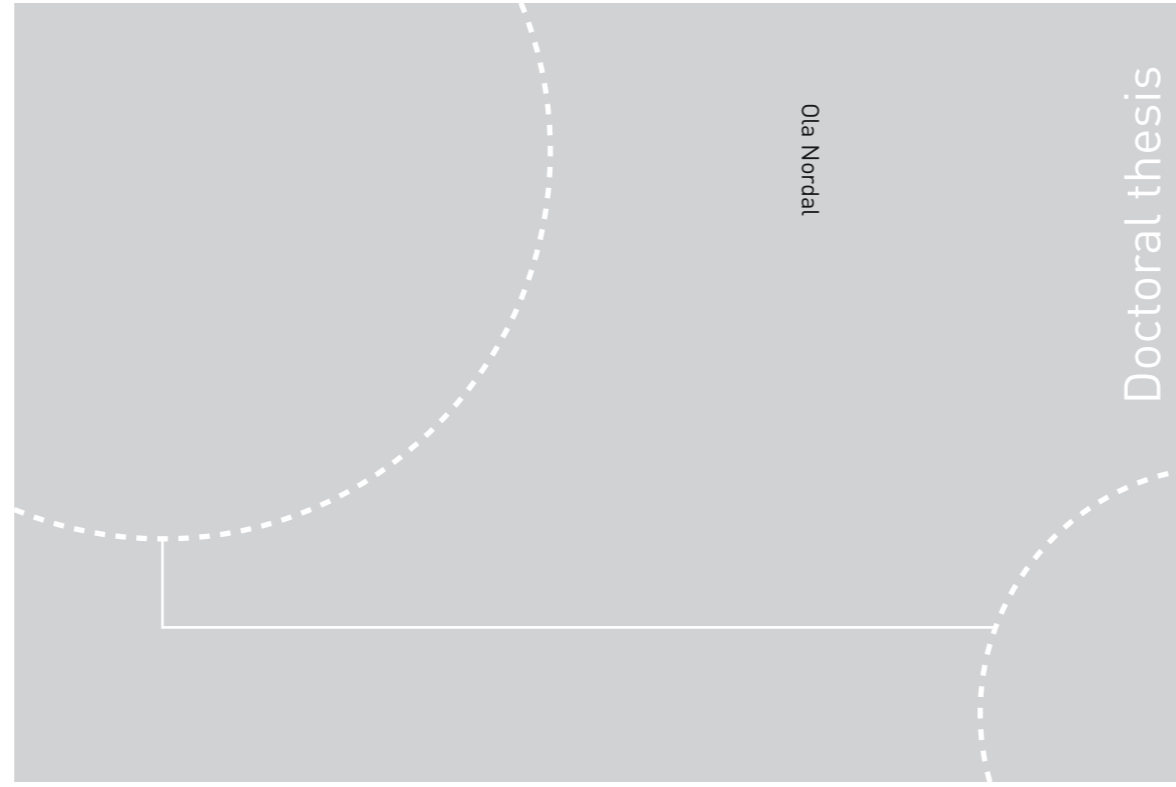


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Ola Nordal

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A Study on the Electroacoustic Music
of Arne Nordheim

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Abstract

Arne Nordheim (1931–2010) was Norway’s most prolific composer of electroacoustic music in the second half of the 20th century. His catalogue, which is gathered for the first time in this PhD dissertation, includes 197 compositions in a wide range of styles and instrumental combinations. More than half of these have some sort of electronic component. While Nordheim’s orchestral music has received some musicological commentary, little has been written about his electroacoustic works. This study is the first comprehensive examination of this vital part of his output. I ask contextual questions about when and why a piece of music was composed, as well as aesthetic questions about how it was constructed, and how it can be perceived and interpreted.

I have divided Nordheim’s electroacoustic output into four periods, roughly coinciding with where he was working: 1) early: Oslo 1960–1967, 2) Warsaw 1967–1974, 3) intermediate: Oslo, Warsaw and Stockholm 1975–1983 and 4) late: Oslo 1984–2006. I have given particular emphasis to the second period, since I regard the Warsaw years as especially important, both in terms of the repertoire that Nordheim produced and in terms of his aesthetic development.

This PhD dissertation is the first large-scale work on Arne Nordheim’s life and music published in English. It is also a contribution to the general history of 20th century music, and to the growing academic field of electroacoustic music studies. The study includes the first complete catalogue of compositions and recordings of Nordheim’s music.

Acknowledgements

This PhD project was performed at the Norwegian University of Science and Technology (NTNU), Department of Music. My work was funded by a four-year grant from the Faculty of Humanities, NTNU. I would like to thank professor Magnar Breivik and professor Andreas Bergsland for excellent guidance and supervision. I also wish to thank professor Carl-Haakon Wadeland and professor emeritus Harald Herresthal who contributed with supervision early in the process.

I have been very privileged to enjoy the collegial support and good working environment at the Department of Music. In particular Trine Knutsen, Jørgen Langdalen, Erik Hagtun, Vegard Stolpnæssæter, Lill Hege Pedersen and Ove Sæternes has provided me with valuable help and institutional support during these six long years. I will also direct a special thank to Sigurd Saue, who has provided unique support, both as a colleague and as informant for the project.

I will give a very special thanks to the family of Arne Nordheim, Rannveig Getz Nordheim, Mads Nordheim and Gro Nordheim, who all have given me crucial support and material, and have provided me with valuable insights into Nordheim's life and career. I am grateful for having had the opportunity to include examples of Nordheim's music in this PhD thesis.

I will also like to thank Nordheim's friends and colleagues that I have had the pleasure of discussing with during the research phase of my project. In particular Mats Claesson and Harold 'Hal' Clark has given me valuable insights into Nordheim's working methods. Hakon Blandehoel has given me valuable insights into the composition of *Colorazione*. A complete list of informants and discussion partners are listed in the appendix. My gratitude goes out to them all.

I have enjoyed great support from the following institutions and persons: Frida Kristine Røslund at the NTNU Music Library, Christos Farmakis at Edition Wilhelm Hansen, Keez Tazelaar at the Institute of Sonology, University of Utrecht, May Irene Solum at NRK Dokumentarkivet, Guri Finsveen at NRK Archive and Research, Jorid Nordal Baumann, Ivar Håkon Eikje and Inger Johanne Christiansen at the Norwegian National Library, and Silje Vestvik at the Bergen International Festival. I also wish to direct a special thanks to Jøran Rudi and Asbjørn Blokkum Flø at NoTAM for providing me with a valuable video interview of Nordheim, and to Kjell Oversand for providing me with a valuable recording of one of Nordheim's lectures. Harald Herresthal has given invaluable help by opening up for me the Arne Nordheim centre at the Norwegian Academy of Music during the time the material from Nordheim's home *Grotten* was stored there.

The many good friends I have discussed this project with, have shaped my work in important ways. Lars Mørch Finborud at Henie Onstad Kunstsenter has been one of my most valuable conversation partners in the early part of the research process. The interviews we conducted together and the other work we did together on the exhibition *Ingen -ismer for meg, takk!* at Henie Onstad Kunstsenter in 2013 was a truly joyful experience. Ina Pillat deserves special thanks for arranging a research trip to Warsaw, and for including me in her work on her documentary film on the Subharchord.

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Lasse Thoresen gave me crucial support by providing me with an early version of the manuscript for his book *Emergent Musical Forms*. This manuscript was very important for me when developing the analytical methods for my project.

The dissertation has been skilfully proofread by André Marques Smith. Any remaining spelling mistakes are solely my own responsibility.

During my time as PhD candidate and later as university lecturer, I have had the pleasure of teaching two courses on Arne Nordheim's music, and to give a long range of classes on music history. I'd like to give a warm thanks to the wonderful students at NTNU's Department of Music for giving me so many stimulating moments in the lecture halls.

I wish to thank my family and my mother Kari who ignited my interest in history.

Finally, I am eternally grateful for the wonderful and patient support I have had from Charlotte and Nicolas. Thank you for enduring so much waiting during these six long years. This PhD thesis is dedicated to you two!

Notation conventions

Notes, pitch and register

For note names, I use the Scientific Pitch Notation (SPN): C₀-C₈, where A₄ = 440 Hz. Where applicable I notate pitch in exact frequencies, and include deviation from the closest tempered tone in cents.

For register designation, I use Lasse Thoresen's adaptation of Pierre Schaeffer's convention, using a scale from 1 to 7 (see table to the right).

Register	
1	Profound
2	Deep
3	Lower mid range
4	Higher mid range
5	Treble
6	High treble
7	Extreme treble

References to archives

Documents from official archives are referenced in the footnotes using the following convention: [Institution]/[Archive creator]/[Key]/[Box]/[Folder]. This is the same convention used on the Norwegian archive web portal <http://arkivportalen.no>.

List of institutions and archives are given in the Sources-section at the end of the thesis.

References to Nordheim's compositions and recordings

I refer to entries in the catalogue of works and recordings before the title at *first mention in each chapter* of a work or recording.

The numbering in the lists uses the following convention:

- AN = Work number, in chronological order from first performance
- AN.B = Ballet set to Nordheim's music
- AN.R = Commercially available recording of Nordheim's work
- AN.RC = Compilation including recording of Nordheim's work

For example: AN.52 *Solitaire* refers to the 52nd entry in the list of compositions. Similarly, AN.R6 *Popofoni* is entry number six in the list of recordings.

References to scores

The consulted scores are listed in the appendix. The appendix also contains information on publication. This is therefore not listed in the footnotes.

Time

Time as measured, for instance with reference to sound files, is notated in brackets: [mm.ss].

Time as estimate, for instance with reference to scores, is notated without brackets: m's or s''.

Most analyses have tables listing a segment's duration (marked *Duration* or *Dur.*) and its position in the continuous track (marked *Cumulative time* or *Cumul. time*).

Translations

If nothing else is indicated, all Norwegian quotes are translated to English by the author.

All interviews have been conducted in Norwegian and have been translated to English by the author.

Software

All sonograms and spectromorphological transcriptions are made with INA GRM's open source program *Acousmographie*, version 3.71, using the *Aural Sonology Plugin*.
<http://www.inagrm.com/accueil/outils/acousmographie>

All note-by-note transcriptions are done with *MuseScore*, version 2.0.
<https://musescore.org/en/2.0>

Frequency detection and detailed spectral information is obtained using the Spectrum Analyzer plugin in *iZotope RX2*.
<http://izotope.com/rx>

Sonograms

Sonograms use the following colour convention:

Yellow = high intensity, red = normal intensity, blue = low intensity, black = no intensity.

