perceptions are also culturally situated.

This insight is confirmed by Steven Feld in his monograph *Sound and Sentiment* from 1982 that presents his research into Kaluli myths and cosmology from the Bosavi people in Papua New Guinea. As Feld summarizes in a later publication:

Kaluli myths and cosmology portray birds and humans as transformations of each other in death and life, living in different planes of visible and nonvisible reality that in part 'show through' to each other. Birds can 'show through' by their sounds; Kaluli apprehend and relate bird sound categories to spirit attributions according to which ones 'whistle', 'say their names', 'talk Kaluli', 'cry', 'sing' or 'make a lot of noise'. The explicit link between bird sound and human emotional expression

is first formed in the arena of weeping. The descending four tones of the *muni* bird call creates a melodic framework through which women's funerary wailing turns into wept song.

(Feld 1987: 192)

Feld too shares his findings with the practitioners of the sounds that have become meaningful to him throughout the years. Talking to them about what they found striking and what they found missing in the recordings, Feld came to acknowledge the immense range of internalized and often subconscious presumptions about practices of sonic production and aural perception, including his own. People's ears trace different lines while immersing themselves in the same acoustic space. Some of these presumptions I outline here in order to substantiate my ethnography of a community of music scholars in their employment of concepts of noise, music, sound and silence.

By singling out human sounds from all other sounds – animal sounds, sounds of wind, trees, water and acoustic conditions belonging to certain times of the day, certain times of the year, certain weather and certain places – Feld adhered to an anthropocentric understanding of the world, as he later acknowledged himself. Kaluli practitioners perceived his distinction between human and non-human sound as contrived. Moreover, he assumed an a priori difference between culture (as man-made) and nature (as pre-given). This divide reaches back to European Enlightenment ideas about the separation of mind (cultural) and body (natural) that also surface in Helmholtz's distinction between embodied sensation (*sinnliche Empfindung*) and intellectual observation (*bewusste Wahrnehmung*) (Helmholtz 1863: 556).

Ana Ochoa outlines how all these binary assumptions of difference – between human and non-human entities, between nature and culture, between body and mind and between the given and the made – intersect with 'theories about the acoustic whether understood as music, language, narrative, sound, or otherwise' (Ochoa Gautier 2014: 21). These assumptions of difference are all but obvious and are certainly not universally shared by people who conceptualize their aural environments and experiences (see, for example, Menezes-Bastos 1999; Viveiros de Castro 2013; Brabec de Mori 2015). Like Feld, many fieldworkers (including the present author) became aware of this only while being confronted with unfamiliar sounds and, more importantly, with theories about the acoustic that do not assume above distinctions.

The Fantasy of Europe's Cultural Self-Sufficiency

While we know that the conceptual tools that facilitate such distinctions (music, noise, human sound, non-human sound, silence) largely stem from European traditions of thought (Strohm et al. 2001), scholars have only recently started to trace back the histories of these concepts in a global perspective – one that questions 'Europe' as a self-contained cultural

entity. Olivia Bloechl outlines how 'the increasingly important fantasy' of Europe's cultural autonomy, self-sufficiency and superiority developed during the early period of colonization in the sixteenth to eighteenth centuries (Bloechl 2008: xiv). She explains how this ideology was an anxious response to the intermingling of peoples and cultures caused by colonial conquest. This intermingling challenged existing politico-cultural identities through the highlighting of 'alternate vectors of identification' and through 'uncomfortable questions regarding relations of likeness and difference' (*ibid.*). She convincingly demonstrates how the consistent and coherent narratives 'about' colonial subjects started to function as imperious codes in themselves, denying or forgetting how European practices of thinking and performing were entangled with and indebted to those from parts of the world that were mined and often exploited by European powers. Conceptual differences between sound, noise, music and silence were important categorical tools to bolster the impermeability of such narratives.

Ana Ochoa provides a telling example of the conceptual walls being erected between lettered elites in nineteenth-century Colombia (who often identified as hailing from Europe) and their sonic and social Others:

> Lettered elites constantly encountered sounding and listening practices that differed from their own: vocalities that seemed out of tune, difficult to classify as either language or song, improper Spanish accents that did not conform to a supposed norm, sounds of indigenous languages for which there were no signs in the Spanish alphabet, an abundance of noises or 'voices' coming from natural entities that seemed to overwhelm the senses. In the process of inscribing such listenings into writing, the lettered men (and it was mostly men) of the period simultaneously described them, judged them, and theorized them. And while some were keen to rein in what seemed like a disordered acoustic abundance into a descriptive and normative standard that allowed for the proper identification of an ordered 'nature' and 'culture', others sought to enhance the relevance of such acoustic multiplicity by revelling, often in contradictory ways, on the significance of such sensorial exuberance.
> (Ochoa Gautier 2014: 4)

Bloechl's and Ochoa's accounts indicate a feedback loop between culturally situated practices of listening, on the one hand, and aural concepts reflecting theories about the acoustic, on the other hand: the listening practices underlie the concepts, and the concepts impact on the listening practices. Conceptual distinctions between noise and music or sound and silence were once functional in a response to the intermingling of peoples and cultures caused by colonial conquest. The content that is understood within these categories may be changeable and context dependent: what Densmore and Kunst would have called 'yells' may be regarded by Seeger

and Feld as 'voices of the forest'. However, the sensorial and expressive schemes of noise, sound, silence, yells, voices and music remain operative in their framing of these aural experiences, also today (Ochoa Gautier 2014: 17). Despite their colonial legacy, they apparently continue to serve a purpose. The implications of such dynamics of reproduction are being studied from a growing range of (musicological) fields of interest. These encompass publications delving into specific colonial histories of acoustic conceptualization and theorization (Erlmann 2010; Hoffmann 2015; Radano and Olaniyan 2016; yamomo 2018) and publications engaging with the more general dynamics of inclusion and exclusion through sonic practice and aural perception (Olwage 2004; Weidman 2014; Western 2015, 2020; Sykes and Steingo 2019).

Maskanda Music in South Africa

A region where this colonial legacy is particularly palpable (although not necessarily more present than elsewhere in the world) is southern Africa where colonial stratifications of society in the form of legal apartheid policies were formally abolished only late in the twentieth century: in Zimbabwe in 1980, Namibia in 1990 and South Africa in 1994. As in all colonial societies, practices of inclusion and exclusion pertained not only to politics and the economy but also to education, social life and cultural practice. Cultural practices and policies were employed to not only impose divisions between groups of people but also make them embrace these divisions and encourage them to perceive these as given rather than made. As Gavin Steingo notes:

> The apartheid policy of ethnic zoning was not merely spatial; it was also, and at the same time, a distribution of the sensible […]. It produced, in other words, a triangular relationship between bodily postures, cognitive affordances, and practices of sense making.
>
> (Steingo 2016: 95)

In 2008, I started fieldwork in Durban, South Africa, for my investigation of maskanda music. Played on guitar and concertina, maskanda can be an acoustic individual leisure activity as well as a sometimes profitable amplified band practice. Practised in labour migrant dormitories (so-called 'hostels'), on the streets, and in recording studios, maskanda straddles a startling range of aural universes – a range that represents as well as crosses the separate realms in which South Africans were supposed to confine themselves in colonial and apartheid conditions. I had come from the Netherlands without any prior sustained engagement with South Africa or South African music. What I knew about it, I knew from books and media coverage of the Struggle against apartheid in the 1970s and 1980s. In a sensory respect, this ignorance was productive: it made me sense acutely that the politically fabricated and imposed associations

between bodily postures, cognitive affordances and practices of sense making, mentioned by Steingo, were still very powerful 14 years after the official demise of apartheid. They were operative in the observations and judgements of South Africans about each other's ideas, skills and performance practices. They were also operative in how South Africans regarded me: an affluent white woman coming from Europe to study music that is predominantly practised by black men who eke out a precarious existence living from one gig to the next.

In the early years of the twenty-first century in Europe, skin colour was not supposed to be an issue anymore – at least not for white people. In South Africa, I learned for the very first time that my skin colour was, indeed, a case in point for the assessment of anything I said or did. What is more, I learned that I was not colour blind either – even if I wanted to be. I found myself expecting different things from white South Africans than from South Africans of colour, which did not only come down to their socio-economical position but also to how they spoke, how they moved, how they looked at me and what they wore – in short: to my associations between their bodily postures, cognitive affordances and practices of sense making.

During the ten years in which I researched maskanda, I worked with numerous maskanda musicians (male and female, black and white) and learned from them how this music had been inspired by a range of widely diverse musical practices: *amahubo* a cappella choral dance song, ragtime, jazz, strophic *boereliedjes*, *umakhweyana* gourd bow playing, Christian church hymns, among others. I learned how this practice gradually became essentialized as Zulu popular music with a standardized guitar–bass–drums band, homogeneous three-minute formats and backing dancers in Zulu attire. Such visual and aural tokens of Zulu nationalism were supposed to present the continent of Africa as a land of savanna and safari (Meintjes 2003: 225). These presentations had been particularly profitable in music industries regulated by the apartheid government between the 1950s and the early 1990s. They remained profitable in global music markets demanding similar stereotypical notions of Zulu culture and tradition in the realm of 'world music'.

I also witnessed how musicians used their guitars, violins, concertinas and mouth organs in their own particular ways with their own tunings and playing techniques transmitting their own stories and own forms of eloquence through complex reconfigurations of time and place. I learned to hear how they reworked age-old scales, timbres, vocal inflections and textures into their styles and genre denominations. Crucially, I learned to hear these sounds, stories and reconfigurations as the expression, communication and perception of experiences of black South Africans, since only people of colour had – often forcibly – been subjected to the circumstances in which their music was practised: forced labour migration, shared dormitories, so-called 'homeland' reserves, whole-day commutes on foot from

home to work and back, the denial of formal education. Maskanda was and remains a performative and cognitive realm for alternative homes, alternative senses of self and belonging and complementary modes of education and heritage transmission. In my presentations and publications about this music on international platforms, I have always tried to draw attention to these epistemic implications of maskanda musicking (Titus 2013; 2016a; 2019; 2020; 2022).

Apartheid Distributions of the Sensible

What was my business there as an affluent white woman coming from the Netherlands – of all places? I still find it difficult to answer this question, whereas it is an utterly relevant one if we discuss the cultural situatedness of aural perception and differentiation. It occurred to me that my urge to learn (about) a black performance practice was shared by only a handful of white musicians and scholars. After the demise of apartheid, many black South Africans started participating in performance practices that had been reserved exclusively for white South Africans during apartheid times: symphony orchestras, rock bands, string quartets, opera classes. They were in no way matched by the few white South Africans who started engaging in performance practices that had always been the domain of black South Africans: maskanda, mbaqanga, isicathamiya, kwela, marabi, kwaito. 'White' performance practices continue to represent upward social mobility for most South Africans today, which is reflected in the relentless striving of South African musicians to climb overseas stages and perform for international audiences. Often, they take the collaboration of Joseph Shabalala's isicathamiya group Ladysmith Black Mambazo with Paul Simon on his album *Graceland* (1986) as a model for such upward social mobility, despite the problematic circumstances in which this collaboration took place.[2]

This rough overview of South African music participation demonstrates how the apartheid distribution of the sensible, outlined by Steingo, thrived on categorical distinctions between various forms of sonic practice and aural perception. Musician Johnny Clegg (1953–2019) deliberately and famously transgressed these apartheid categories. He was a 'White Zulu' not only for his audiences but also for his Zulu friends and colleagues. He once explained how maskanda practitioners were supposed to be perceived by white South Africans during the apartheid era:

> Apartheid taught you [i.e. white South Africans] not to see, to walk down the street and *not* see a black man, coming up the street, playing the guitar. If you heard the sound, it was a foreign sound. It made no sense to you, it was a garbled, distorted sonic representation of a culture that is dangerous to you.
>
> (Clegg quoted in Coplan 1993: 321 – emphasis in original)

In her book about maskanda, Kathryn Olsen points at the consequences of such aural strategies of othering, telling that, until she started her research,

> the path of my existence and the paths of maskanda musicians had not intersected, except perhaps incidentally, anonymously, or under the weight of the identities assumed and controlled by the apartheid regime. The guitar music that I heard on the streets of the middle-class suburb where I lived as a young child was nameless in my world, just as those who played this music were nameless.
>
> (Olsen 2014: xii)

I have observed with my own ears and eyes that maskanda's non/presence among South African white middle classes persists to this day. When I spoke about my research subject to white Durbanites between 2008 and 2019, it often struck me that they had never *heard* (of) maskanda in their entire life but had, nevertheless, *seen* black people plucking their guitars on the street. Apparently, they had never paid attention to them or wondered what they were playing. In Ingold's terms, their eyes and ears did not expand to pervade the entirety of visual and acoustic space (Ingold 2019: 55), so they also missed out on the affective dispositions that such an experience affords. This is what apartheid policy could deny to people: it kept them apart not only physically but also sensorially.

Clegg's, Olsen's and my testimonies (please note the absence of black voices here) present a poignant tension between being seen, heard and named. The lack of personhood that maskanda musicians suffered in Olsen's white suburb resembles the lack of personhood that musicians suffer in the many ethnographic sound collections that are currently stored in European and North American metropoles. These speakers, singers, instrumentalists and orators often remain anonymous, being sound specimens of distinct cultures as general and static entities that were to resemble the botanical and archaeological classification categories of the time. This brings us back to Jaap Kunst's ethnomusicological sound collection. The voices and performances on the recordings from central and southern Nias (without any from northern Nias), like the ones from other parts of Indonesia sometimes have names. Often, however, they are merely indicated with genre indications, line-ups and instrument indications. The instrumentalists, singers, orators and ritualists can be heard, but they cannot be seen and often remain nameless.

These anonymities, voids and silences testify to the often unequal relationships between researchers and researched and raise questions about the extent to which our current research practices are still thriving on such relationships. The namelessness of the recorded practitioners served an imperial purpose. Their expressions could be treated as entries in an encyclopaedic constellation of knowledge and information about regions, environments and 'their' peoples. Encyclopaedic knowledge pretends to be complete and

taxonomically organized. Such taxonomies were (and are) an integral aspect of colonial impositions of power, since they enable self-declared colonists to claim complete knowledge of, and hence control over those they colonize.

Entangled Modes of Aural Differentiation

For a critical engagement with the concept of noise in the study of music and sound, it is crucial to incorporate the exclusivist potential of this concept that – as this chapter has intended to outline – has often been realized in a range of research situations. Even if noise is included with open ears and an open mind, it is included as noise. It is important to explicate these dynamics of exclusion because they often occur subconsciously and with the best intentions. I carried them with me in my body and mind when I started participating in South African sonic and social interactions and only became aware of them when I noticed the sensorial separation that centuries of worldwide colonial rule and decades of apartheid policy had instilled in all our bodies. Although I never recorded maskanda music for archiving purposes, I found myself, like my predecessors, positioning my recording device in such a way as to keep out the wind that was whistling through the bushes when I recorded maskandi Josepha Nkwanyana (1952–2012) in the village of Mandeni near Tugela River (Nkwanyana 2009). There have been several instances in which I tried to talk maskandi Shiyani Ngcobo (1956–2011) out of turning up the sound system beyond distortion, even if that was what he wanted (Ngcobo 2010). Only later did I start to interrogate those interventions, acknowledging that they came from this tradition of binary thinking that I grew up in and that constitutes my indigenous theory about the acoustic: there is sound that should be in, and there is sound that should be kept out. This dichotomy goes back to Helmholtz; it is culturally situated in mid-nineteenth-century Europe during a time in which such dichotomies were functional for societal and interactional stratifications and segregations that could secure existing social orders.

The practice of tracing earlines, proposed by Ingold, that presupposes interstitial or entangled modes of aural differentiation has proven helpful for me to reach beyond the binary implications of concepts such as noise and music, or sound and silence without throwing them out with the bathwater. During my engagement with maskanda – studying it, playing it, dancing it and singing it with a female maskanda band in Durban – I began to sense the notion of tracing earlines: that one can cut different aural lines and paths through the same acoustic texture. The repertoire that I am familiar with – my indigenous music – encompasses European and North-American music practices from Perotinus to Ferneyhough. I was exposed to Javanese gamelan music from a very young age, since I lived there, but I never regarded this music as 'mine', even though it has always touched me profoundly. Through my studies, I was (ear)trained in Common Practice Period music theory.

Due to my indigenous 'eurogenic' aural settings, it took me years to develop an ear for maskanda's melodic bass lines that carry its intricate heterophonic textures. Prior to this development, I heard maskanda as repetitive, since I heard the bass as a foundation of the harmony. It took me just as long to sense differences between the emphatically articulated maskanda styles: isiShameni, isiZulu, isiNdwedwe and isiChunu, among others – this only happened when I had to place my feet in dance and when I was exposed to the Zulu song and dance styles that preceded maskanda practice. Within these years, it took me months of solid practice to perceive and produce a vocal timbre in my singing voice that constituted, in Louise Meintjes' words, a 'gruffness' and 'deep-throated vocal production' with 'a feeling of pitch distortion and a constrained resonance, resulting in a pulsating effect' (Meintjes 2003: 226).

Like many of my colleagues in the field, I had to hear beyond heptatonic scales, equal temperament, diatonicism and functional harmony, although never entirely, since maskanda also thrives on them. However, the newly practised singing technique in particular – that Zulu South Africans call 'the goat voice' (*ibid.*) – obliged me to interrogate the notion of distinct sound parameters itself and to acknowledge that this distinction had guided my sensory tracing of earlines in acoustic spaces up to then. In the goat voice – especially in amahubo a cappella choruses that are still considered as the highest form of musical activity in Zulu culture – rhythm ties in with timbre and harmony. They can neither be heard apart nor told apart (conceptually). Resonating fifth chords create a rhythmic pulse in the timbre. In its 'counterpoint' to the articulated beat of insistent humming, this resonance pulse enables a strong polymetric feel that also features the maskanda guitar picking style in which the polymetre is explicated in the playing. Thus, the accuracy of concepts like timbre, harmony, rhythm and metre in representing maskanda becomes questionable. Even if maskanda purveyors pointed me at the melodic bass, the isiShameni dance steps, the synchronized breathing and syllables in the singing, I had to aurally deconstruct the distinct sound parameters of my serialist equal-tempered aural universe before I could hear what was going on in maskanda. Only then could I aurally follow new paths in the acoustic information that I was exposed to. Only then could my body become ear.

Yet, in this chapter, I am able to describe what was going on thanks to the very concepts of these sound parameters. This demonstrates that earlines are – in Ingold's words (2019) – elastic threads in a listener's effort to continuously differentiate aurally. These efforts do not materialize into discrete and self-contained sonic elements or assemblies; they are and remain interstitial (Ingold 2019: 55–56). People trace earlines in sound that erupts into their awareness – they cut along grains and creases and paths that cross each other, clash with each other, wind themselves around each other in the same acoustic space where sounds and matter only find a temporary place before they are considered out-of-place and non-sense again.

Notes

1 It is important to note that such an 'acoustic territory' (LaBelle 2010) or 'auditory space' (Ingold 2011) is constituted by a range of musicking practices: performing, rehearsing, hearing and reflecting on sound. Thus, such territories and spaces are lived experiences as much as they are buildings, environments or geographical regions. As Brandon LaBelle argues 'sound is the result of a spatial relation: it requires resonating or vibratory sympathy of a surrounding' (LaBelle 2012: 5).

2 South African jazz, by contrast, has always been the only realm of performance in which South Africans from all backgrounds recognized themselves. This resulted in jazz being strictly controlled and censored by the apartheid government since it enabled the coming-together of people who were not supposed to interact and become acquainted beyond the terms of encounter prescribed in apartheid society (Coplan 2008; Ballantine 2012).

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4 Noise Not Music

Paul Hegarty

As noise spreads as concept, its status as sound recedes. Its status as other, same or interlocutor for music can also be heard as diminishing. Brian Kane makes the case that sound studies as a whole has a problem with music (Kane 2013), and I would extend this to writing on noise, which has drifted away from music, to the neglect of the centrality of the oppositional quality of noise, in favour of a newly positivized way of understanding noise. In the text that follows, I explore the necessity of incorporating the relation of noise to music and vice versa if noise is to be a critical, diagnostic tool as opposed to a merely observational description. I consider some ways in which the history of noise in music has unfolded, what it means to be able to identify a canon, whilst bearing in mind noise has a history not through the presence of any sort of objective noise but through understandings, judgements and innovations in sound or musical practice. I propose that noise is something to do with extra-musicality, and work through some contemporary musical or 'musical' forms this has taken in the twenty-first century. As noise and music relate through these processes, I close by reflecting on the role of taste (as understood by Kant) in understanding or valorizing noise, to argue that noise shows us that all music can be noisy and that any noise can take us beyond the realm of appreciative taste and into a darkened sublime. This means that the canon of noise, based on firstness, is only a misleading diversion from noise and that to think noise in itself, in music and in the place of music is to think about *lastness*.

No Noise Without Music

Whilst granting that there are many, maybe even an infinite number of ways of thinking about what noise is or does, something essential inheres in the relation of noise to music, something that can help with other variants of modelling. It is also significant that of all the ways that noise has been activated as a cultural tool, or as something to be defended against, it is within music that has been judged to be noise that we encounter the greatest range of diverse agents, as opposed to noise as psychological, physical, geological or whatever type of phenomenon. In short, noise music or noise in music

emerges from different cultural groups and individuals with a wide-ranging identity spectrum. Therefore, it would be very important to pause before dismissing the value of musical noise or the contextualization of noise or the demonization of music as noise (on this, see Rose 1994) as just so much noise. But before we get to that variant of the extra-musicality of noise in music, let us go back to music. For music to occur, it needs to be separate from the rest of the world and it has to be recognized as the thing that is not 'not-music' (Macé 2012). Music takes place in designated locations, often within designated events. It has structure, or at least form, in that sounds are produced for a certain amount of time, or sounds are framed within time. It makes sound (or is the site of an unsound, an absence where sound should normally be). It requires the presence of agents either of production or of reception, even if presumed, even if differed/deferred. Music is not universal, but it does occur in many cultural places and moments, and arguably, it appears in all human cultures. It occurs in and as instantiations derived from particular settings, not as manifestations of some amorphous sharing across humanity, animality or the universe.

Music is present and presented through performative structures, such as concerts, plays, rituals, that make music have meaning, either as music, or as vector of other meaning, as derived within, against or around social structures which are often highly normative. Noise is not these things, and yet it closely mirrors them. Noise is what is excluded by virtue of the apparatus of music-event (concert, recording, listening, composing). This apparatus precludes noise precisely because it is what threatens. It is the outside of an inside whose existence is based on the threat of an outside that cannot be contained. So, to bring noise into music is highly effective, like a black mass in a Christian church. Once in, it seems more like the introduction of a heretic who the future will prove right, at least partially. Introducing noise into the place of music is not the same as the genuinely tragic attempts to include noise, to make it part of instrumentation. This is what happens if you make the mistake of thinking that noise can just be a part of music because after all it is just sound, and those sounds can be identified, produced and played. One essential characteristic of noise that is not just a 'use' of noise is it must be total, not just a facet of the music being played.

Noise here is thought about as sounds that are in some way considered non-musical, inappropriate, too loud, too soft, too natural, too false, inept, unwanted, contingent, simply bad, impolite, illegal, made by the wrong gender, wrong people, wrong group… and the bringing of those sounds into contact with music. But it is not the misguided categorization of a group of sounds as noises that can then be musicalized, as Pierre Schaeffer did so well. It is the persistence of these ideas in response to whatever the noise is that you or someone makes that is where noise happens. So when noise is in or somewhere near music, it is also somehow wrong as music.

This encounter, of noise and music, whenever situated historically or geographically, is about the paradox of continuing within that wrongness and

is about embracing that disruption. It is the reintroduction of the suppressed other of music (or meaning, truth, propriety) and the moment that it was suppressed. Whenever anyone calls for some type of music not to be considered noise but just part of music, they are repeating the gesture of exclusion that music required for it to be music.

Many things that we call noises may not be noises in musical terms but are alternative sounds that can be used just as any others. This is a complacent repetition of the suppression of noise, a kind of neo-liberal deregulation of the borders of noise and music such that anything goes and anything can be whitewashed for goodness, or monetized for musicality. If we can use noise, if we can easily identify it, and incorporate it into music, then we are not talking about noise, other than provisionally (Stravinsky's *Rite of Spring* was judged to be noise on its first performance in Paris in 1913, but is not in any way, then or now, inherently noisy, but for a moment it broke something down in Western art music). I would argue that to maintain noise, whatever you are doing that is supposedly noise needs to be kept as other, as some sort of challenge. This is not to say that any one noise will be noise forever. Noise in music is, therefore, as much about when as what.

It is tempting to find a history of noise within the key moments of artistic disruption – usually when these moments inspired further change (such as Futurism's interest in noises), or the arrival of new practices as standard (such as extended technique, where instruments are played in ways that they are not designed for, such as Charlotte Moorman's cello playing, or Yoko Ono's post-Fluxus screams). Where Jacques Attali (1985) saw the incorporation of noises as melancholic progression, Alex Ross (2007) admires a progressive march of noises swirling into one triumphant march like an extended Romantic chorale. Both are in many ways right that is what happens to noises. But, it does not tell us much about noise – where the moment that the new or unexpected sound or sonic practice was wrong, other, defiantly (or better still, accidentally, uncaringly) jarring. I think noise is discrepant, a wrongness that occurs not in or directly against music, but in the exact, specific place of music, dis-placing what music is, even as it locates itself as not-music. Noise replaces and displaces what should be happening and in a place, time or setting that has been set aside for music to happen. Noise makes noise against music and shows that music was only ever noise too, just as Marcel Duchamp insisted that all art was essentially a readymade, a construct of found yet pre-existing ideas and materials (Duchamp 1994: 192). If we are to witness a history of noise as a development rather than one mindless thing after another, it is in the continued prospect of disturbance, like the emergence of weeds. That said, a canon has, of course, formed, and retrospectively imagined as it is, we have an official history of firsts, peaks and game-changing sound moves. Ultimately, we should be able to think about noise away from the seeming ease of 'firstness' and instead posit noise as a continual attempt to end, but to reach this point, the sequence of noise interjections needs

to be acknowledged as firstnesses as this list has become unassailable as constructed value.

There are two ways of seeing noise as the progress of noise in music: the first is simple, it consists of a steady incorporation of new sounds, music from new sources, overcoming of error. This improving discourse has nothing to do with noise. Proponents of this view tend to suggest that we should talk of noise only to say there is no such thing as noise, just noises, and these are, in fact, sounds and contain some core musicality that can be released by the liberal eclectic listener. The second way is more common and consists of identifying moments of disjunction as markers along the road to musicalization. Beyond these simplistic structures for imagining the hearing of noise, we can add a third way – moments exist, or have existed, which even if they did get incorporated to a music history, did involve noise, and that this noise was not always in the sounds that they carried but in the meanings attributed to them.

One place it could start is the Théâtre des Champs-Elysée, 29 May 1913 for the infamous debut performance of *The Rite of Spring*. In the same year, Futurist Luigi Russolo wrote his manifesto 'The Art of Noises' (in Russolo 1986). This and other pieces by Russolo talked not only of his new noise-making machines, the *intonarumori*, but also of the meaning of noise, ensuring that the thought of noise is present in at least one of the privileged origins of Western noise, just as the thought of modernity is present (in Baudelaire's extended 1863 essay 'The Painter of Modern Life', 2010) before there was much modern art in existence. Russolo posits two essential ideas that emanate onward into music and sound art. Firstly, he argues that noise is natural, the true sound that humans have closed off, and that it needs re-valuing. Secondly, he thinks that noise is properly cultural and modern and that the sounds of industry and transport should filter untransposed into music. The suggested sounds, the noises-in-themselves, are not the noise here. The noise lies in the challenge to music as abstraction, or even representation, of the real soundworld and it also lies in the rejection of Russolo's ideas by the officially sanctioned world of classical music.

The experience of rejection, exclusion and confusion would affect a sequence of other noise-introducers through the twentieth century, right through to minimalism, drones and chance procedures. No amount of noise-introducing has been able to sustain the old hierarchy of compositional music, even 'new music', so noise has long since had nothing to do with that heritage realm. Did noise enter Western culture with the experiments of Louis Armstrong? Jazz more generally? Perhaps, Western music could be said to have relied upon a removal of the non-European, other than as exotic decoration. We might wish to consider Duke Ellington's extended compositions as representing a radical shake-up of form and format in his proto-fusions of jazz, classical and African elements, and therefore a central part of noise in relation to music. The wrongness attributed to Ellington's song suites persisted for decades and illustrates perfectly that a music that

includes very little by way of dissonance or even atonality can be more noise than someone looking to expand their composing through the homogenising gating of Max MSP.

Erik Satie gives us a good example of how to think about noise in more than the terms of the introduction of actual noises. His ballet *Parade* (1917) includes noises such as typewriter and pistol (possibly at the instigation of scenarist Jean Cocteau). The predictable trouble erupted upon its debut in Paris and vigorous arguments between composers and critics followed. But Satie's noise is more evident or more 'noisy' in the repetitions of the proto-atonal *Vexations* (around 1893) and in the repetition and stripped-back nature of his instrumental music, including his 'furniture music', also from the end of the nineteenth century.

Other talismanic markers include Jean Dubuffet's 'outsider' improvisations, Pauline Oliveros's retuning of what it means to listen and the drone as music-undermining device; the irruption of free jazz; the politicization of free jazz as radical Black music, expressive of revolutionary culture including and going beyond demands for equality; the spatialization of sound in Iannis Xenakis's multimedia Philips Pavilion designed with Le Corbusier for Brussels Expo 1958; Lou Reed's feedback opus for the perfect 8-track cartridge, *Metal Machine Music* (1975); Boyd Rice's take on feedback in the *Black Album* (1977); the global spread of punk from its messy origins in pub rock and second degree dada. In all cases, their place in the non-progression of interruptive moments depends on the judgement made of the music as noise, or the wrongness in some way of the people or processes in use. Noise must be inappropriate, or it is not.

But the Grand Tour of noise monuments must pause at Woodstock, not initially for the radical noise of Hendrix's deconstruction of the American national anthem in August 1969, but 29 August 1952, and not to a muddy field, emptying out its stoned human cargo, but to the Maverick Theatre. It was here that David Tudor played John Cage's *4'33"*, which, contrary to reports, is not the beginning of noise music. I agree, as I always have, with Douglas Kahn, that *4'33"* is the containing of noise, the opening up of noises to musicalization, and therefore is not noise, does not sound like noise. The same can be said of its barely conceptualized antecedents such as Alphonse Allais, *Funeral March for the Obsequies of a Great Deaf Man* (1897) or Erwin Schulhoff's *In Futurum* (a silent movement of his 1919 composition *5 Picturesques*). It is worth noting too that not all silence is the same, as evidenced in Craig Dworkin's critical cataloguing of silent pieces in *No Medium* (Dworkin 2015: 93–114). Cage's piece is not unique in framing silence in the performance conventions of the formal concert. As well as Cage's other pieces that contained silence, Yves Klein had used it as half of his *Symphonie monoton*, composed in 1947–1948, first performed in 1960.

What makes Cage's silent pieces canonical is how they signal the limit point of composition, while unwittingly illustrating the futility of trying to incorporate noise as a compositional tool. *4'33"* is an event where noise

is supposed to happen, but also music, and perhaps only finally (firstly?), silence. As an event, noise is very much present (not inherently, but in relation to expectations of concert piano performance at that moment in time). Tudor marked the three movements by raising and lowering the piano lid, indicating that silence was form and content. The absence of performed sound was not designed to let people experience silence, but to hear its impossibility (from a human or anthropocentric, hearing-centred view). Instead of music, in the place of music (this is a core part of noise as, against and in music) was all the other sound, the sounds of the world. A further noise in the performance is the structure: there is a score, a performer, an instrument, an audience, a concert setting and all the expectations that brings. Just as many vital moments in noise and music came from visual or non-musical artists, so, *4'33"* as music is a pioneering part of institutional critique, wherein art tries to reveal the structures of art-making and presentation.

What silence opens up is the prospect of the extra-musical, the material and non-abstract, as devices that can work as, or at least, in the place of, music. Cage's work therefore stands as an example of how to read for noise: away from the sound itself, to the purpose, reception, unexpectedness or wrongness of sound, and helps us look away from, for example, the use of feedback developed in 1960s psych rock and toward places where that feedback was used in specific ways to establish something more disruptive, such as Hendrix's rigorous dispersal of nationally representative claims for the US anthem.

Extra-Material, Extra-Musical

What Cage also does is maintain the centrality of the composer (as well as all the other mechanisms of Western art music), even in his use of chance operations. The interest in noise as something that eludes control is something that emerges with 'industrial music' of the late 1970s or in noise music of the 1980s and 1990s that feeds into harsh noise (which is the term used by noise musicians for 'music' based on overdriven sounds in the twenty-first century, as the term 'noise' has been lost as a signifier for 'noise music', ironically, due to its widespread use by musicians making all types of music). Not only would these approaches look to failing equipment, so-called unwanted sound, amateur techniques, they also sought to reinvigorate the element of a musical mission that sought to be more than formal, through an anarchist–libertarian politics informed by transgressive ideas and actions. Transgression can easily be imagined and then dismissed as 'transgressive content', which fixes it into violent shapes, but its essence, according to those who theorized it is in its form: the crossing of lines, the moving outside of norms (Foucault 1977: 35) as opposed to being a specific topic or act (Bataille 1987: 36). Historically, some of the content that industrial musicians did use as a way of critiquing rationalist capitalism have not aged well. The extreme,

violent or dubious political imagery that was a subversive counter-hegemonic reference in the late 1970s and 1980s is now mostly present in the world as an abusive discourse and an asymmetric global politics.

Industrial, and what would come to be noise music, looked to the non-musical (including content designed to shock) as a resource that would be as noise is to music. This quest had already begun in more sanctioned channels. Composers of *musique concrète*, often alongside innovative studios making TV soundtracks, and field recording artists, had all expanded what sound could be brought into listening through framing. More than the introduction of the apparently non-musical sound, the noise in all these areas lies in the strangeness of the sound for listeners in those specific times and places. Whilst not subjective, noise could be felt as subjectively wrong when applied (negatively or not) to the unfamiliar, at a social, or subcultural level, but these artists were dealing with material deemed noise on a more or less objective, or at least consensual, level, as agreed by cultural expectations of what was musical or not. Rather than thinking that noise is a synonym for novelty, we should instead think of it as an intrusion of the unfamiliar, or even the uncanny.

For all this insistence on what is outside of music, noise in music is, if not reliant on recording, then expanded and enabled by its affordances. Therefore, the strangeness of particular types of music or sound is even more paradoxical when thought of as noise because the interruptive quality is shown not by its uniqueness, but in the process of having been deemed worthy of recording even though largely the sound is noise. This process extends to what is released as a recording, in the form of an album, for example, or what is used purposely by artists in the course of the production of live sound. Somewhere at the centre of noise is the prospect of both repetition and permanence, and this is what takes sounds from being noises that create uncertainty to noise that induces something closer to panic. Noise is not just the sound that is wrong, but the sound that demands a reflection on all other sound, just as Marcel Duchamp's ready-mades (derived from Elsa von-Freytag-Loringhoven) invited the viewer to question the autonomous originality of all artworks. Kant had already posited all music as noisy (Hegarty 2007: 8). When noise in or near music makes the listener question their expectations of what is intra- and what is extra-musical, it is this threat, not the sound-in-itself, that translates into reaction. In Kantian terms, this moves noise (or music, or not) from being a matter of appreciation and basic sense-based judgement to the dangerous place where dialectic collapses into excess – the sublime (Hegarty 2020: 23).

Reactions to new developments around music might have created a sense of noise that was quickly smothered either in familiarity or in desire, as other artists took what was noise as something they could use, maybe specifically because, rather in spite, of its being deemed noise. Thus, when I argue elsewhere that noise is a negativity, I try to hint that the judgement part of 'what is noise' is merely an indicator of the deeper semi-dialectical

nature of noise and music's relationality (see Hegarty 2020: 63). Noise feeds into music and opposes it at the same time. Noise is not just not music, it is not-music and so is (or is not) music. More importantly, 'negativity', in the sense devised by Hegel in his early phenomenology, lets us understand that noise is never autonomous: there is no such thing as freely existing noise. It is always caught up in relational opposition and influence with something that aspires to not be noise, or be 'not-noise'.

If noise is not something that exists by itself as a true object, although it might be something like Timothy Morton's idea of an hyperobject (Morton 2013) that is a thing but is outside of our perception as thing, like global warming, or something massive, then neither does it exist as a universal, and that is the other hazard in tracking noise as music, as opposed to noise in or against music. Morton's idea helps us to imagine noise as akin to dark matter, structuring the more obvious structure of the material of music. Beyond the subjective and cultural judgement of what counts as noise lie political decisions about music that threatens public order whether that is hip hop (deemed threatening because of its capacity to reveal the violence induced by systemic racial inequality and violence, see Rose 1994), or panics such as those surrounding punk or drill in the United Kingdom, to Fela Kuti's fights with Nigerian governments, French rap band Suprême NTM's imprisonment, controls and restrictions on music playing and dissemination in a range of systems. Much of what is deemed canonical about the 'development' of noise is very Western, often with a focus on the United States or the United Kingdom. This is not just locally blinkered bias, but the product of highly developed music industries in those countries, and the capacity to spread its product very broadly. In some ways, even the most rebarbative of radical musics has always benefitted from the complex machineries of music production in those countries. A parallel (that is not especially noisy) can be seen in continental Europe's welcoming of American free jazz concerts in the 1960s, and the spread of this into a network of festivals with a primarily left-wing mission that brought together a range of avant-garde rock and jazz musics in the 1970s.

The long-established incursion of non-Western music into the procession of new noises in Japanese noise music, the genre-[breaking] set of musics inspired by Western jazz, prog rock, early metal grew in the 1980s, in close dialogue with Western power electronics (Whitehouse) and John Zorn's exoticist and broad-ranging interaction with extreme parts of Japanese culture. As everywhere that noise has ever had a foothold, collecting culture is an unsung key part of the phenomenon, and why it is sometimes tempting to dismiss 'noise music' as an escalation in a drive for one-upmanship. Japanese noise acquired global renown in what in hindsight was an interim, 'long tail' phase in the supposed decline of the 'music industry', where forums meant that small labels and highly marginal artists would be able to contact, trade, sell releases and tour, whilst at least not losing money.