Sung and spoken text

Text or lyrics used in a composition are written in italics between slashes: / *The isle is full of noises* /

CD tracks

Most of my analytical passages in this PhD thesis refer to commercially available recordings. However, a few exceptions are difficult to obtain, and I have generously been granted the permission by Nordheim's family to include these as sound examples on an accompanying CD. The track listing of the CD is as follows:

1. **Excerpt from Act II of *Katharsis* (1962)**
Unmarked CD at the Arne Nordheim Collection, Norwegian National Library/Norwegian Academy of Music
2. **Excerpt from *Katharsis*: «Electronic 2»**
3. **Excerpt from *Katharsis*: «Electronic 3»**
4. **Excerpt from *Katharsis*: «Electronic 4»**
CD marked "Arne Nordheim lydeksempler 1997." Arne Nordheim Collection, Norwegian National Library/Norwegian Academy of Music (tracks 2-4)
5. ***Epitaffio* – recorded by Herbert Blomstedt in 1967**
From *Contemporary Music from Norway: Arne Nordheim*, Philips 839.250 AY, 1967
6. **Fixed media material for *Response* – 1966 version**
Tape marked «SUNIA» at the Acoustics Department, NTNU
7. **Fixed media material for *Response* – 1977 version**
Edition Wilhelm Hansen
8. **Source material for *Ode til lyset* (1968)**
Tape marked «Materiale til musikkmaskinen» at the Acoustics Department, NTNU
9. **Material for *Solitaire* – Astrid Brekken reading (dry)**
10. **Material for *Solitaire* – Astrid Brekken reading (manipulated)**
11. **Material for *Solitaire* – triangles**
12. **Material for *Solitaire* – gating effect**
13. **Material for *Solitaire* – final version**
Excerpts from "Arne Nordheim om sin komposisjon Solitaire," NRK Radio, March 12th 1968 (tracks 9-13)
14. **Demonstration of sound web from *Pace*, part 1**
15. **Demonstration of sound web from *Pace*, part 2**
CD marked "Arne Nordheim lydeksempler 1998." Arne Nordheim Collection, Norwegian National Library/Norwegian Academy of Music (tracks 14-15)
16. **Fixed media material for *Aurora***
Edition Wilhelm Hansen
17. ***Ode til lyset* – 1995 version: «Smalbånd.wav»**
18. ***Gilde på Gløshaugen* – «Solstraale.wav»**
19. ***Gilde på Gløshaugen* – «Jegerpling15.wav»**
From Sigurd Saues private collection (tracks 17-19)

For å finne denne balansen mellom det poetiske og det katastrofale, må du nødvendigvis gå dit hvor menneskene er på ytterpunktene; stilt opp mot muren med bind for øynene, eller skuende ut over horisonten.

Arne Nordheim, 1981

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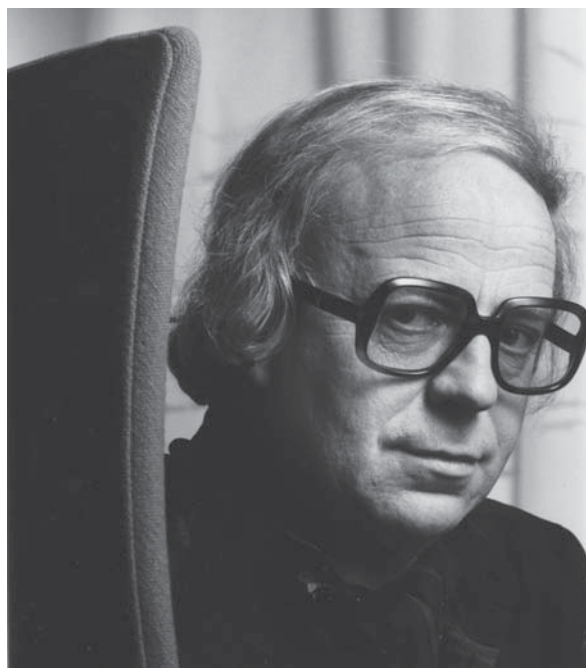
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1 SCOPE AND THEMES

Arne Nordheim (1931–2010) was Norway’s most prolific composer of electroacoustic music in the second half of the 20th century. His catalogue includes 197 compositions in a wide range of styles and instrumental combinations, and more than half of these include some type of electronic component. While Nordheim’s orchestral music has received some musicological commentary, little has been written about his electroacoustic works. This study is the first comprehensive examination of this vital part of his output. I will give an ordered and nuanced account of Nordheim’s electroacoustic compositions, using a combination of historical and analytical tools. I will ask contextual questions about when and why a piece of music was composed, and aesthetic questions about how it was constructed and how it can be perceived and interpreted. In order to map out a historical terrain for my study, I have divided Nordheim’s electroacoustic music into four periods, mainly structured around where Nordheim was working. This periodization is the historical framework around which the rest of the dissertation is structured, and it emphasizes how locality, personnel and studios had a strong impact on his music.

Two words in my dissertation title, *poetry* and *catastrophe*, point to something significant about Arne Nordheim’s artistic sensibility. He often described his music as being located at a point *between* the two, as if they were polar opposites on an imagined continuum. Nordheim enjoyed setting up extremes – life/death, dark/light, quiet/loud, poetry/catastrophe – and he would constantly bring these extremes into his compositions. “Between poetry and catastrophe” is also an apt summary of Nordheim’s aesthetic. When listening to his music, I am constantly struck by how it always seems to mean *something* – and this *something* is always large and imposing. Like the composers he admired, Mahler in particular, Nordheim was striving to express the sublime, exalted and deeply human. He was constantly grappling with the Great Questions of Human Existence. “Where do we come from? What are we? Where are we going?” he could ask, possibly as a reference to Gauguin’s famous painting of that name. Then he would add with his trademark wry humour: “And more importantly: How much does it cost?”¹

¹ This quote has appeared in many forms over the years in interviews and articles, for instance Ellen Pollestad: “Urkraft fra Grotten.” *Nordlys Morgen*, June 25th 1991 and “Ekstreme landskap: Fragmenter fra Arne Nordheims liv,” *NRK TV*, June 20th 1991. The version used above I heard from Nordheim’s son Mads Nordheim, personal communication on April 28th 2014.



There are some particular challenges to writing about Arne Nordheim. As most artists, Nordheim actively shaped his own image. He created a public mask consisting of, among other things, his characteristically messy hairstyle, his large glasses, and his many witty formulations. From early on, Nordheim displayed a magnificent knack for quotable one-liners and short vivid anecdotes. This made him a popular go-to-person for journalists and writers, and he provided almost free access to Norwegian television and radio. In most interviews, Nordheim resembles a shaman or mystic. Rather than explaining compositional detail, he would direct the interviews towards his grand poetic visions. These were always the ideas that have been at the core of western art since ancient times: death, memory, longing, God, landscape, the sea.² It is not my aim here to criticize Nordheim's mysticism. Creativity is a complex process, and does not always lend itself to explanation. As Jonathan Harvey writes in *Music and Inspiration*, "some composers [...] have been more inclined to reveal their feelings about the creative process, while others have shrouded it in secrecy, fearing in some cases that too much openness threatens creativity itself."³ In 1803, E.T.A. Hoffmann wrote that music "discloses to man an unknown realm, a world that has nothing in common with the external sensual

² A poignant example of this is the extended interview Yisrael Daliot conducted with Nordheim in 1991: Yisrael Daliot: *Klingende ord. Samtaler med Arne Nordheim* (Oslo: Aschehoug, 2001).

³ Jonathan Harvey: *Music and Inspiration* (London: Faber and Faber, 1999), p. xx.

world that surrounds him."⁴ In this quote, the artist genius is seen as channelling a particular form of almost divine inspiration, mediating this separate world of truths, ideas and beauty to humankind through music, painting or literature. Such artistic shamanism was a hallmark of the romantic era, but as Gloria Flaherty notes, shamanistic traits are almost as frequent in modernist as in romantic art.⁵ Hoffman's point rings familiar with regard to Nordheim. It seems that he needed his mask. Behind it he could retain his privacy, and be free to compose as he wanted.

At times, Nordheim's shamanism also seems to have been a strategy to steer a conversation away from possibly sensitive subjects. For instance, it is evident that Nordheim's technical understanding was, at best, crude. When he was talking about electroacoustic technology in program notes, lectures or interviews, his formulations never left any doubt that he knew what he was talking about – in particular since his explanations often carried more than just a hint of pedagogic paternalism. But Nordheim was, after all, a composer and not an engineer. His strength lay in the artistic visions and in the aesthetic shaping of the sounding result, not in the development of technical solutions. Even though he had a basic understanding of the equipment, he relied on technical assistance, even for quite simple tasks. If one takes a closer look at Nordheim's many technical exegeses of his electronic music, most of them are actually quite simple – although the language used might be high-flying.

The bottom line is that even though the outline of Nordheim's biography is relatively well known, accuracy is generally lacking in the literature. Some of this inaccuracy can be traced back to Nordheim's virtual indifference to historical detail. He was more focused on upcoming events and concerts than on keeping records of past activities. He did not leave behind a well-organized archive, and a lot of the work in this PhD project consisted of putting together bits and pieces of information from various archives and collections. I have surveyed all documents I could find about his electronic compositions, and I combine insights from these documents with a wide range of analytical methods. Rather than taking Nordheim's own words at face value, I have attempted in this PhD thesis to look behind the mask that Nordheim held up, and formulate precise questions about his music and artistic ideas.

⁴ Quoted after J. Peter Burkholder, Donald Jay Grout, and Claude V. Palisca: *Norton Anthology of Western Music. International Student Edition*, 9th ed. (New York: Norton, 2014), p. 595.

⁵ Gloria Flaherty: "The Performing Artist as the Shaman of Higher Civilization," *MLN*, vol. 103, no. 3 (1988).

1.1 Basic terms and definitions

The four periods and the structure of the dissertation

I have divided Nordheim's electroacoustic output into four periods, roughly coinciding with where he was working: 1) early: Oslo 1960–1967, 2) Warsaw 1967–1974, 3) intermediate: Oslo, Warsaw and Stockholm 1975–1983 and 4) late: Oslo 1984–2006. I have placed particular emphasis on the second period, since I regard the Warsaw years as especially important, both in terms of the repertoire that Nordheim produced and in terms of his aesthetic development.

Such temporal demarcations always carry a considerable degree of arbitrariness. The periodization is based on my needs as a writer, and does not necessarily reflect Nordheim's thinking on his own music. Obviously, I doubt that he saw his compositions of the late 1970s as being part of an "intermediate" period.

Moreover, it is not always clear-cut when it is fitting to assign demarcations. This is evident for instance in Chapter 4, where I needed to include an elaborate discussion on why I place the end of the Warsaw period at 1974 and not 1971 or 1972, the two other possibilities. A further complicating matter is that some works might stylistically belong to a period other than what the temporal organization has amounted to. For instance, several of the radio-theatre commissions of the late 1960s and early 1970s belong stylistically to the first period, and not to the Warsaw period where they have been placed. In sum, the periodization is a framework that I have constructed as an aid for my discussions, and the periods should not be regarded as strict aesthetic categories.

The dissertation is both chronologically and thematically organized. In Chapter 2, I provide an overview of Nordheim's formative years, education and early works before Nordheim took up electronic composition. In this Chapter I also discuss some of the core aesthetical principles of Nordheim's music, and examine the concept of the *memorable*. Then I tackle each of the four electroacoustic periods in turn. In Chapter 3, I focus on what I call *contrast, contact and conversation* in the mixed works of Nordheim's early period (1960–1967). In Chapter 4, I give a historical outline of Nordheim's decision to go to Warsaw in 1967, and in Chapters 5 through 7 I discuss the works I see as the most important from the Warsaw period. These analytical Chapters are thematically organized, and I discuss in turn sound installations, live-electronic music, and construction of meaning in two of the acousmatic works. In Chapters 8 and 9, I provide shorter overviews of Nordheim's third and fourth periods, before finally, in Chapter 10, summarizing and pointing to future work.

Electroacoustic music and Nordheim's compositions

This is a study dealing with *electroacoustic music*. If one consults the *New Grove Dictionary of Music and Musicians* one can read that this is music where "electronic technology, now primarily

computer-based, is used to access, generate, explore and configure sound materials, and in which loudspeakers are the prime medium of transmission.”⁶ In principle, this could mean virtually all music produced today. However, it is clear from the rest of the encyclopaedia entry that the term is used in a much narrower sense: it is not just a technical demarcation, it is also an aesthetic label – a genre. I wish to turn to the musicologist Joanna Demers for a working definition of *electroacoustic music* that I can use in my dissertation. Demers sees *electronic music* (note the use of the more general term “electronic” and not the more specialized “electroacoustic”) as “any type of music that makes primary, if not exclusive, use of electronic instruments or equipment.”⁷ The word “primary” is central. It indicates that in order for music to be labelled as *electronic*, it is not enough for it to just be recorded or mediated through electroacoustic transducers. Rather, the music must in one way or another have its aesthetic foundation in electronic instrumentation; what the French musicologist Marc Battier has called the *lutherie électronique* – the wide range of electronic and digital sound generators, effects and instruments available to the electronic music composer.⁸ Still, this definition covers a large expanse of genres, styles and practices. Demers therefore further divides her understanding of electronic music into three “metagenres”: *institutional electroacoustic music*, *electronica* and *sound art*.⁹ She defines *institutional electroacoustic music* as the electronic music of the western “contemporary” or “classical” music sphere, *electronica* as the electronic music in the popular music sphere, and *sound art* as the use of (electronic) music and sound in the otherwise visual and plastic arts. The important point for Demers is that these are genres and not just practices. While a *practice* can be linked to the use of certain equipment and instruments over a wide range of styles, a *genre* is a closed set of aesthetic preferences, often linked to a specific set of performers, with a limited set of techniques, and with a more or less defined historical genealogy of important works and contributors.¹⁰ As a practice, *electronic music* can be traced back to the birth of electricity, with its first flowering around the expanse of radio technology in the 1920s and 1930s with instruments such as the theremin and the ondes martenot. As a genre, *electroacoustic music* (I prefer to leave out the word “institutional,” in order to be more in line with the general usage of the term) traces its origin to the tradition that grew out of the tape music studios of Europe, USA and Japan in

⁶ Simon Emmerson and Denis Smalley, “Electro-acoustic music,” in *Grove Music Online*, accessed July 9th 2011 (Oxford: Oxford University Press).

⁷ Joanna Teresa Demers: *Listening Through the Noise. The Aesthetics of Experimental Electronic Music* (Oxford: Oxford University Press, 2010), p. 5.

⁸ Marc Battier: “A Constructivist Approach to the Analysis of Electronic Music and Audio Art – Between Instruments and Faktura,” *Organised Sound*, vol. 8, no. 3 (2003).

⁹ Demers (2010): *Listening Through the Noise*, p. 6.

¹⁰ Demers (2010): *Listening Through the Noise*, pp. 167-68.

the decades following the end of the Second World War. It is within this tradition that we find Nordheim's electronic works.

Some of Nordheim's electroacoustic works can be labelled as *acousmatic*. The term originated in the *musique concrète* movement in France in the late 1940s. According to Pierre Schaeffer (1910–1995), the followers of the Greek philosopher Pythagoras, the *akousmatikoi*, had listened to the lectures of their teacher while he was hidden behind a screen or curtain. Following Schaeffer's argument, this forced the *akousmatikoi* to focus on the content of Pythagoras' teachings rather than on his presence. The term was closely related to Schaeffer's aesthetic program for listening behaviour – so-called *reduced listening*. Schaeffer wanted the listener to focus on the acoustic events in *musique concrète* as pure sound without regard to “modes of its production and transmission.”¹¹ Gradually, the term *acousmatic* has lost some of this specific meaning, and has come to mean fixed media pieces from all over the electroacoustic music spectrum intended for loudspeaker playback. There are a few acousmatic works in Nordheim's catalogue, the most famous being AN.49 *Warszawa*, AN.52 *Solitaire*, AN.74 *Pace* and AN.77 *Lux et Tenebrae* (also known as *Polypoly* – one word, no hyphen).

Most of Nordheim's electroacoustic output can be located within the practices of live electronic music or mixed electronic music. *Live electronic music* is music that includes some kind of live processing of an acoustic and/or a fixed media element. The best example of this in Nordheim's catalogue is AN.50 *Colorazione*, where the sounds of the performers (Hammond organ X-66 and percussion) are filtered, ring modulated and played back through the speakers after a 15-second time delay. The result is that the performers are constantly confronted with what they played just a while ago. *Mixed electronic music* is music that combines live performance (acoustic instruments or voice) with some kind of fixed media component projected electronically through loudspeakers. In Nordheim's case this music falls into two main categories: orchestral works with a collection of shorter or longer fixed media cues, and chamber works for one or more players with a continuous fixed media element. The acoustic and the electronic elements can interact in various forms. In some instances, the electronic elements are accompanimental sonic backdrops to a live performance, in others they interact more directly. I define a *cue* as a fixed element that needs to be started at a specific point in the course of the performance. This is normally “cued” by a conductor, and an operator synchronizes the element with the actions of the other performers. I will discuss the

¹¹ Pierre Schaeffer, “Acousmatics (excerpt from *Traité des objets musicaux*, 1966),” in *Audio Culture. Readings in Modern Music*, ed. Christoph Cox and Daniel Warner (New York: Continuum, 2004). Schaeffer built his assumptions on a slight misunderstanding of the entry on Pythagoras in the Larousse dictionary, see Andrew Hugill, “The Origins of Electronic Music,” in *The Cambridge Companion to Electronic Music*, ed. Nick Collins and Julio d'Escrivan (Cambridge, UK: Cambridge University Press, 2007).

practice of cues in Chapter 3 in connection with AN.16 *Katharsis* and AN.28 *Epitaffio*. An example of a chamber work with a continuous element is AN.34 *Response*.

Nordheim also produced a large number of *sound installations*; works that strictly speaking come under Demer's metagenre *sound art* and not under electroacoustic music. However, Nordheim saw his sound installations as closely related to his other electronic output, and I see these works as naturally belonging within the scope of this dissertation. Demers defines *sound art* as "works that use non-narrative sound (either in combination with or to the exclusion of visual elements), often in a site-specific context in which sounds interact with their venue."¹² I will problematize the notion of site specificness and discuss the relationship between sound installations and music in Chapter 5 in connection with AN.55 *Ode til lyset* and AN.70 *Poly-Poly* (two words, with hyphen). In this chapter, I will also discuss how Nordheim used sound material from his installations to produce what I call *derivative works* – electroacoustic works intended for records or concert performance. This was an important category in Nordheim's catalogue and includes works like AN.77 *Lux et Tenebrae* which is derived from AN.70 *Poly-Poly*, and AN.190 *Dodeka* which is derived from AN.182 *Gilde på Gløshaugen*.

1.2 Historiography and relevance

This PhD dissertation is the first large-scale work on Arne Nordheim's life and music published in English. It is also a contribution to the general history of 20th century music, and to the growing academic field of electroacoustic music studies.¹³

Electroacoustic music still holds a marginal place within the general histories and aesthetic theories of western art music. The standard period surveys of Richard Taruskin, Paul Griffiths, Alex Ross, and Nicolas Cook and Anthony Pople mention electronic music only in passing.¹⁴ In the literature on aesthetics and philosophy of music, for instance the books of Roger Scruton or Peter Kivy, the peculiarity of electronic music is not addressed.¹⁵ Even in the writings of the noted mid

¹² Demers (2010): *Listening Through the Noise*, p. 6.

¹³ The international Electroacoustic Music Studies Network has arranged conferences on electroacoustic music annually since 2003. <http://www.ems-network.org/>, visited January 2nd 2015.

¹⁴ For instance Paul Griffiths: *Modern Music: A Concise History* (New York: Thames and Hudson, 1994); Nicholas Cook and Anthony Pople, eds., *The Cambridge History of Twentieth-Century Music* (Cambridge: Cambridge University Press, 2004); Alex Ross: *The rest is noise* (London: Harper, 2009); Richard Taruskin: *Music in the Late Twentieth Century*, vol. 5, *The Oxford History of Western Music* (Oxford: Oxford University Press, 2010). An exception is Elliott Schwartz and Daniel Godfrey: *Music Since 1945: Issues, Materials, and Literature* (New York: Schirmer, 1993).

¹⁵ Roger Scruton: *The Aesthetics of Music* (Oxford: Clarendon Press, 1997); Peter Kivy: *Introduction to a philosophy of music* (Oxford: Clarendon Press, 2002).

20th century champions of contemporary music, Theodor W. Adorno and Carl Dahlhaus, commentary on electronic music is limited to some scattered and often dismissive remarks.¹⁶

The history of electronic music has traditionally been confined to more specialized accounts, primarily targeted to students of electronic music production.¹⁷ These accounts are generally focused on technological know-how, and rarely discuss the aesthetic considerations that went into the compositions. In short, they focus more on the *how* than the *why*. This has led to a limited understanding of central aesthetic issues. For instance, Simon Emmerson quotes how the conflict between the German *elektronische Musik* and the French *musique concrète* has been misunderstood as a disagreement over material, manipulated recorded sound or generated electronic sound, and not an aesthetic conflict based on different cultural traditions.¹⁸

Since the end of the 1990s, there has been an overall increase in interest for the pioneers of electronic music. The phonomusicologist David Grubbs claims that it is now possible for the first time to grasp this pioneering period of electronic music through recordings.¹⁹ My own introduction to Nordheim is illustrative of this trend. I first encountered Nordheim's electroacoustic works in 1998 through the remix album *Nordheim Transformed* by the ambient artists Geir "Biosphere" Jensen and Helge "Deathprod" Steen.²⁰ The embrace of Nordheim by this new generation of electronica artists brought the subsequent re-release of his early electroacoustic works AN.RC9 Arne Nordheim: *Electric* (also 1998) to the top of the classical music sales lists in Norway.²¹ For me – and many others in my generation – these two albums were my first real introduction to Nordheim's sound world.

¹⁶ The most thorough treatment of electronic music by these two authors is found in the following articles: Theodor W. Adorno, "The Aging of New Music [1955]," in *Theodor W. Adorno: Essays on Music*, ed. Richard Leppert (Berkeley, Los Angeles: University of California Press); Carl Dahlhaus, "Ästhetische Probleme der Elektronischen Musik [1970]," in *Schönberg und Andere. Gesammelte Aufsätze zur Neuen Musik*, ed. Carl Dahlhaus (Berlin: Schott, 1978).

¹⁷ The most important introductions are Joel Chadabe: *Electric Sound: The Past and Promise of Electronic Music* (Upper Saddle River, N.J.: Prentice Hall, 1997); Peter Manning: *Electronic and computer music* (Oxford: Oxford University Press, 2004); Nick Collins and Julio d'Escrivan: *The Cambridge Companion to Electronic Music* (Cambridge: Cambridge University Press, 2007); Thomas B. Holmes: *Electronic and experimental music: technology, music, and culture*, 3rd ed. (New York: Routledge, 2008); Nick Collins, Margaret Schedel, and Scott Wilson: *Electronic music* (New York: Cambridge University Press, 2013).

¹⁸ See the introduction to Simon Emmerson, ed. *The Language of Electroacoustic Music* (New York: Harwood Academic Publishers, 1986).

¹⁹ David Grubbs: *Records Ruin the Landscape: John Cage, the Sixties and Sound Recording* (Durham and London: Duke University Press, 2014).

²⁰ Biosphere/Deathprod: *Nordheim Transformed* (Rune Grammofon, 1998).

²¹ Geir Kristian Lund: "Smal musikk med bred appell," *Aftenposten*, February 2nd 1998. In the week of this article, Nordheim was on the second place on the classical list of the music shop Akers Mic in Oslo, only surpassed by a recording of Brahms 4th symphony.