Japanese noise contains multitudes, from the harsh noise of blasting analogue electronics to vocal feedback, freeform durational work, microphone

'artefacts' preserved in released recordings, multi-CD boxes, one-offs, secret releases, bands with no official releases and variants on most Western popular genres. A shared interest in the dynamics of extreme volume and volume changes, a shared interest in pushing the music form or characteristics, a shared, almost destructive take on influence, are what unites a swathe of musicians across generations, although since this noise 'went global' over two decades ago, overdriven electronics, literally noisy equipment, samples and extended technique are commonplace in DIY experimental music. If anything, this has led to distortion (…) of noise, as it has become a genre like all others. I don't think this is a problem: noise music as commodified genre and practice that leads to gigs, recordings, elective communities, as if it were rock but less popular, is all fine. It does not contradict the idea that noise needs, in some way, to be 'other' to music, it co-exists alongside it, and should not be taken as a summary of all noise that has gone before, which can lead to misattributions of what noise music is, based on experience of a small number of local scenes.

What Happens Once Noise Is Part of Noise Music

I would argue that for all the festive parade of 'firsts' that can be understood as a noise canon, it is only when there is the possibility of noise music (and global, or perhaps anti-global, or alter-global, at that) that noise and music properly relate and that both past and future sounds 'in the place of music' can be thought of as noise at all, or extended beyond the realm of music. What also changes is that noise can be thought of as a positive resource (as recast more broadly in Thompson 2017 and, to some extent, in Voegelin 2010) and something that can simply be liked, sought after and valued. As noise came to be valued, used explicitly as content, form, signifier, it began to acquire cultural capital and found itself gentrified or 'genrified' (Brassier 2007). I would argue that whilst this has definitely happened, it represents the same kind of failure experienced by dada as anti-art – in other words, this was bound to happen, despite the temporarily unbounded nature of any specific noise music (that is something like music, in the place of music, but somehow aberrant). Noise music is therefore a non-failure, a constant not quite failing that never matches up to the dream of attaining a peak or zenith.

With 'success', and the arrival of racks in real or online shops or distributors, in tags, or in exploitatively derived playlists on streaming 'services', has also come satiety and rejection. For the arrival of noise as a set of established practices, even if these were about pushing boundaries, equipment, volume, expectation, convention and taste, means that noise seems to be a positivity, a simply existing thing we can point to and choose or not. Equally, the establishing of conventions, such as music made from cheap software, analogue equipment, noise pedals, field recordings and loops, possibly with some shouting, meant that many have been quick to say that noise is either over or

is elsewhere. Which is true, but also tells us of a residual anxiety about noise, a fear among even the roués and lags of noise fandom and critique that they are missing out or are too caught up in something, leads people to look for the new noise, as if noise was reducible to novelty.

With this refusal, on the back of genrification, came an anti-refusal, an abreactive obstacle to the normalization of noise. This is harsh noise wall, developed extensively by Richard Ramirez (Black Leather Jesus, Werewolf Jerusalem) and extended by Vomir. This new-ish variant seeks to reject not only music but also noise as creativity, as dense masses of feedback and processed sounds make a solid 'wall' of noise – and yes, you can refer back to rock guitar heroes here, but it is the insistence, the unmoving nature of harsh noise wall that makes it something, or at least not quite nothing, in the rolling trudge of noise in or near music. This type of noise still suggests that noise is a kind of escalation, a willed wielding of noise to attain an ultimate sonic experience. But I think we can hear this wall differently and understand it as the retrospective destroyer of a sequence of advances in noise (or music). Its static yet permanently changing nature suggests the direct presence of entropy, as opposed to constituting structures formed out of a pre-existing and vitalist chaos. It reminds us that noise remains formless, even as it coalesces, implying shape, a shadow to the music of meaning and taste.

Harsh noise wall is about the end but is not the end, the resolution or the dialectical apotheosis of an endless war between music and noise. Like all evident noise, it tells us something deeper about noise as the connection between what seems to be noise and what is understood as music. It is hard to go beyond it, except to go further in. Maybe each harsh noise wall piece or performance is a Boltzmannian ripple in entropy from which universes can bud. Harsh noise wall might all seem the same, if you have not listened to it, as even the same piece varies extremely (as it were). Away from the suggestions of power and its opposite (abjection, failure, weakness) at play in static noise, Marja-Leena Sillanpää also makes walls of noise, extracting a complexity from a fluctuating radio universe often reduced in sound studies discourse to a background hum or the latest discovery in transposing space weather. Standing near to the equipment as if wondering about it, Sillanpää tempers and shapes, minimally, to bring a powerful and affective noise through. It is not only a powerful experience in its own right, but exemplifies the idea that harsh noise pushed to what seems to be an absurd presence in coloured noise is not always the same, does always come from the same place or aims for the same affect.

But it is clear that many do seek to go around harsh noise and its walls and look for noise elsewhere. The temptation is to identify where the 'real noise' is: is it in Aaron Dilloway's 2020 video concerts of chickens eating grain on amplified floors? Perhaps, it is in the sound of Pharmakon reminding us of the female performers' counter-lineage 'in' noise and pushing her audiences into discomfort. Maybe it is in the sound of various breakcore

variants, suggesting through their febrile stutters a non-fixity that attacks not just hearing but the practice of listening. It could be in what I identify elsewhere as 'collision musics' (Hegarty 2020), that propose fusions between styles that resist settling into a new genre, and particularly cross between racialized audience constructions – for example, Zeal and Ardor's introduction of sounds associated with the exploitation and physical control of slaves, along with references to segregation and racism, into a music that crosses between different subgenres of metal whilst hinting at appropriated folk musics from the mid-twentieth century. Kenyan/Ugandan band Duma splice breakcore with more thunderous metal sounds, edging from black metal through power electronics and into lo-fi throbbing electronic ambience. Japan is not restricted to its noise blossomings in the 1990s, with Maso Yamazaki (Masonna) also ploughing a sludgy furrow with his Controlled Death project. It could be that future noise is just out there, awaiting attention, a disruption as statistically inevitable as the heat death of the universe, a fluctuation that no amount of familiarity with noise or expertise in music can account for as prediction. That fluctuation may not come in the electro-acoustic conservatory or in the looping returns to harsh electronics as method that is now its own genre (albeit one that has taken shape only with the commercial collapse of all music to the level of avant-garde and newcomer DIY musicians).

One fertile area, like the barely biotic life clinging to the underside of glaciers might be that of parody, or extending ineptitude, lack of skill and offering something sonically unsatisfying. Leyland Kirby's V/VM stand out in the 1990s and early 2000s, in their karaoke versions of messed up rock classics, joke noise and foolish 'proper' music. Much of what is called noise music can also be done with the harshness stripped out, but for listeners, all that toughness of industrial, harsh noise and power electronics can be silly in its own right, as Whitehouse knew, and as Drew Daniel showed with such care in Soft Pink Truth's take on extreme metal in *Why Do The Heathen Rage?* (2014). Every 'noise performer' knows the risk of silliness, of absurdity. This, maybe, beneath all, will mark what counts at any one time, as noise: not the willed manipulation or channelling of noise but playing noise as an embarrassing burden someone handed to you.

At the same time as noise in music cannot be restricted to what counts as noise music, nor what looks like novelty, nor what crosses a social exclusionary barrier, neither can it be left as a tragic or melancholic ending. It may always be a living-on in the end, but that 'end' is always returning, and open to overturning. So another place to look for noise is in DIY sound-making, where what was once avant-garde is now in the 'toolkit' of newer performers. Without some sense of what has been done before, much new noise is not engaged in any line-crossing, or formal transgression, but is noise in the place of music nonetheless. A performer who has just discovered the potential for improper playing and wants to shout through effects and turn everything up loud is only disappointing if the listener wants new, improved

and improving music that will somehow help jaded expert palates feel something new. Fully genrified, absolutely banal 'noise' might not really be noise, or very good music, but it is no less a gateway to noise than learning how to play an instrument before 'forgetting'.

The difference lies, to some extent, in the intent: does the sound maker try to make music or, in some way, a set of disruptive sounds, or some other disruptive practice? Then, noise might just be another type of instrumentation, a usable positivity and possibly a more satisfying and therefore less noisy noise. Maybe the noisemaker would be better off not attempting to explicitly make noise. The process of attempting noise is of some value, precisely an anti-value that does not seek to improve either listening or the range of sounds to be thought of as musical. Noise is something other than the intent to be noisy, though. Noise is a process of judgement, a process of matching (or not) the criteria for an aesthetic experience. It could be that noise is 'over' in terms of an escalation of use-value, whether for musicians or for critics but that would be like saying weather is over because we have seen it all.

But who or what is this 'we'? in the context of noise, it is that group of people that could arrive at a judgement about musicality – this could be a culture, subculture, taste public, other grouping – all manner of things, but never the everyone suggested by positivistic musings on what supposedly happens when music occurs, or what noise is. This could lead to the misunderstanding that noise is subjective – a judgement made from *my* ideas, *my* experience. Whether *you* as an individual decide that something is noise or not is entirely irrelevant to whether it is or not. Your judgement did not arise independently of inputs, nor is it a gateway to a universalist eclecticism ('there's no noise, only music'). Noise is a statistical judgement: something that lies outside cultural norms and normativities. It can be adopted, temporarily, failingly, hopefully, even, but even taking on noise as a ground, or as a resource, as opposed to seeing it as unwanted sound (Thompson 2017) is voluntaristic. Noise is subjective in the same way that Kant saw taste – a normative and shared, arbitrary set of likings that a subject holds. That taste can apply to artistic products in a universal way is nothing to do with their truth but a presumption that what a subject feels or perceives is transferable to all (Kant 1987: 199). This applies whether you like noise or define noise as the things you do not like: these will be both products of the generation of taste publics at a particular moment or location. We will all express our tastes about it, but we will be doing so within an implied taste community that can understand the greater whole that is the beautiful, the completely aesthetic.

But, warns Kant, music is not really in this game, 'since it merely plays with sensations, has the lowest place among the fine arts' (1987: 199). Music itself is a noise for judgement, as it 'imposes itself on others and hence impairs the freedom of those outside of the musical party' (1987: 200). So, music is noise, all the way down, as it is lowest of the arts – and yet, the thing we call noise, since the early 1900s at least, is something other than this music. Without

delving too far into Kant's theory of the sublime, noise summons a border of judgement, as does the sublime in nature, such that judgement is thwarted, made powerless, even if it quickly recovers (1987: 106).[1] So, noise opens up a gap within the logic of judgement. The sublime can be sonic, and it is noisy. But music, an affair of mere taste, is also noisy. Whether noise is good or bad, it disrupts and alters.

Far from music or noise being subject to taste, music, as noise, as the unwitting arbiter of group judgement, is a border marker of taste, the defining line that is devoid of precise content but yet generates both inside and outside, or as Fred Moten would have it, the instanciation of the cut that defines whether something establishes an outside from which to make art beyond acts of exclusion (Moten 2003). This cut, the separating, connecting, negatively relational line that has taste as its element, is the disappearing space across which noise relates to music, over and over. In its vanishing, it appears as prospect and as past, in the illusory canon of noise music, in the illusory hope of positivity, in the illusory space of the yet-to-come, always yet-to-come, as, to be honest, 'we' have never had noise, neither have we had it so noisy.

Note

1 For more on the power of actual sound within the sublime see Kant (1987: 120), where he talks about thunder, hurricanes and waterfalls, among other phenomena.

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5 Between Morphological Research and Social Criticism

Notes on the Aesthetics of Noise in Avant-Garde Music

Makis Solomos

Introduction

In his inspiring article 'Music and background noise', Michel Serres writes:

> Perhaps we should distinguish two kinds of music […]. The first is a signal, a shimmering fabric of signals; it also intends to signify, to communicate a message […]. This music cannot cease to be cultural, marked by the relativities from here and there […]. In the second kind of music, precisely that which refuses to trace signs, which tries to erase the signal […], the transmitted message conveys the noise itself. [… We are] on the side of the rendering of noise, a universal condition of any exchange. Not the noise which differs from the sound […] but the physical or thermodynamic noise which is a condition of circulation of any message in general and which remains in the absence of any message […]. This music is indeed universal: everyone can hear it, whatever its language, its suffering and its condition, its world and its birth, since it is conditional, prior to any broadcast, to any reception.
>
> <div align="right">(Serres 1972: 191–193; my translation)</div>

This description elegantly sums up the great paradigmatic shift that corresponds to the emergence of avant-garde music from the twentieth to the twenty-first centuries. Where music, as a rule, consists of 'musical' sounds, of harmonic sounds, that is to say of 'signals' which 'tell' us something (this music claims to be language), avant-garde music blends in with the generalized noise, it is background noise rather than language. Of course, noise here does not mean a kind of undifferentiated magma – or even worst, something that is just ugly (from the point of view of those who hate modern music) – it can be highly structured, elaborated and differentiated. But, this structuration and differentiation does not happen as it does with tonal music that imitates language and its double level of articulation. The use of these full sounds that are noises instead of the use of sounds-limited-to-pitches obliges music to renounce any pretension to being just like a language in favour of other means of structuration.

It is not that music, in the traditional sense, does not know of noise. Musical noises have existed in music from the past but are treated separately in one way or another. Thus, in the Middle Ages, theorists see in noise the devil's music: 'Countless pictures in manuscripts show us [the] division between celestial music – in general, music of the angels accompanied by the harp or stringed instruments – and infernal music – most often noisy, with pipes, drum, and trumpet' (Wilkins, 1999: 28; my translation); that is why they consider noise as having passed down to popular music. In baroque music, listeners are fond of noise which composers integrate in the form of imitative music. Other noises, less stylized, call for a more secret listening, as Michel Chion (2016: 63–64) writes:

> The role of noise does not start, as is often thought, with contemporary music. It is already important in the seventeenth century and pertains not only to imitative musical effects. The repeated notes and trills in Scarlatti's harpsichord sonatas are notated such that creakings and cracklings might be heard. […] What hides this role of noise from the ear – and from the eye and mind – of classical musicologists […] is the fact that in the score those effects intended to produce it are marked using the same symbols as the 'notes'.

And noise could be put to many other uses whose logic can still be perceived in romantic music.

However, it was not until the first avant-garde music of the twentieth century that noise was thought of and integrated as such into music. And since then, it has not stopped, noise has invaded the musical fabric, from the earliest *musique concrète* to Noise, right through to countless musical moments that will be briefly mentioned in this chapter. This will be limited here to the musical trends that wanted to be pioneering, new, original, aiming at unheard-of sound worlds, that is to say: 'avant-garde', whether the word is used or not – by the way, it is to be noted that, unlike visual artists, musicians have rarely used this expression. In this account, I will arrive at current developments, in which the term 'avant-garde' is no longer used by many people today. Truth be told, I could have adopted the term 'experimental' music, which is more fashionable these days and has been since the 1950s.

To put it simply, the generalization of noise in avant-garde music may be broken down into two main categories. On the one hand, it can occur according to a *morphological* logic. Here, musicians are interested in noise for its sonic, musical potential, for the pleasure that can be taken in being invaded by complex sounds, interesting from a sonic point of view. It should be noted that 'noise' does not necessarily mean a very loud sound – which could be dangerous for the listener – it refers to a sound with a non-harmonic spectrum. Avant-garde music likes complexity, with regards to both structures or compositional processes and sounds: in acoustic terms, noises are more complex sounds than the so-called 'musical' sounds. Referring

to this first way of generalizing noise, the qualifier I quite readily use is 'morphological', which I borrow from *musique concrète* which is precisely the model for this type of use of noise. I could also have spoken of a 'purely musical' use of noise – to distinguish it from the second –, but I no longer believe in the expression 'purely musical', or at least I do not know what it means anymore, when it transcends the sanitized world of the concert hall or the recording studio which, if it constitutes one of the conditions for the existence of music, cannot be identified with music, whose resonances are too complex to be restricted *to itself.*

The second major way in which avant-garde music generalizes noise is criticism – social, political and so on. Hugues Dufourt writes that 'the growing share that noise takes in art music attests to the emergence of a repressed plebeian element and reveals the guilty conscience of the symbolic authorities' (1999: 9; my translation). This is a commonly held view even though it should not be taken for granted – the people's voice is not always noisy, and revolutions are fond of consonant chants like *Bella Ciao* or *The People United Will Never be Defeated*! This hypothesis is, nevertheless, operative in many cases if we are talking about criticism or political–social protest in general. In this sense, it extends Theodor Adorno's philosophy of new music. Speaking of Schoenberg, Adorno wrote: 'The dissonances that frighten them [the listeners] speak of their own situation' (2006: 11; first edition in German 1947), implying the condition of the alienated. In this sense, in avant-garde music, noise replaces dissonance, which has become too commonplace. Adorno's analysis also has the merit of showing that the two ways of generalizing dissonance (and, by extension, noise) are intertwined:

> Dissonances arose as the expression of tension, contradiction and pain. They deposited sediment and became 'material'. They were no longer media of subjective expression. Still, they did not thus disavow their origin. They became characters of objective protest. It is precisely the enigmatic happiness of these sounds that, as a result of their transformation into material, dominates the suffering they once announced, and does so by holding it fast. Their negativity remains loyal to utopia: It contains in itself the concealed consonance – hence new music's passionate intolerance of everything reminiscent of consonance.
>
> (Adorno 2006: 68)

In what follows, I will show how, during the history of the musical avant-garde, morphological logic and critical positioning intermingle or exclude each other, in an increasingly pervasive history of musical noise. To do this, I will distinguish several periods: to begin with, the situation before 1945, then the years 1950–1960, the years 1960–1970 and the present age since the 1980s.[1] A final part will focus on a composer who equally weaves these two great ways of integrating noise into music: Iannis Xenakis.

Before 1945

Before 1945, noise had already entered avant-garde music in several ways, closely combining morphological research and criticism. We think, for a start, of the generalization of dissonance, which has just been mentioned, characteristic of the expressionism of the Second Viennese School. But with Stravinsky's *Rite of Spring* (1911–1913), dissonance is not about suffering – be it protest against society or the expression of personal pain: Stravinsky plays with the temptation of challenging civilization with a primitivist aesthetic. Dissonance also spread, during the same period, thanks to the American 'ultra-moderns' – described as the 'bad boys of music' – and their taste for sound experimentation (see Nicholls 1990). Sometimes, it is the equivalent of Stravinsky's primitivism, for instance with Leo Ornstein's *Wild Men's Dance* (1914). Elsewhere, it is related to political involvement, as with Henry Cowell, Ruth Crawford and Charles Seeger who were militants in the Composer's Collective, a progressive association. Cowell also earned a place in the history of music for his famous book *New Musical Resources* (published in 1930, but started as far back as 1914), which invents the notion of 'cluster'. Charles Ives is the most famous of these Americans who activated the proliferation of dissonance – along with polytonality and cross rhythms. We find many of the ways in which he introduces dissonances in his *Concord Sonata* for piano (1909–1915). It is important to note that, during his life, Ives reworked his pieces, adding dissonances. Finally, in the same vein, we could mention some early Soviet composers, such as Alexander Mossolov and his *Iron Foundry* (1927).

Be that as it may, noise truly enters into music with the movement to which it owes its name (in French): bruitism. Among the bruitist musicians, Luigi Russolo, author of the Futurist manifesto of 1913 *L'arte dei rumori* (*The Art of Noises*), is the most singular. As an inventor of the *intonarumori* (the noise instruments), he had some success, but since, unlike other Italian Futurists, he was not a fascist, he exiled himself to Paris in 1927, where he sank into oblivion until his relatively recent rediscovery. The futuristic manifesto expounds revolutionary ideas which criticize tradition:

> We futurists have all deeply loved and enjoyed the harmonies of the great masters. Beethoven and Wagner stirred our nerves and hearts for many years. Now we have had enough of them, *and we delight much more in combining in our thoughts the noises of trams, of automobile engines, of carriages and brawling crowds, than in hearing again the* Eroica *or the* Pastorale.
>
> (Russolo 1986: 25)

The text defends the idea of a history of music leading to what he calls 'noise-sound':

> From the beginning, musical art sought out and obtained purity and sweetness of sound. [...] As it grows ever more complicated today,

musical art seeks out combinations more dissonant, stranger, and harsher for the ear. Thus, it comes ever closer to the noise-sound. *This evolution of music is comparable to the multiplication of machines, which everywhere collaborate with man.*

(Russolo 1986: 24)

But, at the same time, he does not give up a certain idea of music. Thus, *intonarumori* are supposed to produce *pitches*, they are not just noise makers, as we can see from the score of *Il risveglio di una città*. Besides, as Russolo writes, one of these instruments, the howler, 'is a mysterious, suggestive instrument that takes on an intense expressiveness in various *enharmonic* passages and offers many resources, being capable of the most perfect intonation' (Russolo 1986: 78; italics are mine).

Criticizing the noise makers ('Why, Italian futurists, do you slavishly reproduce the trepidation of our daily life only in what is superficial and annoying therein?'), Edgard Varèse (1983: 24; my translation) is the composer who went furthest in morphological research into noise during the interwar period. With his new definition of music as 'organized sound' (56), he put an end to the debate waged by conservatives who contested the quality of 'music' in works with widespread recourse to dissonance, let alone noise. As a matter of fact, he rejected the musical sound versus noise cleavage:

I do not distinguish between sound and noise. When someone says noise (as opposed to musical sound) the refusal is of a psychological kind: the refusal of everything that diverts from droning, 'pleasing', 'lulling'. It is a refusal that expresses a preference. The listener who states his refusal affirms that he prefers what diminishes him to what stimulates him.

(Varèse in Charbonnier 1970: 43–44; my translation)

In his music, noises proliferate thanks to the use of percussions (*Ionisation*, 1929–1931, the first Western work for solo percussions) and complex harmonies, but also, after 1945, because of the use of electroacoustic sounds. With *Déserts* (1950–1954, instrumental ensemble and electromagnetic tape) – one of the very first 'mixed' pieces in the history of music in the sense that it alternates between movements for ensemble and tape – or with the *Electronic Poem* (1958, electromagnetic tape), composed for the multimedia performance in the Philips Pavilion at the 1958 Brussels World Fair (a spatialized piece in which Xenakis collaborated), Varèse is also the composer who constantly calls for a new world of sound, and in political terms too – let us not forget his engagements with workers' choirs during his youth.

The 1950s and 1960s

The avant-garde music of the immediate post-1945 era unmistakably has a 'technocratic' aspect. We may well take the birth of additive sound

synthesis, which takes place in the Cologne studio for electronic music, as a metaphor for the reconstruction of Germany (and Western Europe) with the help of the Marshall Plan. As a result, the morphological type of research tends to become predominant. Contemporary music, especially music working with new technologies, becomes synonymous with 'progress': progress in the dominance over the material, technological progress too. This is how the notion of 'experimental' music was born, an expression notably launched by Pierre Schaeffer (1957). However, the critical positioning has not disappeared.

In instrumental music, dissonance, being so widespread, becomes commonplace: we can no longer consider it as a form of criticism. However, this trivialization of dissonance as well as the extraordinary rigour of the constructions lead to a kind of 'neutrality' of the musical fabric, which could be analysed as the symptom of a critique, that of the subjectivist aesthetic linked to note-based music. In serial music, sometimes, to quote Henri Pousseur talking about Book I of Boulez's *Structures*,

> […] we hear sorts of sound cohorts, statistical and of variable density […]. Although the charm of this piece is however undeniable, it is less a matter of the charm of a perfectly clear and translucent 'geometry' than a more mysterious charm, exercised by many distributive forms encountered in nature, like the slow moving of clouds in shreds, the scattering of gravel at the bottom of a mountain stream or the gush of a wave breaking on some rocky strand.
>
> <div align="right">(Pousseur 1972: 78–79; my translation)</div>

This 'charm' is not without affinities with the undifferentiated, syncretic perception evoked by the psychoanalyst Anton Ehrenzweig (1967) in his book *The Hidden Order of Art*. Also referring to Boulez and his *Marteau sans maître*, he notes that, in this music,

> […] any continuity of melodic line or harmonic progression seems missing; the instrumental sounds tumble like the tinkles of an Aeolian harp responding to irregular gusts of the wind. […] We must listen to this music without trying to connect the present sound to the past and future; […] After a while the sounds will come with the feeling of inevitable necessity, obeying an unconscious submerged coherence of a different order that defies conscious analysis.
>
> <div align="right">(Ehrenzweig 1967: 111–112)</div>

Still related to instrumental music, the same analysis could be proposed concerning the proliferation of noise in John Cage's music either with the use of percussions or with the invention of the prepared piano: it is, indeed, a morphological quest but also a critique of the subjectivist aesthetic in favour of a neutral expression. To quote one last example: what about the search

for noise via clusters, extreme registers or particular modes of playing in Krzysztof Penderecki in the 1960s, and in particular in his *Threnody for the Victims of Hiroshima* (1960, for string orchestra)? We know that it was given its title after the piece was composed, accordingly it is a matter of morphological research, of which, however, the composer soon grasped the expressive (critical) potentialities.

In the 1950s and 1960s, it was, of course, *musique concrète* – the first musical creation of which was Schaeffer's *Five Studies of Noise* (1948) – which further developed morphological research on noise. For the *musique concrète*'s musician, there is no difference between musical sounds and noises: any sound material can serve music. The words 'noise' and 'musical sound' are discarded in favour of the sole word 'sound'. And the theorist Schaeffer's whole effort in his *Treatise on Musical Objects* (2017) consists in analysing the morphology of sounds through the use of a much-refined typology.[2] After several successive approaches, the *Treatise* resulted in a 'summary diagram' (Schaeffer 2017: 467). This chart consists, horizontally, of seven 'criteria of musical perception' (mass, dynamic, harmonic timbre, melodic profile, mass profile, grain and allure) which fill several columns with 'descriptions' and 'evaluations'. To quote but one example, regarding the criterion of 'mass' – a term that corresponds, roughly speaking, to an approach to sound according to its spectral dimension, or a generalization of the notion of pitch – we have several 'types': 'tonic (type N), complex (X), variable (Y) and some or other (W, K, T)'. This typology is based on the sole principle that sounds are not classified according to their origin (sound source), but only according to their internal morphology. The same principle enables Schaeffer to postulate the existence of 'sound objects' attainable through 'reduced listening':

> There is a sound object when I have achieved, both materially and mentally, an even more rigorous reduction than the acousmatic reduction: not only do I keep to the information given by my ear (physically, Pythagoras's veil would be enough to force me to do this); but this information now only concerns the sound event itself: I no longer try, through it, to get information about something else (the speaker or his thought). It is the sound itself that I target and identify.
>
> (Schaeffer 2017: 210)

By cutting off sounds from their origin and making 'sound objects' – which are almost the equivalent of musical notes –, Schaeffer is merely exploiting the morphological dimension of the world of noises. However, while Schaeffer tried to impose this methodology on the young composers who took up *musique concrète* in the 1950s and 1960s, not all of them bowed to this discipline. Among the best-known 'dissidents', Luc Ferrari, with *Hétérozygote* (1963), developed a sort of 'sound cinematography' in which various anecdotal sounds blend, particularly in soundscapes and words.
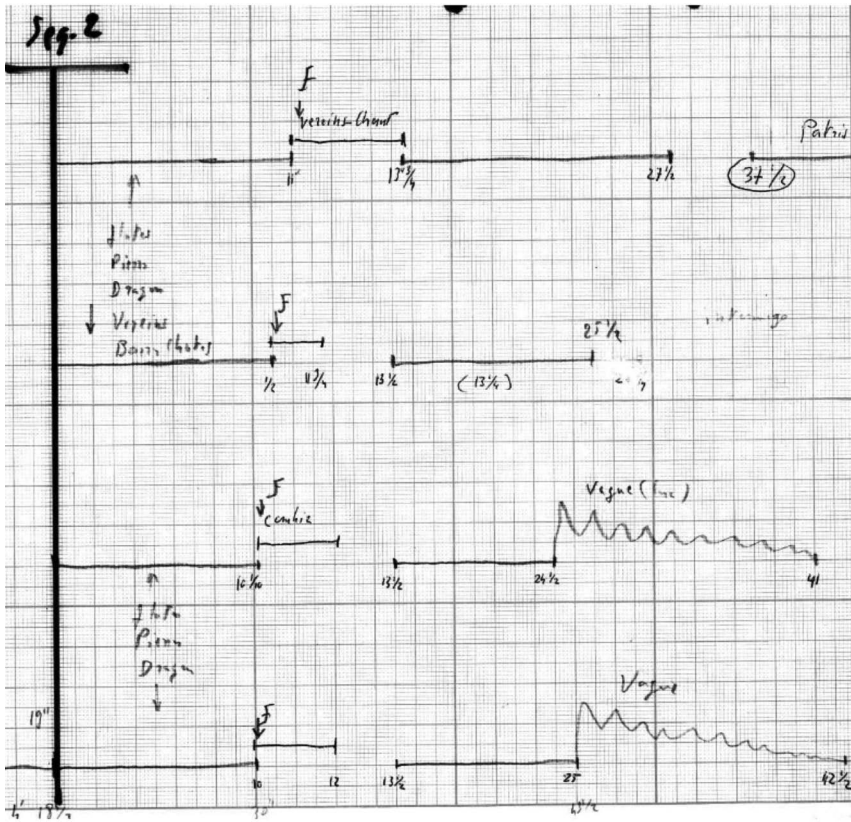
Figure 5.1 Luc Ferrari, *Hétérozygote*'s montage diagram: sequence 2 (from Reyna 2016: 65).

Hétérozygote has achieved a place in the history of concrete music by its 'opening' to the world of external sounds, which are neither made nor cut off from their source. This opening occurs at 4′43″ when we hear sounds of waves in a stereophonic movement and then at 5′12″ when a voice says, 'Ah! no, don't think of that… you only think of eating…' (see A. Reyna's analysis, 2016; Figure 5.1 gives Ferrari's assembly diagram, where the 'waves' can be seen).

The 1960s and 1970s

Much as the 1950s and 1960s were a period of faith in technocratic progress, the 1960s and 1970s were a period marked by protest. The progression of noise in domains like rock music or (free) jazz parallels the multiplication of diverse forms of revolt, protest or political, social and

cultural criticism in Western societies during those two decades. In 1966, Archie Shepp declared

> We see jazz as one of the most meaningful social, aesthetic contributions to America. It is that certain people accept it for what it is, that it is a meaningful profound contribution to America – it is anti-war, it is opposed to the U.S. involvement in Vietnam, it is for Cuba; it is for the liberation of all people. That is the nature of jazz. […] Why is that so? Because jazz is a music itself born out of oppression, born out of the enslavement of my people.
>
> (quoted in Carles and Comolli 2015)

By that time free jazz had already developed all kinds of noise, whether through modes of playing such as multiphonics or by structures calling on free improvisation, polyrhythm or atonality. As for rock, noise enters through the front door with the Beatles' montages (*Tomorrow Never Knows* from the *Revolver* album, 1966), the distortions of the electric guitar (live recording of *The Star-Spangled Banner* at Woodstock by Jimi Hendrix, 1969), the sound experiments of progressive rock (*The Lamb Lies Down on Broadway* by Genesis, 1974) and so many other examples.

In avant-garde music, composers such as Iannis Xenakis, Luigi Nono or Helmut Lachenmann also use noises for purposes of protest. This was the time when Nono had his work *La fabbrica illuminata* performed several times in factories resulting in debates with the workers. This piece for soprano and magnetic tape, composed in 1966, is based on recordings made in a factory – the Italsider factory (one of the most important steel companies in Europe in the twentieth century) located in Cornigliano (West district of Genoa) – and includes noise-based sounds. After one of these 'concerts', Nono writes:

> The workers: often without the slightest academic, cultural and musical 'preparation' […]. But in life and at work, they are technically forced to be in the vanguard and to apply new technical means of production and work. Consequently, first technical and later aesthetic analysis is the vehicle of their understanding. They easily perceive the work and composition processes in the electronic music studio and the phonetic and semantic analysis of the text in relation to its musical adaptation. The relation between sound and noise, in other words, the specific sound structure of the acoustic phenomenon, does not represent a principal or artificial problem for them, as it does for the bourgeois audience that most often attends musical performances in concert halls.
>
> (Nono 1966: 238–239; my translation)

In a way, reviving Walter Benjamin's thought, Nono explains that the workers are much more sensitive than the bourgeoisie to contemporary music

because of the technique. Both contemporary music and the proletariat are, indeed, at the 'avant-garde' in the technical field because they use the most advanced techniques in their respective fields (assembly line work for the workers, electroacoustic music studios for the composers).

To name another figure from the 1960s and 1970s, the German composer Helmut Lachenmann starts from the Adornian observation that musical material is not neutral but is already in conflict with reality:

> Musical material is something other than simple, docile, raw matter waiting uniquely for the composer to fill it with expression and thereby give it life within such and such a set of relations: it is itself already inscribed in relations and marked expressively, even before the composer approaches it.
> (Lachenmann 1991: 262–263; my translation)

Against an authoritarian domination of the material, which empties it of its concrete qualities – of its share of reality – by transforming it into something neutral whatever its nature (tonal material, dissonances, noises), Lachenmann develops, to use Adornian language, a veritable mastery, enabling it to preserve these qualities. To do so, he advances the idea that composing means 'building an instrument': composition is not an abstract task (a blind domination), but a confrontation with matter, like the musician's confrontation with his or her instrument. So, in sum, it is all a matter of 'touching a sound' (see Lachenmann 1993: 233; my translation). With his *musique concrète instrumentale*, Lachenmann composes pieces that constantly interrogate the materiality of the instruments. Moreover, the literal action of rubbing is quite important in his works, as we can observe in the opening of *Pression* (1969), a piece for cello solo. The score, which constitutes a tablature – Lachenmann indicates the action to carry out and not the sound result –, indicates the bow's motion (up) and the fingers' movements on the strings (down). In *Pression*, Lachenmann rejects the notation of notes, since the sounds are represented only in an abstract way: the musical material is made up uniquely of the cello's concrete sounds and the actions for obtaining them. By laying the stress on matter, the concrete, the living and the sensitive, Lachenmann's music makes us aware that the domination of nature leads to its disappearance. It is in this sense that, in his music, noise is also a musical sign of social criticism. In a musical way, Lachenmann prolongs the critique of 'Instrumental Reason' that Adorno and Horkheimer (2002; first edition in German 1947) had carried out in their *Dialectic of Enlightenment*, which tends towards the blind domination of nature.

Since the 1980s

From the 1980s onwards, noises also spread in such post-rock music as 'industrial music', post-punk music and some rap music. In some cases, they still bear their protest charge. This is the case with such new trends

as 'radical improvisation'. The book *Noise and Capitalism* federates some research in this field. In his contribution to this book, the British percussionist Edwin Prévost writes:

> If we – as musicians and listeners – have any choice when confronting the morality of capitalism, then it must be to do rather than to be done to. We must decide who we are rather than be given an identity. In our freely improvised music, there is the opportunity to apply a continual stream of examination. We search for sounds. We look for the meanings that become attached to sounds. […] The search is surely for self-invention and social-invention. This is an opportunity to make our world.
>
> (Prévost 2009: 58)

In avant-garde instrumental music (contemporary music), however, the work on noise-based playing modes no longer has this critical load, as noise has become widely commonplace. This is true, for example, of the French 'saturist music' represented by Franck Bedrossian, Raphaël Cendo, Yann Robin and others (see Rigaudière 2014) or of the Russian composer Dmitri Kurljandski (Kourliandsky) (see Solomos 2010). Situated between avant-garde and popular music, noise music, for its part, combines criticism and morphological research. This is the case with the musical praxis known as 'Japanoise' and with the performer Merzbow (Akita Masami), who explores the complex morphologies of the universe of noises and, at the same time, playfully transgresses limits (Hegarty 2007: 155).

Unable to analyse everything that is done in terms of noise in avant-garde music during the late twentieth and early twenty-first centuries, let me mention only two musicians representative of different trends, Agostino Di Scipio and Hildegard Westerkamp. Di Scipio is one of the pioneers of 'ecosystemic' compositions. In the set of pieces called *Audible Ecosystemics* (2002–2005, live electronics solos), which offers implementations of composed interactions (see Figure 5.2), the ecosystem is a triangular interaction between the musician, the DSP computer and the sonic ambience (Di Scipio 2003: 272–275). Noise plays a prominent role in this context. In the simplest terms, I would say that in Di Scipio's music, noise is neither disturbance (as in traditional music) nor sonic material (as in modern music). In *Audible Ecosystemics*, it is one of the agents of the interaction, since it is produced by the concrete place where the interaction occurs; it is part of the ecosystem, as explained by the composer himself:

> The role of noise is crucial […]. Noise is the medium itself where a sound-generating system is situated, strictly speaking, its ambience. In addition, noise is the energy supply by which a self-organizing system can maintain itself and develop.
>
> (Di Scipio 2003: 271)
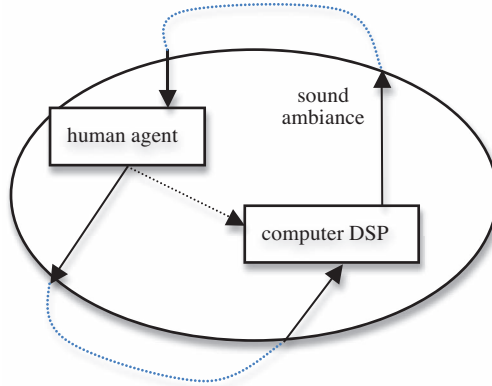
Figure 5.2 Agostino Di Scipio, composed interactions for the *Audible Ecosystemics* interface (after Di Scipio 2003: 272), © by kind permission of Agostino Di Scipio.

With Hildegard Westerkamp, we are in the field of so-called acoustic ecology. For this musical and ecological movement, noise must be banned: acoustic ecology fights against noise pollution; as Murray Schafer (1977) explains, it is synonymous with 'lo-fi' soundscapes. However, Westerkamp takes a more dialectical approach. Insisting on the need to give priority back to our ears which have been neglected, she explains that listening can sometimes be a painful, exhausting or even depressing experience when the surrounding sounds are too loud or seem meaningless to us, that is, when it is noise: 'Trying to ignore them, however, makes even less sense […] We desensitize our aural faculties by shutting out sounds and thereby not allowing our ears to exercise their natural function' (Westerkamp 1974: 49). What is needed is to produce the (inner) force to resist these sounds. Westerkamp explains that she has experienced this type of sound attitude in India, for example, by observing 'people worshiping in deep inner focus at a temple while crowds and noises, hustle and bustle happen around them' (Westerkamp 2015). Her piece *Gently Penetrating Beneath the Sounding Surfaces of Another Place*, made from recordings in India, brilliantly illustrates this dialectic of listening thanks to its subtle mix of lively street atmospheres and moments of sound peace.

Xenakis, a Case Study

Michel Serres' text that I quoted at the beginning of this chapter is largely dedicated to Xenakis's *Pithoprakta* (1955–1956, for orchestra). The piece begins with noises: each of the players (46 in number), totally individualized, turns their instrument over and strikes the body of the instrument. Only the rhythms are notated in the score (Figure 5.3). This is one of the earliest

examples of 'granular' music in Xenakis. Indeed, the rhythms and also the density vary; the strokes are sufficiently short and numerous so that, overall, a kind of synthesis of sound takes place,[3] from which Serres concludes:

> [Xenakis] erases the signal and composes the noise. He lets us hear the *rerum* universals, the naked voice of the things of the universe. He strictly emits what is emitted *per se*, without intervening, without letting the articulate intervene, without letting anybody intervene. What is emitted, in the absence of screening, filtering or separating? The effect of gravel, the effect of scintillation, the noise of thermal agitation – the ensemble of background noises.
>
> (Serres 1972: 189–190; my translation)

We know how important the reference to thermodynamics was at that time for Xenakis, who introduced stochastic music.