Electric is an early specimen in the stream of archive releases of electronic music that has surfaced over the last two decades.²² It has been the case for several pioneers that even works initially deemed too obscure for release, are now getting collected and released in large box sets. It is telling that since 2008, much of the electronic music of the Norwegian pioneers Rolf Aamot, Sigurd Berge, Bjørn Fongaard, Kåre Kolberg, and Arne Nordheim has been released on CD.²³

The increasing interest in this music has also led to a broadening of perspective in the literature. In addition to the previous focus on the pioneers and cultural centres, such as Pierre Schaeffer and the studios in Paris, Karlheinz Stockhausen (1928–2007) and the electronic music studio of Nord-West Deutsche Rundfunk in Cologne, the activities around John Cage (1912–1992) and Milton Babbitt (1916–2011) in the USA, we now observe an increase in studies of lesser-known composers and studios. The BBC Radiophonic Workshop, the San Francisco Tape Music Centre and Elektronmusikstudion in Stockholm have recently been addressed in book-length accounts.²⁴ These books can to some extent be labelled as alternative histories to the established narrative within electroacoustic music studies.²⁵ They direct focus to previously unsung heroes and lesser-known works in the repertoire, and often challenge the commonly held centre-periphery model where information and knowledge flowed in one direction from the centres (Paris, Cologne, New York) to the periphery.²⁶ They also tackle the important questions of regional differences, east-west relations, gender relations, and the particular role of electronic music within broadcasting.

My study is part of this widening of perspective. It displays a complex network of cultural relationships, where for instance the contact between what could be seen as a central node (Paris) and a peripheral node (Oslo) in a traditional centre-periphery model is less important than contact

²² For instance the box sets addressing the career of pioneers like Pierre Schaeffer, François Bayle, Bernard Parmeggiani, Luc Ferrari and Pauline Oliveros. One should also note the 9-CD box set *Acousmatrix: The History of Electronic Music* (BV Haast Records, 2005). The Polish label Bôlt Records has over the last four years released 20 double and triple CDs addressing various aspects of the legacy of Polish Radio's Studio Experimentalne.

²³ Rolf Aamot: *Tonal Image Films 1968-1991* (Prisma Records, 2011); Sigurd Berge: *Early Electronic Works* (Prisma Records 2010); Bjørn Fongaard: *Elektrofoni. Works for Micro Intervallic Guitar 1965-1978* (Prisma Records, 2010); Kåre Kolberg: *Nova* (Prisma Records, 2009), Kåre Kolberg: *Omgivelser & Portando* (Prisma Records, 2011); Kåre Kolberg: *Attitudes* (Bôlt, 2014); Arne Nordheim: *The Nordheim Tapes* (Aurora, 2008); Arne Nordheim: *Solitaire* (Bôlt, 2014). The only Norwegian pioneers to not see such releases are Gunnar Sønstevoid and Alfred Janson.

²⁴ David W. Bernstein: *The San Francisco Tape Music Center: 1960s Counterculture and the Avant-garde* (University of California Press, 2008); Louis Niebur: *Special Sound: The Creation and Legacy of the BBC Radiophonic Workshop* (Oxford: Oxford University Press, 2010); Sanne Krogh Groth: *Politics and Aesthetics in Electronic Music: A Study of EMS - Elektronmusikstudion Stockholm, 1964-1979* (Heidelberg and Berlin: Keher, 2014).

²⁵ In April 2016, the international conference *Alternative Histories of Electronic Music (AHM)* highlighted lesser-known figures and places that have been excluded from the traditional Paris, Cologne and New York based narratives.

²⁶ This problem is discussed as the "centre-periphery model" within sociological dependence theory. The dependence theory is discussed within many academic fields, for instance in relation to scientific and technological development, see Kostas Gavroglu: "The STEP (Science and Technology in the European Periphery) Initiative: Attempting to Historicize the Notion of European Science," *Centaurus*, vol. 54, no. 4 (2012).

between two nodes commonly thought of as peripheral (Warsaw and Oslo). In other words, my study forces us to rethink the concepts of centre and periphery, and instead see locality as having a spectrum of identities.

Previous literature on Arne Nordheim and his electronic music

Much has been written about Nordheim over the years, and he is well established as a central figure in the second half of 20th century Norwegian music.²⁷ However, very little of this has been of actual comprehensive nature. While Nordheim might figure as a side character in the biographies of other artists, composers and musicians, no complete biography exist of his own life and music.²⁸ Before his death in 2010, the most used sources for biographical data were two Festschriften published in connection with his 50th and 60th birthdays.²⁹ The latter includes a list of works that forms the basis for the first part of the list of compositions provided in this dissertation.³⁰ However, the celebratory nature of these books has made them of only limited value as a model to rely upon when approaching Nordheim's life and music. More relevant is the extended interview published by Yisrael Daliot in 1991, which has provided valuable insights into Nordheim's view on the literary foundation for many of his works.³¹

Following Nordheim's death in 2010 there has been a steady rise of interest in his life and music. In 2013 Henie Onstad Arts Centre arranged a large-scale exhibition dedicated to Nordheim and his relationship with the art called *Arne Nordheim and the arts. –No -ism's for me, please!* The 500-page exhibition catalogue includes several biographical studies of Nordheim's music, including

²⁷ In 2002, Harald Herresthal wrote that Nordheim "is undisputed as today's most important Norwegian composer." Jean Christensen and John David White: *New Music of the Nordic Countries* (Hillsdale, N.Y.: Pendragon Press, 2002), p. 412. The same year, Frederick Key Smith wrote that Nordheim stood "at the zenith of Modern Scandinavian music." Frederick Key Smith: *Nordic Art Music. From the Middle Ages to the Third Millennium* (Westport, Conn: Praeger, 2002), p. 122. In 1993, Nils Grinde called Nordheim the "leading modernist" in Norway. Nils Grinde: *Norsk musikkhistorie. Hovedlinjer i norsk musikkliv gjennom 1000 år*, 4th ed. (Oslo: Musikk-husets forlag, 1993), p. 270. Some have called Nordheim "the Grieg of our time." See for instance Arvid O. Vollsnes et al.: *1950-2000. Modernisme og mangfold*, vol. 5, Norges musikkhistorie (Oslo: Aschehoug, 2001), p. 212.

²⁸ Examples include Mads Bækkelund: *Far min. Når Se og Hør har gått hjem* (Oslo: Schibsted, 1997); Stein Slettebak Wangen: *Håkon Bleken. Et portrett* (Oslo: Aschehoug, 2008); Einar Wexelsen, ed. *Carl Nesjar* (Tønsberg: Haugar Vestfold kunstmuseum/Labyrinth Press, 2008); Niels Chr. Geelmuyden: *Inger Sitter. Et portrett* (Oslo: Aschehoug, 2009); Elef Nesheim: *Alltid på leting. Finn Mortensen: en kraft i norsk musikkliv* (Oslo: Norsk musikforlag, 2010); Ole Einar Andersen: *Arve Tellefsen. "Æ må jo spæll?"* (Oslo: Aschehoug, 2013).

²⁹ Rolf Davidson, ed. *Arne Nordheim. Festskrift til 50 årsdagen, 20. juni 1981* (Copenhagen: Wilhelm Hansen, 1981); Stein Mehren et al., eds., *Arne Nordheim ...og alt skal synge!* (Oslo: Dreyer, 1991).

³⁰ Ole-Henrik Moe-jr, "Verklister," in *Arne Nordheim ...og alt skal synge!*, ed. Stein Mehren, et al. (Oslo: Dreyer, 1991).

³¹ Daliot (2001): *Klingende ord*.

two articles written by the present author, based on work-in-progress material from this PhD dissertation.³²

There exists some previous commentary on Nordheim's music from musicologists, but this literature is sparse. An anthology with contributions by Norwegian musicologists was in preparation for Nordheim's 75-year birthday in 2006, but because of his illness the project was paused. The anthology was published only in e-book form in 2013.³³ In 2015, Harald Herresthal published a biography of Nordheim's youth and early career, using documentation collected at the Arne Nordheim Centre at the Norwegian Academy of Music, as well as private letters that he had obtained from Nordheim's years as a student.³⁴ While largely anecdotal in nature, this book contains the most comprehensive documentation available of Nordheim's early years.

In 2015 The Norwegian Academy of Music, in cooperation with the Chopin Institute in Warsaw, hosted an international conference on Arne Nordheim and Witold Lutosławski's Norwegian-Polish connections. I participated in this conference with a paper on *Ode til lyset*.³⁵ There were also papers on Nordheim's early life, his electronic music and the relationship between Nordheim and Lutosławski's music.³⁶ With a few notable exceptions (see footnote), these are the first scholarly accounts on Nordheim's music published in English.³⁷

Of more analytical nature, there is a handful of master theses written in Norwegian analysing some of Nordheim's most important orchestral works; AN.14 *Canzona*, *Epitaffio*, AN.29 *Favola*, AN.54 *Eco*, AN.76 *Floating*, AN.109 *The Tempest*, AN.111 *Nedstigningen*, AN.112 *Clamavi*, and

³² Lars Mørch Finborud: *Arne Nordheim: Ingen -ismer for meg, takk!* (Oslo: Orfeus Publishing/Henie Onstad kunstsenter, 2013). My contributions are Ola Nordal, ""-Ingen ismer for meg, takk! Portrett av komponisten som ung mann," in *Arne Nordheim: ingen -ismer for meg, takk!*, ed. Lars Mørch Finborud (Oslo: Orfeus Publishing/Henie Onstad kunstsenter, 2013); Ola Nordal, "Ode til lyset. En samtidsmusikkdetektivhistorie," in *Arne Nordheim: ingen -ismer for meg, takk!*, ed. Lars Mørch Finborud (Oslo: Orfeus Publishing/Henie Onstad kunstsenter, 2013).

³³ Harald Herresthal and Elef Nesheim, eds., *Nordheim: en ordets komponist. Musikalsk prosa med duftende poetisk atmosfære* (Oslo: Akademika (e-book only), 2013).

³⁴ Harald Herresthal: *Fra hjertedypet stiger tonens strøm. Den unge Arne Nordheim* (Oslo: Norges musikkhøgskole, 2015).

³⁵ Ola Nordal, "The sound sculpture Ode to Light – Arne Nordheim's first project at the Studio Eksperimentalne," in *Between National Identity and a Community of Cultures*, ed. Kamila Stepień-Kutera (Warsaw: Narodowy Instytut Fryderyka Chopina, 2016).

³⁶ Asbjørn Blokkum Flø, "Time, timbre and text – techniques and artistic concepts in Arne Nordheim's electronic music," *ibid.*, ed. Kamila Stepień-Kutera; Harald Herresthal, "Musique concrète – 'this is obviously not music' – Arne Nordheim's route from *Aftonland* to *Response*," *ibid.*; Marcin Krajewski, "Lutosławski–Nordheim – two stylistic models and their interrelations," *ibid.*

³⁷ Before 2016, Guy Rickard's review of Nordheim's cello music was the only available scholarly article on Nordheim in English. Guy Rickards: "Shadows and Acclamations: The Cello Music Of Arne Nordheim," *Tempo*, no. 181 (1992). Anders Beyer has published the only available interview with Nordheim in English: Anders Beyer, "Arne Nordheim: On Articulating the Existential Scream," in *The Voice of Music. Conversations with Composers of our Time* (Aldershot: Ashgate, 2001).

AN.163 *Draumkvedet*.³⁸ My comments on Nordheim's orchestral music in this dissertation are largely built on these accounts. Two master theses addressing the questions of how Nordheim has been received, understood and discussed. André W. Larsen's reception history includes brief analyses of *Epitaffio* and AN.89 *Greening*.³⁹ Maren Ørstadvik has provided a study of the reviews of Nordheim's music in Norwegian newspapers.⁴⁰

The previous literature on Nordheim's electroacoustic music is even more limited. In 2012 Asbjørn Blokkum Flø published the first brief overview of Nordheim's electronic works and provided short analyses of his most important acousmatic pieces.⁴¹ Andreas Bergsland has discussed Nordheim's role in the light of Norwegian electronic music and avant-garde culture, and also provides short analyses of some of Nordheim's works for radio theatre.⁴² Asbjørn Tiller's PhD thesis on the experience of space in sound art includes a chapter on Nordheim's use of physical space in the sound installation AN.187 *Dråpen*.⁴³ Iver Frounberg has written a brief overview of Nordheim's electronic works where he calls the Warsaw period alongside *Epitaffio* and AN.118 *Aurora* "Arne Nordheim's electronic biosphere."⁴⁴ In 2016 Lasse Thoresen published a spectromorphological transcription and analysis of *Solitaire*.⁴⁵ While these articles have provided me with valuable

³⁸ Peter Wollnick: *Arne Nordheims Canzona per orchestra og Epitaffio per orchestra & nastro magnetico. En undersøkelse av klangen som stilelement på bakgrunn av samtidens orkestermusikk*, Magisteravhandling i musikkvitenskap (Oslo: Universitetet i Oslo, 1971); Lorentz Reitan: *Arne Nordheims Eco og Floating: En undersøkelse av det musikalske materialet og dets behandling, og en sammenligning av verkene*, Hovedoppgave i musikk (Oslo: Universitetet i Oslo, 1975); Sidsel Marie Thommesen: *Arne Nordheims forhold til multimedia kunst eksemplifisert ved Favola (1965)*, Hovedoppgave i musikkvitenskap (Oslo: Universitetet i Oslo, 1979); Flora Jersonsky-Margalit: *Perspectives on Arne Nordheim's The Tempest*, Magistergradavhandling i musikkvitenskap (Oslo: Universitetet i Oslo, 1982); Egil Sagstad: *Arne Nordheims "Clamavi" for violincello. Deskriptiv analyse med hermeneutiske perspektiver*, Hovedoppgave i musikkvitenskap (Oslo: Universitetet i Oslo, 1991); Hallgjerd Aksnes: *Musikk, tekst og analyse: en studie med utgangspunkt i Arne Nordheims Nedstigningen* ibid. (1994); Tori Skrede: *Himmel og helvete i musikken. En studie av samspillet mellom musikk og tekst i Arne Nordheims Draumkvedet* ibid. (Trondheim: Universitetet i Trondheim, 1995). The work of Jersonsky-Margalit is the only account in English.

³⁹ André W. Larsen: *Rabulist eller ikon? Resepsjonen av Arne Nordheim* ibid. (Oslo: Universitetet i Oslo, 2003).

⁴⁰ Maren Ørstadvik: *Overraskende romantisk. En fordykning i kritikkene av Arne Nordheims musikk 1960-2011*, Masteroppgave i musikkvitenskap (Oslo: Universitetet i Oslo, 2013).

⁴¹ Asbjørn Blokkum Flø: "Memorabler. Om Arne Nordheims elektroniske musikk," *Lydskrift*, vol. 1, no. 1 (2012).

⁴² Andreas Bergsland, "Arne Nordheim og den tidlige elektroniske musikken i Norge," in *Norsk avantgarde*, ed. Per Bäckström and Bodil Børset (Oslo: Novus, 2011).

⁴³ "Kapittel 8: Lyden i vannrenseanlegget. Arne Nordheim: *Dråpen* (2001)" in Asbjørn Tiller: *Opplevelse av rom. Kunstens lydeksperimenter og audiovisuelle uttrykk*, PhD Dissertation (Trondheim: Institutt for kunst- og medievitenskap, NTNU, 2011), pp. 209-28.

⁴⁴ Iver Frounberg, "Specimen fra Arne Nordheims elektroniske biosfære," in *Nordheim: en ordets komponist*, ed. Harald Herresthal and Elef Nesheim (Oslo: 2013).

⁴⁵ Chapter 15: "Analysis of Arne Nordheim's *Solitaire*" in Lasse Thoresen: *Emergent Musical Forms: Aural Explorations* (London, Ontario: University of Western Ontario, 2015).

perspectives for some works, my study will be the first comprehensive investigation of Nordheim's entire electroacoustic output.

1.3 Geographical-cultural locality

The influence of what I call *geographical-cultural locality* is an important topic in my study. In previous sections, I based the periodization of Nordheim's electroacoustic music on the cities where he was working. My reason for doing so is that I see the electronic music studio not just as a room, but a *zone of means and possibilities*.⁴⁶ Each studio is a unique environment, and has its own way of mapping the instructions of the artist to a corresponding sonic event. Some studios have specific resources, like the availability of recording rooms, musical instruments or technical equipment, particular musicians and sound archives. I will suggest that the *influential potential* of the studio is the sum of *the technical aspects* (available equipment and resources), *the personal aspects* (technical and aesthetic know-how and preferences among the staff), and *geographic-cultural aspects* (such as the studio's prestige within a cultural community).

I wish to use Nordheim's Warsaw period as example. At Studio Experimentalne, Nordheim could use top of the line equipment, much of which he had no access to before. This is evident for instance in the frequent and elaborate use of ring modulation in *Solitaire* and *Ode til lyset*. In these particular works, the available "boxes" clearly had an aesthetic influence. However, the influence of Eugeniusz Rudnik (1932–2016), Nordheim's assigned sound engineer, was of perhaps even greater importance. In the early phases, electronic music production was mostly a collaborative effort. Although overdubs were possible, one sought to minimise their use due to the increased tape hiss and fidelity loss for each new generation of overlay. Automation was non-existent, and every manipulation sequence had to be executed by hand. Operations demanding more than two hands required more people. Jerome Kohl has described the process of realizing Karlheinz Stockhausen's *Telemusik* (1966) as a more or less live performance in the studio, involving a complex choreography of a large group of people.⁴⁷ In this kind of process, diverging results not indicated in the instructions would occur, as would be the case in a stage performance. Kohl's study shows how even Stockhausen, a notorious calculator of frequencies and durations, would often incorporate such "accidents" into his compositions if they "felt" right. Nordheim was completely dependent on

⁴⁶ For this perspective, I am indebted to Albin Zak: *The poetics of rock. Cutting tracks, making records* (Berkeley: University of California Press, 2001); Eliot Bates: "What Studios Do," *Journal on the Art of Record Production*, no. 7 (2012).

⁴⁷ Jerome Kohl, "Serial Form, and Process in Karlheinz Stockhausen's *Telemusik*," in *Electroacoustic Music: Analytical Perspectives*, ed. Thomas Licata (Westport, Connecticut/London: Greenwood Press, 2002), p. 99.

technical assistance to realize his music. In some cases he would not even touch the equipment, limiting himself to instructing the studio engineer whilst listening to the result. One of the assets of Studio Experymentalne was that the two in-house technicians were also accomplished composers and not just technical support staff. This might have contributed to the good working relationship between Nordheim and Rudnik. It is also clear that both Rudnik and Bohdan Mazurek (1937–2014) had direct influence on Nordheim’s sound, based on their previous experiences as composers.

Studio Experymentalne were also connected to a wider geographic-cultural scene, and could secure performances and releases for their affiliated artists. The studio was close-knit with the Warsaw Autumn festival. The studio director Józef Patkowski was also in the program committee of the festival, and this paved the way for the performance of *Solitaire* in 1969. The studio’s placement within the Polish broadcasting corporation also secured Nordheim the commission that resulted in the work *Pace*, which was also performed at the Warsaw Autumn festival the year after *Solitaire*. Moreover, it was common for studios to have connections with specific record labels, and Nordheim’s affiliation with Studio Experymentalne secured a place for *Solitaire* on the 4xLP box AN.RC2 (Various Artists): *Electronic Panorama: Paris, Tokyo, Utrecht, Warszawa* (1970), released on Groupe de Recherches Musicales’ prestigious *Prospective 21^e Siècle* series. On this recording, Nordheim was featured alongside composers such as Bernard Parmegiani, François Bayle, Gottfried Michael Koenig and Krzysztof Penderecki, and the record gave him international exposure in the electroacoustic music community.

An intuitive composer

Composers work with electroacoustic music in many different ways. Some start out with a clearly predefined set of ideas, and the work in the studio is more or less a realization of what has been developed conceptually beforehand. Others have a more intuitive approach to studio work. The popular music musicologist Albin J. Zak III writes about similar processes in rock music. Zak claims that the recording process contains “three distinct compositional layers: the song, the musical arrangement and the track.”⁴⁸ He then goes on to discuss how different artists emphasize these layers distinctly. Some will come to the studio with finished arrangements and precise instructions for the sonic architecture they envision. Others will come with loose sketches and develop their ideas as they go. Nordheim’s approach seems to have been in line with the latter category.

Harold “Hal” Clark, who worked with Nordheim at the Norwegian Studio for Electronic Music in the mid 1970s (see Chapter 8), told me the following about Nordheim’s intuitive working method.

⁴⁸ Zak (2001): *The poetics of rock*, p. 24.

Nordheim would say: "Show me some sounds. Give me a palette of sounds of what this Buchla thing can do." And I would set up some different things. I would create some loops, I would create something that would change the timbre over time of a particular tone, and he would say "That's it, that's it! Now, can you adjust it just a little bit higher, and let's record that." So it was always a process of using the ears, and then combining tones together. He was composing with the technology of the mixing table, probably more than anything else.⁴⁹

Nordheim has been more praised for his "finely-tuned" ear than for writing technically sophisticated compositions.⁵⁰ Even when he came to the studio with relatively well-prepared plans, the actual composition process would take many intuitive turns, as the example of *Ode til lyset* in Chapter 6 will show. Sometimes Nordheim's instructions would be purely associative. Mats Claesson, Nordheim's regular sound engineer in his fourth electroacoustic period, told me the following anecdote:

He *never* had any references to other music, except the music we were working on at the time. [...] "Could I please have a sound that sounds like silver noise in the ear?" – that is one of my favourite examples. It was never "could I have a sound like in this or that piece" or like "a sound like he used in this or that piece" or the sound of ... like when you cross the street. It was always things like "deep silver noise in the ear."⁵¹

The intuitive approach to composition was confirmed by Nordheim in an earlier interview:

I am a *trial-and-error* composer. I need to change things all the time, all the time make it a bit better: a little rounder on the edge here and a little sharper there.⁵²

This does not mean that he had an attitude of "anything goes." On the contrary, he seems to have been very strict in his judgement on what was to be used. In a late interview, on answering a question if he was "strict" when choosing his sounds, he answered: "Yes, very!" and continued that most of "the reels" that he created were discarded.⁵³

The intuitive approach to composition suggests that Nordheim would be more open to influence from the aspects of *geographic-cultural locality* than a composer more focused on abstract principles. This is one of the reasons why locality takes up so much space in my study, and why it was used as the foundation for the periodization of Nordheim's electroacoustic music.

⁴⁹ Harold Clark, interviewed by Ola Nordal on November 29th 2014. English in the original.

⁵⁰ See for instance Rickards (1992): "Shadows and Acclamations: The Cello Music Of Arne Nordheim."

⁵¹ Mats Claesson, interviewed by Ola Nordal on October 21st 2011.

⁵² Beyer: "On Articulating the Existential Scream," (2001). English in the original.

⁵³ Arne Nordheim interviewed by Tilman Hartenstein in "Elektronisk tidligmusikk," *NRK Radio P2*, December 14th 2005.

Arne Nordheim in the international context

My study emphasizes how Nordheim must be understood as having a spectrum of identities, and it has been one of my goals in this project to balance the accounts between three rather different contextual framings: the Norwegian context, the Scandinavian context and the wider international context.