Xenakis is one of the composers who most closely mixes morphological and critical approaches in his search for music that exploits the dimension of noise. The hypothesis of a granular synthesis is of a morphological order, but Serres' analysis makes it clear that the whole issue is also a critique of art as riveted to a 'molar' subjectivity in order to favour a 'molecular' subjectivity, to use Deleuze and Guattari's terminology (1987: *passim*).[4]

Morphologically, Xenakis's music is intimately linked to the world of noise; moreover, it is in both senses of the term: sound of very high intensity and sound with a very rich spectrum. Great intensity: in his instrumental music, Xenakis makes extensive use of *fortississimi*, sometimes exhausting for instrumentalists in terms of duration – especially in his latest works. With electroacoustic music, we know that he liked playing the sound very loud. This was also one of the reasons for his argument with Pierre Schaeffer, who described the premiere of *Bohor* (eight-track tape, 1962) as follows

> *Bohor*, it was, at worse (I mean better), the early wood fire. It was no longer the little embers [*Concret PH*], it was a huge backfire, an offensive accumulation of lancet hits in the ear at the maximum of the potentiometers.
>
> (Schaeffer 1981: 85; my translation)

Maybe Xenakis liked playing the sound very loud due to his partial deafness caused by his injury during the Greek Civil War, an episode when he almost lost his life. It should be noted, however, that the speakers he was working with are not those of today.[5] Playing very loud with today's high-performance speakers, without filtering out some high-pitched sounds, as some do, is simply criminal.

To sum up the first dimension of noise, Xenakis is one of the main composers of his generation to have worked on noise as musical material, developing its morphological dimension. To mention *Pithoprakta* again, the piece

Figure 5.3 Iannis Xenakis, *Pithoprakta*: bb. 0–4, © Copyright 1967 by Boosey & Hawkes Music Publishers Ltd., reproduced by permission.

follows the model of physical sound: its entire form goes from noise (the 'grains' of the beginning) to pure sound (harmonics at the very end). This transformation is realized through interpolations, with frequent returns to prior states in terms of the degree of noise. In short, the process is as follows: (1) noises with continuous transformation of density and spatialization, with progressive emergence of *pizzicati* and *arco* (bars 0–51); (2) overall transformation through filtering of a 'cloud of sounds' (bars 52–59); (3) sustained sounds with progressive emergence of *pizzicati* then *glissandi* (bars 60–104); (4) discontinuous transformations of a field of *glissandi* (bars 105–121); (5) noisy superposition of six timbre groups with sporadic 'views under the microscope' (bars 122–171); (6) continuous transformations of the register of sounds in *battuto col legno* (bars 172–179); (7) discontinuous transformations through filtering of a cluster (bars 180–207); (8) fields of *glissandi* with irregular then linear transformations of register (bars 208–231); (9) a large cluster that 'evaporates' progressively into the high register (bars 231–250); (10) harmonics in discontinuous spatial transformations (bars 250–268).

As for the second meaning of the word, noise is also valid as criticism for Xenakis – according to social, political and historical dimensions. To illustrate this, let us consider two periods: his beginnings when, in a way, he uses music to heal his wounds and also the defeat of the Greek Civil War; then, the mid-1960s, foreshadowing the unrest of May 1968, when the revolutionary Xenakis reappears. The first period relates to the political and military action that the composer carried out in Greece, before being forced to flee the country illegally (where he would be sentenced to death *in absentia*) to settle in France. Everyone knows the important role he played during the Resistance against the Nazis, organizing demonstrations, food distribution and so on with his comrades, as well as the tragic events of December 1944 – the outbreak of the Greek Civil War – when, along with his comrades of the Lord Byron battalion, he was among the last to defend Athens against Churchill's colonialist troops and their Greek allies (former Nazi collaborators) until the day of his above-mentioned injury. In some interviews, he evoked the relationship between the chaotic, noisy sound and visual environment of war and civil war and his polytopes (Matossian 1981: 261–266), a subject that has been developed by some commentators (Kiourtsoglou 2016). But already in *Metastaseis* (1953–1954, for orchestra) the relation is obvious. A famous passage from *Formalized Music* explains the need to introduce the calculus of probabilities in music:

> Everyone has observed the sonic phenomena of a political crowd of dozens or hundreds of thousands of people. The human river shouts a slogan in a uniform rhythm. Then another slogan springs from the head of the demonstration; it spreads towards the tail, replacing the first. A wave of transition thus passes from the head to the tail. The clamour fills the city, and the inhibiting force of voice and rhythm reaches a climax. It is an event of great power and beauty in its ferocity. Then the impact

between the demonstrators and the enemy occurs. The perfect rhythm of the last slogan breaks up in a huge cluster of chaotic shouts, which also spreads to the tail. Imagine, in addition, the reports of dozens of machine guns and the whistle of bullets adding their punctuations to this total disorder. The crowd is then rapidly dispersed, and after sonic and visual hell follows a detonating calm, full of despair, dust, and death. The statistical laws of these events, separated from their political or moral context, are the same as those of the cicadas or the rain. […] They are stochastic laws.

(Xenakis 1992: 19)

This text is, in a way, a perfect description of the first part of *Metastaseis*. In his text, Xenakis considers 'separating [these events] from their political or moral context' in order to be able to compare them with natural events that are also stochastic, but it should be remembered that he himself experienced these demonstrations from the inside. The creative proposal that he emits was arguably a way for him to survive after his injury and the death of several of his comrades. Consequently, there is a relationship between the concept of 'mass' that Xenakis introduced in music and the masses of demonstrators during the Resistance and the Greek Civil War: his music represents these historical events and 'uses' them to invent noise-based avant-garde musical techniques.

To go even further, we could also consider a movement in the opposite direction. Indeed, in some cases, music does not only represent social, political and historical struggles, but itself becomes an instrument in a struggle to transform society: it is 'revolutionary' in the sense that avant-garde research at the musical level also has a combative character at the socio-political level. Indeed, the noise, the chaotic masses could also be interpreted as weapons: the weapons of a revolution which one tries to win through music itself. In other words, not only does Xenakis represent the historical events of the Civil War which culminated in the defeat of the Greek left and its exile in France, but he continues the fight, giving promises for future victory.

As an example, another period in which both musical and social–political events mingle can be evoked: the mid-1960s when the major protests leading to the revolts of May 1968 began. During that period, Xenakis was no longer, officially, a 'committed' composer, but he continued to be linked to political protest. That was also the time when he composed *Nuits* (1967, for 12 *a cappella* voices) which he dedicated to both the political prisoners of the Junta which had just staged a coup d'état in Greece, and to the political prisoners of Spain and Portugal, still under dictatorship. At the same time, students taking to the streets saw him as revolutionary because of his music itself. And they are right: when you listen to a work like *Terretektorh* (1965–1966, for orchestra), you want to start a revolution! Not only are we stimulated by the incredible sounds and the noisy complexity of the sounds of the

piece, but the unprecedented arrangement of the orchestra (the 88 musicians are dispersed among the audience), which breaks with the conformism of the Italian stage, foreshadows an egalitarian society resulting from the revolution.

Notes

1 In Chapter 2 of my book *From Music to Sound* (Solomos 2020), I also present a history of noises in the music of the twentieth and twenty-first centuries. While of course some steps are found in this chapter, the perspective is different.

2 Here, the words 'typology' and 'morphology' are not used in their Schaefferian sense. For Schaeffer, typology is linked to *listening* to a sound and morphology to its *making*.

3 It is only with electroacoustic music such as *Concret PH* (1958), but also with certain passages from *Diamorphoses* (1957–1958) that Xenakis formalizes his search for a granular synthesis. The theoretical text in which he sets out the beginnings dates from 1960: 'All sound is an integration of grains, of elementary sonic particles, of sonic quanta. Each of these elementary grains has a threefold nature: duration, frequency and intensity. All sound, even all continuous sonic variation, is to be conceived as an assemblage of a large number of elementary grains adequately disposed within time' (Xenakis 1992: 43–44, based on Xenakis 1960: 86–87).

4 Serres' analysis also finds an echo in Milan Kundera, who explains that two or three years after the crushing of the Prague Spring, he found 'relief' in the 'objective' noises, the 'non- sentimental' music of Xenakis: 'European music is based on the artificial sound of a note and a scale; it is the opposite of the raw, 'objective' sound of the world. From the beginning, it is linked, by an insurmountable convention, to the need to express a subjectivity. […] But the time may come […] when sentimentality […] is exposed straight away as the 'superstructure of brutality'. It was at this point that music struck me as the deafening noise of emotions, while the world of noise in Xenakis's compositions became beauty for me; beauty washed away from emotional filth, devoid of sentimental barbarism' (Kundera 1981: 21–22).

5 Daniel Teruggi (oral communication) told me that when digitizing *Bohor*'s tapes, Xenakis was very surprised to 'discover' low sounds in the piece.

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Part II

Music-Analytical Case Studies

6 Analysing Non-Score-Based Music

Simon Emmerson

Introduction: What Is a Score? What Do We Need It For?

To examine 'non-score-based music', we need first to establish some limits to our discussion of 'score'. 'What is a score?' is too big a question – better might be 'what is a score when we want to examine the music in some way?'. The answer will depend both on the genre practice of the music and on the questions we ask of it (Emmerson and Landy 2016). As a composer, I have always seen the (traditional western music) score as a set of instructions, more or less defining actions of musicians to create a performance of 'the work'. More recently, I have had this simple view challenged by perform-ers,[1] some of whom see it more as a way into the composer's aims and ide-als which needs a more creative engagement. I think the composerly view I originally had was badly (sadly) reinforced by the 'midi' revolution of the 1980s when scores became too easily interpreted as an inflexible sequence of note on, velocity, channel 'messages' – which were, indeed, dumb instruc-tions to sound production devices.

It is also true that a vast range of musical genres throughout the world have evolved and are still performed with no recourse to written materials.[2] The musics examined by disciplines variously known as 'ethnomusicology', 'world music' and the like bring us many approaches to how we examine the music of oral traditions, sometimes more specifically focusing on embodied performance. There thus evolved the notion of transcription, using the tools available – although existing western notation sometimes needed modifying to a degree to accommodate pitch and rhythm systems quite different from those upon which it was based.

The western score-based tradition became challenged, too, from within 'art music' practice – at least its so-called avant-garde. Technologies of the recording and radio studios allowed a return to an aural[3] approach appar-ently free from the constraints or limitations of text. But this last point is an illusion that comes back to haunt us. The oral story traditions of, for example, the Hellenic, African or Australian aboriginal[4] worlds required prodigious feats of memory – these have been progressively 'off-loaded' to paper and more recently recording.[5] So while studios can remember (record)

anything we want them to, *we* cannot do that so easily. For some practices, writing exact instructions for the technology seemed the right approach – oscillator, filter settings and the like. When computers came along this was the only approach, ruthlessly applied. In other practices that allowed more improvisatory materials, recorded sounds and so on, mnemonic sketches reappear – how else to recall the vast range of options now opening up to the musician? In both cases, the notation is specialist – that is only readable by a small group of people. On the one hand, a block of technical instructions can only be read by someone who understands the programming languages and devices to which this applies; on the other hand, the sketches and mnemonics of the aural traditions may retain information personal to the individual musician's listening. Indeed, each work might have its own notation. Overriding both of these is the possibility that the recorded result is the only trace of the work after its completion – we do not need the score any more to experience the piece. Maybe there never was a score – it was an improvisation; or perhaps written notes and sketches have disappeared. This has consequences for our analytical project.

The Visualization of Scores

This apparent confusion is at the root of a range of options for the function of the score which we shall look at in more detail. Let us consider the needs of those who ask questions about the music – and most often their preliminary investigations relate to some kind of transcription, suggesting we need to represent the music in some visual way to enable us to 'see' it *outside of time*. Time is projected onto space.[6]

The anthropologist Tim Ingold has published a critique of soundscape (Ingold 2007) which seeks to re-establish a more holistic model of human perception in the world. He argues:

> Likewise, listening to our surroundings, we do not hear a soundscape. For sound, I would argue, is not the object but the medium of our perception. It is what we hear *in*. Similarly, we do not see light but see *in* it (…). Once light and sound are understood in these terms, it becomes immediately apparent that in our ordinary experience, the two are so closely involved with one another as to be virtually inseparable.
>
> (Ingold 2007, p. 3)[7]

This seems to suggest that our desire for visualization of the sounding flux might be an attempt to restore this relationship.

Of course, transcription of sound for analytical purposes is not confined to unnotated *musics*. Animal sounds and cries – most especially birdsong – have been the subject of transcription to 'outside time' notations for many centuries. Birdsong transcribed into music notation was a common example (predating recording, of course). While strictly unable to represent pitch

and time complexity, standard notation was adequate for 'musical mimicry' within existing musical traditions. As the more scientific approaches of ornithology and environmental sciences developed in the twentieth century exactly the same technological tools were used as for sound in more musical contexts.[8] Trevor Wishart has examined this relationship of animal sound to music in his classic work *On Sonic Art* (1996, orig. 1985). Chapter 11 is titled 'Utterance', and here he relates animal sound types through their sonic *behaviours* – that is patterns and shapes over time – to musical possibilities.

In the world of electroacoustic music, visual representations of sound have steadily invaded the sound studio. Starting with amplitude metering, occasional frequency measures, then (with early computers) the representation of midi events with time line on screen, through to the real-time display of signal information (discussed further below). With the development of Digital Audio Workstations in the last part of the twentieth century, there was a fundamental shift from *editing tape* – literally cutting and ordering objects – to non-destructive editing and processing *of an image*. Furthermore, there emerged a new approach to anticipating the future – we can *see* what comes next as the time line sweeps steadily across the image.

Mnemonic Functions: Sketch and Diffusion

Let us look again at possible functions of transcription in this field. One is that it reminds or suggests to the reader *sounds already known* – this is, therefore, a *mnemonic* function. 'Reminds us of' is a label function – probably not real time, it does not usually take five seconds to recall a five-second event.[9] It is sometimes unclear to me whether 'note based' music analysis has much of this mnemonic function. In the hands of an expert reader, *looking* at a complex contemporary score may result in *evoking* a sonorous imagining of the sound – but abstracted into note arrays and structures (without instrumentation) in an academic article, this is surely reduced to some 'black and white' shells of pitch. There is absolutely no equivalent for complex acousmatic music – we do not have a notation to suggest anything but the vaguest notion of a *sound not yet heard*.

At least two kinds of score have a mnemonic (memory) function for humans which is relevant to our discussion here – one creative the other performative. Firstly, a sketch score for the composer, with two functions, immediately via a labelling system to allow recall, but importantly also as a possible suggestion of a relationship or patterning element. Secondly, to remind the performer at the mixing desk how best to project the work to an audience. Especially emerging from the French tradition, we have scores associated with *sound diffusion* – even of completely fixed studio works. This has often surprised non-practitioners – why is a score needed for a work whose sound is not created live? – except it is, when there is an 'orchestra of loudspeakers' under human control, playing with the sound in the performance space to best articulate its highs, lows, dramatic points and so on by

way of creating a spatialized experience for the listener. This has historically developed as a kind of pictogram, identifying key events, indicating strategies of fader movement to control spatial trajectories and so on, all on a spatialized 'stop watch' timeline.[10]

The mnemonic sketches of the composer might help us here as starting point for a much bigger picture. This can have two functions that balance uneasily: on the one hand, some real information about the sound, its qualities, shape and direction; on the other hand, an 'evocative' function, an image that might somehow suggest the sound to us. As noted above, most often, we know the music already and this is a memory trigger – but that may not always be the case. This becomes a kind of creative game play. I believe there is a mild synaesthesic tendency in most humans[11]: what might the music *look like*? In the absence of sound, how might this representation stand in for it somehow? There are tensions here, too. There is the pull to labelling sounds to relate to objects around us: 'bell', 'voice', 'water waves' and so forth – then we can simply use a picture of this. But in some genre practices, this reference to possible sources is anathema – and avoids a real engagement with the *sound quality*.[12] This can be a matter of fine judgement – perhaps in genres where recognition of the source is embraced then this iconic image use would become acceptable. In Emmerson and Landy (2016), we transcribed some examples including Jonty Harrison's *Hot Air* (p. 23) in which the image of a cicada stands in for its sound. Of course, there are many such potential examples of what might land up as a kind of 'after the event' storyboarding.

In a limited number of cases, the composer (and perhaps other assistants) have kept detailed accounts of the creation of a work – the settings, parameter values, studio connections and so on. The idea of the *realization score* for studio music[13] was an early invention – the ultimate prescriptive score which could recreate the work apparently *ab initio*. This retains and refines the ideal of score as *instructions* – before the advent of computers this was an unattainable ideal.[14] We shall return to the often problematic possibilities that computers afforded to score making in more detail later. What view we take depends on our needs. Even though there may be much crossover between the two (which we shall discuss further), a simple duo remains: a 'prescriptive' score that might somehow cause – or at least describes the causes of – the sound and a 'descriptive' score that takes the existing sound and transcribes in ways that describe and evoke its qualities.

Can There Be An Objective Description of 'The Work'?

We should take stock here of what is attempted in creating this visualization of the music. We shall start with an examination of an ideal which makes a valuable contribution to this discussion. Even though it may in the end have claimed too much, it raises questions that still need to be addressed. The work of musicologist and semiotician Jean-Jacques Nattiez (1990) is largely

based on the 'tripartition' of musical discourse (adapted from the work of Jean Molino). First, a summary: the tripartition designated the 'neutral level' ('niveau neutre'), an existential entity (the 'music itself') addressed from one 'pole' (direction) by its creation (poiesis) and from the other by its reception (aesthesis). The poietic pole is constituted of all the compositional and creative inputs, while the aesthesic pole includes the effect on the receiver (including interpretation ('meaning') of the music). It is important to add that both poles can extend to include contextual and social dimensions, examined through an interdisciplinary network of tools. These two address the 'neutral level'. For Nattiez this was essential – to ground a semiotic analysis, there needed to be an agreed object of study – sometimes described as the *trace* of the sign. Ideally, this was seen as somehow free of either pole. This also tended in practice to be interpreted as a kind of score (with much ambiguity as to whether this was prescriptive or descriptive – there appeared to be little difference in Nattiez's own writing).[15] Both the poietic and aesthesic processes pointed towards (addressed) the neutral level. As Nattiez restates Jean Molino's tripartition:

> … a symbolic form […] is not some 'intermediary' in a process of 'communication' that transmits the meaning intended by the author to the audience; it is instead the result of a complex *process* of creation (the poietic process) that has to do with the form as well as the content of the work; it is also the point of departure for a complex process of reception (the esthesic process) that *reconstructs* a 'message'.
>
> (Nattiez 1990: 17)

The detail of the discussion surrounding the development of Nattiez's ideas is outside our remit here except to observe some unease with the idea of 'neutral level' especially as represented by a score. A brief but intense debate between Jean-Jacques Nattiez and François Delalande[16] is pertinent here.

In 1986, Delalande published an article 'En l'absence de partition: le cas singulier de l'analyse de la musique électroacoustique' in which he cites and summarizes Nattiez's own split of the idea of the neutral level into three 'meanings': neutral in the object (the work), the neutral as a method and neutral as a reference (to which the poietic and aesthesic are pointed and hence anchored). Delalande observed that we can *only* create a transcription through perceptual information from a listening that is inevitably part of an aesthesic processes. And clearly if a transcription were to be created from the composer's recorded actions that too would retain its poietic marks. Furthermore, the final fall-back position that the acoustic signal is the 'work in itself' becomes problematic the moment it needs to be examined – that is as soon as we need to break it up into operational units (as with the individual phonemes of spoken language, for example) which are not objectively given. In all these cases, there is choice and interpretation – depending on the need at hand. So Delalande concludes his

article with a section headed 'With electroacoustic music, neutral analysis is impossible'. Thus, transcription itself cannot be 'neutral' or 'objective' – even machine transcription. Yet in concluding that 'there is no neutral (level) analysis', we have not abolished all concept of 'the work' – this will not let us off the hook. As an important footnote, we have some confusing priorities with *mixed music* (for live performers and electroacoustic sound). Here, there may be a traditional score for part of the work only – largely prescriptive – and an evocative transcription for the rest. Strictly speaking, we could ignore the former – why not treat all the music as a single sonic entity? We would need to 'bracket out' all knowledge of the written notation (code) for the live parts. In Emmerson (2016), I examined Hans Tutschku's work *Zellen-Linien* (piano, electronics) starting from a listening and straightforward graphic transcription without score. Repeated listening allowed annotation to ever greater detail until only in much later listenings was the score 'revealed' – sometimes corroborating and sometimes contradicting the heard encounter.[17]

Transcription

Transcribing the many oral traditions of music making has a long history,[18] whether for creative adaptation, emphasizing national identity or drawing attention to an 'other' culture in some way. Then, there is the function of preservation – by accident or design. The development of (so-called) 'ethnomusicology' is broadly from the same era as acoustic recording itself. The advent of a systematic transcription of oral tradition to western notation was quite quickly allied to portable recording equipment, allowing repeated listening to make more accurate transcriptions. In some traditions, there was a realization that many performances were only inadequately transcribed into western notation – a notation often meaningless to at least the earliest generation of its practitioners.[19] Bartók's transcription of Romanian oral tradition song (Bartók 1976: 184) is a very beautiful paradigm case of western notation at (and beyond) its limits.

Machine sound analysis and transcription were quickly harnessed to measure pitch and time elements from recordings. The development of Charles Seeger's melograph in the 1950s and 1960s for use in ethnomusicology is a good example. The work of Robert Cogan (1984), using photographs of a real-time analogue display, was important for showing a continuum between pitched and non-pitched, metric and non-metric musical sound using tools that were advancing rapidly at this time. By 1990, a greater range of new computer-based time and frequency representations were presented in De Poli et al.'s (1991) classic compendium 'Representations of Musical Signals'. However, machine tools aimed at combining – or at least balancing – signal analytical and music analytical functions have been much slower to develop. Further tools for machine-aided musical analysis[20] have progressed much further in the area of music

information retrieval (MIR – big data) than in the field discussed here. Tae Hong Park's SQEMA (Systematic and Quantitative Electro-Acoustic Music Analysis) project (Park 2016) develops a comprehensive toolbox which might usefully form an alliance with more recently developed neuroscientific procedures.

Transcription acts as a form of filter in two interacting ways. First, there are constraints on what *can* be transcribed – limitations of the notation itself which was often designed and evolved to serve different purposes. Then, secondly, there are the decisions of the transcriber, choosing (sometimes unaware) what is important and significant to preserve. The two interact – what becomes possible is more likely to become important. Technology allows 'scientific' representations of amplitude and spectrum.[21] Amplitude was foundational in any electroacoustic system after the invention of the microphone – it is the origin of the term 'analogue', as a changing voltage is an analogue of a changing air pressure. Frequency and its complex combination in spectrum were understood before flexible analytical machines – and methods of representation – became available. While real-time spectrum display was possible in the analogue laboratory, computer applications (based on 'fast Fourier transform' (*fft*) mathematics) were initially non-re-al-time – though these opened up powerful analysis of spectral change over time (through 3D perspective presentation). Increased computer power eventually brought real-time (near instantaneous) spectrum analysis. The two dimensions of the printed page or flat screen suddenly became insufficient for the trio of amplitude and frequency changing over time. As noted above, we can have 3D perspective representations on 2D platforms, but we more commonly find 'line width' sometimes allied to colour as indicators of amplitude (the third dimension 'out' of the screen). Most systems also allow parallel visualizations of overall amplitude and frequency representations separately. Here, we confront a learning curve – the relationship of representation to perception is not *given*: it is *learnt*. However, certain kinds of relationship clearly resonate and relate more strongly and are, therefore, more easily learnt.

We have not yet referred to image scale which influences critically how we see these trajectories. In Figure 6.1, we see an image of the entire *Kits Beach Soundwalk* by Hildegard Westerkamp. This conveys powerfully the different spectral regions (quite perceptibly related to the narrative) for the separate sections of the work. This also shows how simple *annotation* of the spectrum can help. In the first part, the city noise is drawn to the foreground of our perception by the narration – this acoustically grounds the entire soundscape. But then, the filtering out of the city noise leaves us with this enormously poetic cloud formation, floating above an apparent 'cave' of absence. We can grasp and annotate the structures we hear along with the spectral bandwidth for each. The play of noisebands becomes a key articulation – and the way some sounds can be masked by others is an important argument.
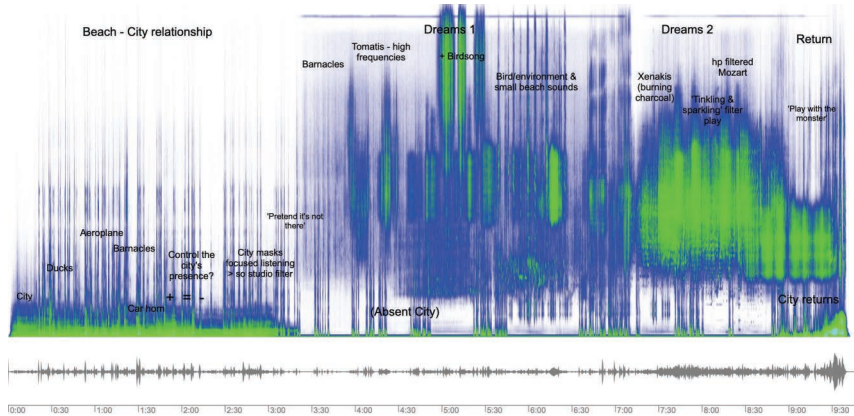
Figure 6.1 Hildegard Westerkamp's *Kits Beach Soundwalk – EAnalysis* image.

This example allies the *fft* representation with our listening to often recognizable sounds – but also with the help of the composer as narrator! The raw uninterpreted spectrum is less help than we had hoped. So, why is this machine-driven 'perfect' analysis not the answer to bridging many of these earlier divisions concerning sound representation? The density of information in these is too great and comes in a form too esoteric for most readers to decode – and often relates only weakly to perception. Look at a spectrum and only the most experienced user can get even a generalized notion of sound colour – perhaps overall shapes and trajectories, tessitura and loudness, but little detail.

However, we believe some useful information is encoded within – so how can we access it? For many decades now we have had research aimed at relating more reliably natural language sound descriptions to measurable parameters of the sound. For example, that perception of 'brightness' correlates well to the measurable spectral centroid was established in the late 1970s (Grey and Gordon 1978). To be reliable, repeatable and generalizable across many listeners were tough demands and progress since has been slow. Not everyone uses words in the same way to mean the same thing – and even worse is to translate from one human language to another. However, using more contemporary techniques, new spectrum analysis criteria mapped to verbal descriptions are steadily emerging (Peeters et al. 2011).[22]

To some, *machine listening* is a contentious phrase – in reality a shorthand for an analytical project. The key questions take us over the border to the 'music information retrieval' industry – what is it 'to listen out for' something? Machines can only work on the physical signal (its digital representation strictly); we are now quite capable of capturing more than the average human can perceive.[23] An important question we need to ask of this machine assistance must clearly be: what is it 'to be present'? If we

measure the presence of an acoustic component but cannot perceive it, is it *really there*?[24] There are approaches that attempt to bridge this gap where the *fft* and amplitude representations are retained but added to 'by hand'.[25] Thus, the scientific and fantastic (evocative) may be brought into closer relationship. The two most referenced transcription software packages are the *Acousmographe* (produced by the ina/GRM in Paris) and Pierre Couprie's *EAnalysis*.[26] This latter is the originator of the images in this article.[27] It allows streams of parallel information to be pasted in, audio or video, moving or still as well as extended mark-up tools from a wide-ranging toolbox derived from many of the analytical traditions that have grown up for electroacoustic music (Couprie 2016).

Noise and Representation

We inherit from a Platonic tradition of Greek thought an idealization of sound analysis and representation. From Pythagoras through Fourier and Helmholtz, the acoustics we teach to music (and other) students is a 'cleaned up' theory that deals only with difficulty with the literally noisy, irregular world around us. We refer too easily to the 'harmonic series' with respect to instruments whose 'partial tones' (the strictly correct term) may differ substantially from the exact whole numbers of true harmonics (for example, most strikingly, the trumpet and piano).[28] To make matters worse, we tend to describe the real world case as 'inaccurate', the deviation from ideal as 'errors'.[29] This warps how we conceive of the importance of transients, noise components and inharmonic partial tones.

In the field of music, 'noise' has had many meanings and applications from social to individual, from acoustic to psychological. It remains a term impossible to pin down clearly.[30] The earliest works of *musique concrète* were titled *études de bruits* and performed at the first broadcast *concert de bruits* in 1948. The recorded materials for these studio montages ranged from shunting trains and other found objects to traditional instruments and voices and were not all strictly noise in an acoustic sense. That said, a sense of noise as *non-pitch* comes through clearly here. It was this that Boulez (who had assisted Schaeffer with piano sound sources for some of the early études) was famously to criticize as being unable to be 'organized' and merely 'anecdotal' (Boulez 1971: 22).[31] In a parallel universe, Stockhausen was overtly to contradict this assertion from within the modernist camp to create 'scales of noise' in works such as *Kontakte* and *Momente*. Then, we have Denis Smalley's characterization of a *continuum* from pitch to noise: 'note – (notes) – noise'[32] (Smalley 1997: 120) that usefully undermines an unnecessary binary distinction – which the history of western music had necessarily emphasized.

There is another continuum that can easily be ignored. Generally, the ideas of noise just discussed concern the frequency domain, but the time domain is never strictly separate. Here, we encounter the notion of noise

through *transients*. At its most extreme, we can characterize this continuum to embrace *both* time and frequency domains through a relationship which is true of all wave phenomena but was famously highlighted in 1927 through the proposition of Werner Heisenberg's *uncertainty principle* from quantum mechanics. This shows that we cannot know accurately both the position and the momentum of a particle – furthermore, there is a calculable 'trade off' relationship between the accuracies of either measure. For our discussion, let us first consider the time of an event – say a spike of acoustic energy. This has a measurable duration. Over a relatively longer duration, we can work out the spectral components which have a certain bandwidth. But that 'longer' duration is the best we can do to fix the time of the event. If we imagine then that that spike becomes shorter, we can claim to fix the time of the event more accurately – but unfortunately that means we need a wider bandwidth in the frequency domain. At the limit as the spike width tends to zero, we have an 'exact' time for the event but an infinite bandwidth spectrum. The converse works in a kind of mirror – if our infinite spectrum is reduced to a unique frequency (sine wave), strictly speaking to maintain a similarly exact (no width, that is, unique) value, this wave will have to exist for all time and all space. If not there is sometime, somewhere a *transient* – which is a noise.

Both ends of this continuum may be ideal and are unobtainable in the 'real' world. Yet, an attempt to reach them forms the basis of (at least) two potentially subversive genres of electroacoustic music: *glitch* and 'noise music'. Let us contrast an example from Ryoji Ikeda and Carsten Nicolai's classic album – *Cyclo (C3)* (Figure 6.2) with a recording of Merzbow with the Dirty Electronics Ensemble[33] from 2008 (Figure 6.3).

This example demonstrates the time-domain end of our continuum – an example that combines elements of glitch and microsound heard often through barely perceived techno rhythmic patterns, warped and extended (see the phrase and section suggestions). Many of the sounds are short
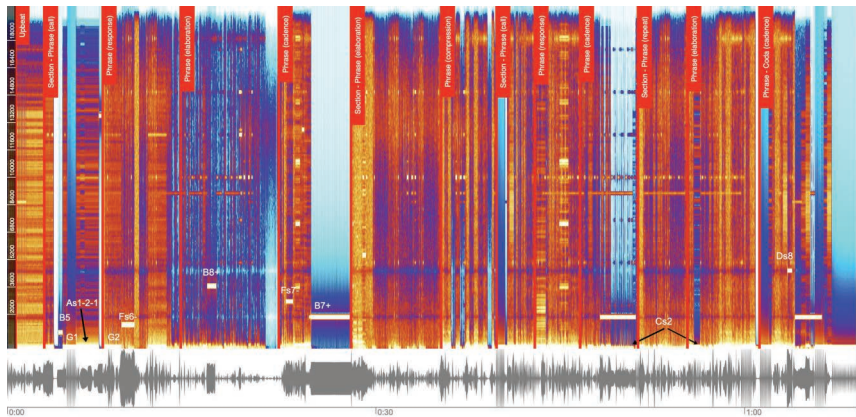
Figure 6.2 Ikeda and Nicolai *Cyclo (C3)* (version 2001) – *EAnalysis* image.

'spikes', the sonogram shows this with extraordinary clarity – the band-widths are nearly always very wide as a consequence of the 'on/off switching' of the sound. There are also nearly pure sine tone inserts into the noise texture (transcribed with their standard pitch designation with '+/−' deviations) which hint at a melodic frame barely glimpsed through distorted artefacts and textures. The nature of wideband noise bursts is striking – and the 'strangeness' of seeing such 'sharp edges' in the representations is in great contrast to the living world sounds of the Westerkamp. We easily fall into the old binary descriptors of 'natural' or 'environmental' as opposed to the more urban noise of the 'machine', built from circuits and switches (and their 'failure'). More recent views of soundscape reject this divide and embrace the totality including the machine as an environmental sound.[34]

The wall of noise heard in the Merzbow/Dirty Electronics example brings us to the other end of the time continuum – that is very few punctuation points, no glitches or switches. However, it turns out to have greater variety on repeated listening.[35] The way the block structure is articulated becomes clear from the image. Furthermore, the way significant noise sweeps emerge from the cauldron of sound gives a strangely expressive quality and seems to articulate a struggle for depth and perspective in an otherwise amniotic immersion – in the last section of the extract, a free play of this sweep texture comes well to the fore of the noise wall.

The questions raised are several: can we learn to associate these images – so strikingly different from environmental sound on the one hand and other forms of synthesized and processed sound on the other – with what we hear? Furthermore, if we take noise in its more totalizing forms, a wide band spectrum sound may be represented but its sheer power, its physical (whole body) impact poses an entirely new kind of problem – for both representation and evocation of the effect. Other physiological, psychological, social and environmental aspects are of increasing importance. Can we capture some of these for our further examination and analysis?
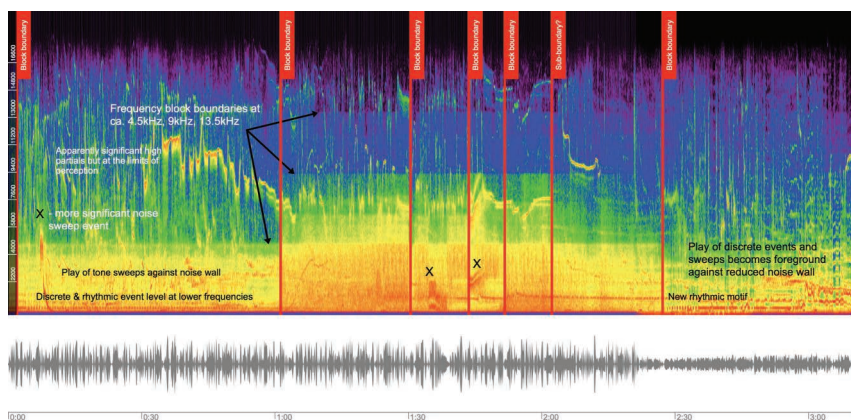
Figure 6.3 Merzbow with the Dirty Electronics Ensemble (2008) – *EAnalysis* image.

The Super Transcription – Another Look at the Tripartition

I shall make some initial suggestions here as the start of a much longer-term enterprise that might allow a widening synthesis of approaches. Perhaps, the tripartition can reconfigure around a single stream with a left bank (creation) and a right bank (reception) both of which we need to 'hold the music in place' – not exactly a neutral level but *that something we seek to grasp* yet flows through our fingers. We need to combine the range of multi-disciplinary approaches in a comparative framework that brings together elements of the poietic and aesthesic better to see 'what is going on'. Some of these will have the same time-dependence as audio–video recording – for example, a multi-screen video of a performance to show performer and audience response. Others may be text-based and not so time-related – perhaps, they can be tagged and linked off-line.

Let us develop this idea. With current systems, the following is speculation – but not impossible to conceive. I will focus on two streams of analysis to be added. Let us group together the lines of poietic materials to the top, aesthesic materials to the lower part of the window. These two sandwich the so-called neutral level flux (trace) that eludes our 'fixing it down' objectively. However, we may need to stick with the somewhat misplaced beliefs that the scientific representations can stand in for this neutrality. They may be the closest we can get. Let us (with Delalande) see this elusive entity as having poietic and aesthesic 'aspects'.[36] We shall need to partition the two poles somewhat to make sense of the multitude of tools we have at our disposal. We place the outside time elements furthest away, then in-time as we approach the trace.