In the Norwegian context, Nordheim was clearly a pioneer, associated with several strongly pronounced identities, ranging from the enfant terrible to the “flagship” of new musical expressions. He was not the first to take up electronic expressions. The first example of electronic music in Norway were sections of Gunnar Sønstevoid’s incidental music to Shakespeare’s *The Tempest* at Det norske teater in 1959.⁵⁴ It was Nordheim, however, who took the leading role in propagating this type of music to Norwegian audiences. Between 1960 and 1965 he was virtually the only Norwegian practitioner of this kind of music (Sønstevoid had temporarily moved to Austria), and he was widely known for electronic compositions in radio drama, television and film. Only later in the 1960s did the electronic music scene begin to grow, with composers like Sigurd Berge (1929–2002), Kåre Kolberg (1936–2014), Bjørn Fongaard (1919–1980) and Alfred Janson (b. 1937). These six composers, Kolberg, Sønstevoid, Nordheim, Berge, Fongaard and Janson, make up the entire first generation of electronic music composers in Norway.⁵⁵

Within the European-American context however, Nordheim has a markedly different identity. Nordheim first gained international recognition for his electroacoustic music with the mixed orchestral and electronic work *Epitaffio*. The work premiered in Stockholm in 1964, and the

⁵⁴ Odd Eidem: "Vakker, halvert Shakespeare. 'Stormen' på Det norske teateret," *Verdens Gang*, March 11th 1959; A.O.: "Shakespeares siste skuespill på Det norske teateret igår," *Morgenposten*, March 11th 1959. Sønstevoid had already experimented with tape manipulation in the radio drama *Regneoppgaven*, broadcast on NRK Radio, December 2nd 1958, but this is amounted more to sound effects than an actual musical composition. Some authors erroneously date Sønstevoid’s music for *The Tempest* to 1957; for example Arvid O. Vollsnes, "Gunnar Sønstevoid," in *Norsk biografisk leksikon* (2009); Elef Nesheim: *De heftige årene. Norsk modernisme 1956–68* (Oslo: Unipub, 2012). Vollsnes claims that Sønstevoid’s mixed electronic and acoustic work *Intermezzo* was composed in 1958, and would thus predate *The Tempest* by a year. However, since the score bears several German markings it is probable that the work was composed after Sønstevoid moved to Vienna in 1960. In his 1973 radio program on the history of electronic music, Arne Nordheim dates *Intermezzo* to 1961. However, at that time Sønstevoid was still in Austria, and this premiere date is probably also wrong. In a radio program on Sønstevoid (“Komponisten og hans verk: Gunnar Sønstevoid”, *NRK Radio*, November 1st 1966, hosted by Idar Lind”), a performance of *Intermezzo* from June 3rd 1966 is claimed to be a “premiere” [“urframførelse”]. This seems to be the correct date. I was made aware of this point by Andreas Bergsland.

⁵⁵ There are a few people who could potentially have been added to this list. Viktor Sandal produced some electronic scores for radio dramas in the early 1960s while working as a sound engineer in NRK, but all in all his output was very small. Knut Wiggen was a prolific electronic music composer, but he was living in Sweden and was not directly contributing to the Norwegian music scene. The first person to be interested in electronic music in Norway was Ingrid Fehn (1929–2005), but there are no traces of any compositions by her hand (see Bergsland: "Arne Nordheim og den tidlige elektroniske musikken i Norge," in ed. Bäckström and Børset (2011).) There was a student group dedicated to electronic music at the University of Oslo in 1959. The group included the philosopher and writer Sigmund Kvaløy Setreng (1934–2014). However, I have not been able to find any sources for the activity of this group other than a short article in *Morgenposten*: (Unsigned): "Elektronisk musikk er den rene nytelse. Skjeggete karer med alvorlig hobby. Lager ny skuespillmusikk," *Morgenposten*, December 11th 1959.

following year it was played in two of the most important contemporary music festivals in Europe: the ISCM-festival in Madrid and the Warsaw Autumn festival. By this time, almost every major national radio station in Europe had established studios for electronic music and sound effects. Several of the studios had an open-door-policy, encouraging visits from composers not working directly on music for broadcasting. The most active studios were the ones in Cologne and Paris, but Milan (1953), Eindhoven (Philips, 1956), London (1956), Warsaw (1957), Utrecht (1961) and Gent (1962) were also of importance. In the US, Luis and Bebe Barron had started experimenting with electronic music already in the late 1940s, and during the 1950s their private New York studio was also used by the composers John Cage and Christian Wolff. There were few radio studios of importance in the US, but there was great interest in electronic music in some of the academic music departments, especially after the opening of the Columbia-Princeton Electronic Music Centre in 1957. In 1967, Hugh Davies completed a monumental 330-page catalogue of electronic music works and studios, listing 4950 compositions realized in 560 studios across 39 countries.⁵⁶ Within this context Nordheim must be seen as part of the second generation of electronic music composers. He was a respected name in this international community, but he was not commonly regarded as one of the important pioneers in the field.

There is also a third context that should be kept in mind. Especially during his formative years, the Scandinavian countries were Nordheim's first level of international contact. In the aftermath of the Second World War, the Nordic countries saw themselves as a third alternative between the Eastern and Western blocks, and thus both in a cultural and political sense the ties were strong.⁵⁷ Even though politically speaking Norway was firmly placed in the western block with their entry into NATO in 1949, the Nordic alternative had enjoyed great public support throughout the early decades of the Cold War, especially after the establishment of the Nordic Council in 1952. Nordheim seems to have subscribed to this vision. "More than anything, I believe in *Norden*, in the Boreal!" he stated in an interview from 1956.⁵⁸

With regards to electronic music of the 1950s, the Nordic countries basically meant Denmark and Sweden (Norwegian, Finnish and Icelandic electronic music only came on scene later). The first Scandinavian compositions were produced by Else Marie Pade (1924–2016) in the Danish Radio

⁵⁶ James Mooney: "Hugh Davies's Electronic Music Documentation 1961–1968," *Organised Sound*, vol. 20, no. 1 (2015). Only three Nordheim compositions are listed in the catalogue: AN.16 *Katharsis*, AN.28 *Epitaffio* and AN.29 *Favola*. Hugh Davies: "Repertoire International des Musiques Electroacoustiques - International Electronic Music Catalog," *Electronic Music Review*, no. 2-3 (1967), p. 99.

⁵⁷ Even Lange: *Samling om felles mål 1935-70*, 2nd ed., Aschehoug Norgeshistorie (Oslo: Aschehoug, 2005), pp. 224-27.

⁵⁸ (Unsigned): "Ung komponist ser lyst på fremtiden," in *Programbladet*, December 1956.

studio in 1953. Pade had met Pierre Schaeffer in the early 1950s, and started producing electronic soundtracks for radio dramas and television documentaries. Her first electroacoustic concert works, *Symphonie Magnetophonique* and *Syv Circler*, premiered on a radio concert in 1958.⁵⁹ In that sense, she continued to develop the pronounced early trend for electronic music to be rooted in broadcasting. Even though Pade can be regarded as the first Scandinavian electronic composer proper, most of the activity took place in Sweden, which is also the only Nordic country to have a pronounced body of works and composers working with these expressions.⁶⁰ Rune Lindblad (1923–1991) composed his first concrete work *Party* already in 1953, but this work did not gain widespread attention in the Swedish music scene. Instead he had a greater influence as teacher of electronic music at Chalmers University of Technology in Gothenburg.⁶¹ Bengt Hambræus' (1928–2000) *Doppelrohr II* (1955) is on the other hand regarded as one of the classic pieces to come out of the electronic music studio in Cologne. Hambræus was, alongside Bo Nilsson, the best known of the early pioneers in Sweden. In 1957, he started working for Swedish Radio, and established a small electronic studio in order to produce incidental music for radio dramas. The electronic interludes in Karl-Birger Blomdahl's space opera *Aniara* (1959) and Ingvar Lidholm's ballet *Riter* (1959) were also produced in this studio.⁶² Both these works had great influence in the Nordic countries, and, as we will see in Chapter 2, might have been among the decisive inspirations for Nordheim to take up electronic composition.

This short survey shows that within the Scandinavian context, Nordheim was not particularly late in coming into the field. Nordheim's AN.9 *Sigurd Slembe* from 1960 came just one year after Blomdahl and Lidholm's seminal works, and only two years after Pade's first radio concert.

1.4 Methodological approach

The present dissertation is a work of historical musicology with a strong analytical component. However, it has been one of my guiding principles that as a historian I am interested in different results from my analyses than what a composer, a performer or a conductor might be. For instance,

⁵⁹ Anne Hilde Neset: "Else Marie Pade," *The Wire*, no. 354 (2013).

⁶⁰ The page-count for the sections dedicated to electroacoustic music in *New Music in the Nordic Countries* is illustrative for the level of activity. While Denmark has two pages and Finland four, Sweden has twelve. Norway and Iceland have no specified sections dealing with electronic music. Christensen and White (2002): *New Music of the Nordic Countries*.

⁶¹ Christensen and White (2002): *New Music of the Nordic Countries*, p. 549.

⁶² Davies (1967): "International Electronic Music Catalog," pp. 149-50. The Swedish Radio studio gradually evolved into Elektronmusikstudion i Stockholm (EMS, from 1964), which throughout the 1960s and 1970s was one of the most important electronic music studios in Europe. See Groth (2014): *Politics and Aesthetics in Electronic Music*.

it has not been a goal to “paint” every single sonic event as a visual shape – the sort of transcription that sometimes is done to aid the performance of an acousmatic piece.⁶³ Instead, I have taken my cue from Theodor W. Adorno’s comments about how the task of the analyst is to reveal “the problem” of the work under scrutiny. “To analyse,” Adorno wrote, “means much the same as to become aware of a work as a force-field organized around a problem.”⁶⁴ On a similar note, I also agree with Roger Scruton when he writes that the main role of analysis is to “discriminate between salient and peripheral features,” and to guide the ear in order to “tell us what we should be listening for in a work of music, in order to receive its full effect.”⁶⁵

The role of analysis has been one of the great debates in musicology over the past 30 years, especially when weighing external/contextual narrative against intramusical aspects in writing music history.⁶⁶ The musicologist Kevin Korsyn claims that there is always an inherent tension between writing historical narrative and writing about the music itself. He states that “we inhabit a conceptual space ruled by metaphors of ‘inside’ and ‘outside’.”⁶⁷ The writer is either ‘inside’ the work performing some sort of analysis or s/he is ‘outside’ mapping its place with “respect to other closed units.” According to Korsyn one can alternate between these positions, “tilting like a see-saw”, but one can’t occupy both positions at once. It has been my ambition to attempt to overcome such tensions, and instead follow Richard Taruskin’s ideal of a symbiosis of analysis and narrative, text and context, the internal and the external.⁶⁸ As in Taruskin’s historical writing, my analytical sections are integrated parts of the historical narrative; I see them as translations of what happens in the realm of sound into the realm of the written word.

Nicholas Cook has written that there are at least as many approaches to analysis as there are analysts, but in the end most analyses seem to ask the same sort of question:

⁶³ For an excellent example of this approach, see Thomas Gorbach’s visual score for his live acousmonium-performance of Wen Bihe’s *Visual Image* (2011). <https://youtu.be/vKF78DizLCO>, visited September 25th 2015.

⁶⁴ Theodor W. Adorno, “On the Problem of Musical Analysis [1969],” in *Theodor W. Adorno: Essays on Music*, ed. Richard Leppert (Berkeley, Los Angeles, London: University of California Press, 2002), p. 173. See also Richard Leppert’s commentary on Adorno’s view on analysis, page 104 in the same volume.

⁶⁵ Scruton (1997): *The Aesthetics of Music*, p. 397.

⁶⁶ For a review of the role of analysis within and after the so-called “New Musicology” and the “cultural turn” of the 1980s and 1990s, see the introductions to Nicholas Cook and Mark Everist: *Rethinking music* (Oxford: Oxford University Press, 1999) and Richard Middleton, Trevor Herbert, and Martin Clayton: *The Cultural Study of Music. A Critical Introduction*, 2nd ed. (New York: Routledge). An overview of new perspectives in historical musicology is given in Rob C. Wegman, “Historical Musicology: Is it Still Possible?,” in *The Cultural Study of Music: A Critical Introduction*, ed. Martin Clayton, Trevor Herbert, and Richard Middleton (New York: Routledge, 2012).

⁶⁷ Kevin Korsyn, “Beyond Privileged Contexts: Intertextuality, Influence and Dialogue,” ed. Nicholas Cook and Mark Everist (Oxford: Oxford University Press, 1999), p. 55.

⁶⁸ Taruskin (2010): *Music in the Late Twentieth Century*, 5, p. xv.

They ask whether it is possible to chop up a piece of music into a series of more-or-less independent sections. They ask how components relate to each other, and which relationships are more important than others. More specifically, they ask how far these components derive their effect from the context that they are in.⁶⁹

I see analysis as identifying musical entities and salient aesthetic characteristics, and describing how these entities are combined in sonic space and how they unfold in time. The end goal is to discuss how single musical entities relate to the “problem” of the entire work. Since I am discussing works that have very different types of “problems,” I have chosen quite different analytical approaches for each work. As I will come back to, the choices of analytical method were also influenced by my available sources.

There are specific challenges connected with the analysis of electroacoustic music. Several authors have emphasised that it is a diverse field with no clear methodology. In 1991 Gianmario Borio wrote that electronic sound production posed challenges to musical analysts since the conceptual apparatus here was “thrown into crisis more clearly than elsewhere.”⁷⁰ According to Borio, the crisis came about because the established aesthetic and analytical vocabulary did not take into account the specificities and idiosyncrasies of the electronic expressions. In my opinion, these factors must, at least in part, be held accountable for the deficient treatment of electroacoustic music within the historical literature. There has been both an aesthetic lack of understanding of the particular “language” of electronic music and a more pragmatic dearth of generally accepted vocabulary for how to represent this music in words.⁷¹ With regard to Nordheim, I will argue that these factors have led to a merely partial understanding of his music in musicological circles. For instance, in the two previous analyses of *Epitaffio*, none of the analysts have written about the electronic elements of the work, which take up half of the work’s playing time.⁷² In other words, they build their conclusions on just half of the music. I will come back to this particular example in Chapter 3.

One of the particular challenges is finding a way to map what is happening in the sonic realm to a set of conceptual terms that can be used in a written discussion. Since there is no prescriptive score to support the analysis, one has to look for other ways of representing the music. For several of my analyses, I rely on sonograms, that is, frequency domain representations of the physical

⁶⁹ Nicholas Cook: *A Guide to Musical Analysis* (New York/London: W.W. Norton & co., 1992), p. 2.

⁷⁰ Gianmario Borio: "New Technology, New Techniques: The Aesthetics of Electronic Music in the 1950's," *Interface*, vol. 22, no. 1 (1993).

⁷¹ This argument is built on Emerson, *The Language of Electroacoustic Music*, pp. 1.

⁷² Wollnick (1971): *Arne Nordheims Canzona og Epitaffio*. Larsen (2003): *Rabulist eller ikon?*, pp. 62–74.

qualities of a sound based on Fast Fourier Transform analysis (FFT). In a sonogram, time is represented on the x-axis, while the y-axis displays energy for each frequency. While sonograms are good for visualising certain sonic qualities, like the intensity of energy over time, they only display a representation of the physical sound and not the musical gesture. Many sounds that are easy to separate for the ear, for instance two notes played simultaneously on two different instruments, could be difficult to see as separate entities in a sonogram. Therefore, several authors have criticized the uncritical use of sonograms.⁷³ For instance, Michael Clarke writes that for the "very spectromorphological details that are so important for electroacoustic music, such as subtle changes in the timbral envelope of a sound, a printed sonogram is often of little use."⁷⁴ Sonograms are also of limited use when describing textures where many sound events happen at the same time. On the other hand, certain techniques or relationships that might be difficult to register for the ear will display clearly. In my analyses I will use sonograms for passages that translate well from the physical reality to the musical gestalt. In most cases however, I will combine the sonograms with Lasse Thoresen's graphical notation system (see below).

Over the years there have been several attempts to develop a conceptual vocabulary for describing electroacoustic music. Much of the effort has been put into finding a suitable way to classify and describe single sounds in words. The idea of classifying sounds goes back at least to the Italian futurists and Luigi Russolo, who in his famous *L'arte dei Rumori* from 1916 described six "families of noises" that would be used by his futurist orchestra.⁷⁵ The first systematic attempt to provide a unified theory of sound in the wake of electroacoustic music was provided by Pierre Schaeffer in his influential *Traité des objets musicaux* from 1966, where he attempted to create an all-encompassing typology of sound – a *sofège* of "sound objects."⁷⁶ While Schaeffer's work has had great influence on the understanding of how sounds behave in a musical context, his typology has proven difficult to use in practical analysis. These problems have led to several attempts at complementing and expanding Schaeffer's system. Prominent examples within the francophone

⁷³ For instance Norman Adams, "Visualization of Musical Signals," in *Analytical Methods of Electroacoustic Music*, ed. Mary Simoni, Studies on new music research (New York: Routledge, 2006); Bruno Bossis: "The Analysis of Electroacoustic Music: From Sources to Invariants," *Organised Sound*, vol. 11, no. 02 (2006); Lasse Thoresen and Andreas Hedman: "Spectromorphological analysis of sound objects: an adaptation of Pierre Schaeffer's typomorphology," *ibid.* vol. 12, no. 2 (2007); Michael Clarke: "Analysing Electroacoustic Music: An Interactive Aural Approach," *Music Analysis*, vol. 31, no. 3 (2012).

⁷⁴ Clarke (2012): "Analysing Electroacoustic Music: An Interactive Aural Approach."

⁷⁵ Luigi Russolo, "The Art of Noises: Futurist Manifesto [1916]," in *Audio Culture. Readings in Modern Music*, ed. Christoph Cox and Daniel Warner (New York: Continuum, 2004).

⁷⁶ See for instance Brian Kane: "L'Objet Sonore Maintenant: Pierre Schaeffer, sound objects and the phenomenological reduction," *Organised Sound*, vol. 12, no. 1 (2007); Michel Chion: *Guide To Sound Objects. Pierre Schaeffer and Musical Research* (2009).

world include Françoise Delalande and the MIM laboratory at the University of Marseille's theories on temporal semiotic units (UST) and Stéphane Roy's functional analytical grid.⁷⁷ The most influential related approach in the Anglophone world has been Denis Smalley's spectromorphological vocabulary for describing the temporal shaping of sound gestalts.⁷⁸

One of the principal points in these approaches is that in electroacoustic music the basic unit, the smallest musical event, is not the *note*, but the *sonic gestalt*. A sonic gestalt *can* be a note, but it can also be any other sound; from the "grain" (a sound segment so short that it loses its original sonic identity and retains only its spectral profile), to long concrete or synthetically generated sounds. According to Smalley, it is one of the characteristic traits of electroacoustic music that the gestalt can be made from several sources and still be perceived as a single closed unit in the phenomenological realm. His main focus however, has been to show how the different parameters that make up a gestural event (frequency, harmonic spectrum and ambience) change over time. Smalley's spectromorphological vocabulary focuses on how the energy articulation of a sound has a temporal shaping, a *morphology*, with an onset, a continuation and a termination. He further uses several sets of metaphors describing the behaviour and movement of the gestures within a musical stream, for instance "motion and growth process" (unidirectional, reciprocal, cyclic/centric and bi/multidirectional, and several sub-sets of these categories), "characteristics of motion" (push/drag, flow, rise, flow/flip, drift, float, fly), "space" (close, distant), and "spectral density" (empty, transparent, translucent, opaque, packed/compressed, filled), to list the most important terms in his rich vocabulary. However, while Smalley's theories have had some impact both on the understanding and the composition of electroacoustic music, his concepts have also proven difficult to use in actual analysis.⁷⁹

To aid my analytical passages, I have chosen to use a spectromorphological vocabulary and graphical notation system developed by Lasse Thoresen, which for my needs has proven more flexible and better suited than the approaches of Schaeffer, Delalande, Roy and Smalley.⁸⁰ Even

⁷⁷ Françoise Delalande: *Les Unités sémiotiques temporelles. Éléments nouveaux d'analyse musicale* (Marseille: Documents Musurgia/MIM, 1996); Stéphane Roy: *L'analyse des musiques électroacoustiques. Modèles et propositions* (Paris: L'Harmattan, 2003).

⁷⁸ The theory originated in a conference paper from 1981 and was later published as Denis Smalley, "Spectromorphology and Structuring Processes," in *The Language of Electroacoustic Music*, ed. Simon Emmerson (New York: Harwood Academic Publishers, 1986). Smalley refined his system in the article: "Spectromorphology: Explaining Sound-Shapes," *Organised Sound*, vol. 2, no. 2 (1997).

⁷⁹ This difficulty has been noted for instance by Robert Normandeau: "A Revision of the TARTYP published by Pierre Schaeffer," *Proceedings from EMS10*, (2010). For an interesting attempt at bypassing the shortcomings of Smalley's system, see Manuella Blackburn: "The Visual Sound-Shapes of Spectromorphology. An Illustrative Guide to Composition," *Organised Sound*, vol. 16, no. 01 (2011).

⁸⁰ The system has been presented in a number of articles in *Organised Sound*: Lasse Thoresen and Andreas Hedman: "Spectromorphological analysis of sound objects: an adaptation of Pierre Schaeffer's typomorphology," *Organised*

though Thoresen is using Smalley's term "spectromorphology," his system is not built on Smalley's vocabulary. Instead, Thoresen went back to Schaeffer's typologies, the same ones that Smalley used, and built his system directly on this. Thoresen's main contribution to Schaeffer's (and Smalley's) theories is a stringent set of terms and graphical symbols. He simplified the systems by drastically reducing the number of concepts and sound categories. This means that while the placement of a representational symbol might be very precise in the time domain, the sonic character of the sound is only an approximation. This shifts the focus from the frequency domain to the time domain. I see this as beneficial for my analyses, since I am more interested in the identification of events and their role in the musical texture, than in accurate descriptions of every single sonic event.

Fundamentals of Lasse Thoresen's spectromorphological notation

Thoresen built his system around a series of grids with representational symbols. The three main symbols, the circle, the diamond and the square, are listed on the y-axis in figure 1.1 from the "simple" to the "complex" with regard to sound spectrum (meaning richness of frequencies at any given time): circle = pitched sound (clearly recognizable pitch or fundamental frequency), diamond = dystonic sound ("ambiguous sounds whose sound spectrum is formed by a mixture of pitched elements and cluster"), and square = complex or saturated sound (some or no sense of pitch centrality). Each of the symbols can be graded by either being open (less "complex" spectrum) or filled (more "complex" spectrum).

	Sustained	Impulse	Iterated
Pitched	○ — ● —	◦ ●	○ -- ● --
Dystonic	◇ — ◆ —	◊ ◆	◇ -- ◆ --
Complex (unpitched)	□ — ■ —	◻ ■	□ -- ■ --

Figure 1.1: Thoresen's main categories.⁸¹

Sound, vol. 12, no. 2 (2007); Lasse Thoresen: "Sound-objects, Values and Characters in Åke Parmerud's *Les objets obscurs*, 3rd Section," *ibid.* vol. 14, no. 3 (2009); Lasse Thoresen: "Form-Building Patterns and Metaphorical Meaning," *Organised Sound*, vol. 15, no. 2 (2010). The theory is elaborated in the new book Thoresen (2015): *Emergent Musical Forms*. It is also explained in detail on the companion website to the book <http://www.auralsonology.com>, visited January 20th 2016.