From the poietic perspective, computer code may have given a false sense of security. Let us consider the work of Laura Zattra on the pioneering FM-synthesis computer-generated work *Stria* by John Chowning (Zattra 2007). Describing her approach as *philological*, she has painstakingly reconstructed the various 'texts' of the work in great detail using forensic techniques.[37] It turns out that there was no definitive version even for the earliest performances. In making edits in the analogue copies of the piece, the composer compromised the definitive status of the computer code used to generate it which, in any case, rapidly became unplayable as the computer language used became (in large part) obsolete.[38] In a parallel (and related) article in the same issue of the journal, Olivier Baudouin (2007) describes a project to recreate the computer code for a new 'generation' of the piece.[39] Such code is the ultimate *realization score* although now revealed as much more fragile and dependant on a substantial technical infrastructure which cannot be guaranteed.[40]

On the opposite riverbank, let us consider the transcription of response. The arrival and development of non-invasive neuro-science measurement techniques (especially fMRI) are set to transform this field. There are now some neuro-science tools that track our responses to music through scanning and recording brain activity.[41] Progress is slow. One of the limitations encountered so far is a lack of consistency between subjects – the brain is not a standardized entity. Global regions of activity have been quite well defined

but rarely are details entirely the same across subjects. To what extent these 'maps' may also be labelled with emotion 'tags' is a matter of debate. As a composer of electroacoustic music who uses pitched and non-pitched materials, I have been worried by assumptions around pitch, in general, and allocation of labels such as 'happy/sad' to certain tonal functions in many of the tests which address genre and affect. In a conference paper in 2018, I declared a 'manifesto' addressed to neuro-science music research:

> *Dear colleagues in neuroscience*
> For a time at least, please dump the Mozart and the tonal popular music!
> We have some different suggestions: – use music that is predominantly timbral and textural and has little pitch material [original footnote: Or at least where the pitch 'argument' is secondary to the timbral].
> I suggest we start with quite abstract soundworlds that do not immediately reference everyday real-world sounds.
>
> (Emmerson 2018: 4–5)

Nonetheless, in our ideal model, let us feed this into our 'streaming' diagram, summarize what has been done and make a realistic speculation. Of course, not all such levels will exist for every analysis – there will be very different interpretations of what is needed depending on genre (which must include social dimensions). My final image[42] (Figure 6.4) is, thus, not yet a product of realized practice but is based on a selection from the extraordinary range of options illustrated in Couprie (2016) and the *EAnalysis* software. The first poietics track starts outside the flux of performance time with the collection and selection of materials, their organization and composition: embedded in the developing poetics of the work. This results in the construction of a Max patch designed to run the piece in performance. This is instantiated in the second track which may be run 'in time' and perhaps captured in a video. The running patch produces the trace (the standard two tracks, sonogram and amplitude) as shown in this example – which is deliberately left clear of annotation here. The performance is then received and perceived. Firstly, in performance time (the fifth track), depending on the musical genre and its performance practice, this might be captured and displayed, too – the audience response for the collective group, an fMRI scan video for the individual. These would both demand extensive off-line analysis to yield useful information. Our final sixth track shows a transcription of what a typical listener might identify in the music – made with repeated listenings and designed to be examined outside performance time – the piece is about memory, let us see what has been recalled and recognized – a mirror of the first track (above). The substrate beneath the river links the banks and roots the river in the landscape. It is a powerful metaphor for the social and, indeed, total ecology within which any musicking sits. This would form an enveloping ethnography of the performance.
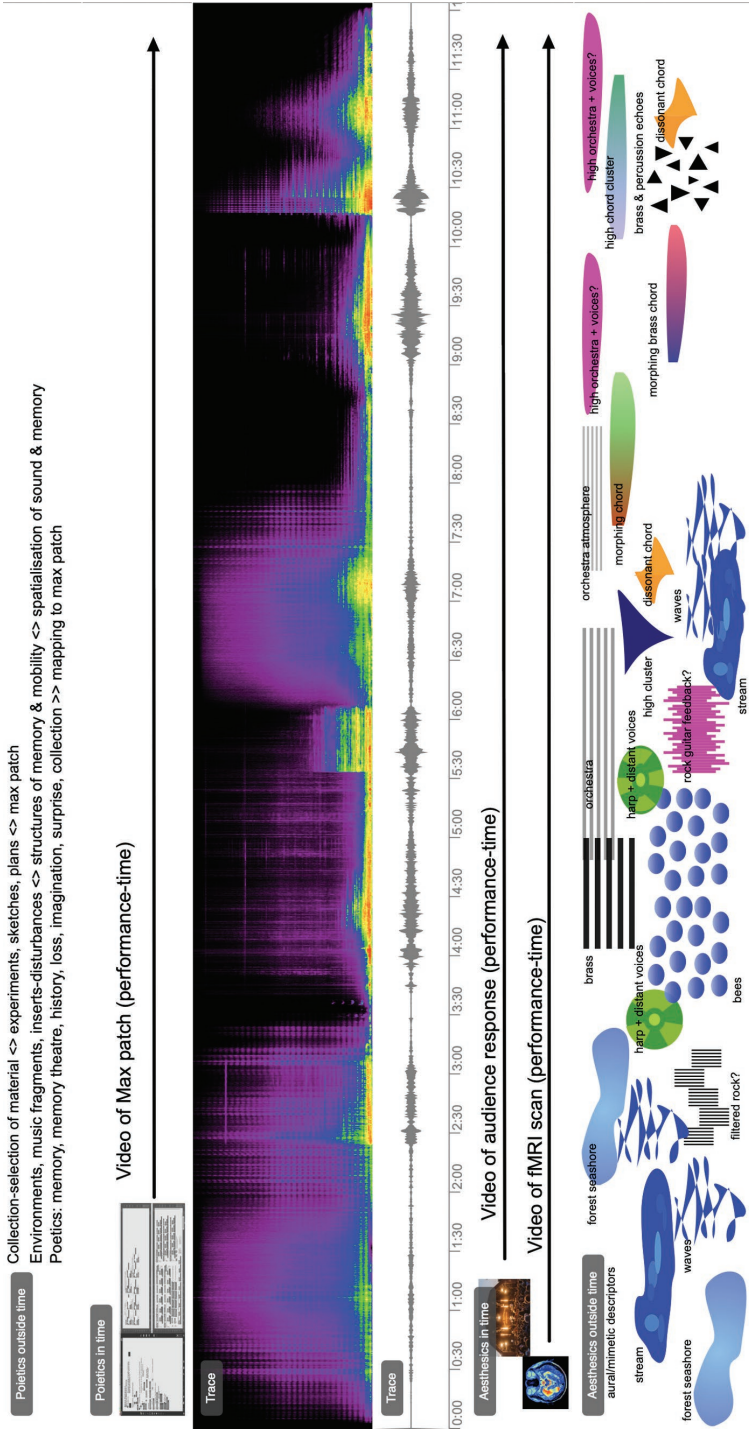
Figure 6.4 Simon Emmerson, *Memory Machine* – composite tripartition – *EAnalysis* image.

Notes

1 I must thank my postgraduate student and professional bass clarinettist Marij van Gorkom for starting this conversation (ca. 2017).
2 While European originated notation is now accepted worldwide, there are many other traditions that use written indications at various stages in music creation – from the Far East, India and the Arab world notably.
3 I deliberately shift the emphasis from 'oral' (conveyed by mouth) to 'aural' (hearing) at this point (after sound recording) – though both will co-exist.
4 Homer, the griots of West Africa, Aboriginal dreamtime and songlines, respectively.
5 The process continues apace in the digital domain as smart tech remembers everything for us.
6 There has been much interesting work as to how we scan fixed images *in time* to build up an internalized (memorized) version (Quiroga and Pedreira 2011). We cannot of course ever escape from time …
7 Ingold's critique in this article seems aimed, without him expressly saying so, at the then burgeoning field of sound studies – although some musicians and sound artists took issue with his views believing he had misunderstood their use of 'soundscape'. I believe there is much less of an issue with practitioners.
8 Two recent texts give us critical (ethnographic) histories of this field. Joeri Bruyninckx's *Listening in the Field: Recording and the Science of Birdsong* (2018) discusses complex and evolving relationships of the culture of field recording to what is represented, all embedded within the various social contexts of listening. Also, Rachel Mundy's *Animal Musicalities: Birds, Beasts, and Evolutionary Listening* (2018) examines how animal voices and song have been used in both science and music for the evaluations of cultural difference.
9 True – 'recall' has two meanings: retrieve a memory and bring to focused attention as well as the 'play through' of the memory itself which still may not be the 'real time' of the original world event.
10 Thomas et al. (1982) include the complete hand-written diffusion score of Bernard Parmegiani's *De Natura Sonorum* (of 1974); Wishart (2012) is also a comprehensive collection of that composer's transcribed scores.
11 I am not myself synaesthesic, but I do have strong imaginary images provoked by much electroacoustic music that appear to exist surrounding me in the listening space. These are, of course, 'movies'.
12 The principles of *musique concrète*, for example, explicitly demand the 'bracketing out' of any suggestion of source or cause, see Schaeffer (2017) and Chion (1983).
13 This is too easily associated exclusively with electronically generated music – but see Pierre Henry's scores for Messiaen's *Timbres Durées* – or Pierre Boulez's scores for his early studio études – while these are not strictly in the philosophy of *musique concrète* they were both created from recorded, not generated sound, in Schaeffer's studio.
14 As computer realizations of Stockhausen's (analogue) early work *Studie II* attest – they do not sound anything like the actual work!
15 Nattiez's work comes (at least in part) from an 'ethnomusicology' tradition, using, for example, Inuit vocal games (*katajjaq*) in one analysis (Nattiez 1983), based on detailed transcriptions, as well as parallel work on Wagner's *Tristan* and Varese's *Density 21.5* (based on the traditional scores).
16 François Delalande is a French musicologist specializing in electroacoustic music.
17 Furthermore, we have access to the live electronic patch (which includes details of both processing and pre-recorded materials) on the composer's website and at least for specialist readers a glimpse much deeper into the poietic side. This

creates a complex dynamic – we may know now what causes some processes, so may hear them differently.

18 Some would say it is as old as notation itself – and its origin, the earliest notations being mnemonics for music already largely learnt.

19 We must be careful not to generalize here – possibly the earliest generations to record for the likes of Bartók, Vaughan Williams, Lomax and others did not read music, but many more recent did – and do. Notation may be woven into oral music practices in interesting ways.

20 *Machine-aided analysis* here means that the tool (for example) searches out, sorts, groups and identifies patterns of salient features of the musical flow – beyond the *machine-aided representation* we examine here.

21 Strictly speaking, all representations are *graphic* – though we have more recently separated out the more mathematical meaning using orthogonal axes and stated measurement scales.

22 Such studies attempt to deal with issues of *intersubjectivity* by testing with large groups and observing commonalities and differences across the results.

23 Ingold (2007) insists sound is an *experience* not a signal, so this sentence would not make sense taking this view.

24 I discuss this in detail in Emmerson (2015). Pierre Couprie (see later) has pointed out to me that this might become more complicated if it is the *absence* of such a component that we (humans) perceive rather than its presence (informal conference communication).

25 Where a flexible range of paint tools as well as copyable models have not been automated.

26 https://inagrm.com/en/showcase/news/203/acousmographe and http://logiciels. pierrecouprie.fr/?page_id=402, respectively – it would be wrong to see these as the only such tools – Couprie (2016) lists many analytical applications that have developed specialist plugins for specific tasks, for example, *Sonic Visualiser* (https://www.sonicvisualiser.org).

27 *EAnalysis* was originally developed by Couprie as part of an AHRC (UK) funded project 'New Multimedia Tools for Electroacoustic Music Analysis' at De Montfort University 2010–2013. He has continued to develop this software to date.

28 They are not *harmonics* because they are not *harmonic*. In the case of the trumpet, the approximation to harmonic series values as a trumpet 'rips' is due to a historically well-crafted combination of mouthpiece, bore and bell; in the case of the piano, the partial tones move progressively sharper than harmonic values due to the string having stiffness (acting as a bar) in addition to ideal tension (see Backus 1977). Any attempt to synthesize piano using harmonic values sounds odd and 'unreal'. These discrepancies should not be described as 'errors' – but we find ourselves doing just that.

29 A platonic perfect form where the substantial objects of the world imitate or are only approximate to the perfect forms of our inner conception.

30 This is inevitable and, in any case, I would not want to.

31 In Emmerson (2018), I argued that much electroacoustic music material was working at a different level of articulation – pre- or proto-language – compared to pitch-based discourse.

32 In an earlier version of this discussion, Smalley had used the term 'node' for this central point, defined as 'a band or knot of sound which resists pitch identification' (Smalley 1986: 65–67). While closer to some biological usage of the term, its possible conflict with more standard meanings – not the node of a standing wave, nor the node in a grid of interconnecting information pathways – probably contributed to its being dropped from further use.

33 I was present at this concert at De Montfort University (Leicester) where Merzbow joined the Department's Dirty Electronics Ensemble (director John Richards). This extract may be found at: https://www.dirtyelectronics.org/play. html.

34 This is prefigured in the Westerkamp – the sound of Vancouver City (at a distance) is a 'keynote sound' in this work – interestingly in both its presence and its absence.
35 And certainly greater than my memory of the performance itself.
36 I use this word in the sense used by architects and visual artists – as in 'southern aspect of the house', not relating deeply to content.
37 In an earlier article, 'Searching for lost data: outlines of aesthesic-poietic analysis' (2004), Laura Zattra harnesses the perception (aesthesis) side of our experience at the service of attempts to reconstruct the 'lost data' of much early computer music.
38 SAIL (Stanford Artificial Intelligence Language) became obsolete shortly after the composition of *Stria* in 1977; data from this fed Music 10.
39 While Music 10 is very similar to CSound (still current), much restoration and translation needed to be done to enable a correct mapping of parameters and finally computable code.
40 I have written on the almost complete loss of early live electronic music for similar reasons. These concerns are widespread across genres and the basis for archiving and re-creation initiatives worldwide.
41 The same representation issues confront us as for any video accompaniment to audio material. This is solved in standard applications by 'snapshot' images lined up at intervals linked to a video window of the continuously changing images (movie).
42 The image is based on a version of my own acousmatic 'live installation' work *Memory Machine* (2010) which runs from a Max patch, mixing sounds from environmental and recorded musical fragments (frozen as timbral objects), probably differently each time it is run. *Memory Machine* (multichannel electroacoustic sound – concert/installation) (12m/variable) was commissioned by Inventionen Festival Berlin. First performance: WellenFeld System H104, Technische Universität Berlin (Inventionen Festival), 27 July 2010.

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7 Noise in Spectral Music

Ingrid Pustijanac

Theoretical Horizon

There is no doubt that from the acoustics point of view sound and noise are part of the same phenomenon. It is also true that there is almost no definition that does not stress – at first – the unpleasant, undesired, unagreeable and disturbing qualities of noise. Some approaches, however, recognize these qualities more as a challenge, as Morton Feldman has pointed out: 'It is only noise which we secretly want, because the greatest truth usually lies behind the greatest resistance' (Feldman 2000: 2). The power to evoke some ancestral dimensions can be found in many other visions of the concept. Reynolds, for example, affirms, 'if music is a language, communicating moods and feelings, then noise is like an eruption within the material out of which language is shaped' (Reynolds 2004: 55). However, all the mentioned views do not seem to be directly pertinent to the definition of noise that composers of spectral music such as Gérard Grisey, Tristan Murail, Hugues Dufourt and Michaël Levinas expressed in their writings and compositions, influenced by the epistemological turn of the so-called age of timbre ['l'ère du timbre'] (Dufourt 2014: 347). A most radical aspect of this turn is the shift from composition *with* sounds (for example, a discrete pitch-space) to the composition *of* sound (acoustic space seen as a continuum), a turn that actually takes place before spectral music. As many scholars stressed, electronic music in the 1950s and 1960s (and, in particular, Stockhausen's *Gesang der Jünglinge, Mikrophonie I* and *II*), on the one hand, and Ligeti's *Klangfarbenkomposition* [composition of sound colours] and Giacinto Scelsi's *Composizione su una nota sola* [composition on a single note] in the 1960s, on the other hand, were some of the most significant contributions to the 'epistemological revolution' later accomplished by spectral music.[1] A convergent perspective, albeit originating from different assumptions, was proposed in the same period by Pierre Schaeffer (Schaeffer 1966). In fact, we can thank Schaeffer for the awareness (shared by Murail 2005) of the central role that percussion instruments, on the one hand, and electroacoustic music, on the other hand, have played in the establishment of timbre as the main field of compositional investigation. However, according to Dufourt,

the most decisive input was provided in the late 1960s and early 1970s by computer music and music informatics research developed by composers such as Jean-Claude Risset with *Inharmonique*, John Chowning with *Stria* or *Turenas* and researcher David Wessel (Dufourt 2014: 354–355). The experience of computer music grounded in information theory introduces a kernel aspect for spectral music: a means for the control (both in the time and frequency domain) of processes of transformation, which express the formal organization of a work, according to a specific degree of predictability or in Grisey's term 'pre-audibility' (Grisey 1987). The process manifests itself on two strongly related levels: macrophonic and microphonic. They both originate from the idea of acoustic zooming which allows one to observe the sound – conceived as a 'living being' (*être vivant*) and therefore endowed with a birth, a life and a death – from different perspectives (Grisey 2008). The metaphor of 'living being' is grounded in research in acoustics and spectrographic analysis of sound, made possible by changing the scale of observation and developed in those years by Emile Leipp, among others (Leipp 2010). As stated in Grisey's and Murail's writings, and as *a posteriori* brilliantly delivered by Dufourt,

> […] with computer music, music in its entirety has undergone a radical change in scale. The objects of modern music no longer belong to the physics of macroscopic objects. The acoustic parameters on which we operate, the details of the encoded signal we control are in the order of milliseconds. […] By changing the scale, the music also changes language.
>
> (Dufourt 2014: 347; my translation)

The question of new language, new syntax and new rules which permeates the theoretical horizon of the first spectral generation will inform many composers of later generations and will emerge in various forms in their music and theoretical writings (see, for instance, Harvey 1986; Bedrossian 2008; Romitelli [s.d]; Saariaho 2013). The question is deeply correlated to the 'instaurative' function of musical time that gives rise to surface instability, liminality, complexity, in short the metaphor of 'sound as a field of forces, each force pursuing its own particular evolution' (Murail 2005: 122) as a new category of compositional thought. The foundation of spectral technique on the temporal dimension was most innovatively theorized by Grisey. In the presentation notes for the orchestral piece *Le Temps et l'écume* (1988–1989), he points out:

> My research […] is motivated by the impossibility of composing an extended time without both expanding the harmonic field (chords become spectra) and the depth of this field (the pitch is no longer coloured by the instrument, it is the imaginary instrument – the instrumented spectrum – that makes the pitch necessary and fixes both its colour and its rank on the dynamic scale.
>
> (Grisey 2008: 153; my translation)

It is in this context that the abolition of limits emerges as imperative and the continuum between 'pitch and noise, rhythm and frequency; harmony and sound colour' therefore entails new rules for integrating the 'totality of sonic phenomena' (Murail 2005: 124). Since the very beginning the means that allow composers of spectral music to accomplish 'synthetic composition' is the technique of instrumental synthesis influenced by additive synthesis used in electronic music, here transferred to instrumental devices.[2] The separated, correlated and simultaneous control over frequency and amplitude for each harmonics or partial of a spectrum, as well as the reciprocal and mutual change of velocity of their transformation, so common in electronic music practice, creates a wide area for experimentation of the formal, timbral and harmonic levels once the technique had been transferred to the acoustic dimension of 'traditional' instruments. In this domain, knowledge from scientific research and experience from electronic music created new challenges since the fusion or segregation principles showed all the complexity of the timbre multidimensionality control and the subtle threshold between timbre and harmony turned out to be more complex than expected (Harvey 1986; Saariaho 1987). In the timbre continuum which is delineated by opposing sonic states (sine wave – noise), the very place of experiencing the instrumental synthesis is represented by the plurality of inharmonic spectra and, more generally, by the concept of inharmonicity as the manifestation of the sound's internal life, dynamism and complexity. This perceptual and cognitive ambiguity (Lerdahl 1987, Pressnitzer and McAdams 2000) shows a strong formal potential, as stated by Smalley:

> Inharmonic ambiguity allows spectral change in two directions. Firstly one can move into intervallic and harmonic (tonal) spectra. Secondly, like the spectral compression […] inharmonic saturation – the adding of spectral components – can be a means of moving toward noise. Inharmonicity can therefore occupy a useful middle ground which allows movement towards harmonicity and intervallic pitch on the one hand, and noise on the other.
>
> (Smalley 1997: 120–121)

Once again, noise is positioned on the opposite side of the timbre continuum, and as such, it expresses a liminal situation, which is hard to inhabit or sustain for a long time due to its saturated nature. Paradoxically, in Grisey's words, noise evokes the same undifferentiated perception as absolute periodicity does (1987: 245). As the examples will show, the process of integration of inharmonic spectra and complex sounds up to complete noise in various spectral and post-spectral works is determined by the idea of experiencing instability in a sort of accumulative process which tends to saturation, obtained by various techniques aimed at increasing inharmonicity. This, concerned with density, 'saturated spectral state which cannot be resolved into intervallic or relative pitch' is defined 'saturate noise' by Smalley

(1997: 120). It is a state that represents the maximum of complexity and from a hierarchical point of view – as theorized by Lerdahl – the maximum of tension and dissonance (1987: 141–143). As such, it represents a strong, temporally oriented element of the large-arc formal organization and can be obtained on various levels of temporal zoom. In the first spectral works, or more generally speaking in the spectral works of the 1970s and early 1980s, the saturation process overlaps with the form itself due to the stretched musical time and slow, teleological transformation of the spectral content. Works from the 1990s (both by spectral and early post-spectral composers) regain the temporal dimension of speech and thus explore processes of saturation embedded in new forms of syntactic articulation. This chapter will show how this change in temporal dimension focuses attention on the construction of each element of the new speech, that is each 'vowel' and each 'consonant', in order to build a new syntax able to integrate various types of saturate noise in a coherent way. More or less linked to the experience of electronic music and sound synthesis, saturate noise is not the only type of noise that the composers interested in sound synthesis actually explored. There is also a second type that emerges through an increasing and structural role of percussion. For this category, Smalley uses the term 'granular noise' and the definition is qualitative: '[…] non-pitched roughness, granularity or grit. […] Granular noise is textured impulses, and need not be dominant in spectromorphology' (1997: 120). This second category will be explored, as the examples will show, through different techniques of organizing both the syntax and form.

Noise as a Saturated State of Inharmonicity

Périodes for seven instruments, composed by Gérard Grisey in 1974, is a sort of *manifesto* of the first spectral period for the exemplarity of its form – articulated in a constant cycle of three states analogous to the respiratory rhythm (inhalation, exhalation, rest) – and for the processes of the 'becoming of sound' embodied by each of them.[3] In this nearly 13-minute piece, the first – chronologically speaking – of the monumental cycle *Les Espaces Acoustiques*, the process of gradual increase of inharmonicity reaches the point of maximum saturation in only two points of the work. The first one corresponds to rehearsal numbers 13–14. Here, the playing techniques of each of the seven instruments – such as exaggerated bow pressure for strings, multiphonics, singing into the mouthpiece, flutter-tonguing for winds and changing the trigger position in the trombone – are oriented towards a maximum of timbre instability and complexity. This saturated state alternates (according to a specific scheme of irregular durations and accentuation) with a low E harmonic spectrum in a process where the durations of the former prevail over those of the latter to the point where only complex sounds remain. Once the field is saturated, internal movements occur in strings (bow position from AST to SP),[4] in

woodwinds and trombone (flutter-tonguing), but no new gestures appear. The energy of saturation, once experienced and sustained for less than 15″ at maximum level, decreases gradually through dynamics and by reducing the number of instruments one by one (flute, clarinet, trombone, double bass, cello, viola) for another 'long' 30″ (approximately) until only the violin remains with a *C5* in *piano* and AST. A first moment of silence of the whole piece absorbs the exhausted energy of the first saturation process. The famous theatrical interaction between violin and viola players that follows expands in a new cycle which closes with the second saturated section (rehearsal numbers 22–23). The saturation process in this final section is due to the gradual compression of the harmonic field in the low register (only trombone, double bass and cello remain); the proximity of the low frequencies together with the already mentioned extended playing techniques in *fff* enhance the roughness. The saturated energy here is not oriented towards dissipation, but, on the contrary, it transforms into a generative, iterative gesture by double bass and trombone, from which the opening low *E* harmonic spectrum of *Partiels* grows.[5]

Partiels (1975) and *Prologue* (1976) develop some of the already mentioned techniques by introducing new ways of internal articulation of saturated states as well as the processes for their introduction and dissipation. *Prologue*,[6] in particular, represents the expansion of the idea of timbre continuum since the whole formal project develops a 19-minute unique trajectory (based on three different gestures) from a five-note arpeggiation of the low *E* spectrum up to the maximum of saturation (*fff*, bow pressure, very high register, double strings, glissandi) and backwards, with a final cadential 'retrospective' section. The new aspect introduced by *Prologue* is the internal articulation of the one-minute saturated state modelled upon the structural elements of the whole form, as the global profile of the glissando corresponds to one of the 'neumas' of the arpeggio gesture (Féron 2016; Baillet 2000; Haselböck 2009). In *Prologue*, the curve for the increasing inharmonicity corresponds better to the idea of the scale of complexity (in particular, the category of discontinuous dynamics) theorized by Grisey (1987: 244). It is worth mentioning that the piece was also conceived as a version for viola and acoustic resonators vibrating in sympathy and enriching the global timbre by various 'granular' qualities (Féron 2016), an aspect that will be discussed in the next paragraph.

The early 1970s also saw the first spectral works by Tristan Murail who was interested in the composition of complex sounds through instrumental synthesis, but with even more 'electroacoustic' origins than Grisey. As he states,

> it was inevitable that the development of electroacoustic techniques, and of our understanding of acoustics, would affect traditional compositional techniques. Indeed, electronic music produced a more or less deliberate proliferation of instrumental and orchestral music, which as

a result proposed new schemes, new forms, new ideas as far as the use and combination of instruments, etc.

<div align="right">(Murail 2005: 123)</div>

In this new horizon of possibilities, Murail develops his own field of references in both the scientific research on sound and the technique of instrumental synthesis. From this point of view, *Mémoire/Erosion* (1976) for horn and nine instruments is an emblematic example. Here, the idea of an instrumental simulation of the analogue studio technique known as the 'reinjection loop' is used in order to explore a gradual deterioration of the initial gesture and the increase of disorder and inharmonicity up to the final sections (H–I–J) where the process results in a saturated acoustic space unable to restore any harmonic element. It ends with an abrupt interruption. This final gesture, even if related to the technique of the 'reinjection loop', also shows a radical formal function of noise as expression of an energetic maximum which has no potential to generate other gestures than silence.

Tristan Murail's *Désintégrations* (1982) for ensemble and electronics is the last example of the category of noise as the expression of a saturated state of inharmonicity that will be discussed here.[7] This piece is emblematic for the plurality of modes with which the technique of instrumental synthesis based on acoustic models derived from the computer analysis of various instruments was applied both to the instrumental parts and to the magnetic tape (Hirs 2009: 104–118). In its 11 sections ('stages' – to use Murail's words – that evolve from the harmonic to the inharmonic or vice versa), linked in various ways to the idea of destroying and building timbres, the first part of section IV and the final part of section V explore the universe of inharmonicity and complex sounds in a particular way. Here, all the elements (acoustic instruments including percussion, magnetic tape, dynamics, register, spectral content, rhythmic articulation of gestures) contribute to the process of saturation. However, this example prompts the two following observations. The duration of each process is noticeably shorter than in all the examples discussed above. The global duration is, therefore, articulated by gestures with different coefficients of 'harmonicity'. This fact considerably influences the way in which relationships between harmonic and inharmonic content are perceived, as specific harmonic elements persist in the perception of the complex sound areas, even if not present physically. Repetitions and short distances between events make the sound globally differentiated by various levels of complexity. This persistence of 'tension' gives the rare moments of pure harmonic spectra an expressive brightness and radiance. In this piece more than in any other discussed above, a feature emerges which reflects the ambiguous nature of complex sounds and noise. As Smally points out:

> Noise is relative rather than absolute – it exists because we have a concept of pitch. Intervallic pitch is an absolute – we can perceive and name intervals precisely – whereas noise is a generality and has to be

considered spectromorphologically in terms of its motion, texture, and behaviour if we are to be able to describe its riches. On the other hand, noise can occur in narrower or wider bands, and become coloured and resonant so that pitch (either relative or absolute) becomes blended in. Therefore, while intervallic pitch and noise are in one sense extremes, noise can take on a pitch identity, just as pitch can take on noise content.

<div align="right">(Smalley 1997: 120)</div>

This ambiguity between the states of sound matter which, especially from a psychoacoustic point of view, has been shown to possess many liminal zones in which various blending and masking phenomena intervene becomes an important field of exploration in the following decades during which a decisive impulse comes from digital technology for sound analysis and synthesis. The focus shifts to many possibilities of transferring typical electronic processes (FM synthesis, ring modulation, cross-hybridity, filtering and so on) to instrumental synthesis (possibly of orchestral sound) of a variety of inharmonic spectra. Kaija Saariaho's production is an example of this shift towards a new phase of spectral composition dominated by inharmonicity, thus more oriented to the formal and syntactic possibilities that no longer only belong to the sound/noise axis but also to that of harmony/timbre. In her 1980s and early 1990s works (*Verblendungen*, *Lichtbogen* and *Solar*), the role of spectral analysis software such as Iana, CHANTS or transkaija, in the preparatory phase of the creative process, and thus the growing role of technology (increasingly available thanks to the founding, among others, of IRCAM in 1976 and with a whirlwind development at the turn of the 1980s and 1990s) becomes more and more evident (Morrison 2021). The shift towards the 'age of timbre' swept through both the production of the spectral composers themselves, whose works of the 1990s clearly showed this transition (see Grisey's *Vortex temporum*, Murail's *Le Partage des eaux*, Dufourt's *L'Espace aux ombres* or Harvey's *Cello concerto*) and that of the middle generation of composers such as Philippe Hurel, Marc-André Dalbavie, Magnus Lindberg, among others, who were exploring the new horizon. In little more than ten years, the scenario changed and continued to change in the increasing fusion of technological, psychoacoustic and compositional discoveries, leading to an increasingly integrated vision of the acoustic space in which the sound/noise axis no longer represents the core aesthetical and compositional challenge in the production of the new generations. But before describing this point of arrival, the next paragraph returns to Smalley's idea of fluid boundaries between sound and noise and focuses on the challenges of composing noise (in Smalley's words 'granular noise') in spectral works.

Noise as a Granular Quality of Inharmonicity

The starting point for the discussion of the examples chosen for this category will be the already mentioned definition of granular noise as textured

impulses, which 'need not be dominant in spectromorphology' (Smalley 1997: 120). In this category only rarely do we find examples derived primarily from the control of acoustic space in terms of frequencies, and in this case, they can be linked to the idea of the beating effect due to the critical band width that influences the roughness quality or even the separation of perceived pitches.[8] This effect is explored by Grisey in *Partiels* (rehearsal numbers 12–22) and *Modulations* (rehearsal numbers 23–31) where the rhythmic activity of the percussion is derived from the difference of two low frequencies, the subtraction of which results in frequencies lower than 16 Hz, thus expressing rhythm (the number of pulses in a given temporal unit, see Pustijanac 2017). However, this technique is not the main field in the exploration of granular noise. Other possibilities have been developed by spectral composers, considering the fact that granular quality can be obtained or generated by a variety of means that often originate in percussion instruments. In fact, thanks to the long tradition of works for percussion going back to Edgard Varèse's emblematic *Ionisation*, through the production of Iannis Xenakis (*Persephassa*, *Psappha* and so on) and spectral composers themselves such as Dufourt (*Erewhon*, 1972–1976) and Grisey (*Tempus ex machina*, 1979), the exploration of the timbral and syntactic qualities of the variegated percussion family reaches a new richness in the integrated spectral approach. Percussion instruments are, from this perspective, on a par with the different modes of sound expression obtained on pitched instruments by means of extended techniques, enhancing certain timbral specificities, ambiguities or latent qualities. Used in the crucial attack phase of the sound, they can contribute to masking the specific instrumental source; integrated in the sustain phase, they can bring out instability of intonation or timbre as well as expand the decay phase through timbrally coloured resonances. The presence of percussion (with or without the percussive use of pitched instruments) develops the compositional technique more towards a complex vision of the acoustic space, which is evaluated on the basis of observable multidimensional relations that can be expressed, for example, through so-called spectral descriptors (McAdams 2019).

One of the emblematic examples of a smooth but pervasive role of noise is Michaël Levinas's *Appels* (1974) for 11 instruments. In this piece – shaped from the idea of sympathetic vibration – the sound of wind instruments activates the vibration of snare drums. This complex sound is captured by a microphone and spread in the hall, reinforced by the brass instruments and tam-tam. The evocative character of this piece is due to the 'call gesture' of the horn, each repetition of which is followed by silence allowing resonance appreciation. The process is oriented by a progressive saturation of the acoustic space due to the intensification of activity in all instruments, projected into a more and more inharmonic field and enriched by extended playing techniques. In this example, the harmonicity and noise not only coexist but form each other's projection space.

The expansion on a large scale of this principle is represented by the orchestral piece *Saturne* written in 1979 by Hugues Dufourt. Grounded on the composer's previous monumental work *Erewohn* for 150 percussion instruments and six percussionists, *Saturne* expands the timbre space by employing a group of 12 wind and brass instruments as well as a large group of electronic instruments such as two electric organs (including two Ondes Martenot) and two electric guitars, along with a large percussion section (see Laliberté 1995). In this work, the richness of timbre and the harmonic and rhythmic relationship between the different instrumental families show a more limited application of the granular noise concept. One has the same feeling when listening to another monumental orchestral piece such as *Le Temps et l'écume* (1988–1989) by Grisey, a piece in which the percussion section is integrated in the very archetype of the work: two gestures – sound/noise – explored by changing the scale of observation. Once again, the granular quality is part of the global timbre, and the saturation as observed in the early works is more and more integrated into a complex acoustic space. As in the previous case, the closer we get to the present day, the more the spectral experience of the 1970s and 1980s seems to be internalized in a sort of global approach to sound that can consequently manifest itself in different facets, accumulated by an increased awareness and sensitivity towards the continuum of acoustic space in the time and frequency domain (from a mathematical point of view) and, at the same time, towards a new appreciation of all the discontinuities due to perception and cultural diversity.

Conclusions

From the plurality of cases examined, an aspect emerges with particular urgency: the presence of noise as part of a larger context, determined by a variety of dimensions that the spectral technique introduced under the influence of the many domains mentioned in the first part of this chapter. On the other hand, a discourse about specific, discrete elements of a musical language grounded on the principle of continuum also appears as a 'virtual' and imposed distinction of well-integrated dimensions, as the division into two categories of noise – in itself useful but forced considering the fluidity of intermediate states – has shown.

However, what can be observed from a more general point of view is the fact that the presence of both categories of noise in the next period (after 1986, the year of Grisey's *Talea* and symbolic threshold of the early spectral period) functions in a more and more 'harmonic' context in which the initial idea of a revolution of complex sounds and their integration into a new language and new syntax gives way to a deeper exploration of the acoustic model concept and its role on the formal level (timbre as structuring force), while the question of noise and saturation remains in this embryonal stage. The challenge will be taken up by the so-called saturationist composers of younger generations who recognize the potential of the initial idea and develop new ways of integration

(Rigaudière 2014). Among them, Franck Bedrossian and Raphaël Cendo are particularly aware of their 'spectral' roots:

> During the Sixties and the Seventies, and even before under other forms […], an attempt had been made several times to integrate complex sounds into musical writing. I also think of Iannis Xenakis and some pieces by Gérard Grisey. Back at that time, many new musical materials were invented. But it seems to me that their inventors did not always know what to do with them, how to compose with them. What you had was the raw material, a marble block which had never been hewn, but you still could not see any shapes. A certain number of pieces of that time have not gone beyond the level of experiment.
>
> (Bedrossian 2008: 85)

From a historical distance, the early spectral period appears as an opening towards a new horizon of an 'age of timbre', grounded in scientific research on acoustics and psychoacoustics. This huge amount of information, together with the development of the personal computer in the late 1980s, strongly conditioned the path of the first-generation spectral composers, who gradually abandoned the exploration of liminal noisy states. Their heritage has been taken up by new generations and is flourishing today, nurtured by the awareness of the expressive potentialities of this unstable and overwhelming energy.

Notes

1 As the variety of contributions in the present volume shows, the horizon is considerably more complex and articulated.

2 Gérard Grisey, 'À propos de la synthèse instrumentale' (Grisey 2008: 35–37) and 'Structuration des timbres dans la musique instrumentale' (Grisey 2008: 89–120).

3 For more analytical information see Féron (2010); Eller (2017); Utz (2017).

4 Grisey indicates bow positions according to the following scheme: AST – alto sul tasto [as high as possible on the finger board, very near to the fingers of the left hand], ST – sul tasto [on the fingerboard], ORD – ordinario [normal], SP – sul ponticello [near the bridge], ASP – alto sul ponticello [very high on the bridge].

5 The extent to which performance style influences the more or less 'aggressive' quality of the inharmonic material in sound-based compositions has been investigated by Christian Utz on the very example of *Périodes* and *Partiels* (Utz 2017).

6 For more analytical information on *Prologue* see Baillet (2000: 99–112); Haselböck (2009: 68–79); Féron (2016), Pustijanac (2016) and Pustijanac (2017).

7 For more analytical information see Hirs (2009).

8 Roughness is an elementary timbral attribute based on the sensation of rapid fluctuations in the amplitude envelope. It can be generated by proximal frequency components that beat with one another. Dissonant intervals tend to have more such beatings than consonant intervals. As such, a fairly direct relation between sensory dissonance and roughness has been demonstrated (McAdams and Giordano 2016: 77).

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8 Is There Noise in Helmut Lachenmann's Music?

Temporal Form and Moments of Presence in the String Quartet *Gran Torso*

Christian Utz

Noise in New Music and Its Pitfalls

In a recent German newspaper review, Helmut Lachenmann was characterized as a composer who

> for a long time […] mistrusted tones, replaced them with noises, gave them an undreamt-of beauty and at the same time emphasized his protest against the established music business. In old age, Lachenmann has become more sensual in sound and has increasingly made his peace with ordinary tones.
>
> (Brembeck 2020)[1]

If this might seem an oversimplified characterization, indebted to the generalizations of a musical feuilleton style, we might turn to a similar statement by Frank Hilberg, who in a research report 25 years earlier had characterized Lachenmann's works created between 1968 and 1980 as a 'radical rejection of tones in favour of the use of noises as compositional material' (Hilberg 1995: 26). In a later article that contextualized Lachenmann's *musique concrète instrumentale* with Pierre Schaeffer's *musique concrète*, Hilberg deplored the absence of music-theoretical discourse and terminology for such noise-based music and criticized the ubiquitous use of 'sound' (*Klang*) as 'universal placeholder' and 'empty phrase […] signifying the blank space of non-reflection on given sonic qualities, passing over the problem of having to terminologically grasp the characteristics of (composed) noises more precisely' (Hilberg 2009: 60).

It is uncertain whether the 'distinct' way of distinguishing the concepts 'tone', 'sound' and 'noise' that Hilberg calls for in this context can be attained at all or is even desirable. Musical acoustics and psychoacoustics have informed us that in music there is hardly any sound without noise components – components that in many cases and respects are crucial for the characteristics of a particular instrumental or vocal timbre and make it so hard (or sometimes impossible) to produce 'exact' copies of such timbres through physical modelling. Moreover, all sound is mediated by reflections

in space or triggered by physical forces that produce noise components even in seemingly 'pure' pitched sounds. Ultimately, a broad definition of sound may arguably encompass the entire spectrum between isolated sine waves and unpitched noises of maximum spectral complexity (see Utz 2013: 19–20; Solomos 2020: 48–52): 'the increasingly intensive lack of differentiation between the so-called musical sound and noise opens wide the door of sound apprehended in its full generality' (Solomos 2020: 8).

Twentieth-century music since Luigi Russolo, Erik Satie and Edgard Varèse has explored two different functions of noise: its fundamental incompatibility with and its gradual approximation to pitched and tonal sounds (Kaltenecker 2016a: 248). On the one hand, noise was staged as the 'Other' of a concept of music based on an ideal of clean and unobstructed pitched qualities – the basis of the blending effects of nineteenth-century orchestration, among others. Noisy qualities in the form of everyday sounds of sirens, typewriters or guns in works by Russolo, Satie, Varèse and others were clearly conceived as provocative means against such ideals. This is evident in Varèse's intention to search 'for a bomb that would blow wide open the musical world and let in sounds – all sounds, at that time called "noise" – and sometimes even today' (quoted after Wood 2014: 158).[2] In opposition to such 'sonic violence' (Shreffler 2006: 293), noise, on the other hand, became an element integrated into more narrowly defined musical contexts, increasingly often conceived not necessarily as a provocation but as a means of expanding the 'universe' of musical sounds in the sense of an unfinished modernist project. Without doubt, Helmut Lachenmann's music plays a key role in the latter context, but it is also obvious that it can be connected with *both* tendencies distinguished by Kaltenecker: the noise-permeated textures of Lachenmann's music led to unprecedented scandals in German (and international) music life of the 1970s and 1980s, not least due to their refusal of familiarly pitched musical structures; at the same time, the composer has insisted (and this has been considered especially provocative by some) that his way of approaching sounds was deeply embedded in a tradition from Bach to Mahler and Schoenberg, in which 'elements of compositional individuation are directly apprehensible as rejections of the usual; as latent or open cause of scandal, as expressive redefinition of the means of composition' (Lachenmann 1980: 23).

Evidently, Lachenmann's dismissal of the noise category in the context of the 1970s or 1980s was a reaction to what he perceived as attempts to isolate his music from mainstream tendencies of new music, based on a 'polemical game with the term "rejection", which would like to stamp me as an ascetic, sulking preacher with a morally raised index finger in the desert of smothered scratching noises' (1996d: 70–71)[3] – a formula that by generous self-quotations and multiple references in the journalistic and scholarly literature has become a much revisited topos of Lachenmann's reception.

Even in more recent statements, the composer has upheld his rejection of the category of 'noise'. In an interview with Matthias Hermann on a CD-ROM

(2013), he argued that he favoured the term 'sounding elements' over 'noises', preferring 'to speak of rushing or hissing or breathing or rattling, clattering, pattering, snarling, pawing, also snoring, crunching, or toneless blowing, depending on the intended sound result'. If this quotation suggests that the rejection of the noise category is mostly resulting from its lack of nuance, another statement from 2015 makes a more explicit claim at 'pitched sounds', referring to the scordatura (*Ab*1–*G*2–*Db*3–*F*3) of the cello in *Pression* for a cellist (1969/1970), by which Lachenmann refers to a double-dominant sonority above a dominant pedal in a *Db* major version of Gustav Mahler's song *Ich bin der Welt abhanden gekommen* (1901) (*Ab*1–*Eb*2–*Ab*2–*G*3–*Bb*3–*Db*4–*F*5, bar 55).[4] In a filmed discussion with cellist Lucas Fels, Lachenmann argues that these pitches should be heard in *Pression*, deploring the 'old misunderstanding' to be 'pigeonholed as a composer of noise'. Fels reflexively replies: 'But this has nothing to do with noise', and the composer concludes: 'That's rubbish' (Lachenmann and Fels 2015, 14′33″–14′45″).

   Lachenmann scholarship has largely followed the composer's own scepticism concerning the term 'noise'.[5] The foundational 2000 study on Lachenmann's orchestral works by Rainer Nonnenmann makes the problem implied in this position explicit and critically reflects it:

> Although his compositions consist to a large extent of noise, it is not without problems to speak of noise compositions, because the term noise is generally connoted pejoratively and does not correspond to Lachenmann's positive understanding of what is otherwise devalued as noise. Even if it would therefore be better to speak in a value-neutral manner of complex tones or sound mixtures instead of noises, there will be talk of noises in the following, and not just for reasons of convention, but because this also to some degree on a linguistic level preserves the consciousness of breaking taboos and the resistance to traditional aesthetic norms, which Lachenmann's music seems to advocate in an exemplary way, but to which it cannot be reduced because it is more than polemical negation of the familiar.
>
> (Nonnenmann 2000: 23)

Evidently, this 'resistance to traditional aesthetic norms' to some extent aligns with the avant-gardist impetus of using noise as a provocative musical means as outlined above, especially when one considers the historical context in which Lachenmann's *musique concrète instrumentale* was originally developed – the student movement of the late 1960s. It is important in this context to emphasize that Lachenmann's works from the 1960s and 1970s were conceived in a post-serial manner throughout, with performance techniques treated rigorously as 'parameters' of the music and subjected to a systematic elaboration. At the same time, it remains crucial to understand the sound world of *musique concrète instrumentale* as an example of a politically motivated liberation of perception against the backdrop of a wave

of 'critical composing' that emerged in Germany during the 1968 student protests. Referring to the calls for political and social liberation during the 1968 and 1969 'student revolts', Lachenmann emphasizes that 'to hear the good old notes we [knew] before in another context is a sort of [liberation]' (Lachenmann and Brodsky 2013: 12′11″): noise as resulting from a reconceived approach to the instrumental 'bodies' challenges the common trope of the concert hall as a safe haven of unpolitical beauty. While Lachenmann considers it 'senseless to make any propaganda in [a] piece [of music]', he sees a 'sort of political message' by addressing through his music the 'human spirit whose decisions make [a new form of musical communication] possible' (*ibid.*: 13′23″). He places this position in direct opposition to the more explicit 'political' music of the 1960s and 1970s, referring to works from that period in which 'the composer wants us to be moved' (*ibid.*: 14′42″) by using more or less conventional expressive topics. In the same vein, he considered those reactions to his percussion concerto *Air. Music for Large Orchestra with Percussion Solo* (1968–1969) that perceived this work as an 'example of aesthetic refusal and protest against ingrained orchestral cuisine' as a clear misconstruction (1996e: 125) – a work, in which gun shots integrated into the orchestral writing at the Frankfurt premiere on 1 September 1969 evidently resonated with the politically charged killing of Benno Ohnesorg (2 June 1967) and the attack on Rudi Dutschke (11 April 1968) but were still 'motivated primarily musically' (Nonnenmann 2005: 10). Although the composer generally identified with the student movement (Nonnenmann 2000: 49), the refined perspective on the political context of his day ultimately led to a long-lasting conflict with Lachenmann's former teacher Luigi Nono's institutionally framed political activism up to the early 1980s (Nonnenmann 2013: 249–323).

Another channel through which the use of noise became a self-evident means of composing for Lachenmann during the 1960s was a broad familiarity with what has been called 'avant-garde universalism' (Hamilton 2013: 92), an aesthetic position that denies a delimitation of sound, tone and noise. While the origins of this position are surely to be traced in the works and writings of Henry Cowell and Varèse (Nort 2006: 173), it was John Cage's trenchant formulations of that position (see, for example, Cage 1961: 3) that had been particularly influential on European composers already since the mid-1950s with the emancipation of noise timbres in Cage's works for prepared piano playing a crucial role in this process (Iverson 2019: 49–73). Although Lachenmann had rejected Cage's universalist aesthetics while he was working with his teacher Nono on the latter's Darmstadt lecture in 1958 (Nono and Lachenmann 1996) and remained sceptical of European appropriations of Cage's aesthetic throughout the following decades (Lachenmann 1996i), he later retrospectively acknowledged Cage's influence, referring to him as an 'exemplary practitioner of radical liberation' (*ibid.*). And while the basic compositional idea of Lachenmann's *musique concrète instrumentale* that of exploring the inner structures of musical sound, aiming at a self-similarity

of sound and form, was originally indebted to principles Karlheinz Stockhausen had postulated in the early 1950s at the beginnings of serial electronic music (Stockhausen 1963: 34–35, see Nonnenmann 2000: 40), the label of *musique concrète instrumentale* was not incidentally chosen in reference to Schaeffer's acousmatic approach to sound and noise (Lachenmann 1996j: 211): despite the obvious differences in their compositional approaches, Lachenmann aimed at integrating those 'anecdotic' or 'auratic' qualities of sound and noise which at least the early post-war aesthetics of serial and electronic music had rigorously excluded (see below).

Even more importantly, *musique concrète instrumentale* was emerging from a performer-based, bodily and sensualist approach to sound after Lachenmann had remained largely unsatisfied with the results of his work in the electronic studio. At the Instituut voor Psychoacustica en Elektronische Muziek (IPEM) at the University of Gent, he created the twelve-minute *Scenario* for tape in 1965, mixing synthetic and recorded sounds, the latter taken from a recording of his work *Introversion 1* (1963) for clarinet, harmonium, harp, double bass and percussion (Sabbe 2006; Nonnenmann 2013: 274).[6] The performer-centred approach was not least guided by Lachenmann's political impulse to stage his 'adventure of hearing with hardly developed sound relationships […] not in the exotic remote of electronic sounds […], but in the familiar symphonic apparatus, in the lion's den, so to speak' (1996e: 125). To some degree, this approach therefore can also be understood as an attempt to disentangle the use of noise-permeated sonorities from the industrial and technological implications it had carried since Russolo and Varèse (Nort 2006: 174). The performance-sensitive approach was notably triggered by an intense collaboration with percussionists in a series of works featuring prominent percussion settings between 1963 and 1969 including *Introversion 1* (1963) and *Introversion 2* (1964) for clarinet, harmonium, harp, double bass and percussion, *Interieur 1 for a Percussion Soloist* (1965–1966), *Trio fluido* for clarinet, viola and percussion (1966) and *Consolation 1* for twelve voices and four percussionists (1967), all culminating in the percussion concerto *Air*. The impact of the percussionists Christoph Caskel (with whom Lachenmann studied percussion instruments during the *Kölner Kurse für Neue Musik* in 1963 and 1964), Michael W. Ranta and Siegfried Fink on the evolution of Lachenmann's compositional agency during that period can hardly be overestimated (Nonnenmann 2000: 37–39, 2013: 246). Although a simple transfer of unpitched percussion timbres to string or wind instruments has never been envisaged by the composer, it is clear that performance movements emerging from an extended approach to percussion playing (striking, bouncing, rubbing, scratching and so on) were crucial in the overall evolvement of *musique concrète instrumentale*.

More generally, the problem of how to differentiate the role of noise in Lachenmann's music can be explained with recourse to what the composer has since 1987 described as 'dialectic structuralism' (1996f: 349, 1996h: 83): an emphatic relationship to tradition is the precondition of a critique of

tradition. This position emerged from a sharp rejection of neo-tonal or neo-Romantic tendencies since the early 1970s as well as of concurrent trends of post-serial complex music. Lachenmann accused New Complexity's 'structural mannerisms' of assuming the 'fiction of a historically and socially untouched or unencumbered material thinking and a corresponding space of listening without presuppositions' and of relying on an 'unbroken technological optimism' that institutes 'complexity in a sterile space where it does not bother anyone and where a "disinterested", technologically impressive hearing delights itself in a botanizing way, as it were' (1996h: 83). This dialectic understanding of tradition, emerging from a specific reception of Schoenberg, Adorno and Nono (see Utz forthcoming b), prompts a composer to engage with those securely kept areas of aesthetic experience (including most parts of contemporary music practice and reception) in which the present society isolates art from the everyday and political experience in a comfortable space of non-reference. The unsettling qualities of noise-permeated sounds in Lachenmann's works assume a crucial function in disturbing such pacified areas. In a broader context, it therefore seems pertinent to emphasize that Lachenmann's sounds not only participate in a crucial turning point of a narrowly conceived late post-war *music* history but significantly contribute to broader streams of modern noise, audio and listening cultures. Historical accounts of such cultures (Hegarty 2007; Bijsterveld 2008), however, have hitherto ignored Lachenmann's impact – which may not least be due to the composer's and his interpreters' insistence on the 'music-structural' character of his noise sounds outlined above.

Acknowledging this broader relevance of Lachenmann's sound invention makes it necessary to take the field of tension between the provocative implications of noises and their socio-political contexts, on the one hand, and their integration into tradition-oriented and pitch-related musical structures, on the other hand, as a departure point for any analytical investigation of Lachenmann's music. The following two-level analysis of *Gran Torso*, Lachenmann's first string quartet and certainly one of his most rigorous works as far as the exploration of noise is concerned, is thus centred around the question of where, why and how noise elements either serve structural or form-functional purposes or 'come to their own' in moments of unconnected presence. Of course, such a distinction cannot be made on the basis of any definitive arguments but still the differing analytical perspectives may help to draw a more nuanced picture of the experiential quality that noises play in Lachenmann's music. This analysis complements my earlier analysis of *Pression* in which I approached the formal structure of this similarly noise-based (though much shorter) work from three different morphosyntactic temporal archetypes, namely, architectural or spatialized time, transformative or processual time and presentist time (Utz 2017). As in this earlier study, I will argue here that the performers have a crucial influence on how the pitch and noise structures may be experienced by listeners, although the present chapter does not rely on a similarly systematic comparison of recorded performances.

Two Perspectives on Experiencing Noises in Lachenmann's *Gran Torso*

Lachenmann's *musique concrète instrumentale* (see Kaltenecker 2016b) emerged during the late 1960s and was a compositional poetics in which the physical actions and resistances of sound production are at the centre of attention. Its origins lie not least in a rigorous criticism of sound composition (*Klangkomposition*) or sonorism in works of the early 1960s by Krzysztof Penderecki, György Ligeti and others as attested by the well-known essay 'Klangtypen der Neuen Musik' (Lachenmann 1996a), written in 1966 with first versions dating back to 1963–1964 (see Utz forthcoming a). Although *Klangkomposition* had originally been a trend of new music that served as a decisive impetus in supporting Lachenmann's efforts to distance himself from 'orthodox' forms of post-serial music (Nonnenmann 2013: 190), Lachenmann's goal since about 1963 had been to find a model of 'composing sounds' in which sound material and form were indissolubly interwoven. The concept of 'structural sound' (Lachenmann 1996a: 17–20) introduced by the composer for this purpose and put into practice in his own works by means of a highly complex post-serial 'structural net' (Cavallotti 2006: 80–90) regulates the entries and lengths of predefined instances of 'sound families' (Lachenmann et al. 2008: 20–27) in a complex and multivalent form of polyphony. Similar to Ludwig Wittgenstein's concept of 'family resemblance', the attribution of an individual sound to a sound family in Lachenmann's poetics is not exclusive but might be ambivalent: a sound might be attributed to several families at once (see Neuwirth 2008). For example, a low trumpet sound articulated in *pianissimo* and played with flutter tongue could belong to families such as 'brass', 'pianissimo', 'rattling/fluttering' or 'middle/low register'. Arranging such families as 'structural sounds' results in a 'polyphony of orderings' (Lachenmann 1996a: 18), which not only allows one to discover new 'family resemblances' and thus new formal processes with each listening but is also decisive for a close correlation between sound and form as envisioned in the concept of 'structural sound'.

Gran Torso – Musik für Streichquartett (1971–1972, revised in 1978 and published in a rewritten form in 1988)[7] can be regarded as a particularly provocative work of the early *musique concrète instrumentale*, mainly associated by the composer with his works *Air* (1968–1969), *Pression for a Cellist* (1969–1970) and *Kontrakadenz for Large Orchestra* (1970–1971). The two orchestral works feature spectacular media-reflexive sound generators (radios) and everyday objects used as 'ad-hoc instruments' such as wind-whipped crops, cracking branches, electric bells, a zinc tub or rubbed Styrofoam (see Nonnenmann 2000: 21–137). These works thus endorse that anecdotic, in Lachenmann's words 'auratic' (1996c: 60–61) quality of noise components which, according to Pierre Boulez or Stockhausen, were considered ill-fitting with the serial project of non-referential

music (Wilson 1985: 110–111). In the context of the prestigious and tradition-imbued string quartet genre, however, such more explicitly 'avant-gardist' reflections of the art-life dichotomy seemed to be ill-fitting and it therefore appeared of particular importance for the composer to emphasize that the enormous richness of the sounds emerging through *musique concrète instrumentale* in this work does not aim at a 'negative idyll' but rather intends to 'reveal' traditional ways of composing such as 'analogy, contrast, expansion, contraction, transposition, modulation, transformation' (Lachenmann 1996g: 197). Most importantly, 'pitch and noise were not opposites, but were constantly emerging from one another in different ways as variants of superordinate sound categories' (Lachenmann 1996k: 227).

Analysis 1: Gran Torso as Temporal Form

An analysis that follows such paths suggested by the composer can easily identify formal principles and functions that may let this music appear as a rethinking of 'classical' categories' of form: timbre- and rhythm-based gestures, especially in a live performance, are easily understood as traces of particular performance movements and constitute narrative threads that can certainly be associated with conventional temporal or formal musical functions. Generally, Lachenmann's works from this period appear to be exemplary of a compositional practice unfolding 'from below' – they constitute bottom-up processes, in which the individual gestures or actions of the performers can be observed combining into a superordinate context, which, as it were, creates itself.

It is hardly surprising that the interpretations of the formal process in most analyses rely on significantly differing arguments (see Hermann 2002: 146–147; Vélazquez 2011: 165–167; Carter 2014: 27–56, as well as Hockings et al. 2016)[8] since ambiguity is essential for this kind of self-organization of the material. The overview of the formal design provided in Table 8.1 is, therefore, only to be understood as one of several options. It is based on decisive macroformal markings (cues), which are defined by criteria of morphosyntactic analysis (see Utz 2013, 2017), in particular by changes in the dominating structure or sound generation technique, sometimes reinforced by obvious caesuras such as general pauses. Most often, however – as mentioned in most analytical accounts –, these sections do not present clear boundaries; instead, transitory zones are established by a continuous transformation of sonic characteristics:[9] 'Sound modulation and overlapping techniques (fading in and out) as a stylistic principle promote the experience of processuality' (Hockings et al. 2016). This feature most notably connects the noise-sound structures with conventional temporal functions in multiple ways.

The fragmentary character referred to in the title of the work ('torso') is particularly recognizable in the 'interrupted exposition' that introduces

Table 8.1 Lachenmann, *Gran Torso*, formal structure, score-based durations (calculations based on metronomic tempo, integrating tempo changes and fermatas in the calculation) compared to durations realized in the recording by the Arditti Quartet (2006, see also Table 8.2).

Phase	Section	Bars	Section	Duration (sec.)				Percentages (%)			
				Score		Arditti Q. 06		Score		Arditti Q. 06	
I	**1**	1–15	interrupted exposition	64	**80**	65	**85**	4.85	6.06	4.72	6.19
	2	16–19	interrupted exposition (echo)	16		20		1.21		1.47	
II	**3**	20–61.1	rustling field 1	175	**257**	181	**261**	13.26	19.47	13.15	18.91
	4	61.2–71	rattling field 1	49		46		3.71		3.32	
	5	72–80	rustling field 2	33		34		2.50		2.44	
III	**6**	81–103	rustling field 3	176	**365**	191	**380**	13.33	27.65	13.84	27.52
	7	104–106.1	rustling field 4 / 'anti-climax'	70		78		5.30		5.65	
	8	106.2–122.2	rustling field 5 (impulse genesis)	119		111		9.02		8.03	
IV	**9**	122.3–187	impulse field (development)	275	**275**	278	**278**	20.83	20.83	20.14	20.14
Va	**10**	188–205	rattling field 2	59	**76**	63	**83**	4.47	5.76	4.53	6.02
	11	206–208	*flageolet chord*	17		21		1.29		1.49	
Vb	**12**	209–259	rattling field 3	146	**267**	169	**293**	11.06	20.23	12.24	21.22
	13	260–272	rattling field 3 – echoes	50		53		3.79		3.83	
	14	273–280	damped closing chords	71		71		5.38		5.15	
Total				1320	**1320**	**1380**	1380	100	100	100	

a large number of sound families, while in the further course long passages are reduced to only a few families or sounds. In this exposition, a genre-typical character of correspondence and communication becomes evident which can be understood as a reference to the tradition of communicative interplay, in the sense of a 'multiple agency' (Klorman 2016): the instruments react to one another, but not only in an omnipresent dialogue or complementarity. In bar 1, viola and cello create a superordinate phrase with obliquely wiped bow wood on strings III and IV; in bar 5, a crunching impulse on the back side of the instrument by violin 1 triggers a *flautato* (which maximizes the non-pitched sound of the bow) of a half-flageolet *B*4 in the cello; but, this vague idea of a pitched quality is immediately masked by a pressed bow sound of violin 2, crescendoing into an 'extremely incisively pressed' sound ('äußerst scharf gepresst', violin 2, bar 6). In many places, one of the instruments takes on an initiative role and thereby diverts the process in a completely new direction. Especially in the interrupted exposition, such diversions continue without the newly introduced sound families being able to really establish themselves, contributing to the impression of fragmentariness.

After a large number of general pauses and other interruptions (including bars 14, 15, 17, 19, 20), a continuous soft noise sonority constituting a first 'rustling field' spreads from bar 25 in the viola ('writing' with the bow between the bridge and the finger on the board) and cello (*flautato* on the bridge of the fourth string in the highest position with the string clamped between the fingers). This more than three-minute state is interrupted abruptly in bb. 61–71 by a short 'rattling field' (section 4), the first sustained manifestation of the pressed bow sound which is to dominate three further sections (10, 12, 13), but then, the 'rustling field' continues with a dreamy persistence for a total of almost ten minutes (according to the score, sections 3 and 5–8 last ca. 9:33 minutes in total). In this course, the soft noise goes through the most varied transformations – almost always at the hearing threshold – and is also transferred to other instruments. The 'shape' of the sounds is reduced to a minimum, moving toward extreme regions of an 'amorphous' noise, which for a few minutes exclusively explores the limits of audibility (sections 6–8) – Heinz-Klaus Metzger aptly spoke of an 'anticlimax' (Lachenmann 1996g: 198).

After the number of sound families has been successively expanded again in the development-like and increasingly polyphonic impulse field (section 9; see below), the second rattling field (section 10) is soon interrupted by flageolet sounds (section 11), which – analogous to a key passage in *Pression* where a pitched quality surfaces – in bar 206 combine to form a veritable 'chord' and thereby constitute the work's only explicit 'pitch moment'. This moment again is intentionally fragmented and gives way to the third and longest rattling field (section 12), whose almost three-minute cascades of noise appear as a dynamic-energetic climax and are followed

by successively fading echoes (section 13), before a sequence of muted Bartók-pizzicato chords, isolated by expanded silences, concludes the work in a cadence-like manner. In the second part of the work (sections 10–13) too, a continuous soft noise, mostly generated by *flautato* techniques, remains the 'centre of gravity' (Hermann 2002: 145), appearing as a kind of continuous non-temporal grounding of the dramatized sound events in the foreground.

The diverse linking techniques that Lachenmann develops on the basis of the concepts of sound families and structural sound can be exemplified by a closer look at the central 'development section', which makes the 'polyphony of orderings' particularly clear (see also Hermann 2002: 134–138). The approximately four-and-a-half-minute section is prepared in section 8 (from bar 106.2) with initial hints of rhythmic figures using a 'toneless' *tenuto* or *tremolo* at the edge of the instrument body (on the frame). With section 9, this newly constituted *gestalt* comes to the fore in the form of four sound families, which are all related to one another by a predominating *impulse* character – a 'family resemblance' that from the beginning suggests a tendency to converge:

1   *arco balzando* impulses: letting the bow hair bounce on the string by its own weight produces a slightly accelerating series of impulses (for the first time in bar 122, violin 1);
2   Bartók-pizzicato impulses: either on an identified pitch or on a damped string (for the first time in bar 131, violin 1);
3   *legno saltando* impulses: dense shaking of the struck bow wood, partly with glissando effects achieved by shifting the point of attack (for the first time in bar 133, violin 1);
4   *legno battuto* impulses: a single stroke of the bow wood (for the first time in bar 135, violin 1).

Figure 8.1 clearly shows how interruptions in the form of general pauses in this section fulfil the function of energetic triggers: the first pause (b. 138), shortly after all four families have been introduced, leads to a strong and continued density of events (b. 139–155); after the second pause (b. 156), however, the situation is almost exclusively limited to a field of ostinato *legno saltando* impulses, complemented from bar 172 by *legno battuto* strokes of the cello played *dolcissimo* and adding a clearly pitched character (preparing the 'pitch moment' in section 11). This situation is, in turn, 'overridden' by the following general pause (b. 177), which opens the space for a cadence-like conclusion of the section and at the same time prepares the following rattling field 2 (section 10) by introducing isolated pressure impulses and a compressed sequence of arpeggiated pizzicati.

Figure 8.1 and the above description seem to suggest a kind of 'pseudo-causality' of the events, as outlined by Ligeti using his orchestral work *Apparitions* (1958–1960) as a model of form (Ligeti 2007a: 95, 2007b: 173,
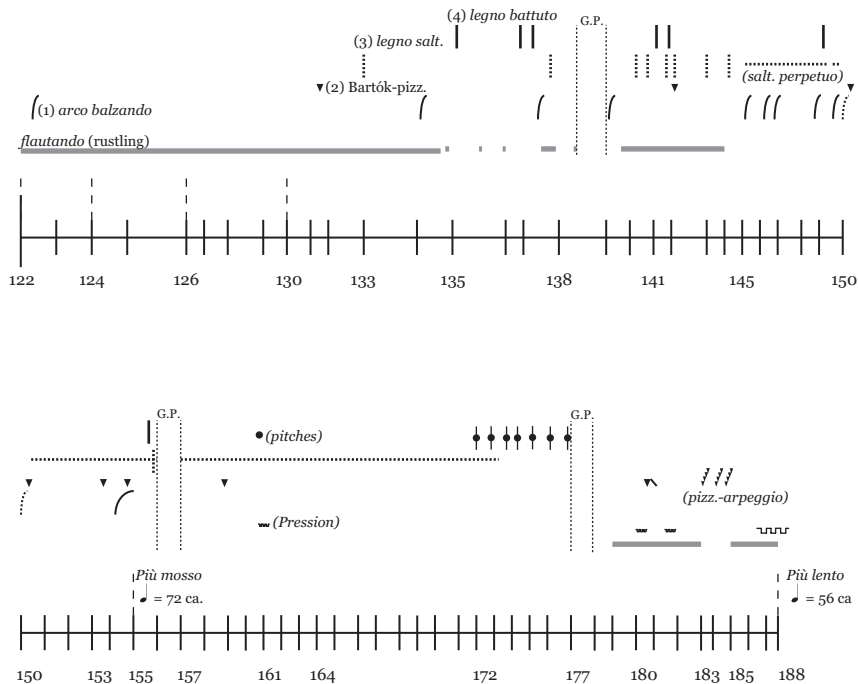
Figure 8.1 Lachenmann, Gran Torso, schematic representation of bb. 122–187.

see Borio 1993: 56),[10] enhancing a tradition-based form of temporality in *Gran Torso* as a whole. Re-reading Elisabeth Egger's analysis of Lachenmann's work that posits an analogy between the large '*flautato*-field' (bb. 1–188) in the first part (which takes about three quarters of the total duration) and the large 'rattling field' in the second part (bb. 188–280), one may go even further in attributing familiar formal processes to the work: both parts describe a process from sustained to increasingly perforated and ultimately isolated pizzicato impulses (Egger 2008: 168–169). Thus, one could certainly associate the formal process described by this piece with the metaphorical implications of sonata form as laid out in *Elements of Sonata Theory* as a two-fold division into 'a structure of promise' (exposition, bb. 1–121 – the impalpable *flautato* sound as a 'promise' of more substantial sounds to come) and a 'structure of accomplishment' (recapitulation, bb. 188–280 – the pressed bow sounds functioning as a – somewhat overfulfilled – accomplishment of this promise) – separated by a more unpredictable 'development' (bb. 122–187) in which familiar material is reconsidered and developed (Hepokoski and Darcy 2006: 17–20). Even though such outrightly traditionalist interpretations are certainly possible, it remains questionable if they do justice to the music's unique sonic and temporal qualities.

Analysis 2: Gran Torso *as Fragment or Moment Form*

The specific quality of Lachenmann's sound polyphony certainly lies not only in its undoubtedly effective form-energetic and form-constituting power but also in its flexibility to abruptly abandon the chosen direction or gradually divert to hidden paths. In such manifestations of 'fuzzy' musical logic, one may discover moments of presentist time experience that effectively interrupt or subvert the formal process and raise doubts about the composer's own preference for a 'traditionalist' reading of his music. Noises surely play an outstanding role in this context as they are explored, developed and 'sensed' by the performing musicians.

Among the existing analyses, Ryan Carter's has made the most comprehensive efforts in accommodating these areas of sound and noise experience. His strategy is not unsimilar to that pursued in the present chapter in that he starts with a descriptive analysis of dominating performing techniques and their formal orderings which is then 'overwritten' by a second analysis in which the sounds themselves are at the centre of analytical attention: five full recordings of the work are compared using MEAPsoft,[11] a software tool for audio segmentation and feature extraction. Carter limits the feature extraction to the functions 'average frequency' and 'average spectral flatness'. The first attributes an average frequency to a segment, allowing large-scale frequency structures to derive, quasi in the manner of a middle-ground Schenkerian analysis. The second represents a segment's harmonicity in between pitch-based (low flatness value) and noise-based (high flatness value) spectral structures. Although visually appealing and methodologically well reflected, this method in the end suffers from what the author indulgently calls the 'flattening effect of feature extraction' (Carter 2014: 75) resulting in a rather generalized, at times tautological account of pitch-noise relationships. Not surprisingly, clearly identifiable pitches in *Gran Torso* are limited to short fragments (and often to extremely high registers), a technique well established in the concurrent orchestral works. This is, as Carter aptly observes, because a

> preponderance of these [pitched] sounds would encourage a listener to consider pitch relationships as a primary organizing principle. Instead, Lachenmann uses these sounds in isolation […]. […] Lachenmann seems particularly fond of "sustaining" sounds with only a hint of pitch […].
>
> (*ibid.*: 76)

While the feature extraction reveals notable aspects such as a certain degree of harmonicity produced by specific spatial-acoustic environments (*ibid.*: 84), the graphs generally fail to contribute essential aspects of 'machine listening' (*ibid.*: 63) that could not be derived from 'human' close listening methods. The stability of sound features observed over the course of the predefined sections is equally self-evident. Clearly, the most significant aspect

here is that differences between the recordings are immediately apparent. The most essential factor lacking in Carter's analysis, however, are the dimensions of duration and loudness which are considered only implicitly and in their relation, but not in their absolute phenomenological qualities. In re-listening to the quartet, the significance and salience of these two factors become apparent. After a rather 'conventional' beginning (when considering the density and communicative kind of 'interactive' agents or personae described above), the insertion of complete silences repeatedly disrupts the formal process, establishing a 'rustling field' in an instable area of hardly recognizable 'pitched noises' which is only temporarily interrupted by a first short exposition of pressed bow sounds (section 4, bb. 61.2–71). The rustling extends for a total of 9:33 minutes 'score time', expanded to 9:55 and 11:00 minutes in the two Arditti recordings (2006, 2015, see Tables 8.1 and 8.2), a percentage of 43%–44% of the total playing time. Given that even beside this expanded field of reduced loudness, the 'impulse field' of section 9 as well as the echoing fields 2 and 13 are equally located on low dynamic levels, the significance of near-silence for the experience of the piece in unmistakable. The low auditory level – different from Nono's famous *Diotima* string quartet in that Lachenmann does make less use of absolute silence but establishes rather an eminently soft continuous noise sound at the hearing threshold – sensitizes the listener to the tiniest details such as the disappearance of the vague-pitched qualities in the high viola solo in section 6 at the beginning of section 7 (b. 104). This aesthetics of fragmentation and Beckettian 'lessness' is contrasted with the bewildering, ecstatic celebration of the pressed bow variants in sections 4, 10 and 12. Despite all the efforts to integrate the last of these three sections into a processual temporality, this pivotal movement, in particular, seems to take on an independent quality of presentist contemplation – a contemplation of noise which tears the listener away from any temporal form-related continuity. Thus, it is the discontinuity provoked by both the utmost tranquillity and the utmost violence of Lachenmann's noises that challenges conventional interpretations of musical form in this work.

Tables 8.1 and 8.2 show that the performance, even when testifying to an astonishingly meticulous tempo discipline as in the case of the Arditti 2006 recording, can transform the sound process in a specific way. The Arditti Quartet in 2006 apparently continues Tempo I (quarter note = ca. 56) throughout the climactic section 12, while according to the score, a *più mosso* (quarter note = ca. 66), prescribed at bar 196, should be applied here (which only returns to Tempo I in bar 266, seven bars after the beginning of section 13). The Arditti Quartet thus gives section 12 a considerable weight, which results in an exact balancing of phase V (sections 10–14, 27.24% of the total duration) and the major rustling fields in phase III (sections 6–8, 27.52% of the total duration). The 2015 recording, in contrast to the score-oriented timing of the 2006 performance and possibly due to the live situation and an intention to point more clearly to details, takes exactly two minutes longer

Table 8.2 Helmut Lachenmann, *Gran Torso*, Discography.

Performers	Version	Date of Recording	Place of Recording	Releases	Full Duration
Società Cameristica Italiana	original version (1970–71)	06/05/**1972**	Radio Bremen	Edition RZ – Ed. RZ 1003 (LP), 1990	25'15"
Berner Streichquartett	revised edition (1978)	[1986?]	SWF Baden-Baden	5504 Digital (LP **1986**; CD 1988)	20'25"
Quartetto Danel	rewritten edition (1988)	09/10/**2005**	Festival di Milano Musica, Sala Puccini del Conservatorio 'Giuseppe Verdi' di Milano	Stradivarius – STR 33870 (CD, 2010)	20'29"
Arditti Quartet	rewritten edition (1988)	26–28/06/**2006**	Beethovenhaus Bonn	KAIROS – 0012662KAI (CD 2007)	23'00"
JACK Quartett	rewritten edition (1988)	07/11/**2008**	WDR Funkhaus Cologne	Mode – Mode 267 (CD 2014)	24'00"
Stadler Quartett	rewritten edition (1988)	[2010?]		NEOS 10806 (SACD **2010**, DVD 2016)	22'01"
Arditti Quartet	rewritten edition (1988)	16/02/**2015**	The Chapel, King's College London	Institute of Music Research, School of Advanced Study, University of London (Online Podcast 2015), http://podcast.ulcc.ac.uk/accounts/SAScasts/arditti.xml (accessed 17 May 2021)	25'00"

for the entire piece (25′00″ instead of 23′00″), considerably expanding the rustling field by one and a half minutes compared to the metronomic duration pointed out above. It is obvious how, on the contrary, in the recordings of the Berner Streichquartett, the Quartetto Danel and the Stadler Quartett the essential stretched moments of the rustling field at the centre of the work are shortened in performance, leading to a considerable modification in the formal proportions of the work.

Conclusion

Lachenmann, at 85, has certainly not 'made his peace with ordinary tones'. His enhanced efforts to integrate the everyday connotations, auratic and anecdotic qualities of noises into a most rigorous musical structure which is informed by Western music tradition seem to be beyond doubt and have been outlined at length in research as well as in journalism. A critique of Lachenmann's 'critical composing', however, must start by scrutinizing this assumption. As I have argued elsewhere, it is probably apt to identify traces of the influential nineteenth-century aesthetic tradition of a supremacy of structure over sound in Lachenmann's writings and compositional concepts, as evident in the definition of the 'structural sound' as an ideal state in which a perception of individual components or streams and an impression of the overall situation oscillate without turning sound into a unifying, holistic 'texture' (see Utz 2013: 30–32). The composer's (and his commentators') circumvention of the noise category might be explained by a similar aesthetic indebtedness to a post-war discourse in which noises were considered incompatible with the serial project. While these tropes can thus be explained as a concession to the serial concept of structure and the ethics of early serial composition, Lachenmann's music makes it clear that structure, sound (implicitly including noise as a subcategory) and perception are interdependent categories, an idea emerging from his familiarity with variants of the 'avant-garde universalism': the dichotomy of sound and form is eliminated, a 'sound structure' may turn into a 'structural sound' and vice versa (Lachenmann 1996a: 17–20). It is this subversion of categories that I have tried to emphasize in Analysis 2 of the present essay: not only can all sorts of sound or noise events be conceptualized as parts of a *structural sound* process that often alludes or rethinks conventional temporal and formal functions of established art music styles but also a *sound structure* can turn into a dominating and guiding revelation of discontinuity and dislocation in the listening experience, creating moments that untie the connections to the surrounding structures and take on a life of their own. These moments of discontinuity are crucially characterized by the exploration of unheard-of *noise* qualities that today stand out as the most individual components of Lachenmann's 'adventure of hearing'. It is actually only by describing and appreciating such moments of unconnected presence that the political undertones of Lachenmann's noises can be adequately reflected in an

analytical context. Beyond their significance for a restricted area of new music, they secure Lachenmann's sound compositions a prominent place in the history of audio and listening cultures in the twentieth and twenty-first centuries. By staging such unheard-of experiences at the heart of Western concert life and within its long-established institutions, Lachenmann's specific implementation of the 'avant-garde universalism' and his unique abilities to interconnect pitched sounds, noises and their historical and auratic connotations have contributed considerably to a reframing of these institutions and their audiences – a fact that should be reflected in analysing his music and in debating its historical significance.

Notes

1 All non-English quotes in this chapter are my translations.
2 Varèse, 'Autobiographical Remarks', unpublished manuscript, Edgard Varèse Collection, Paul Sacher Stiftung.
3 The composer also inserted this sentence into his well-known Open Letter to Hans Werner Henze from 1983 and quoted it again in his essay 'Komponieren im Schatten von Darmstadt' from 1987 (Lachenmann 1996f). In 1993, he varied this formulation to: 'These scandals, provoked in all innocence, have given me the nimbus of a "John the Baptist" in the desert of malicious noises, of the bogeyman from the avant-garde cabinet of curiosities, famous and notorious for the music lover' (1996j: 212).
4 The composer demonstrates this sonority on the piano in Lachenmann and Fels (2015), 15:00–15:38. The Mahler song was noted down by the composer in *Eb* and *F* major versions. The *Db* major version is available as a transposition for low voice.
5 It seems necessary at this point to at least vaguely reflect on the problem that the definition of the German 'Geräusch' (referred to by Lachenmann) is not entirely synonymous with the English 'noise'. The latter appears to be more comprehensive and also especially connotes those auditory impressions that are explicitly categorized negatively by the perceiver, thus phenomena for which in German terms such as 'Lärm' or 'Krach' are reserved.
6 See also http://ppeam.zhdk.ch/song/szenario (accessed 11 August 2021).
7 The work was commissioned by Radio Bremen and dedicated to Italo Gomez and the Società Cameristica Italiana, which gave the premiere in Bremen on 6 May 1972. The revised version was premiered by the Berner Streichquartett in Witten on 23 April 1978. A recording of the premiere by the Società Cameristica Italiana was released on an LP in 1990, a recording of the revised version performed by the Berner Streichquartett was released in 1986. The discography in Table 8.2 below provides an overview of all available recordings. The process of revision has not yet been adequately documented in the literature. Hilberg (1995: 27–28) offers a short comparison of a short passage from the earlier and the later versions. From here (as well as from a comparison of the audio recordings documenting the different versions) it can be guessed that the process of revision also involved aspects of continuity/discontinuity and form, not only a rethinking of the notation. The year of revision is sometimes identified as 1976 (including in the current score edition and on the Breitkopf & Härtel website), sometimes as 1978 (most notably in the composer's own introductory note, Lachenmann (1996b), first published in the programme book of the Wittener Tage für neue Kammermusik 1978).

8 The most extensive analytical treatment of *Gran Torso* appears in Vélazquez (2011) and Carter (2014) (see Analysis 2 below). In addition to Hermann (2002) and Hockings et al. (2016), shorter analytical accounts are offered by Alberman (2005), Egger (2008) and Houben (2018: 208–212). Aspects of performance practice are discussed in Mosch (2017). Among the existing analyses, only Hockings et al. (2016) go so far as to identify the musical form with a classical four-movement structure consisting of a 'multi-part' ('vielteilig') first movement (bb. 1–58), a 'quasi slow movement with introduction' (bb. 59–129), a 'quasi Scherzo capriccioso' (bb. 130–208), and a 'quasi Finale energico' (bb. 209–280), arguing that the 'negation of the genre icon, the string quartet, makes sense if its historical, formal, and genre-aesthetic constitution is given space to shine through as a reflection'. A different variant of the following 'Analysis 1' appears in Utz (forthcoming c).

9 The lack of consensus about the sectional structure in the analyses is surely due, on the one hand, to a multivalence of textures and the processual or fuzzy structures in the transitional areas. On the other hand, there seems to be a certain tendency in these analyses to derive sectional markers from the score rather than from the listening experience. For example, bar 59 serves as a sectional beginning in almost all existing analyses, justified to some extent by the preceding fermata (which according to Hockings et al. [2016] is absent in the 1971–1972 version) and probably also motivated by the beginning of a new staff system, but neglecting the obvious continuity in the viola's *flautato* 'writing movements' up to the second pulse of bar 62. A new sonic quality arguably is only established with the high tremolo in violin 1 beginning a sixteenth before the second pulse of bar 61.

10 Ligeti's essay on *Apparitions* originally appeared under the title 'Zwischen Klang und Geräusch – Neue Kompositionsprinzipien, dargestellt an dem Orchesterstück *Apparitions*'. See editorial note in Ligeti (2007b: 173).

11 See http://www.meapsoft.org (accessed 3 May 2021) as well as Carter (2014: 64–109).

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9 The Mic as a Scalpel – Skinning the Voice in Henri Chopin's Sound Poetry

Jannis Van de Sande

> I heard my voice… in the tape recorder in 1955 and I found that my voice was very good, my texts very bad… absolutely incredibly bad.
>
> (Chopin quoted in Hudak 1994: 9)

Somewhere around 1950, the French poet – or the soon-to-be *sound* poet – Henri Chopin (1922–2008) puts his writings in a bag and burns them on the banks of the Seine. In his 'inevitably incomplete' autobiography, he vividly recalls the event: 'All of them bar twenty or so were washed away in the waves. This was my first big move in poetry' (Chopin 2015: n.p.). Disillusioned by the horrors of World War II, which he experienced first-hand, Chopin dismisses language as a repressive and imperative structure:

> I accused it and I still accuse it as an impediment to living, it makes us lose the meagre decades of our existence explaining ourselves to a so-called spiritual, political, social, or religious court. […] It serves only to propose intelligible usages, normativitized elementary exchanges, but never will it canal the admirable powers of life, because this meagre canaling, as I have implied, finally provokes usury in us through the absence of real life.
>
> (Chopin 1967: n.p.)

Chopin's sound poetry instead turns to the 'pure voice' as a corporeal force enslaved in language: 'In fact, sound poetry is a rediscovery of the space of limbo that we lost when we discovered the written word' (Chopin 2015: n.p.).

Chopin's artistic commitment to the resounding voice is not unprecedented as such. Still long before he laid ear on it, many pre-war avant-gardists similarly renounced the word as the basis for their poetry, privileging instead the autonomous value of its sounding properties. Well-known examples would include the Dadaist poetry of Hugo Ball, Russian Futurism's 'zaum' or the 'parole in libertà' practised by their Italian counterparts. If Chopin's sonic turn moreover ventures into music, his special fascination for the materiality of the voice had been no stranger to composers either. In

the course of the twentieth century, the classical singing voice increasingly has to compete with less polished contestants. Arnold Schoenberg's technique of the *Sprechstimme* is a particularly early and important example. If this 'speaking voice' obviously does not part ways with the word, it does resist the domesticating structures of tonality, paving the way for the rawer and often noisy vocal palette (re)discovered by a first generation of postwar composers. Dieter Schnebel, Mauricio Kagel and Luciano Berio would, among others, contribute extensively to new music's vocal explorations.

Despite the clear similarities between Chopin's work and that of his composing contemporaries, he himself always insists on the distinctiveness of sound poetry – an art form that should not be understood as merely extending an earlier sound-oriented poetics either. Designating the latter as 'phonetic poetry', Chopin repeatedly advocates its distinction from 'sound poetry' proper. If his own status as one of the strongholds of this new art form clearly calls for some critical reserve, many have similarly questioned the validity of a previous departure from 'the Word'. Steve McCaffery (1978: 10) for example argues that

> whilst the work of the Dadaists, Futurists and Lettrists served to free the word from its semantic function, redistributing energy from theme and 'message' to matter and contour, it nevertheless persisted in a morphological patterning that still suggested the presence of the word,

concluding that 'word persists even in the state of its own excommunication throughout the century'. Brandon LaBelle (2010: 152) similarly suggests that 'one does not leave behind signification simply by speaking nonsense, or by turning the mouth into a noise machine'. When (poetic) performance no longer makes sense, it still tends to retain a speech-like patterning, while often taking recourse to a familiar set of phonemes so that at least the general impression of language remains. The issue seems all the more pertinent regarding phonetic poetry in its written form. In his interview with Vincent Barras, Chopin argues that 'the human voice, like musical sound, is not distributed over 7 or 12 values, or 40 phonemes for the spoken word' but rather emerges as the site of 'millions of variations' (1992: §32, my translation). For composers as well, traditional musical notation quickly became an issue, in that it severely restricts the potential reach of their vocal investigations. Unsurprisingly, many of them would explore alternative forms of notation. Dieter Schnebel's *Maulwerke* (1968) – an open score based upon the physical processes of vocalization – is no doubt one of the most fascinating examples in this regard. Poets as well had been developing new modes of writing: both in Dadaist and in Futurist circles, graphical notation occasionally came to replace the familiar set of letters. Still, the page remains a poor recipient when the voice is theorized as the source of a pre-symbolic materiality. *How does one write the unwritable*? Sound poetry, so Chopin will insist, became a reality only when recording technology provided a genuine

alternative for the page.[1] In Chopin's words (2015: n.p.): 'Before 1950, the poet was submissive to known applications of language, whereas with the tape recorder language, like the voice, became a fresh construction site'.[2] Elsewhere, he writes: 'At last, besides the verb and what it composes, the voice manifests itself' (Chopin 1994: 29).

Of course, many composers similarly employed the tape recorder to work directly with sound. Berio, in particular, is an interesting example here: his well-known *Thema (Omaggio a Joyce)* is a tape composition based on a recording of Cathy Berberian reciting a passage from James Joyce's *Ulysses*. If Berio's method is quite similar to that of Chopin – as the following analysis will demonstrate – the latter explicitly expresses his distaste for *Thema* in his infamous 'Open Letter to Aphonic Musicians'. Pierre Henry as well is criticized in Chopin's letter, which denounces the alleged hijacking of sound poetry's artistic program by certain composers. 'The will to set the voice free is poetic' (Chopin 1967: 21): such is his – curiously paradoxical – verdict. If the polemical nature of his letter goes a long way towards explaining his rather blunt statements, Chopin would later argue that Berio and Berberian's approach differs from his own in that their composition still evolves around the 'always perfectly measured' voice, whereas sound poetry precisely grew tired with the latter, seeking out 'the very interior of this voice' instead (Chopin quoted in Barras 1992: n.p.).

'As opposed to theatrical declamation, or singing in opera, the voice in itself portrays multitonal powers unforeseen in our verbal utterings and dictions, viewed in their descriptive roles, or as "messages"' (Chopin 2001: 19, my translation). Clearly, this 'pure voice' does not simply begin where speech ends. Rather, the 'audible slips' that Chopin's work seeks to explore pertain to an expressiveness inherent to the sounding voice itself that 'no grammar can envision' and 'no written or even screamed declamation could exert' (Chopin 2001: 23). By means of the tape recorder, sound poetry hopes to recover the voice's pre-symbolic presence from underneath its articulate surface. Literature has commonly reinforced such an understanding of Chopin's work. Cédric Jamet (2009: 141), for instance, characterizes Chopin's work as 'a nihilistic return towards a body without meaning'. Following a similar line of argument, Kiene Wurth (2013: 9) suggests that Chopin seeks out 'a sound mode that circumvented the symbolic order'. According to Wurth, Chopin's poetry 'has nothing to do with words', instead giving us 'bare, vocal as well as buccal, vibrations' (2013: 3). This resonates with Christoph Cox's view (2018: 2), where Chopin is said to participate in a 'pulverization of meaning and [...] affirmation of linguistic materiality'.

Cox finds in sound poetry an example of what he more generally distinguishes from music as 'sound art'. His argument is based on Friedrich Kittler's theory of the phonograph. In an often-quoted passage, Kittler states:

> The phonograph does not hear as do ears that have been trained immediately to filter voices, words, and sounds out of noise; it registers acoustic

events as such. Articulateness becomes a secondorder exception in a spectrum of noise.

(Kittler 1999: 23)

Traditionally, writing employed a limited set of signs to represent infinitely more complex events. In keeping with the aforementioned issue of musical notation, Kittler, for example, contends that the score is unable to account for 'the world's noise' (Kittler 1999: 24). Drawing from the work of Jacques Lacan, he theorizes this noisy field as 'the real' – that is, 'the waste or residue that neither the mirror of the imaginary nor the grid of the symbolic can catch: the physiological accidents and stochastic disorder of bodies' (Kittler 1999: 15–16). The phonograph, however, operating not by means of symbolic mediation, 'records noises regardless of so-called meaning' (Kittler 1999: 85). As such, Cox (2018: 76) concludes from Kittler, 'phonography discloses […] the primary noise from which music is derived, and it provokes a materialist account of listening and the voice that cuts through the domain of the symbolic and plunges us into the real'. Defining sound art as 'the art of the auditory real', Cox's theory is premised upon recording technology's alleged capacity to attend to 'sound as a material, physical substance' (Cox 2018: 102–103).[3]

Exemplary of this general shift from symbolic to real, Cox suggests that Chopin 'employed electronic equipment to shift the interest of poetry from language and meaning to sound' (2018, 100). Yet, while this appears to be in keeping with Chopin's ideas, a close examination of his actual sound poems calls for nuance. In what follows, I will consider Chopin's *Rouge* and *Dynamisme Integral* and demonstrate how they are at odds with two preconditions set out in Cox's theory. Firstly, both he and Kittler distinguish sound's physical *presence* from any (cultural) meanings it might obtain in *representation*. Bypassing the latter by means of the tape recorder, Chopin's work is understood as 'abandoning *the word* in favour of *sound*' (Cox 2018: 93). Below, an analysis of *Rouge* will demonstrate that the word here is very much present, appearing as the starting point for a subversive practice that precisely explores the tension between language and sound. Secondly, Chopin's work calls into question the alleged neutrality of the tape recorder. If Cox's understanding of sound art derives from the phonograph's status as 'an indiscriminate register [whose] machinic contraction is markedly non-human' (2018: 120), one might question the pertinence of this claim in light of a practice such as Chopin's, where recording technology facilitates the (re)organization and modulation of materials.[4]

Rouge

In an interview with Zurbrugg, Chopin notes how he 'gradually abandoned the written word' between 1955 and 1957 and started to research 'vocal values in their own right' (Chopin quoted in Lentz 2000: 547). *Rouge* (1956),

Chopin's first sound poem ever, was published in the very midst of this transition and thus occupies a rather curious position in his oeuvre.[5] Here, the use of manipulation techniques is very limited when compared to later works. The starting point is a text, a transcription of which is provided in Table 9.1.[6]

As noted by Chopin, *Rouge* is the second part of a threefold theatre play entitled *Vivre pour Vivre*. The main character here is *l'écorché*, or 'the skinned one' (Chopin 2001: 65). The poem then appears to narrate from a third-person perspective a most gruesome scene.[8] With the exception of the five full sentences (occurring twice), the narrator mostly repeats a handful of words related to the 'skinned one'. The preference here is given to the direct sensorial impressions (colour, sound, movements, etc.). The narrator, hence, merely *describes* the scene, rather than *reading* into it the reality of the skinning. In fact, the text parallels the victim's fate by explicitly negating his constituted existence as a (human) individual (*Il n'est que …*), turning instead to the various components that the skinning transforms him into. Interestingly, the narrator too, unable to consciously relate to the state of affairs, largely disappears as the locus of subjective experience. Although the short-spoken nature of the latter's account – which lacks any

Table 9.1 Transcription of *Rouge* (two left columns) with my translation (two right columns).

Rouge, rouge, rouge	*Il n'est que vain,*	Red, red, red	It is all in vain[7]
Rouge, rouge, rouge	*Il n'est que veine*	Red, red, red	He is only vein
Rouge, rouge, rouge	*Il n'est que sang*	Red, red, red	He is only blood
Rouge, rouge, rouge	*Il n'est que sort*	Red, red, red	It is only fate
Rouge, rouge, rouge	*Il n'est que chair*	Red, red, red	He is only flesh
Rouge, rouge, rouge	*Rouge, rouge, rouge*	Red, red, red	Red, red, red
Choc, choc, choc	*Rouge, rouge, rouge*	Shock, shock, shock	Red, red, red
Dur(e) et rouge, dur(e) et rouge	*Rouge, rouge, rouge*	Hard [tough] and red, hard [tough] and red	Red, red, red
Rouge, rouge, rouge	*Rouge, rouge, rouge*	Red, red, red	Red, red, red
Bruit, bruit, bruit	*Rouge, rouge, rouge*	Noise, noise, noise	Red, red, red
Rouge, rouge, rouge	Rouge, rouge, rouge	Red, red, red	Red, red, red
Choc, choc, choc	Rouge (× 20)	Shock, shock, shock	Red (× 20)
Rouge, rouge, rouge	*Il n'est que vain*	Red, red, red	It is all in vain
Rouge, rouge, rouge	*Il n'est que veine*	Red, red, red	He is only vein
Rouge, rouge, rouge	*Il n'est que sang*	Red, red, red	He is only blood
Nue, nue, nue	*Il n'est que sort*	Nude, nude, nude	It is only fate
Nue, nue, nue	*Il n'est que chair*	Nude, nude, nude	He is only flesh
Rouge, rouge, rouge	*Rouge (× 20)*	Red, red, red	Red (× 20)
Rouge, nue, nue, nue, nue	*Bruit, bruit, rouge (L) / Choc, choc, choc (R)*	Red, nude, nude, nude, nude	Noise, noise, red (L) / Shock, shock, shock (R)
	Rouge (× 40) (L) / Rouge (× 38) (R)		Red (× 40) (L) / Red (× 38) (R)

interpretative impulse that would help make sense of the events – might be explained by its shocking nature, there remains an uneasy discrepancy between the reality of skinning and the factual narration. While it is uncannily minimal considering the scene it portrays, the text serves only as a starting point for Chopin:

> The descriptive side explaining the skinning was, with the powers of the tape recorder, quickly abandoned, to leave room for the re-composition to R (throat rolling [*roulé de gorge*]), to OU (exhaling [*souffle expiré*]), to G (hissing [*chuinté*]) and E (aspirated [*aspiré*]).
>
> (Chopin 2001: 65)

While Chopin insists on the importance of the tape recorder, it is worth pointing out that the text itself already prepares for this shift towards sound. Firstly, most of the text consists of single words which are repeated various times.[9] The word *rouge*, in particular, is constantly repeated throughout the work – appearing 137 times out of a total of 203 words, Chopin's text is, indeed, unusually repetitive. Though he refers to *rouge* as a 'Leitmotiv' himself, looping would appear to be the more appropriate musical metaphor (Chopin 2001: 65). Even if repetition as such is far from unusual for a poem, we have six sections here where the word *rouge* is repeated for no less than 9 and up to 40 (!) times, suspending the potential unfolding of a narrative and shifting – at least metaphorically – the attention to the voice in the text.[10] Secondly, the text contains two identical sections that consist of a sequence of full sentences. Here, the similarity between *vain* and *veine*, on the one hand, and *sang* and *sort*, on the other hand, is, of course, not coincidental.[11] Although both procedures are implemented on the level of the text, they will take full effect only in the work's sounding performance.

Having approached *Rouge* as if it were a conventional poem, the following will turn to the sound aspect of the work. Listening to *Rouge*, the calm tone of the narrating voice immediately strikes the listener – at least one who is aware of the work's theme. The aforementioned discrepancy between the text's descriptive character and its theme is further emphasized here by a voice whose sounding timbre in no way corresponds to the view it allegedly reports. In general, *Rouge* consists of two main parts. In the first, words are structured in a verse-like patterning, whereas the second (starting around 1′12″) mostly abandons this familiar cadence in favour of long-lasting repetitions of the word *rouge* without any further grouping into units. On a smaller scale, *Rouge* can be divided into 14 sections which, for the most part, are clearly isolated from one another by short instances of 'silence'. Only the four last sections lack such a caesura, yet the changes in material and technique ensure a clear sense of segmentation.

The resulting structure pictured in Table 9.2 is also the starting point for the only existing analysis of *Rouge* by Michael Lentz.[12] As we can see, Lentz further classifies these sections according to their textual content, yet the

Table 9.2 Structure of *Rouge* following Lentz (2000)

Rouge, rouge, rouge	A	Il n'est que vain,	E
Rouge, rouge, rouge		Il n'est que veine	
Rouge, rouge, rouge		Il n'est que sang	
		Il n'est que sort	
		Il n'est que chair	
Rouge, rouge, rouge	A′	Rouge, rouge, rouge	A‴
Rouge, rouge, rouge		Rouge, rouge, rouge	
Rouge, rouge, rouge		Rouge, rouge, rouge	
Choc, choc, choc	B	Rouge, rouge, rouge	A⁗
Dur(e) et rouge, dur(e) et rouge		Rouge, rouge, rouge	
		Rouge, rouge, rouge	
Rouge, rouge, rouge			
Bruit, bruit, bruit	C	Rouge (× 20)	F
Rouge, rouge, rouge			
Choc, choc, choc			
Rouge, rouge, rouge	A″	Il n'est que chair	E′
Rouge, rouge, rouge			
Rouge, rouge, rouge			
Nue, nue, nue	D	Rouge (× 20)	F′
Nue, nue, nue			
Rouge, rouge, rouge			
Rouge, nue, nue, nue, nue			
		Bruit, bruit, rouge (L) / Choc, choc, choc (R)	C′
		Rouge (× 40) (L) / Rouge (× 38) (R)	G

suggested interrelations do not always correspond to *Rouge* in its sounding form. Seemingly one-sided in its emphasis on the text, the true shortcomings of such an approach become clear if we take into account that, strictly speaking, there is no text. Sections E/E′, F/F′ and C/C′ are most obviously problematic in this regard, given that the differences in tape manipulation are far more pertinent to the listening experience than the shared textual basis. Although Lentz's discussion of the individual sections takes note of these divergent treatments, he does so in the margin of a scheme which downplays these differences in favour of linguistic sameness.[13] In what follows, I will focus on the five different instances of A to demonstrate that, in the absence of extensive manipulation techniques, the sounding differences would repudiate the identification of these sections as repetitions. Not only is every *rouge* unique in its particular sonic properties, but the following analysis also highlights certain developments across the different sections – both of which would call into question, from opposite directions, the notion of sameness proposed by a text-based approach.

As is evident above, 'A' refers to five sections in each of which the word *rouge* is repeated nine times, always in groups of three (i.e. 3 × 3), with small breaks separating these groups. Although the differences in timings encountered throughout these sections give way to an interesting overarching development, this aspect cannot be dealt with here at

length. Instead, my focus will be on Chopin's use of what might be called a limited set of sound materials. The phonetic transcription of *rouge* is ʁ u ʒ, and the word can thus be divided into three distinct sound components. However, Chopin only partly abides by this 'official' pronunciation. First off, he regularly replaces the typically French [ʁ]-sound with a rolled [r]-sound.[14] Also, he occasionally 'adds' a fourth sound to the palette by pronouncing the 'e' of *rouge* (the mid central vowel [ə]), a letter which is often not sounded in the everyday pronunciation of the word. His phonetic resources then are:

> ʁ - voiced uvular fricative ↔ **r** – alveolar trill
> **u** - high back rounded vowel
> ʒ - voiced palato-alveolar fricative
> (ə - mid central vowel)

Rather than treating it as a single word, Chopin finds in *rouge* a constellation of sound components, whose mutual coherence might then be modified over the course of its 'repetition'. The following graphical representation (Table 9.3), developed on the basis of close and repeated listening, seeks to visualize this process of sonic change flourishing amidst textual redundancy. As a starting point, a symbol was chosen for each of the four phonetic components introduced above, with which I attempt to visually 'capture' its sounding nature. These symbols are as follows:

Regarding the 'r'-sound, multiple triangles are used when there was a real rolling r, whereas a single triangle indicates the presence of a more traditional French 'r'-sound, mostly only lightly pronounced. Regarding frequency, it is first and foremost the central vowel 'ou' that underlies the perceived pitch, which has been visualized in the graphic representation accordingly. Small fluctuations in pitch were not considered for reasons of simplification as explained above. As a 'run-up' to the pitched vowel, the rolled 'r'-sound – despite potentially being (semi-)pitched as it is a voiced consonant – barely contributed to the perceived pitches and their frequency. As such it is not considered. While the 'e'-sound is, in

Table 9.3 Sound components of the A sections

R [ʁ - voiced uvular fricative ↔ r – alveolar trill]	▲
OU [u – high back rounded vowel]	∿
G [ʒ – voiced palato-alveolar fricative]	𝕸
E [ə – mid central vowel]	●

fact, another vowel with a perceptible pitch, hardly any real variation was noted in this regard. Moreover, these sounds are, for the most part, extremely short, and their accentuating role was found to be far more significant than their contribution to the melodic course. Finally, while the consonantal 'g'-sound could arguably be said to be the noisiest component present in these A sections (although this is once again a voiced consonant), it could be categorized as semi-pitched. Despite the fact that it can easily be missed in superficial listening, a melodic course – 'complementary' to the main melodic line driven by the 'ou'-sounds – indeed unfolds itself across the many instances of this sound. Rather than specifying a fixed pitch (which is not there), their placement on the frequency spectrum is an approximation and has, as its main purpose, the illustration of this general course. As for intensity, differences were mainly noticeable in regard to both the 'ou'- and 'e'-sounds and this is captured by the size of their symbols.
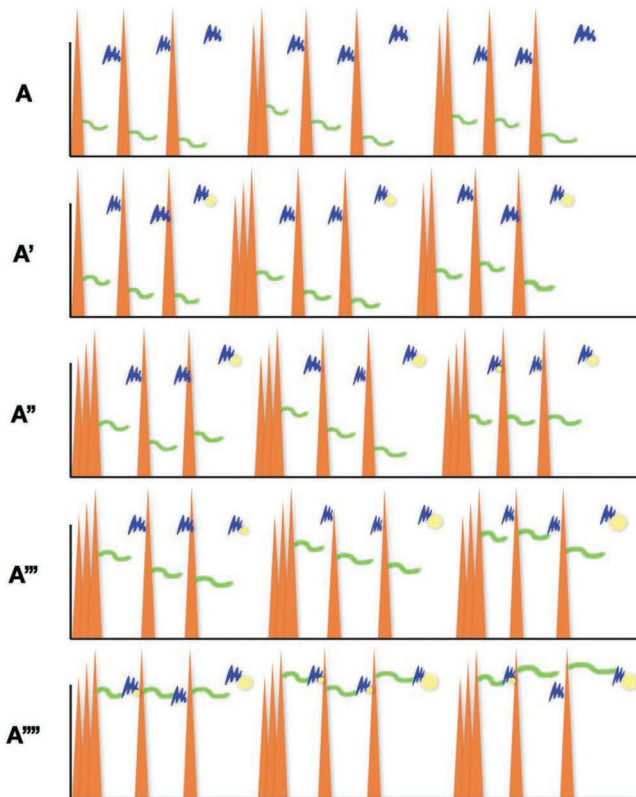
Figure 9.1 Visual representation of the A sections.

To avoid the reductionism of a text-based approach to *Rouge*, the representation in Figure 9.1 takes into account the many sonic nuances regarding timing, composition, pitch and dynamics, which form an integral part of the work. Certain developments can be found across different A sections. In terms of their length, for example, there is a gradual, very slight increase to be noted (with the exception of the second one, which is slightly shorter than the first). The general intensity, mainly determined by the central 'ou'-component, also increases steadily throughout the sections. As for pitch, a few things are worth noting. First off, we can see how on the larger, general scale, there is a clear upward trend. Indeed, while A and A′ stay more or less in the same register, A″ initiates a rising motion. This can be seen in the diagram below (Figure 9.2) which pictures the pitch contours of the different sections.

On a smaller scale what stands out is how approximately half of the individual word groups (eight to be exact) are characterized by a descending melodic contour, as opposed to the general upward motion noted above. Seemingly independent of all of this, the 'g'-sounds develop their own melodic patterns. Here, the succession of a descending and ascending interval is predominant when comparing the individual word groups. At no point, however, do they show the descending motion which has been said to be predominant with respect to the 'ou'-sounds. Furthermore, in almost every group (except for the first of A‴), an ascending motion characterizes the latter two 'g'-sounds. While there is no clear correlation between these two melodic elements, it goes without saying that a contrary motion occurs rather frequently. While both lines obviously do not overlap, this multi-layered melodic course gives the sections a certain contrapuntal allure.

Finally, the phonetic content of the different groups should be addressed. With the first group of the very first A section, we get the most rudimentary configuration possible: no rolled 'r', no 'e' at the end – the word *rouge* repeated three times by the book. The very last group of the final A section (A‴′), on the other hand, sounds and consequently looks quite different. Figure 9.3 compares both groups, the very first one is pictured here on the left and the final pattern on the right.
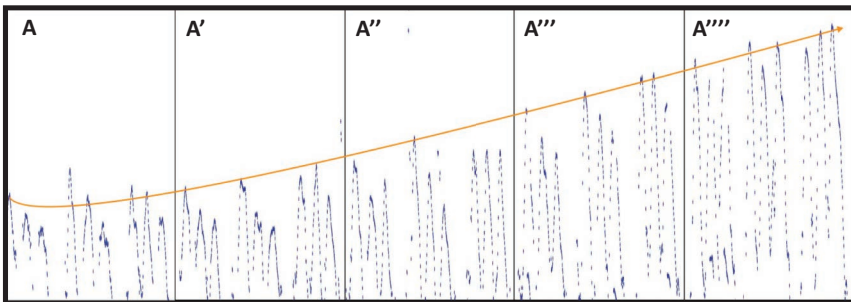
Figure 9.2 Pitch contour of the A sections.
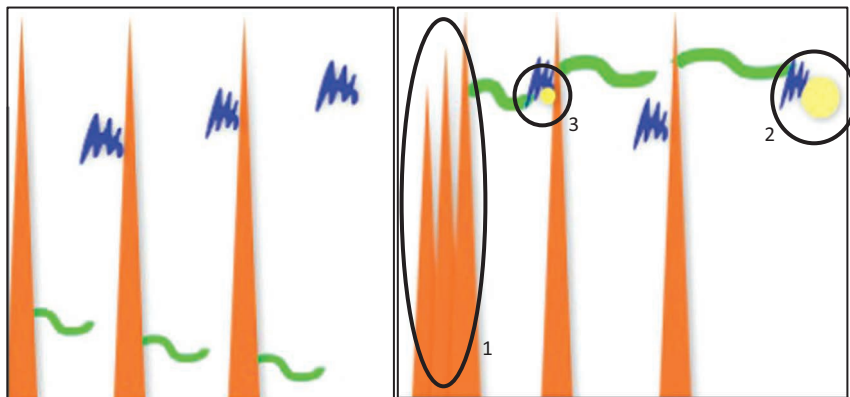
Figure 9.3 First A (left) and final A″″ (right) group.

As we can see, the final group differs from the first one in that it begins with a rather long and marked rolled 'r' (1). The pattern is moreover concluded by a clear 'e'-sound, which is lacking in the beginning of the piece (2). Lastly, the sense of segregation between the different words characteristic of the first group is lost. The unassuming 'e'-sound appearing inbetween the first two *rouge*'s (3) creates a smooth transition, resulting in a more 'flowing' sound (*rougeroug* more so than *roug/roug*).

If we examine the graphic analysis of the word groups and sections that separate these two instances, we find that there is a gradual development towards the latter configuration. All the three main changes are part of a gradual transformation of the initial basic pattern. First off, the long, rolled 'r' at the beginning of the group is already prefigured in section A, where the first word of the second and third group has a slightly more pronounced 'r'-sound than the opening group. The second section experiments with different gradations of this 'r'-sound. And from section A″ onwards, each group starts with a longer, rolled 'r', while the second and third 'r' remain unaltered. Secondly, the 'e'-sound concluding the final word group is introduced in the second section and immediately becomes a fixed component of the pattern. However, as seen in the graphic representation, its initially rather subtle character gradually makes room for a more pronounced presence. While this does not happen linearly per se and occasional relapses occur, a general intensification is unmistakable. Finally, the 'connecting' 'e'-sound in between the first and second *rouge* occurs for the first time in the last group of the third section yet only becomes a real factor in the very last one.

In mapping out the sonorous variations and developments that both underset and transcend the repetitive structure of the text, the above analysis has sought to highlight a tension residing at the very core of

Rouge. Smuggling sonorous variations into textual repetition, *Rouge* is the experience of 'words that become sounds again' (Certeau 1984: 163). Indeed, it is not just that an over-emphasis on the work's textual base would obscure this metamorphosis. Conversely, it seems that Cox's understanding of Chopin's work as merely concerned with the sounding materiality of the voice similarly falls short. Rather than fully abandoning the word, giving us the sounding voice as such, *Rouge* explores the tension between word and sound – or indeed, symbolic and real – as they coalesce in the perimeter of the voice.

Better yet, this field of tension foregrounded in *Rouge* is perhaps nothing other than the voice itself, ever carrying meaning(s) that somehow remain alien to it. In view of Cox's insistence on the autonomous reality of sound as such, the voice seems particularly challenging in that it always already appears to be quite a bit more than that. Obviously, this is true of its culturally significant appearance in speech, music and so on, yet the issue itself is more fundamental. The voice, regardless still of *what* it says, *says something*. Perhaps it is precisely this that we call voice: a *sounding* carried by a *saying*. As such, I tend to disagree with the common argument that Chopin's later work finalizes the break with language merely instigated in early works such as *Rouge*.[15] It is true that later audiopoems lack the overt linguistic basis of *Rouge*, yet the communicativeness of the voice runs deeper than the surface of words. That the voice in its mere presence remains out of reach is, of course, not to deny its existence. Furthermore, *saying* and *sounding* never simply coincide, and the voice precisely emerges as the incongruity between the two. If *Rouge* was said to insist on this discrepancy, the following analysis of Chopin's *Dynamisme Integral* serves to demonstrate how later work, rather than making the definite turn to the real, scrutinizes further the structural tension that is the voice. In addition, a new issue emerges as Chopin increasingly turns to the tape recorder as a tool to modulate and (re)organize his vocals. If recording technology was supposed to register indiscriminately, attending to sound as such, what to make of this technologically augmented voice, which at times sounds barely vocal at all?

Dynamisme Integral

Already in *Rouge* – its second part in particular – Chopin explores what the tape recorder had in store beyond mere registration. Although he kept working with a basic recording setup, Chopin's later work increasingly came to bear on various sound effects.[16] *Dynamisme Integral* is a striking example of the highly unusual sounding work that resulted.[17] As mentioned, the piece lacks any discernible linguistic content, and at times, it barely sounds vocal at all. Yet, the tape recorder is not merely used here as a local sound effect. Although the creation process of *Dynamisme Integral* is undocumented, the main procedure can be deducted from careful listening. The basis of the work consists of the same recording appearing on both the
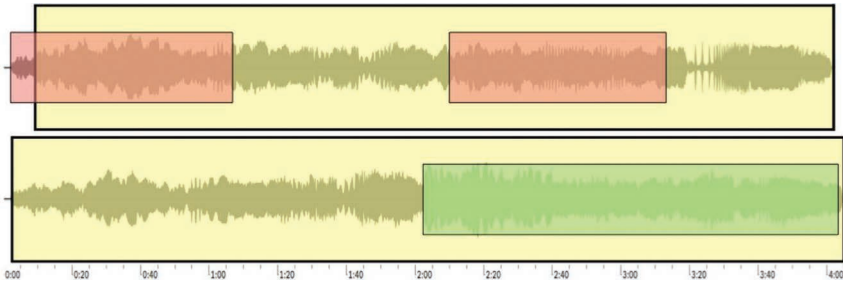
Figure 9.4 Dynamisme Integral's basic construction relative to the waveforms.

right and left track, which are separated by a delay interval of 6.5 seconds (in the beginning).[18] This correspondence between both tracks – quite dense in terms of sound material – is easily missed. More than this, it is above all the superimposition of three additional versions of the same recording that troubles the straightforward perception of the work's structure.

Figure 9.4 displays the global form of the work. Considerably shorter in duration, the 'added' versions are accelerated versions of the initial recording (yellow), played at two (green) and four (red) times the original speed. All materials thus appear five times in total, be it at three different frequencies and unevenly distributed in the stereo field.

If this complex sound structure – unequivocally the product of editorial interventions applied to the initial recording – clearly cannot be understood as the voice manifesting itself in its pre-symbolic presence, it should be noted that the initial recording itself is no transparent rendering of Chopin's performance either. As there is not enough space here to address its construction in detail, suffice it to say that techniques such as overdubbing, feedback, recording at various speeds and so on dramatically leave their mark on Chopin's vocal input. At this stage already, the latter's immediate presence does not simply resound onto tape, as technological artefacts instead express the unbridgeable distance that post-recording interventions will merely come to accentuate further.

Chopin's method thus seems to emphasize what many perceive to be common to the recorded voice as such. R. Murray Schafer (1977: 90), for example, coined the term 'schizophonia' to refer to the split that separates sound from its technological reproduction. In a not-too-distant past, all sound was profoundly original: 'The human voice travelled only as far as one could shout'. With the emergence of recording technology, sound obtains 'an amplified and independent existence', and the voice 'is no longer tied to a hole in the head but is free to issue from anywhere in the landscape' (Schafer 1977: 90). Whereas Cox (2018: 77) suggests that recording thus 'promises a return to the presence of the voice', Schafer seems to argue for the reverse. Rather than disclosing an auditory real to us, the recorded voice, separated

from the uttering body, might now become subject to symbolic exchange.[19] Although this is not to suggest that recorded sound *represents* in the manner of a linguistic sign, it at least *re-presents* something that is no longer there.

Whereas Cox, like Kittler, strongly insists on the *registration* of sound, Schafer and many others have instead focused on its *reproduction*. In doing so, a wholly different understanding tends to result. Kittler (1999: 12) suggests that 'a reproduction authenticated by the object itself is one of physical precision', yet with a signal-to-noise ratio that would convince few of us today, the phonograph itself seems to suggest otherwise. If the many recording formats that separate our present time from Edison's hoped to close the gap to achieve a more realistic listening experience, the target of total transparency is bound to remain an ideal. As an after-effect, the recording can only ever approach a sounding presence with which it never coincides.[20] Indeed, it is not just that a full transparency between the sounds recorded and reproduced is impossible, even the registration itself necessarily assumes an objectifying listening post. The phonograph, like our ears, never hears the entire picture.[21]

Clearly, the general idea of a phonographic access to the auditory real becomes untenable here, yet Chopin's methods are all the more challenging in view of Cox's theory. For how pertinent is the recording's 'markedly non-human' (Cox 2018: 120) functioning in view of its application in a markedly human practice? If Chopin, like many working with sound, finds in the tape recorder a means to organize materials into meaningful structures, the technology is perhaps best understood as an advanced form of writing. Instead of emancipating the voice's *sounding* from its *saying*, could we say that the tape recorder rather enabled composers to integrate into their musical lexicon what traditionally fell beyond the symbolic reach of the score? The noisy remained, becoming part of the text – could it be that the tape recorder, rather than attending to the voice's *sounding* as such, ensures the composer's final *say(ing)*?

If a work such as *Dynamisme Integral* cannot possibly be thought of as passively disclosing the 'independent reality of sound', the opposite reading as well ultimately falls short of properly accounting for the work. It is true, of course, that Chopin obtains an unprecedented degree of control over his voice. Even if he could not possibly foresee the precise outcome of his superimpositions, these chance elements by no means subvert the composer's authority. Rather, the work's construction is exceptional in that it confronts the perspective of Chopin as a vocal performer with that of the tape's reconfiguring operations, giving way to a most unusual experience of the voice. Rather than passively opening onto a vocal real by dissociating a sounding from a saying, the tape recorder here actively renegotiates our experience of Chopin's initial performance. Combining multiple 'readings' of the same recording, displacing and stretching it in time and space, *Dynamisme Integral* subverts the voice's situatedness by offering us a plural experience. If Cox (2011: 155) invites us to think of sound as 'an anonymous

flux', preceding and exceeding not only listeners but also composers whom, following Cage, are perhaps best understood as its 'curators' more so than 'creators', the antihumanism of his sound art theory does not sit well with Chopin's explicit presence as a vocal performer in his works.[22] Even in *Dynamisme Integral*, where the vocal nature of the materials is at times transformed beyond recognition, there are, nevertheless, instances that precisely foreground their physical origin in the uttering body. At the same time, however, and this is true for Chopin's work more generally, he himself appears to become subject to the operations of his machines.

A passage towards the end of *Dynamisme Integral* is exemplary in this regard. Around 3′15″, an extremely dense and abstract texture, mostly carried by ear-piercing feedback, quite suddenly dissolves and gives way to a sequence of percussive sounds that are unambiguously identifiable as coughs. Appearing on both the left and right track – separated by a delay interval – these coughing sounds are part of the work's two-fold foundational structure as outlined above. From a listening perspective, the presence of a 'speaker' is naturally assumed here, even if the delayed re-presentation of the sounds across the stereo field already detracts from the latter's vocal authority. More importantly, this quasi-natural echo relation is disturbed as the sequence's reoccurrence is affected by a gradual increase in playback speed. The effect is most unusual: Chopin's quasi-physical presence as an uttering body is confronted with the repurposing of 'his' vocals in technological procedures that draw them away from this origin – the voice emerges as product and input at once. Holding the middle ground between vocal performance and tape composition, what we hear is not so much a (recorded) voice, but a voice in the process of being recorded: Chopin speaks while being spoken. As such, the voice here does not reach us as an autonomous *sounding*, nor do we witness instead the triumph of an omnipotent *saying*. Once again, the voice materializes at/as their intersection.

If we are to draw this conclusion from the global construction of *Dynamisme Integral*, it should be noted here that Chopin's struggles most certainly do not go unnoticed from a local listening. The coughing example already made this clear, and although it is beyond the scope of the present chapter to provide a detailed account of the strategies involved, one additional example might illustrate the point. Chopin's extensive use of feedback throughout the work might be understood as giving a voice to the recording agency.[23] If feedback is commonly avoided as an unpleasant, noisy sensation that disrupts the transmission of an intended signal, Chopin not only welcomes these ear-piercing timbres but foregrounds them by shaping them into melodic contours by tampering with the recording speed of his machine(s).[24] Interestingly, the sections of the initial recording that feature such feedback motifs are generally accompanied by Chopin performing a variety of percussive sounds at a mostly steady and rather fast pace. The accelerations foregrounding the feedback sounds as musical material

have the reverse effect on his contribution, in that they often cross a certain threshold at which the individual impulses can no longer be heard. Chopin then literally disappears into the background (noise), giving way to a singing machine. This is just one of the techniques by which Chopin makes the aforementioned tension the very subject of his sound poetry.

Conclusion: The Mic as a Scalpel

Rejecting the fixed normativity of the word, Chopin's turn to 'vocal microparticles' often led him to compare his tape recorder to a microscope, an 'enlarger' that attends to 'our infinite vocal vibrations, that we could not limit to the sounds designated by our 26 letters' (Chopin 1994: 20). Elsewhere, Chopin describes his microphone as a 'probe' (Chopin 2001: 77–78) or – more interestingly – a 'scalpel' (Lentz 1996: 51). Indeed, the connection with the subject of *Rouge* here is difficult to miss. If the skinned one was continuously opposed to his 'particles' in the work's text, which was then said to mirror the skinning itself, Chopin's sound poem similarly explored the tension between the word (*rouge, rouge, rouge*) and the sonic differences subsisting through its continuous repetition. If speech relies on an obscuring of its noisy origin, *Rouge* can be said to move in the opposite direction, starting out from comprehensible language and then – through the tactics addressed above – slowly revealing the sonorous multiplicity hiding underneath. While later works such as *Dynamisme Integral* have often been understood as ridding themselves of the figurative basis in Chopin's early sound poems, the above analysis has demonstrated how a similar tension between saying and sounding remains at stake here too. In many ways then, *Rouge* is programmatic of his entire creative project. Instead of presenting to us, on a magnetic platter, a voice in its full sounding presence or a clean *cut* of an auditory real, Chopin's sound poetry begins at the symbolic surface, staging the *cutting* itself.

Notes

1 Again, this is a view adopted by many, both sound poets and critics (see, for example, Wendt 1985; Barras 1986; Hanson 1994).

2 Although tape recording had in fact been around for quite some time, it was not until the 1950s that it became available to the general public.

3 Although less important for the present context, it should be noted that if in Kittler's account, noise clearly corresponds to an empirical reality, Cox's work alternates this view with a conception of noise that, drawing primarily from the work of Michel Serres and Gilles Deleuze, figures it as precisely 'not an empirical phenomenon,' but rather 'the ground, the condition of possibility for every significant sound, as that from which all speech, music and signal emerges and to which it returns' (Cox 2011: 20 and 22) Relating it to Deleuze's notion of 'the virtual', noise for Cox becomes 'the dynamic, differential, discordant flux of becoming that precedes and exceeds empirical individuals' that constitute the 'actual' register of ordinary appearances (Cox 2011: 153).

4 As many have noted, it is this extensive use of tape manipulation that sets Chopin apart from many of his contemporaries and predecessors.

5 *Rouge* was first published in 1983 on a cassette edition entitled 'Audiopoems 1956–1980' (Edition Hundertmark, 1983). This collection of sound poems was republished on CD in 2002 (? Records). The piece is also included in the collection 'Chopin: les 9 saintes-phonies' (Staalplaat, 1994) as well as the recent vinyl boxset bundling all of Chopin's recordings made between 1955 and 1991 (Vinyl On Demand, 2017) and is moreover available on YouTube as well as Ubu-Web: http://www.ubu.com/sound/chopin.html. It should be noted that (at least) two versions of *Rouge* are in circulation. This is no exception within Chopin's catalogue since different versions exist of quite a few sound poems. Often, the differences between them are of a merely editorial nature, but sometimes they are more radical, for example in the case of *Dynamisme Integral* (1973) of which a four-minute version as well one that is ten minutes longer are in circulation. Nevertheless, *Rouge* is somewhat of an exceptional case, because one of the two versions I was able to track down seems to be the result of a problematic re-editing. In the CD repress, the slight difference in timing between the left and right channel which characterizes the original version is absent. However, this effect is no doubt intentional – Chopin spoke about this technique in his conversation with Hintze (2002) and uses it frequently in his poems – and it is even magnified later in the piece. The version on 'les 9 saintes-phonies' as well as the one on UbuWeb luckily do not suffer from this inaccuracy. I have not heard the Vinyl on Demand boxset and cannot confirm which version of *Rouge* is included there.

6 The transcription here largely follows that found in Lentz's contribution on *Rouge* (2000: 557–558). A few minor changes have been made. First, Lentz notates 'bruit, bruit, bruit' in the penultimate line while in fact Chopin says 'bruit, bruit, rouge'. Also, it sounds as if he says 'dur(e) et rouge' rather than simply 'dur(e) rouge' as seen in Lentz's transcription. Indeed, if the latter were the case, no [e]-sound (close-mid front unrounded vowel) would be heard. Finally, at the very end of the piece, the word *rouge* is said 40 times on the left track of the recording and 38 on the right one while Lentz simply speaks of 38 times and makes no such division, although we will soon come to understand that the identification of this passage as textual is problematic from the very outset.

7 Could also be translated as 'he is only vain'.

8 Following from this point of view, I do not follow Lentz's consequent translations of the 'Il n'est que…'- sentences as '*Es* ist' [It is]. Of course, his version is not incorrect per se and ultimately it is a matter of interpretation, but I have opted for '*He* is' in at least three of the five sentences ('veine', 'sang' and 'chair') which seems more appropriate.

9 The only exceptions in this regard are the phrase '*dur(e) et rouge*' which is repeated in its entirety and the '*bruit, bruit, rouge*' phrase mentioned earlier on.

10 The analogy with the use of looping techniques in music, similarly provoking a sort of stagnation of the musical development, thereby shifting the attention to the sounding properties of the materials, is then rather fitting.

11 Michael Lentz (2000: 556) too notes how Chopin here indulges in an 'articulatory play with homophones'.

12 Part of his monumental sound poetry monograph, Lentz's analysis of *Rouge* merely occupies four pages out of a total of 1240. Admirable both in its comprehensiveness and depth, I believe that it is important to note at the outset that the present text's questioning of Lentz's approach in regard to *Rouge* can only be disproportionate and is in no way representative of his invaluable contribution to sound poetry research.

13 Although Lentz's use of apostrophes seems to indicate that there is some variation involved here, he does speak of 'repetitions of individual sequences'. Moreover, the apostrophe here then indiscriminately applies to structural differences as well as to most minor articulatory variations.

14 In his conversation with Hintze (2002: 16) Chopin notes – although not on the topic of *Rouge* specifically – that 'in French, the R is swallowed, one does not hear it', adding that his idea was 'to win back the R for sound poetry'. Lentz (2000: 557) also refers to this passage.

15 For example, Jamet (2009: 137) suggests that whereas Chopin's 'quickly stepp[ed] away from language to explore the concrete nature of vocal sounds' after first encountering the tape recorder, 'the exploration is still very much bound to words' in early works such as *Pêche de Nuit* (1957) and *Sol-Air* (1961). In keeping with my analysis of *Rouge*, Jamet (ibid.) suggests that in these works too, words are '[r]epeated until abstraction' so that they 'reveal speech as a physical process that defies unity and hides a dynamic multiplicity of sounds.' However, I do not agree with his suggestion that 'from these first poems, Chopin's sound poems rapidly departed from poetry's residual reliance on language towards a more radical poetics of abstraction' (ibid.). Wurth (2013: 3) similarly suggests that 'the history of Chopin's work is the history of the progressive disappearance and disintegration of words, and, as a result, the ever-greater prominence of phonemic sounds and bare, vocal as well as buccal vibrations'.

16 See, for example, Chopin's interview with John Hudak (1994: 17): 'I just have two tape recorders… [it] is a very small studio compared with IRCAM in Paris, compared to Stockhausen, as a musician he has a great factory for that… what for? We don't need it. For me I have the minimum and it is my pleasure'.

17 *Dynamisme Integral* was recorded in 1973 and published as part of the compilation 'Poesia Sonora' (CBS, 1975). It later appeared, alongside *Rouge*, as part of the 'Audiopoems 1956–1980' compilation (Edition Hundertmark, 1983). Interestingly, the 2002 compilation 'La Peur And Co (1958–1979)' (? records) includes a recording of the same name which is however a different work altogether. In fact, this work seems to be a partly reworked version of the first part of *Le Corps*, a work from 1966.

18 Although not discussed in the present paper, a similar technique was already used in *Rouge*. In fact, Chopin has favoured this kind of method throughout his work. In an interview with Hintze, he elaborates on the procedure: 'You take a 2-track tape. On the first track, you record something, a theme, then you record the same once more on the second track, yet now you start half a second later. In this way, an echo-relation is created'. see Hintze 2002: 12.

19 Cox (2018: 77) also alludes to this ambiguity: 'As part of the archive of recorded sound, the recorded voice is submitted to the possibility of endless sampling, splicing, editing, and all manner of sonic modification. While it promises a return to the presence of the voice, audio recording does so at the price of an uncanny alienation of the voice from the body and mind that are said to have animated it'.

20 Indeed, as pointed out by Greg Hainge (2013: 117–118), it is only the implementation of a new (technological) standard that, in retrospect, seems to give voice to the noises that had apparently been lurking in the outdated norm all along – the hitherto silent witnesses of a now evident inferiority.

21 Cox (2018: 87) comes close to acknowledging this when he writes that 'the phonograph listens, too', yet quickly reassures us that 'the scope of its contraction is broader or less discriminate than ours, taking in the whole of what we sometimes call "background noise". Refusing to distinguish between foreground and background, it reveals noise as the very source and destination of articulate sound'.

22 Cox shares his anti-anthropocentric sentiments with Kittler, who greatly values the alleged 'writing without a subject' enabled by phonography: 'Record grooves dig the grave of the author' (Kittler 1999: 44 and 83).

23 Although Chopin never provided any details about the recording process of *Dynamisme Integral*, his rather precise use of these feedback sounds suggests that, rather than performing in the proximity of a speaker that monitored his performance, he likely constructed a separate feedback circuit, potentially controlling both how much of his performance is sent to it and how much of the feedback is recorded.

24 Although Chopin himself never confirmed this, this is indeed the only logical explanation. It is interesting to note in this regard that often, these progressions proceed by octaves, which is to say that the frequency is doubled or halved. This would make perfect sense, as many tape recorders offer the option of multiple recording speeds which are usually multiples of one another. If progressions with smaller intervals characterize for example the very beginning of the base recording as can be heard on the right track (0′04″ – 0′19″) the 'varispeed' control common to tape recorders allows one to manually explore a certain range of speeds below and above the main ones, usually by turning a knob. Additional confirmation for such a hypothesis comes from the fact that, as can be seen on the sonogram, the density of the percussive sound heard in the background as well as its spectral range largely follows the motion of these melodic successions. Finally, further evidence can be found in the occasional, audible clicks which precede an in- or decrease in tempo and pitch, which seem to result from Chopin changing the recording speed on the machine. This can be heard for example at 1′04″, 1′11″ and 1′48″.

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10 Noise as Ground in Improvised Music

The Case of Chris Corsano

Diederik Mark de Ceuster

Introduction

If noise were to be solely defined as violent disruption, as a subversive disconnecting force to interrupt the transmissions of those in power (Attali 1985: 26), then perhaps the noisiest of all musical expressions are those of free improvisation. During the 1960s, several groups of composers, performers and artists gathered to protest against the established socio-political structures with a new non-idiomatic concept of music. Not only did these free improvisation groups challenge existing musical idioms in the same manner as many other composers and performers who defied predominant musical syntax (Pressing 2002), but the very nature of free improvisation itself also constituted resistance: it resisted (1) single authority and the traditional relation between composer and performer (Prévost 2009: 42); (2) capitalist commodification, as the music is primarily invented and produced in performance and thereby tends to present notoriously non-marketable sound products (Watson 2004: 374); and (3) music analysis, since, according to the late guitar improviser Derek Bailey, any recording of an improvisation, let alone any transcription, is incapable of illuminating the processes by which the improvisation was formed (Bailey 1993: 15).[1] And yet, as others have poignantly demonstrated, as soon as these subversive musical expressions become an idiomatic practice and the noise inevitably normalizes, they lose their transgressive power (Goddard et al. 2011). Instead, what used to be a destructive effort – a simulacrum of murder (Attali 1985: 26) – becomes a productive means of innovation and a foundation for a new system of meaning (Hegarty 2007).

In this chapter, I will embark upon a closer examination of one of these established noisy musical expressions that has departed from its former rebellious context, albeit not in an active rebuttal but in a silent acceptance of the rebellious attitude's achievements. I will focus on a short percussion improvisation made in Manhattan Inn, Brooklyn, in 2016 by the contemporary American drummer Chris Corsano (2016). The piece presented lacks the radical anti-establishment attitude of the 1960s and has yet maintained a 'noisy' palette, in which Corsano brings forward almost

impenetrable, non-periodic streams of sound. Instead of relying upon Attali's socio-political definition of noise, I argue that while many of the sound structures presented by Corsano – along with the social–political context of this performance – are normalized and outside the realm of disruptive violence, there is an element of noise in this music, as the improvisations of Corsano are so dense and rhythmically complex that to the listener the improvisations might appear as masses of disorganized sounds. Drawing on Michel Serres' concept of noise as ground (Serres 1995: 7) and Greg Hainge's ontology of noise as a relational process (Hainge 2013), these dense and noise-like sound flows can be described as the dynamic material from which the improvisation is built.

I will start by briefly outlining the state of the art of the analytical research on (free) improvised music. I will then propose to use the concept of noise as a constructive aesthetic phenomenon to gain a new perspective, and perhaps better understanding, of improvisations such as the ones by Chris Corsano. To that end, I will proceed with a listening-informed analysis to (1) examine the vertical density of sounds in the improvisation and (2) identify the horizontal densities and rhythmic contours, in particular, the ways in which Corsano subverts the listener's perception of rhythm (pulse, tempo and accents) over the course of the improvisation. As such, noise in Corsano's music can be understood as both vertical density (exemplified by the augmented drum kit with various re-purposed objects such as attached strings across drums and objects in metal, wood or plastic to create a rich assortment of sound textures and timbres), and horizontal density by obfuscating rhythm in continuous negotiations between rhythmic articulation and dense masses of sound, calm percussive phrases and fast overwhelming spectacles, and ultimately quiet sound textures and loud, astounding noise structures.

Analysing Free Improvisation

Derek Bailey's comment on the un-analysability of free improvisation is a testimony to the close relationship between noise music and free improvisation. After all, many authors have alluded to the un-analysability of noise as well, either by referring to noise as an intangible presence (Hainge 2005) or as in essence anti-establishment (and, in particular, anti-musical). As August Sheehy pointed out, so too can Bailey's comments be considered 'as diagnosing a conceptual gap between improvisational and analytic practices at the time' (Sheehy 2013: 1). Bailey was one of many musicians that turned to free improvisation in the 1950s and 1960s as a reaction to both the upcoming commodification of jazz music *and* the current avant-garde of Western composers and the analytical practices that surrounded them. Bailey's music, and the music of the free improvisers after him, was a matter of rejecting any musical transcendence, that is any standard form of making music engendered by society, and its hierarchical relations (Saladin 2009: 134). Likewise,

Cornelius Cardew, who was a trained musician and composer working as Karlheinz Stockhausen's assistant, broke from Stockhausen and joined the improvising ensemble AMM in a critical stance against notated music and in support of an equal distribution of power in creating music and a dialogical relation between musicians (Iles 2009: 13). In the late 1960s and 1970s, many improvising collectives were founded throughout Europe that took free improvisation as a radical form of rethinking musical values, similarly promoting equality and creation *en groupe*, including British groups such as Joseph Holbrooke (an improvisation trio with Derek Bailey), AMM, the Spontaneous Music Ensemble, Company, the Italian ensemble Musica Elettronica Viva, the German Globe Unity Orchestra and the Dutch Instant Composers Pool.

However, as Musica Elettronica Viva member Frederic Rzewski noted, the concept of freedom in the socio-historical context of the free improvisation scene of the 1960s and 1970s 'was an ethical and political, *as well as an aesthetic*, concept' (Rzewski 2004: 268, my emphasis). These collectives were focusing on new means of making music, for example, with self-made instruments, extended techniques and a focus on (non-pitched) noise sounds in a non-idiomatic way. Rzewski also gives the example of the autonomy of the moment and the impossibility of editing 'unwanted things'[2] and argues that these are fundamental elements of free improvisation that bear undeniable aesthetic consequences. 'Unexpectedness' is perhaps the most key aspect of free improvisation. Rzewski explains:

> A basic device of improvised music is to introduce a precomposed pattern unexpectedly, at a moment when anything at all might happen. Such epiphanies of order in the midst of chaos also seem to relate a seemingly formless groping to a larger world in which things make sense. But the basic subject matter of improvisation is the precariousness of existence, in which anything, death or disease, for example, could interrupt the continuity of life at any time.
>
> (Rzewski 2004: 270)

With many contemporary free improvisers, including Chris Corsano, the political dimension – the strong 'refusal of representation [and] identity' (Toth 2009: 27) and the fight against societal hierarchy, commodification of music, and capitalism at large – is no longer as stoutly present. The aesthetic values generated from this movement are, however, still greatly pursued. It is in this light that one should understand the improvisations of Corsano who adopts a similar approach to improvisation with extended techniques, self-made instruments and a focus on noise sounds, but now performs solo in the culturally established setting of the Manhattan Inn.

In response to Derek Bailey's assertion of the futility of analysing free improvised music, it is important to consider *what* it is that one analyses (Sheehy 2013: 1–2). Improvisation is not a musical product, but a process, or

a mode of action. A technical analysis of a recording of an improvisation is therefore similar to the study of an artefact, a historical trace of an otherwise finished real-time musical event. To study improvisation in a Schaefferian 'écoute réduite' mode would be to completely ignore the context of improvisatory music-making and its implications for the sounding musical product. Because of this, scholars in recent years have opted to focus instead on the network of processes involved in improvisation as well as the agency of materiality, which is an imminent part of improvisation (Keep 2009; Haenisch 2013; Schuiling 2019). In her overview of the use of graphic analytical tools for approaching free improvisation, Ingrid Pustijanac addresses the discrepancy between the improvised performance and its recorded product by stating that 'the recording induced in the audience the sense of a work status, which was mostly unintended, but became an essential component in the subsequent reception (with consequences such as aesthetic evaluation, stylistic emulation, etc.)' (Pustijanac 2016: 4). This is an important observation, as exemplified by Corsano's improvisations: only a handful of people were there to witness his performance in the Manhattan Inn, whereas on the internet his improvisations have reached thousands of people. It might be true that a recording of an improvisation is only a limited reproduction of the real-time event, but for most listeners this is the only way that they engage with the music. Moreover, the recording of Corsano's improvisation is in video format, which allows the listener to take into account the physicality and materiality of the performance. From such a perspective, it is possible to take this recording of the improvisation as the object of analysis.

Having addressed the *what*, there are still numerous answers to the question of *how* one might analyse free improvisation. It goes beyond the scope of this chapter to explore all the possibilities and limitations of analysing musical expressions without a score. A much more comprehensive account of this is offered by Simon Emmerson in Chapter 6 of this volume ('Analysing Non-Score-Based Music'). However, it is necessary to briefly consider two issues related to the analysis of improvised music: (1) the use of graphical representation and its limitations for analysis; and (2) the notion of 'form' in improvised music.

When it comes to graphic visualization, analysts have several tools at their disposal. Jeremy Joseph Ham's doctoral thesis recently offered a particularly innovative method of visualizing polyrhythmic improvisation by creating a 'Virtual Drumming Environment' (Ham 2018). This new spatialized model has the advantage of being able to give a dynamic representation of the full performance; however, it is tailored for improvisations on a standard kit alone and hence would not be suitable for a projection of extra-musical sounds. Other tools, such as the waveform or the sonogram, have their own limits too. The waveform is only useful insofar as the loudness's profile of the music could be considered as a structural component, and sonographic analysis – despite its reputation as a tool for analysing timbre – can merely be used as a 'visual analogue of what we have already

recognised and perceived through listening' (Johnson 1999: 83). Thus, any graphic analysis of free improvisation has to be guided by aural analysis. Yet as Pustijanac mentions, aural analysis might as well risk presenting only general and descriptive types of analysis (Pustijanac 2016: 6). Following Michel Chion (1983) or Lasse Thoresen (2015), it is possible to make a sophisticated description and visualization of the various sound-objects of the improvisation. But if we consider analysis to be 'the interpretation of structures in music, together with their resolution into relatively simpler constituent elements, and the investigation of the relevant functions of those elements' (Bent 2001), a next synthesizing step has to be made with regard to musical form.

Form in free improvisation, however, is a much-disputed concept (see, for example, Onsman and Burke 2019: 15–76). It could be argued that seeking the overall form in a musical process that is supposed to be a celebration of being in-the-moment would be beyond the point of improvised music. After all, free improvisation was not supposed to have any preconceived musical form; it specifically rejected any formal models from classical, jazz or popular music (Onsman and Burke 2019: 10). And yet, even in the most radical free improvisations, it is not impossible to map out a dynamic arc, the recurrence (or lack) of repeating patterns and, in general, the elements that create coherence within one confined improvisation. After all, 'even free improvised music operates with many rules and conventions; like every other musical style, it has its various traditions to which its performers somehow need to relate' (Cobussen 2008: 8). Still, in a musical improvisation in which sound and timbre take precedence over pitch and rhythm – or at the least over quantified systems of pitch and rhythm – it can be difficult to translate the juxtaposition of various sound structures into a formal process that goes beyond the mere description of the succession of events. This is especially the case in Corsano's improvisation, in which so many musical events appear one after another so incredibly quickly.

A Constructive Account of Noise

If Corsano's improvisation is not an anti-establishment statement, like the improvisations of Bailey and AMM were, is there still noise in his music? In many historical accounts of noise, including Attali's (1985), noise is conceptualized in a negative sense: it is defined by what it is *not*. Within a transmission, noise is what is *not* part of the intended signal. In acoustics, noises are those vibrations that do *not* comprise a regular pattern of partials. Many theorists have described noise in music as those sounds that are *not* musical, the sounds out-of-place (Pickering and Rice 2017). Negative definitions, in general, can be problematic: one is merely describing what it is not without attending to any of the means or characteristics that constitute the phenomenon. Yet another issue with negative definitions is that it creates an unwanted opposition that cannot be reconciled. For example, if noise is

defined as anti-musical, then any sound has to be categorized as either noise or music, leaving no space for ambiguity, adaptability or consideration of noise as a continuum.[3]

A first constructive conceptualization of noise came from the French philosopher Michel Serres. According to Serres, noise is not only ever-present but necessary for any message, just as 'sand is needed for stones' (Serres 1995: 132). For Serres, the universe around us is not structured, it is not a pure, ordered cosmos in which noise is a parasitic disruptor. Rather, the universe is an infinite multiplicity: 'It is the global basis of all structures, it is the background noise of all form and information, it is the milky noise of the whole of our messages gathered together' (Serres 1995: 111). Noise is *ground* – it is all the chaotic, random material from which construed order can emerge. As such, noise can be understood as a field of potentiality.

In his seminal formulation of noise, Greg Hainge picks up on Serres' concept of noise as ground; however, he criticizes Serres for his assertion that noise will never be more than potentiality. According to Serres, noise precedes the event, and so, it does not belong to our phenomenology. Hainge instead argues that noise is more than just a concept and is omnipresent in the actualizations of (or, the reconfigurations of matter into) expressions (Hainge 2013: 23); it is the 'relational process through which the world and its objects express themselves' (Hainge 2013: 15). This implies yet another negative definition, and indeed, Hainge stresses that noise 'is nothing in and of itself' (Hainge 2013: 15). Yet it is essential not to view noise as merely one part of a relation process (i.e. noise as defined by that which we find non-noise), but to consider noise as inherently mediating *any* relational process. Ultimately, in Hainge's ontology noise is still considered as resistance, but not a political one (at least, not necessarily so). Instead, it is a material one as it 'reconfigures matter in expression, conduction and conjugation' (Hainge 2013: 23). As Hainge declares, 'every expression is therefore born out of noise and carries noise within it' (Hainge 2013: 18).

While I am only scraping the surface of Serres' and Hainge's philosophies, the consideration of noise as an irrecuperable mediator – as the chaotic ground of all expressions – opens the door to understanding noise as a constructive aesthetic. It should be noted that from the perspective of acoustics, any sound that is non-pitched is categorized as noise. However, just because Corsano plays on non-pitched percussion that does not necessarily make his improvisations 'noise music'. Corsano himself does not find his music to be noise, and neither do the listeners. Rather, in this chapter, I examine the noise *within* the improvisation and the improvisation as coming from noise (instead of being noise itself). In Corsano's improvisations, the flows of percussive sounds might appear as chaotic maelstroms but arising from within are patterns, formations and structures that form the music. Here, noise can be understood as the

field of potentiality, the anarchic ground in which not one melody, or one harmonic progression, or one rhythmic pattern is presented, but a multeity of motives, arrangements and structures. Rather than understanding it as just a description of percussive events, we can conceptualize improvisation as a constant negotiation between this dense noise and order, or in less abstract terms, between fully intelligible (rhythmic) structures and more ambiguous, dense – even mass-like – sound objects. As such, noise in Corsano's improvisations can be construed as the density of aesthetic information. At the microscopic level, this can be understood as a vertical density by presenting a large variety of sounds simultaneously. Macroscopically, an increase in density leads to rhythmic subversion in longer sound-flows. As such, noise in the improvisations can then be described as the product and interaction of both microscopic and macroscopic forms of density, and the form of the improvisation as resulting from the dynamic contrasts therein.

Noise as Density

Vertical density can be defined as the density in the pitch frequency spectrum of the sounds of the performance. If one were to take a single time frame, then the densest possible sound would be white noise, which contains all the frequencies in the spectrum. Following from this, the density of Corsano's spectrum spreads out over time and is filled by extended materials to create a multeity of various sound textures, mediating the familiar sound texture of the standard jazz drum kit. For Corsano, the concept of noise as material is at the core of his improvisations. In a recent interview conducted for this chapter, the drummer explains that 'in a way I'm always playing, if I kick something on the streets and it makes a sound, I can get obsessed by it and then that feeds back to when I'm actually playing behind a drum kit'.[4] The drum kit itself has always been an assembly of various instruments that form one whole. In the improvisations at the Manhattan Inn, Corsano makes use of a standard jazz setup that consists of a bass drum, a snare drum, two toms (one tom in a higher register positioned above the snare drum and one tom in a lower register to the right of the kit), hi-hat cymbals, a crash cymbal and a ride cymbal. This basic kit is extended by using a number of various objects, such as wooden blocks or metal soup bowls, either as an object to hit with a regular drumstick or as a substitute for a stick itself that is used to hit the drums. The two drumsticks have different heads on the tail-ends, so that when they are flipped, they can be used as unwrapped mallets. Additionally, in the first improvisation (from 5′41″ to 6′21″), Corsano plays on a self-made wind instrument constructed from parts of a clarinet, a slide whistle and a small drumhead. He also attaches a string across his snare drum, which is played during the first improvisation as well. A full list of the additional materials used is presented chronologically in Table 10.1.

Table 10.1 List of additional materials used by Corsano during his Manhattan Inn improvisation (extended drum kit)

Time	Extended Instruments
0′00″ – 0′58″	Wooden block
0′58″ – 1′07″	Wooden block, unwrapped mallets
1′07″ – 2′04″	2 wooden blocks, unwrapped mallets
2′04″ – 2′48″	Unwrapped mallets
2′48″ – 3′07″	Wooden block
3′07″ – 3′52″	Unwrapped mallets
3′52″ – 4′32″	Multiple rute brushes and unwrapped mallets
4′32″ – 4′51″	Multiple rute brushes and unwrapped mallets, drumhead
4′51″ – 5′41″	Wooden block, drumhead and unwrapped mallets
5′41″ – 6′21″	Unwrapped mallet, drumhead, wind instrument
6′21″ – 7′03″	Wooden block, drumhead, unwrapped mallet
7′03″ – 7′31″	Bows, unwrapped mallet
7′31″ – 9′03″	Bows on string
9′03″ – 10′09″	Bow on string, metal brush
10′09″ – 10′16″	Metal brush
10′16″ – 11′18″	Metal cup, metal brush, wooden block, metal rings around wrist
11′24″ – 11′32″	Extra drum skin on snare, metal cup, metal brush, wooden block, new unwrapped mallet
11′32″ – 12′29″	Unwrapped mallet, extra drum skin
12′29″ – 13′00″	Metal bowl, metal plates, fabric, unwrapped mallet
13′00″ – 13′45″	China cymbal, metal bowl, metal plates, fabric, unwrapped mallet
13′45″ – 14′27″	China cymbal, unwrapped mallets, metal plate

Adopting this array of instruments has a pragmatic side as well. Corsano explains 'it is a way to escape rudiments and known technique, there is no right way of playing a pot lid'. However, in making use of all these materials, it gives affordance to a wide palette of sounds and techniques that can be combined to create a thick density. Can these extended instruments be conceptualized as the resistors and the re-configurators (in other words, the noise) of the improvisation? The first thing to notice from this list of instruments is that in the first half the extended instruments are mainly used as sound modifiers. The wooden block is either used as a replacement for a drum stick on the drums or is used to press down on the drums to change the pitch of the toms (effectively increasing the tension of the drum skin by using the weight of the block). The metallic bowl, plates and china cymbal are also used as a replacement for the toms to create fully unique sounds. Thus, based purely on the instrumentation, one might suggest a tripartite form of the improvisation with sound modifying techniques (blurring and mediating the well-known sound texture of the drum kit) in the first part, long resonant sounds in the contrasting middle section (the wind instrument, and a bit later the bowed string) and new percussive sounds on the metal bowls, plates and China cymbal in the final part. However, this view of the improvisation is too narrow. First of all, the percussive sounds on the metal instruments, while having slightly

different timbres, are quite similar to the sounds of the original drum kit and thus cannot be construed as noisy subversions of the familiar drum sound textures. Moreover, Corsano uses a number of techniques besides the extended instrumentation – such as the continuous drum rolls – that equally increase the noise of the improvisation.

Instead, another way of looking at Hainge's noise in Corsano's music is to consider both the sounds of the standard drum kit and the extended instruments, and the density of the sounds themselves. Considering density as a form of noise is not unreasonable. In their literature review of the studies of sound masses in music, Jason Noble and Stephen McAdams found density to be one of the most commonly invoked concepts in descriptions and discussions of sound mass textures (Noble and McAdams 2020: 234). Sound mass is not necessarily the same as noise. But the present conceptions of noise as a ground and noise as a relational process share some of the characteristics with sound mass – as with sound mass, noise here is understood as a coalescence of sounds that makes individual notes indiscernible. This density can be considered either vertically, as density in a frequency spectrum, or horizontally as the number of sounds in a given time frame. Let us start by examining the former.

The first thing to notice when it comes to the densities of sounds is that, notwithstanding the bowed string and the wind instrument, all the percussive sounds have a relatively short ADSR envelope. The main exception is the cymbals which can have a long reverberation if struck forcefully. Of all the percussive instruments, the cymbals also have the least definite pitch, with frequencies randomly distributed virtually all over the spectrum. Of the three regular cymbals, the ride cymbal is arguably the least noisy. Only when struck very loudly it will create a long resonance. Otherwise, the sound is smooth and distinct. The crash cymbal is arguably the noisiest. In rock music, it is often used merely for big rhythmic accents and when struck with full force the sound is loud and encompasses virtually the whole frequency range. The hi-hat is an interesting one. Its sound envelope can easily be controlled with the foot, as the set of cymbals have a short, tin sound when fully closed and a noisy, resonant sound when opened. Moreover, by opening and closing the cymbals in quick succession, one can create a resonant sound using just one's foot, freeing up the arms to make other sounds and increase the density.

One example of this increased density can be heard from 2′56″ to 3′36″. Here, the hi-hat is used in quick succession to create a noisy layer too. On top of this noise, Corsano plays a loud drum roll on the snare drum that horizontally creates a dense sound object but vertically increases the resonance as the varying partials of the individual hits are stacked on top of each other. Corsano has developed a technique to perform the drum roll one-handed, freeing up his other hand to give equally loud and resonating successions of beats on the ride cymbal and toms. In a similar fashion, Corsano uses a pitch-blurring technique at 4′20″. As he explained in the

interview, while one hand is pressing down the tom to lower its pitch, the other hand is

> trying to hit the cymbal and the tom at the same time so that the vibrations of the cymbal travel through the wood of the stick into the tom so it becomes a noisier, more harmonically complex – there's too many harmonics for there to be a specific pitch – so you have all this pitch information from the tom but there's a twist.

While vertical density results in the blurring and mediating of pitch and timbre, horizontal density leads to the blurring and mediating of rhythm. It might seem far-fetched to think of Corsano's improvisations as a mass of sounds. When Michel Serres noted the turbulence of Iannis Xenakis's *Pithoprakta* (1955–56; 1972: 190), he did so because of the sheer quantity of musicians (64 string players), who form a vast sonic entity in a statistically distributed arrangement of single attacks in the opening measures. Listening to *Pithoprakta*, one quite literally hears a mass of sounds. Since the single drummer is limited by his limbs, the maximum number of sounds we hear at once in Corsano's improvisation is only 4. And yet, it is not just the number of musicians or sounds heard at once that makes a texture mass-like. *Pithoprakta*'s opening is so noisy not only because there is a vast number of sounds, but the sounds are also organized arrhythmically. In each half-measure, there are ten different attack points, spreading out in a random distribution and 'governed by a mean density' (Harley 2004: 12). The amalgamation of various rhythmic patterns is like multiple people all speaking at the same time. Each monologue would be perfectly comprehensible if heard in isolation, but the aggregation of voices makes it impossible to discern any discourse. It is, in a way, oversaturating the listener with information. Combined with the large number of various sounds and timbres that Corsano produces, this is vertical *and* horizontal density, best described in Frank Zappa's words as 'a maximum amount of aesthetic information in a minimum amount of time'[5] (Ham 2018: 83).

Yet, not all horizontal density leads to a subversion of rhythm. A marching rhythm, for example, can be highly dense in the number of notes but also highly rhythmical as the individual strokes are structurally organized. Rhythm is usually defined as the organization of the durations of sounds (London 2001). Technically speaking, as all music involves durations, all music should necessarily have some form of rhythm. When I speak of rhythmic subversion, this should, however, not be mistaken as the transgression of all forms of durations in a general sense. Instead, the key is to consider the element of organization. Serres speaks of rhythm as

> […] no more mysterious than our cadence. A cadence, a fragment of a fall, a fluctuation of decadence, cadence turns back what seems irreversible. The flowing flux turns through rhythm, and what falls comes

back on itself in cadence. Our natural languages have paid attention to an order formed through a fall or a flowing out, among the noises of the waters, and in unexpected, chaotic conditions. These languages dance, in cadence, at the edge of the noise, they come from it, and they return to it, they turn back on themselves. To arise from the primal noise, they need repetitiveness, an echo, a rhythm, redundancy. In the beginning is the echo: murmur.

<div align="right">(Serres 1995: 70)</div>

What is left but a return to noise when rhythmic patterns are obscured, subverted or even fully abandoned?

Rhythm can be described as the regularity of patterns of durations. If these patterns are placed in a structured repetition which can be divided into measures, we might speak of metre. At the onset of Corsano's improvisation, one can recognize a small rhythmic motive consisting of three syncopated strokes followed by a sextuplet. This motive is repeated three times with subtle varieties but then followed by a series of different rhythmic motives that quickly become more difficult to group together and recognize as a rhythmic pattern. The rhythm in these opening minutes can best be described as additive, as a chain with variably sized links. Instead of a clear pattern of stresses and accents in a certain time signature, there is an asymmetrical articulation of durations in which a short succession is followed by another succession of a different length. Corsano uses the analogy of a forest to describe this rhythmic articulation. If the forest is a musical work, the distance between the trees is the rhythm. Although the rhythm of the opening is irregular and asymmetrical, there is still a clear pulse that can be identified. As soon as the horizontal density of notes increases, the sense of pulse tends to dissipate; when a large number of trees are within close proximity of each other, it becomes increasingly difficult to see the forest for the trees. This is particularly enhanced when series of notes are played in various tempos on top of each other. When two or three tempos are combined, we can hear the result as a polyrhythmic tuplet. But things get more complicated once the series of notes is presented as a constant stream without clear demarcations. After a first rhythmic demonstration at 00′15″, such an arrhythmic continuation follows: the drummer plays a series of quick strokes on the toms and the snare drum (without the snares) and gives accents on the cymbals and bass drum. However, these accents are irregular, with a highly syncopated asymmetric pattern in the hi-hat on top of that and only serve to further obfuscate the rhythm with the vertical noise of the cymbals.

Form in Corsano's Improvisation

So far, two types of noise have been described: (1) noise as vertical density, that is the multeity of sounds filling the spectrum and the various ways in

which short sounds are made denser or noisier in their pitch quality and (2) noise as horizontal density, that is the various ways in which rhythm is subverted by the fast drum rolls, combination of rhythmic motives, non-periodicity of accents, etc. Focusing on these two elements, it will be immediately clear how Corsano's improvisation is a constant negotiation between ordered, periodic sound patterns and non-periodic, noisy sound textures. In Table 10.2, I have given a detailed description of this succession for the first two minutes of the improvisation.

In *The Five Senses*, Serres describes the myth of Orpheus blocking out the noise of the treacherous Sirens by singing and playing music on top of it (as opposed to the men of Ulysses, who plugged their ears with wax to block out the noise; Serres 2008: 126). Serres concludes that Orpheus's act of blocking out noise along with other signals is a dangerous affair, for it will remain 'open to the risk of collapsing into noise' (Serres 2008: 126).

Table 10.2 Succession of small-scale formal units in Corsano's Manhattan Inn improvisation: the first two minutes

Time	Description
0′00″	Repetition of a rhythmic motive in a typical drum set texture
0′05″	Series of rolls in a sextuplet fashion developed from the initial rhythmic motive (i.e. small accent on the first of every six notes), with clear rhythmic accents on the cymbals
0′10″	Series of rolls on the snare drum, changing in sound texture in regular, short intervals
0′12″	Two rhythmic motives with single accents on the ride cymbal and bass drum
0′15″	Repetition of rolls changing in sound texture in regular, short intervals
0′17″	Longer, continuous rolls in a varied sound texture (multiple toms with sound modifying techniques), single notes in the hi-hat and ride cymbal in an irregular fashion
0′33″	Increase of noisiness by an increase in loudness, continuous strokes on the cymbals and a slight acceleration in tempo of the rolls
0′41″	Decrease of noisiness by using the cymbals less, introducing new sound texture by using different mallets, more periodic accents in hi-hat
0′48″	Short repetition of rolls which change in sound texture in regular, short intervals
0′51″	Continuing rolls in a varied texture, only few rhythmic accents
0′57″	Two loud accents on ride cymbal and bass drum, introduction of new texture using different mallets.
1′01″	Big accent on ride cymbal and bass drum after which a new, higher pitched rolling texture is introduced. More periodic accents on cymbal and bass drum
1′20″	Short but very distinct rhythmic pattern on the ride cymbal
1′27″	Noise texture by performing drum rolls on the cymbals
1′36″	Return of the sound texture presented at 1′
1′49″	Increase of noise with the hi-hat
1′55″	Repetition of rolls which change in sound texture in regular, short intervals

Could the reverse be true as well? When noise is used to block out signals, can signals still seep through the blockades and reach the listener? I think for most of the noise music, the answer is unequivocally yes, but these signals are now mediated and transformed. In the table above, it is clear that although there is a variety of rhythmic patterns and recognizable sound textures, these periodicities are often short and placed within one continuous mass of sounds. The point where these complex rhythms turn into noisy chaos and where recognizable rhythmic structures can be found in the noisy chaos might be different for each listener, or even in each time of listening. But this does not matter as this is exactly what noise is: a field of potentiality, a ground from which order emerges.

Conclusions

In his study of noise in music, Hainge stresses that 'music is not a transcendent, unconstrained expression that exists in its own self-enclosed autonomous universe, but is constrained by the world and its objects in various ways across time' (Hainge 2013: 255). It is these constraints (the materiality of the instruments, the physical limitations of the performer, the acoustics of the performance space, the quality of the recording, etc.) that mediate the resulting music, i.e. that form the relation process, and that make music – any music – inherently noisy. Noise can become constructive when these constraints, including the very limitations of our human perception, are not just challenged (for noise according to Serres and Hainge is ultimately irrecuperable) but embraced.

In the case of Corsano's improvisation, these limitations are made manifest in two ways: as vertical density increasing the spectrum over time with a multeity of sound textures and using the resonant noise of the cymbals to further increase loudness and noisiness and as horizontal density obfuscating rhythmic orientation in favour of continuous, noisy rolls. Perhaps this can be better explained with Corsano's forest analogy. On the one hand, the spacing of the trees can be an obscuring element, constraining our view of the complete forest (noise as rhythmic subversion), but, on the other hand, the density of the branches and leaves in all the canopies can have a similarly blinding effect. The point of this is that, of course, the branches, the leaves, the very trees themselves are what make the forest. Moreover, Corsano's improvisations show that any form of noise, whether it is density of sound, rhythmic subversion or even noise as (political) resistance, can be thought of as a continuum. His music is neither as dense as some of the Japanoise records nor as arrhythmic. Instead, his improvisation is a continuous negotiation, an inter-subjective exploration, between those musical aspects that we can unequivocally discern and those which are made nebulous both on a microscopic level through an increase in vertical density and on a macroscopic one with the blurring of rhythmic expectations.

Notes

1 An assessment countered by August Sheehy who argued that music analysis itself can be just as improvisatory and open-ended, affording a reciprocal relation of musical understanding (Sheehy 2013: 1).
2 Here, 'unwanted things' ought to be in quotation marks since, as Rzewski mentions, often the unwanted things are very much wanted and if they were not wanted, there is no reason to improvise in the first place.
3 Another example within musicological discourse of a problematic negative definition – also not entirely unrelated to the discourse of noise – is that of timbre. Most commonly, timbre is defined as 'the auditory attribute that distinguishes two sounds presented in a similar manner and having identical pitch, loudness and duration' (McAdams 2001), in other words that aspect of sound that is *not* pitch, loudness and duration. Just like noise, this is problematic in two ways as firstly this definition does not say anything about what timbre actually is, and secondly it proposes timbre as an opposite category to pitch, duration and loudness, while in reality the perception of timbre is highly dependent on these three aspects.
4 This interview took place on 29 February 2021 via Skype. All following citations from Corsano come from this interview. A transcript of the interview is available upon request.
5 Zappa coined this concept as 'statistical density', which in the context of his music refers to the multitude of styles and lyrical themes, combining humour with political critique through complex musical compositions (see for example Delville and Norris 2005).

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11 Stretching Musicality to the Extreme

Vertical Composition in Merzbow's Noise Music

Marina Sudo

The exploration of the potential of noise in music history reflects composers' relentless ambition to expand their sound palette, experiment with new organizational methods and create unprecedented sonic experiences. Whilst noise has always played an incidental role in musical composition, in the twentieth century, it increasingly came to be seen as a significant musical material in and of itself, as already discussed in the previous chapters. No matter how unconventional the use of noise may be, however, it does not contradict the conception of music as long as it only occupies a part of, rather than the whole of the sonic space. For a long time, noise was not considered music by itself; it was, instead, one of the many possible devices that composers or sound artists might choose to mobilize in their organisation of musical materials.

Whilst the relation of noise to music has often been understood in these terms in the context of Western art music, such a definition, nevertheless, contradicts the understanding in a specific genre of experimental music, namely, *noise music*. With roots in various genres of music including free jazz, progressive rock, industrial and electroacoustic music, noise music emerged in the 1990s as a new genre of music that is marked by an extreme degree of noisiness generated through overloaded distortions, feedback and other electronic effects. The resulting sound is noisy in every possible way, including density, harshness and loudness. It is even, perhaps, incomprehensible and/or unpleasant in that its musicality is thrown into doubt.

Noise music could not easily be accepted as music when it first appeared, even though the use of noisy sounds became increasingly common in musical practices of various genres from the second half of the twentieth century onwards. Its genesis can be traced in the emergence of harsh noisy recordings, especially those of Japanese musicians (later categorised as 'Japanoise'), in the Northern American music scene of the 1990s. Based on his ethnographical research, David Novak explains in his book *Japanoise* that such an extreme form of noise was able to establish its position as a musical genre 'through its antagonistic feedback with Music' (Novak 2013: 118). Noise was considered to be different from other canonical genres of music when it first appeared and yet it has become, as a consequence of the global circulation of its recordings, a distinct generic type. As the most influential figure in

the field of noise music, Merzbow (produced by Akita Masami) has been an important subject of scholarly study. Aesthetic discourses on Merzbow, as found in the works by Eugene Thacker (1999) and Paul Hegarty (2007), have largely focused on the ambivalent feature of Merzbow's noise. Although his noise adopts a temporal musical framework, it embraces what, ostensibly, cannot possibly be deemed (proper) music – that is, an excess of sounds and extreme densities and loudness, as opposed to discernible, ordered series of musical events. This point of view can, however, arguably be challenged by examining the sonoristic details in Merzbow's noise. In doing so, we can address the following questions: to what extent can Akita's noise be considered to be music and how is its musicality defined? Taking these questions as a starting point, this chapter will, through the aural analyses of selected pieces,[1] shed light on a potential, extended form of musicality that emerges from dense layers of Merzbow's noise.

The following text consists of four parts. First, I will focus on aesthetical arguments relating to musicality in Merzbow's works with reference to Thacker's and Hegarty's studies. Second, drawing on several important sources of inspiration in Akita's musical production, I will address how he developed and materialized his idea of noise through his manipulation of sound techniques. The subsequent analysis (part three) will then focus on the vertical relationship between materials in 'noise walls', a feature which has characterized Merzbow's albums since the late 1980s. In part four, Akita's multi-layered sound construction will also be examined from the perspective of rhythm, in which I consider differences between his studio recordings and live performances. This will finally lead to a more complete discussion of spatio-temporal procedures in Akita's composition and its relationship with the traditional ontology of music.

Musicality or Non-Musicality in Merzbow?

In noise music, noise does not serve to create a dynamic effect within a musical flow. Instead, noise itself is music. In the case of Akita, an excess of sounds creates thickness, density (deriving from the superimposition of sonic layers), harshness and loudness and consistently features in the 400 albums that he has released since 1979. As such, these sonorities provide a drastically different experience from what we expect to find in more traditional forms of music. Akita's works have, thus, often been considered a non-musical art form. Thacker, for example, declares that 'the music of Merzbow is of course not music at all, but rather the intensive expenditure of sound and silence in a whirlpool of electronic catharsis' (Thacker 1999: 64). Though with more nuance, Hegarty also states that 'his releases make something out of noise that approximates music, while refusing most ideas of musicality' (Hegarty 2007: 155). With these statements, both authors argue that Merzbow's works can be said to differ from 'normal music' in that they fail to fulfil two essential requirements for (traditional Western art)

music: (1) they do not contain structures, i.e. discernible sound units such as melody or rhythm and (2) they cannot be considered an artwork in which a composer manipulates these structures (musical materials) in a skilled, imaginative manner.

The first requirement is associated with our custom of musical perception. The most fundamental component of music is, self-evidently, sound, which is a physical phenomenon. Yet, when listening to music, we rarely focus on, phenomenologically, individual sonorities but rather attempt to capture the relationship between sounds that together form some kind of structure. This perceptive approach is, however, inadequate when we seek to account for our experience of Merzbow's music. His noise exhibits an excess of sound, an excess of information or in the words of Thacker, 'the overflowing disintegration of music's form and contours' (Thacker 1999: 64). Whilst all the details of musical language are lost in the excess, noise seems to resist our attempt to describe, analyse and understand it. As Hegarty says, 'to think about Merzbow is missing the mark, speculating, imposing, and distorting' (Hegarty 2007: 157). In sharp contrast to *musique concrète*, for instance, noise in Merzbow's albums is not assembled in order to create a comprehensible structure; the noise as a product itself is what the listener should focus on. Hegarty, therefore, concludes that

> the noises are what are brought together in something that is very nearly the double of music – that which music must not be, and that which underpins what music makes itself be […]. Merzbow's noise is an extraneous music, whereas *musique concrète* is an inherent music revealed.
>
> (Hegarty 2002: 197)

The second requirement that Merzbow's noise music arguably fails to fulfil is related to the production of music. Here, we cannot bypass Adorno's idea of the *mastery* of material, as thoroughly discussed in Hegarty's text. Music is not a simple sensuous event but a product of a complex act of composition. According to Adorno, for sound to exist as music, musical material needs to be 'processed' within a dialectical tension between the rational, systematic relations of musical structures and the irrational, complex relations of mimetic and magical elements of art (Paddison 1991: 272). It is only through this mediation that the mere appearance of music as detected by the senses transcends itself and becomes an artwork in the truest sense of the word:

> Every musical phenomenon points beyond itself by virtue of the associations and expectations it arouses, and by virtue of that form which it distances itself. This transcendence of the single musical elements is what is usually meant by the term 'content' (*Inhalt*): i.e. 'what is going on in the music'.
>
> (Adorno, 'Fragment über Musik und Sprache' [1956], translated and cited in Paddison 1991: 278)[2]

Focusing on 'content', Hegarty asks whether Merzbow's noise can be said to be a realization of the Adornian mastery of material. Whilst the answer is naturally no, Hegarty, however, does not completely dismiss the presence of 'content' in Merzbow's albums; he writes, instead, that the 'content and appearance' are 'overlaid, doubling one another', resulting in 'something like an absence signalling the absent presence of music' or 'non-music' – in other words, noise music (Hegarty 2002: 198).

This understanding of 'musicality' is based entirely on the conventional ontology of musical material. Here, the word 'material' refers to a minimum unit of sounds, such as melodic or rhythmic motives, cadences or series of notes. These fundamental materials are then carefully manipulated in a complex network of a large-scale sound architecture. Continual transformations and development of materials as fundamental sound events are crucial not only for the construction of the piece but also for its listening and interpretation. It is evident that Merzbow's noise music does not fit this concept of music.

When excessive sonic information is vertically stacked, individual components can no longer be separately discerned but instead become a part of the resulting mass of sounds. Faced with the amalgam, our ears focus, in all likelihood, on its texture, colour and degree of density rather than on microscopic structures, contours and the details of interactions between individual entities. The use of massed sounds and/or static noises (clusters) itself is not a threat to the very idea of music. On the contrary, it has been an important strategy of musical construction since the twentieth century, as observed especially in the music by composers such as Iannis Xenakis, György Ligeti or Krzysztof Penderecki, in which texture and density often play an important role.

In contrast to these figures, Merzbow's noise does not seem to be deployed as 'organised sound' in order to create a sense of musical time; it is instead perceived as an indefinitely continuing random amalgam of harsh, distorted sounds that simply *is*. Individual materials and contours are, as Thacker describes, disintegrated and enveloped within the extreme volume of the resulting noise, providing no apprehendable objects to listen to. It is for this reason that Merzbow's noise is often labelled as 'non-music'. Nevertheless, by changing our listening focus from the horizontal to the vertical axis, amalgams of disintegrated and enveloped elements in Merzbow's works can be found to be full of meaningful information for the listener and music analyst. These include the identification of multi-layered sonic strata, registral and timbral balance and rhythmic interactions within a texture. Vertical listening can, thus, be suggested as a starting point for analysing Merzbow's noise. Once vertical relationships between sounds are clarified, the spatio-temporal procedure in noise music will become another listening object. This different listening approach allows us to view Merzbow's noise as meaningful after all, and worthier of further analytical investigation.

Production of Noise

Merzbow's albums borrow from various genres of music. During his 40 years of activity, Akita has flexibly adopted his noise to different musical styles (heavy metal, ambient music, electronica, minimal music and so forth), sometimes based on his personal interest and, at other times, in the light of record labels' preferences. As Akita explains, 'the music of Merzbow should be viewed as changing, while being part of a continuum. What matters to me is this line of progression, more so than the individual works that comprise it' (Akita 2019). As a prolific musician, Akita is also interested in releasing archives of his past recordings, as clearly exemplified by his CD anthology set *Merzbox* (2000), which embraces his trajectory from 1979 to 1997. Despite the stylistic differences, the quintessential elements of Merzbow – extreme densities and harshness within multi-layered noise – define most of his output. Whatever style he experiments with, Akita always creates a Merzbow version of it.

A typical Merzbow sound, characterized by extreme densities and harshness, was not apparent in his work from the beginning. Merzbow's noise was a product of his continuous exploration of undiscovered sounds: 'my perception of noise art was constructed after the sound was born' (Akita 1999b). Many of his 1980s albums show various sources of inspiration for the development of a distinctive Merzbow sound. In particular, three categories of music had a great deal of influence on him: 1960s and 1970s heavy psychedelic/progressive/blues rock, free jazz and electroacoustic music. The following discussion will focus on how each of these categories affected Akita's aesthetics and practices of noise music.

Akita's earliest passion for music was rock. In the early 1970s, he started playing drums in a blues rock band influenced by Jimi Hendrix, Cream and Vanilla Fudge. With his increased interest in improvisation, Akita began his activity as Merzbow with his school friend Kiyoshi Mizutani. Most of the early albums in the name of Merzbow are based on studio sessions with Mizutani. Shortly thereafter, the alias was reserved for Akita's solo work. A variety of sound manipulation techniques that Akita explored in the late 1970s and early 1980s derive from audio effects commonly used in hard rock, especially those relating to guitar effect units (pedals). These include flanger, phaser, ring modulator, delay/echo, loop, distortion, overdrive and feedback units, among others. In Merzbow's work, however, these musical effects are no longer merely to emphasize sonoristic details, but rather devices for creating noise that is music in and of itself.

Free Jazz, as exemplified by Cecil Taylor or Albert Ayler, was another significant influence. As a drummer, he was especially interested in its free form drumming style, which led him often to include this form of playing and create a strong sense of pulse beat within the overall density (Akita 2013b). Albums of the early 1980s included on *Merzbox* often comprise a wide range of instrumental sounds mixed in a free jazz style, many of

which exhibit Akita's considerable percussion performance skills. His use of extreme densities, created through multiple layers of sound, is already present in those works – even though, as discussed in more detail later in this chapter, individual layers do not necessarily possess a purely static nature in the manner of those in his later albums.

If Akita's journey of noise started with his devotion to rock, it was electroacoustic music that allowed him to distance himself from it and expand his toolbox. Akita revealed in a 1999 interview that he listened inquisitively to electroacoustic music by Pierre Henry, Karlheinz Stockhausen, François Bayle, Gordon Mumma or Xenakis and that these influences found their way into his pure electronic noise (Akita 2013a: 59). Struck by Schaeffer and Henry's *Symphonie pour un homme seul* (Akita 2013b), Akita also produced a number of experimental tape pieces in the 1970s and 1980s that embrace the heritage of *musique concrète*. Equipped with a portable tape recorder, he often collected concrete sounds in his surroundings, including streets, construction sites, railways, kitchens or bathrooms. As part of his recording process, Akita created manual cut-up effects by intermittently pressing the record, pause and resume buttons (Akita 2014). Similar cut-up or collage techniques were also used for the manipulation of shortwave radio sounds in early Merzbow albums. When Akita utilized radio and TV speeches, for example, the original vocal information is cut into short fragments and modulated with loop, distortion or speed change effects in a way that we cannot hear what has exactly been said in terms of linear speech. Akita's interest in noise as sound was, thus, also combined with a structural sense of noisiness associated with interrupted or disrupted sound information.

In order to explore alternative methods of sound production and manipulation, Akita decided to quit his playing of normal instruments, instead turning to tapes, microphones and DIY instruments as his main creative tools. In doing so, he did not intend to create 'high art', instead he was starting to create 'very cheap non-musical recordings by [use of a] cheap monaural cassette recorder' (Akita 1999a: 82). With a strong sympathy for Dadaism and Surrealism poetry, he considered cassette tapes as a perfect medium for producing an anti-aesthetic art form. Akita also explains his use of tapes by relating the nature of this media to his view on pornography.

> In my early cassettes and mail art projects I used lots of pornography. I made many collages using pornography as it was a very important item in my mail art/mail music. I thought my cheap Noise cassettes were of the same value as cheap mail order pornography. These activities were called 'Pornoise'. In this direction, I would say that I used pornography for its anti-social, cut-up value in information theory.
>
> (Akita 2013a: 60)

In early Merzbow tape works, the noisiness often consists of various types of concrete sounds as well as lo-fi, distorted instrumental sounds derived

from 'false' playing, that is playing instruments in a way that is entirely unconventional. The results include creaky unpleasant sounds, interrupted vocal sounds and the aimless and endless repetition (looping) of sonic fragments. These sounds are found to be disturbing or unpleasant partly because the original sounds, despite the subsequent modulations or distortions, are still, to a certain extent, discernible. It is as if our normal expectations of these 'proper' instrumental and vocal sounds are betrayed, the consequential sonic information being received as noise. As exemplified by the *Scissors for Cutting Merzbow* series, 'cut-ups, loops, scavenged sounds and confusion […] [are] designed to disorient the listener' (Akita 1999a: 113).

Aside from the influence of Dadaism, in the mid-1980s, Akita also started to release vinyl works. These are distinct from his cassette works in that, as Akita says, they 'concentrated more on sound itself' in the context of 'a more static medium' (Akita 2013a: 61). In these vinyl works, in accordance with his increased interest in multi-layered sonic construction, static harsh noises deriving from overladen sound effects – in which original material can no longer be identified – gradually became more prominent. In Merzbow's vinyl works, a variety of sound manipulation techniques are effectively integrated, with a better control of devices compared to his experimental tape works. Aside from Akita's personal development, an external factor also forced him to establish a sort of methodological pattern for his noise creation. At the end of the 1980s, Merzbow expanded his field of activity from studio recordings to live performances and this made it necessary for him to be selective with the equipment he travelled with, which includes multi-track recorders, contact microphones, effectors or ring modulators. By using these devices as his main tools, Akita established his own method for generating static noisy sonorities. In analogue settings, he often uses instruments or other objects (often metallic) connected to a fuzz pedal and/or contact microphones. The resulting distorted sound signal is, in turn, connected to additional devices such as ring modulators, oscillators or samplers. This results in multiplied sound effects and feedbacks and, thus, extremely dense and harsh noise. It is a sound now recognized as emblematically Merzbow.

In parallel with the evolution of techno and electronica, from the end of the 1990s to the mid-2000s, Akita used a laptop as his main tool for his noise music. In this digital phase, however, his primary aim was to reproduce the sound from his analogue period, examples of which include *Dharma* (2001) and *Amlux* (2002). More recently, Akita (2014) has voiced his preference for analogue tools (often instruments he has made), since they allow him to produce the sound he wants more easily. Whether in an analogue or digital setting, Akita has, nevertheless, focused on the expansion of his noise palette through a rigid control of devices. The generated noise, although it already contains multiple layers of sound effects in its production process, is subsequently used as a layer within complex stratifications that form what is often called a noise wall.

Vertical Composition

Merzbow's noise walls embrace a multitude of continuous sonorities. When listening to recorded media, the stratification of the resulting noise can be discerned through careful listening, as long as each layer is sufficiently distinct. The meticulous organization of vertically stacked sonorities is one of the most important skills that Akita developed during his experimental period of the 1980s. A number of his early examples from the 1980s already illustrate Akita's concentration on multi-layered sound construction. In this period, however, Merzbow's multi-layered noise did not necessarily consist of his characteristic statically prolonged harsh noise but often include layers of rhythmic percussion sounds.

In his early 1980s albums, a sense of sonic continuity largely derives from persistently repeated sound units produced through the use of a loop effect creating a kind of rhythm. Layers of looped materials vertically combine to form a dense, multi-layered sonority. His compilation album series *Collection Era Vol. 1–3*, originally appearing on various cassettes released in 1981–1982 and later included in the *Merzbox* anthology, is one of the earliest examples of this multi-layered organization. Figure 11.1 illustrates the textural outline of the opening of *Collection Era Vol. 3*, track 1 (untitled; total length 5′18″). The piece starts with two layers of continuous sounds – a low iterated sound similar to that of a helicopter (layer 1) and a pitched layer approximately on the note B (layer 2). At 0′18″, two additional looping layers, a low-register rhythmic unit (layer 3) and a dry, iterated percussive sound in a higher register (layer 4) subsequently join the texture. These four vertically combined loops serve as fixed underlying layers, though they gradually start to transform in frequency at 0′27″, shortly after which fragmentary
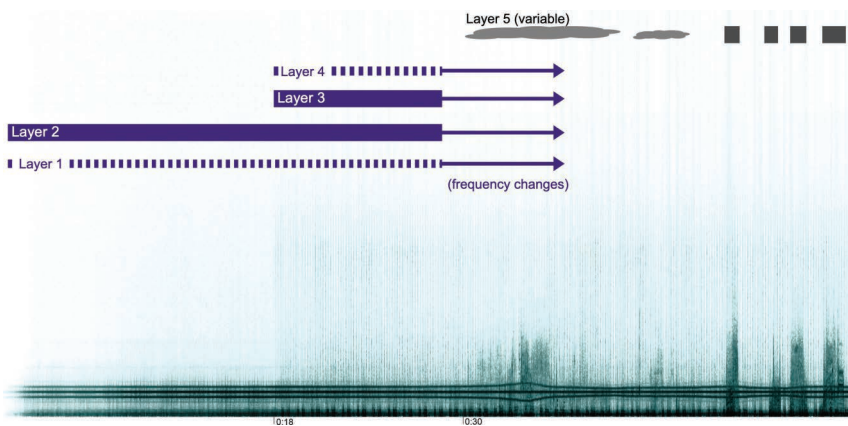
Figure 11.1 Merzbow, untitled opening track of *Collection Era Vol. 1–3*, textural outline.

instrumental sounds and electronically manipulated variable noise (layer 5) are intermittently superimposed (from 0′30″ onwards). The stratified layers 1–4, thus, provide a quasi-static foundation beneath more incidental and discontinuous interactions in layer 5.

Many of the 1980s albums, as just described, already exhibit Merzbow's typical style, in which a variety of continuous sounds are vertically stacked, together forming a dense sonic complex that may be static and harsh. In later albums, however, Akita started to combine this technique with one in which the individual elements are static and harsh in and of themselves. This is more frequently observed in his albums released since the 1990s. The textural outline of the track 'Minotaurus' from *Hybrid Noisebloom* (1997) can, for example, be interpreted as follows: starting with a looped rhythm, three layers – an iterated low register noise, a static fricative[3] noise and a mobile entity – are gradually stacked with a careful adjustment of dynamic balance between the layers. When a new layer is added, the loudness of pre-existent noises is usually reduced in order to create space for it in the overall complex. In this track, the initial looping layer gradually decreases in loudness as the number of textural components increases. Whereas this adjustment allows all the existing layers to be equally discerned to some extent, it does not mean that every single sonic element in each layer is discernible in the resulting density. The bass accent at the end of the loop cycle, for instance, eventually becomes enveloped with the superimposed multiple layers – although, having experienced this rhythmic pattern a number of times, some listeners may continue to 'hear' this element as a memorized artefact.

When encountering a large quantity of sonic information, we cannot listen to all sounds at the same time. Instead, our ears select, consciously or unconsciously, what to prioritize from the overall texture, foregrounding noises in accordance with changes in the layer combination. Whilst acknowledging the fact that there is no universal manner of listening, we are still able to identify the basic conditions that make some sounds more discernible than others. First, the entry of a new element almost always attracts our attention, since it usually involves a distinct change in colour. Second, some sound qualities stand out more than others by nature, as is the case with high-frequency fricative noises that are especially noisy when statically prolonged. Multiple layers of fricative noises, often observed in Merzbow's albums such as *Mercurated* (1996) or *Pulse Demon* (1996), therefore, result in an intense feeling of harshness, whilst, at the same time, creating a feeling of suppression and tightness due to their domination and saturation of the musical space.

When a noisy sonority is part of a musical figure (a *Gestalt*), the resulting composition can largely be approached through structural listening. If a statically prolonged noise is the only element in the space, in contrast, it may be experienced with bewilderment due to the lack of temporal structure. As such, Merzbow's noise music could be considered to be fundamentally

different from what we believe music should be. Yet, Merzbow's noise is not a random accumulation of sounds – it is a result of the meticulous integration of different sonic qualities generated through his rigid control of devices. Within the extreme density, vertical interactions between sonorities give rise to constant transformations of registral profile, dynamic balance, degree of pitchedness, stability/variability, roughness (graininess) or fricative intensity. Hence, it is possible to observe the sonoristic qualities of the layers and the relationship between them despite the resulting density. In this respect, Merzbow's noise can, without doubt, be said to be comprised of structured sounds – even if they are not horizontally organized – and this fulfils, at least to a certain extent, the definition of music. Merzbow's compositional skill is, therefore, displayed in his design of vertical space rather than in his control over the succession of sounds in time. 'Vertical composition' does not mean the denial of music but, rather, a stretched realm of musicality.

The more one listens to Merzbow, the more it is possible to discern the subtle differences in sounds that may, on first listening, seem similar. By opening our ears, we explore and challenge the limits of our listening and the boundaries of music. If there is a truth in the premise that Merzbow's noise is, as an art form, distinguished from 'normal' music, it lies in the sense that Merzbow's work forces one to address the fundamental questions about the definition of music and our listening as well as interpretation capacities. Merzbow's noise provides a platform in which we need to contemplate the line between music and non-music. This inevitably breeds disagreement – some may argue that Merzbow's noise is still 'non-music' or only analogous to music whilst others will find a way to interpret it as music, albeit in an extreme form.

Noise, Rhythm, Form

Merzbow's multi-layered noise is not completely seamless but instead often contains a sense of rhythmic articulation deriving from looping layers. The effect of these loops is not, however, to create a sense of musical momentum since their repetitions are essentially static – they merely function as a textural pattern in the overall complex. Akita, thus, focuses on the energy flow deriving from the relationships between the rhythmic components of the noise wall.

> It's always so thrilling to see what emerges after collisions of various sound elements. In the case of my work, I put an emphasis on how to combine or disrupt stillness and motion, construct a composition as it grows. Successful, if those elements bring tensions, otherwise it'd become plain and boring.
>
> (Akita 2013b)

In order to construct his multi-layered noise, Akita frequently uses a rhythmic loop that contains low-register sounds as a layer, which he employs to

start a piece and over which he subsequently stacks other loops and/or static noise layers. It is as if the initial looped rhythm provides a fundamental pulse for the noise wall against which subsequent layers interact, creating textural gradations that transform the degree of stillness and motion. In any case, rhythm is not perceived as a succession of durations that creates a structured ordering of musical time but rather exists as a local element in an overall texture that is static. This manner of using rhythm is not unique in Merzbow's works – it has been observed in twentieth-century composers who adopt texture as the main part of their compositions, such as Ligeti, Penderecki and Xenakis.

Since he focuses on the vertical space, Akita's primary interest is not to create an intricate sequence of events. This does not mean, however, that his noise music is always devoid of rhythm in a conventional sense. The degree to which we encounter organized temporal structures depends on the type of work. In live performances, for example, Akita creates his multi-layered noise in an improvisational context with a maximum degree of loudness so that there is almost no room for subtle, discernible interactions between sonorities. In his live concerts, furthermore, Akita often uses an excessive number of sound production devices, constantly connecting and disconnecting various equipment. This visual, theatrical aspect of his performances may also distract the audience from their pure experience of sound itself. It is, therefore, debatable whether we can listen to live performances analytically because their extreme loudness and theatricality thwart our attempts to deconstruct the multiple layers. Instead, the extreme loudness may produce a powerful, direct sensation to the body, to the point where it may even be perceived as a threat or otherwise the ecstasy of sound.

Studio recordings, on the other hand, do not necessarily require, as Akita (2014) notes, a high degree of loudness, therefore allowing for greater flexibility of style. In his studio recording/mix albums, the extent to which we may encounter rhythmic structures depends on the creative process of individual works. In his longer pieces generated through improvising, for instance, Akita seems to concentrate merely on vertical composition by filling the space with various combinations and collisions of sonic layers whilst not paying much attention to temporal structure. Such an improvisational manner is a feature, for example, of his 1994 album *Venereology*.[4] This, however, starkly contrasts with *Pulse Demon* (1996). Most pieces in *Pulse Demon* feature frequent changes of contrasting sonic colours based on a fast pulse. Sonic constructions also start, as is often the case, with a static sonority formed by combining looping layers and prolonged noise layers. But within what constitutes an essentially static surface, there are also moments in which we encounter short, discrete rhythmic gestures. This is a prominent attribute, for example, of the opening of the second track 'Woodpecker No. 2'. These frequent changes of sound components thus provide the impression of an organized temporal structure.

A sense of coherence in a musical piece generally derives from the repetition and variation of musical gestures, such as melodic or rhythmic figures. In many of the noise compositions by Merzbow, however, individual sound materials are not connected to a large-scale form in the same ways as in a bottom-up compositional system; nothing happens except changes of colour within the dense static noise wall[5] or, even if the piece contains a sense of movement, we are unable to find predictable patterns and/or order in the temporal axis. Some of his recent works, however, illustrate Akita's more elaborate manner of temporal organization.

An example of this is '98513', a five-minute piece from Merzbow's 2020 album *EXD*. This work starts with a rhythmic loop that consists of an explosive low-register sound followed by granular noise. Among various materials that are superimposed upon this pulsing layer, there is one sonority that interacts particularly strongly with it. This is a variable (mobile) fricative noise that often changes in register and occasionally combines with high-pitched whining sounds like those produced by a scanner or printer.

Figure 11.2 presents the layer outline of '98513'. The six sections illustrate how the relationship between the rhythmic loop and the variable fricative noise (described below as noise V) transforms during the course of the piece. Following an introduction (section 1) that consists of various incidental sonorities, noise V enters at 0′37″, forming a static parallel layer with the loop (section 2). These two sonorities form a combined noise block that, from 1′32″, alternates with a new muffled noise with a dense, granular texture (section 3). At 2′02″, the rhythmic loop becomes slightly dull and lower in register whilst noise V fades away (section 4). During the absence of noise V, we hear instead new fricative noises in a higher register that contrast sharply with the low-register loop (see extract A in Figure 11.2). A harsh, high-pitched feedback noise also becomes apparent during this section. At 2′33″, noise V rejoins the texture, once more coinciding with the rhythmic loop. The manner in which the rhythmic loop combines with noise V is now different, however. Whereas in sections 2 and 3, the two layers combine almost to form one entity; in section 4 and especially section 5, they proceed independently of one another. Their interaction can be experienced as irregular changes of noise colour derived from the intermittently altering register and loudness (at 2′58″–3′07″ for the looping layer and at 3′53″–4′08″ for noise V). Aside from these changes, an additional degree of harshness can also be discerned from 3′37″ to 3'49″ as a result of, in all likelihood, feedback effects. Except for occasional moments when it is enveloped by sonorities with a higher degree of harshness, the rhythmic loop continuously provides a strong pulse. Having served as the fundamental layer within the texture, in section 6, the rhythmic loop becomes the sole focus. Following a sudden amplification of sonority at 4′30″–4′37″, extraneous noise colours are added to each loop (see the sonogram marked with arrows in extract B), their interpolation providing further rhythmic variation.
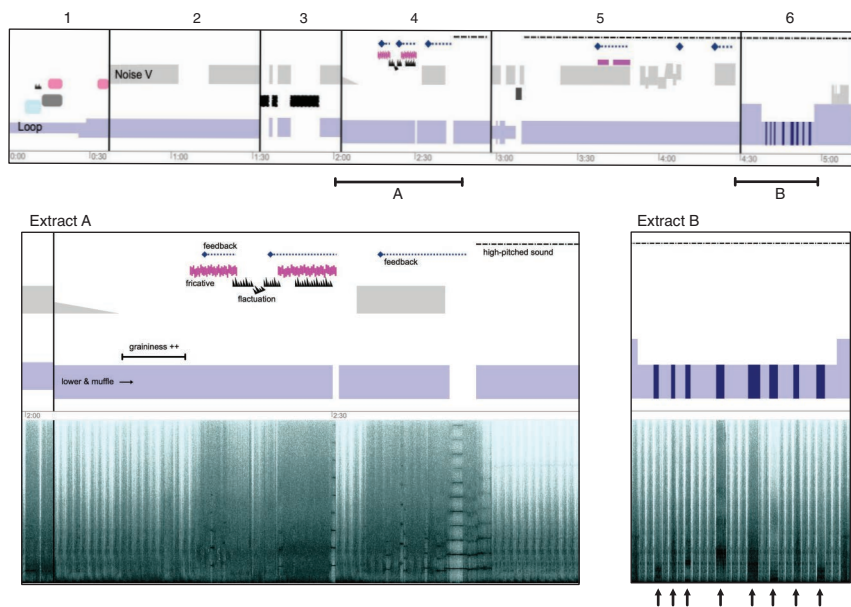
Figure 11.2 Graphic representation of the textural relationship in '98513' divided into six sections (top) and close-up graphics with sonogram of extracts A and B (bottom left and right).

'98513' contains material that gradually 'develops' through the use of loops. This development does not, of course, happen in a conventional manner; each rhythmic loop and the material within it is not manipulated as such but instead has its function transformed within the texture through its relationships with other elements. Whilst the fundamental loop pulse is constantly present, the sonoristic detail of the rhythm transforms over time (as approximately illustrated by the visibility of stripes in the sonogram), based on whether and how this layer combines with other materials. By transcending a mere vertical arrangement of sounds, the piece, thus, provides us with a more intricate and organized spatio-temporal experience than the static Merzbow noise walls.

Conclusion

The analyses of these pieces suggest that the degree of 'musicality' in Merzbow's noise varies widely. Whilst some pieces may not seem to fulfil standard definitions of what constitutes music, in others, there is a more comprehensible relationship between sounds since they are carefully organized in space and time. Regardless of this stylistic diversity, Akita's noise composition demands that we approach and experience it in an unconventional

manner. Merzbow's music requires maximum concentration on the present, the vertical aspect of sound. And even when Akita pays more attention to the temporal organization of the piece, as observed in '98513', the overall sonority, whether it is single-layered or multi-layered, is often so sufficiently prolonged that it allows us to engage in 'scanning and exploring the spectro-morphological and spatial properties' of sound (Smalley 2007: 37), including density, sonic surface (graininess) and texture. It is in this experience of the present that we find meaning, which is also to say musical value, in Akita's compositions.

Notes

1 During the last few decades, the aural analytical approach has been developed as an important breakthrough in electroacoustic music study. Supported by the recent evolution of listening interfaces and the digitization of sound data, a number of authors have proposed new analytical strategies, focusing on timbral, dynamic, spatial and structural features of non-score-based musical compositions (e.g. Smalley 1997; Roy 2003; Emmerson 2009; Clarke 2012; Thoresen 2015; Couprie 2016). When analysing an extreme form of music such as Merzbow's, however, a simple taxonomy of sounds can be more useful because it often contains a dense, complex texture that cannot be separated into layers by, for instance, the sono-gram. The analysis in this chapter is, thus, mainly informed by the 'classic' of aural analysis, namely, intensive listening and some fundamental criteria proposed in Pierre Schaeffer's typo-morphology (Schaeffer 1966; Chion 1983).
2 A full English translation of the revised version was published as Adorno (1993).
3 The term fricative is borrowed from the terminology of phonetics. Whilst in phonetics, 'fricative' is associated with an action that produces a sound (that is forcing air through a narrow gap), in this analysis, it only refers to the resulting sound quality, meaning a hissing noise with a sense of airy friction, similar to the sounds f, θ, ʃ or s. This criterion was originally used in my analysis of electronic noises in Peter Ablinger's music (see Sudo 2020).
4 Released by the American heavy metal label Relapse Records, *Venereology* is known as one of the most extreme examples of his noise composition. First, the pieces in this album contain an amalgam of arbitrary sonic elements created by a heavy usage of feedback and voice distortion. Second, Akita was drinking heavily and intentionally during the recording. The combination of the two fac-tors results in an arbitrary amalgam of harsh noises, which may not exactly be an artefact of Akita's controlled sound production.
5 Latartara's analysis (2010) of 'Cow Cow' from *Amlux* shows how the distribution of frequency bands and its transformation can create a large-scale structure.

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Note: Page numbers followed by "n" denote endnotes.