⁸¹ Lasse Thoresen and Andreas Hedman: "Spectromorphological analysis of sound objects: an adaptation of Pierre Schaeffer's typomorphology," *Organised Sound*, vol. 12, no. 2 (2007).

The x-axis of the grid in figure 1.1 deals with how these sounds are articulated in time. Thoresen calls this his *criteria of energy articulation*. In the middle position we have sounds that are stated clearly once, but have no prolongation. Very short statements (impulses) are indicated with a staccato dot above the symbol. The left and right positions in the grid indicate different types of prolongation. Regularly repeated sounds are called *iterations* and are displayed on the right. Held, or *sustained*, sounds are displayed to the left.

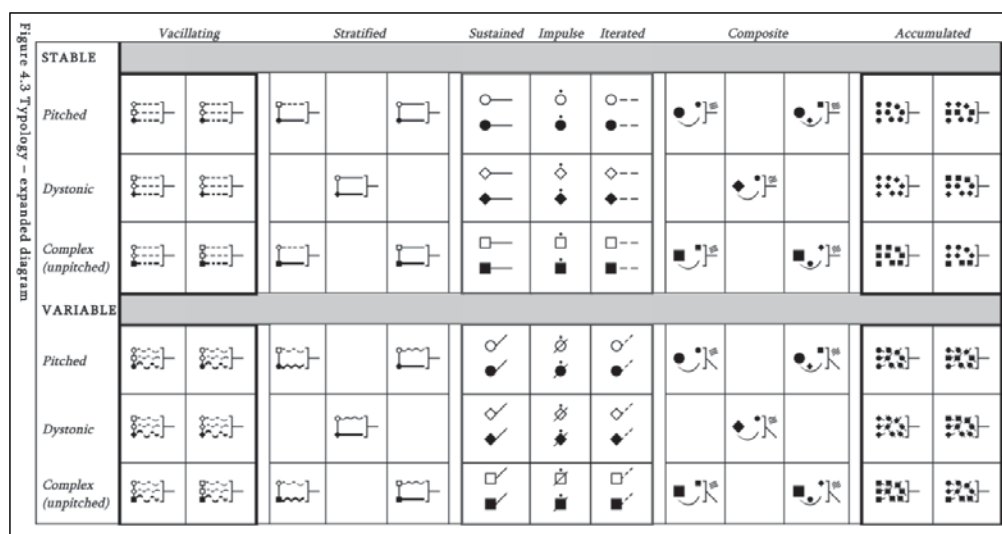


Figure 1.2: The expanded set of categories in Thoresen's graphical system.⁸²

Building on these main categories, the system can be expanded in every direction (figure 1.2). Thoresen presents two separate diagrams for sounds with stable or variable pitch (for instance a glissando or vibrato). He further introduces the concepts of *stratified sounds* (sustained sounds with two or more fundamentals; for instance, a chord), *composite sounds* (collections of several distinct sounds occurring so close together that they form a single sound complex) and *accumulated sounds* (irregular and close iterations of similar sounds; for instance, the falling of raindrops).

There is a gradual transition from *single sounds* to *composite* or *accumulated sounds*. For instance, in the beginning of "Part 2.1" of *Ode til lyset* (see Chapter 5), I have observed three groups of dystonic impulses in the middle layer (figure 1.3). While the impulses in the two first groups are distinct, the impulses in the third group happen so quickly that they lose their character as individual gestalts. I have therefore notated them as an *accumulated sound*.

⁸² Ibid.

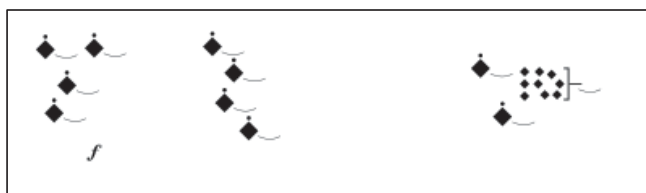


Figure 1.3: Three groups of dystonic impulses in *Ode til lyset*.

This example points to what I see as one of the two main assets of Thoresen's system: the possibility of grouping sounds in composites, and the possibility of constructing a visual representation of a complex musical segment using only a small set of basic symbols.

Each of Thoresen's main categories can be augmented with other symbols. For instance, there is a set of symbols indicating what he calls *pulse categories*, meaning the tempo and type of iterations of sounds (figure 1.4). Thoresen operates with four tempo categories: ambient time (< 25 BPM, cf. whole note or longer), gesture time (25-200 BPM, cf. quarter note), ripple time (200-500 BPM, cf. 8th note) and flutter time (> 500 BPM, cf. 16th note).

	<i>Regular</i>	<i>Oblique</i>	<i>Irregular</i>
<i>Gestural time</i>	Rg	Oq	Ir
<i>Ripple time</i>	≡	≡	≡
<i>Flutter time</i>	≡	≡	≡
Tendencies :			
<i>accel.</i>	⊲	⊲	⊲
<i>rit.</i>	⊳	⊳	⊳

Figure 1.4: Thoresen's pulse categories.⁸³

There are also symbols for additional descriptive qualities, such as spectral brightness, dynamic profile of onsets or endings, dynamic gait, spectral gait and granularity, as well as a wealth of special cases. I will discuss these specificities in connection with the actual analyses. For a complete overview of Thoresen's system, I refer the reader to his original articles or the aural sonology website.

⁸³ Ibid.

Form in Lasse Thoresen's notation

I have also used Thoresen's vocabulary for form and segmentation. In his system, Thoresen proposes four depths of formal segmentation called *object field*, *phrase field*, *sentence field*, and *form field* (table 1.5). The *object field* (field depth 0) is the level of the single musical gestalt. I have not included this level in my analyses since it implicates segmentation for each musical event, which lies beside the scope of my present interests. The *phrase field* (field depth 1) is used for groupings of musical gestalts, such as melodic phrases or other groups of sounds that clearly belong together. The *sentence field* (field depth 2) is used for several groups of musical gestalts that belong together. Finally, the *form field* (field depth 3) groups several sentences together, and is used to designate compositional parts on the macro level (for example the exposition, development and recapitulation of a sonata form piece). Thoresen has provided additional symbols indicating demarcations and positioning of time fields, but I will only explain the basic level here. For a complete overview of the symbols, see the original articles or the aural sonology website.

Number of time-field levels	Designation	Graphic Notation	
		In full	Shorthand
Field depth 0	Object-field/ Field ₀	-----	. .
Field depth 1	Phrase-field/ Field ₁	_____	_ _
Field depth 2	Sentence-field/ Field ₂	_____	_ _
Field depth 3	Form-field/ Field ₃	_____	_ _

Figure 1.5: Thoresen's time-field depth.⁸⁴

I will use *Twinkle Twinkle Little Star* to explain the different levels (figure 1.6). Most of my analyses deal with the *sentence* and *form field* level, but for this particular melody it is also illuminating to do analysis at the *phrase* level. I interpret *Twinkle Twinkle Little Star* as being constructed from six individual melodic lines of quarter notes, each ending with a half note. I have notated each line as a *phrase field* (depth 1). Every two of these phrases seem to belong together, and I have therefore grouped phrases pairwise as *sentences* (depth 2). I have identified three sentences: an introductory sentence A (ending on the tonic), a contrasting sentence B (ending on the dominant), and finally the repetition of sentence A. Since the second A is an exact repetition of the first A and is coming after

⁸⁴ Lasse Thoresen: "Form-Building Patterns and Metaphorical Meaning," *Organised Sound*, vol. 15, no. 2 (2010).

a contrasting section, it carries strong cadential weight. I thus see the end of the second A as the end of the entire *form field* (depth 3).

In this example I will call the three *sentences* A, B and A. On the *phrase level*, I see sentence A as a rising musical gesture (A1) followed by a falling musical gesture (A2). Sentence B I regard as consisting of a single descending phrase (B1) that is repeated. The formal analysis of the entire melody on the *phrase level* thus read A1 A2 B1 B1 A1 A2.

Figure 1.6: Field depth 1 to 3 analysis of *Twinkle Twinkle Little Star*, using the shorthand version of Thoresen's notation.

The Thoresen system and referentiality

The challenge in my use of Thoresen's system is that it is not well adapted for dealing with questions of referentiality. For instance, there are no indications in the graphical systems for sounds coming from different sources. This is often a central compositional strategy in Nordheim's work, where he for instance sometimes combines completely abstract sounds with few or no points of referentiality with sounds that are clearly referential, like the use of musical instruments or the human voice. For example, in the introduction to *Warszawa*, in the middle of a complex texture of hard and metallic concrete sounds we can clearly distinguish human voices (see page 196). They have an important musical role in the segment, but this is impossible to highlight through Thoresen's notation alone. In this particular case, I have pointed out the sounds in question with a written commentary in the transcription. Another similar example is when Nordheim introduces musical tones in an otherwise sound-based texture. In the instances where this happens – an example of which can also be found in *Warszawa* (see page 197) – I have combined the graphical transcription with comments or musical notes.

1.5 Primary sources

For the historical context of Nordheim's electroacoustic music, my approach has been to seek out a broad selection of sources in addition to the previously mentioned secondary literature. Most of the source material had at the time of writing not been preserved or catalogued properly. Documenting Nordheim's electroacoustic music has been like laying a puzzle with most of the pieces missing. The few pieces I found had been scattered across various institutions, including the Norwegian Composers Association, Ny musikk, NRK, Henie Onstad Kunstsenter, The Bergen International

Festival, and the official Norwegian Department of Foreign Affairs and others. A complete list of archives consulted is provided in the sources section.

Furthermore, Nordheim did not keep regular written correspondence with his friends and colleges, which could have shed light on his creative process. He was a frequent user of the telephone, and this has sadly resulted in few written sources that can be used for historical study.⁸⁵

The most important part of my source material comes from what I will throughout the thesis label as “The Nordheim Collection.” After Nordheim’s death in 2010, everything Nordheim kept in his study in his home *Grotten*, where he had lived since 1982, was moved temporarily to the Norwegian Academy of Music, which established an Arne Nordheim Centre in order to preserve Nordheim’s heritage. The material included the bulk of Nordheim’s manuscripts, magnetic tapes, DAT-tapes and CDs, as well as some other documents. The sound material mainly consists of recordings of performances of Nordheim’s music, but also some electroacoustic compositions and some fixed media material for the mixed works. The collection of documents is comprised mainly of lecture manuscripts, concert programs and a few private letters.

The collection was temporarily stored at the Norwegian Academy of Music between 2011 and 2016, and I was able to use some of it through the generous help of Harald Herresthal. This made it possible for me to analyse music that had not been heard since it was first conceived in the 1960s and 1970s (see the section “Sound” below). It also made it possible for me to construct the first complete list of Nordheim’s works and recordings (see Appendixes 1 and 2).

Unfortunately, due to the fragile condition of the magnetic tapes, I was unable to get digitalized copies from Nordheim’s tapes before the Nordheim Collection was moved to the Norwegian National Library in late 2016 – well after the research period of my project was over. When I finally received some of this material (January 2017), I had several last-minute revelations on questions I had been struggling with throughout my project. However, I did not have the time to consider much of this material in detail. At the time of writing, the Nordheim Collection is in the process of getting catalogued and preserved, something that will open up possibilities for later studies.

There are also other puzzle pieces missing. For instance, I am aware of the possibility of material existing in the unorganized archive of Studio Experymentalne, which could shed more light on Nordheim’s numerous stays in the city. I visited Polish Radio in 2014, and saw stacks of historical documents and sound material that possibly go all the way back to the period Nordheim worked

⁸⁵ Nordheim jokingly said that while Grieg, Mozart and other great composers had their collected letters published, the only such publication he would enjoy would be his collected phone bills. Rannveig Getz Nordheim, interviewed by Ola Nordal, September 13th 2012.

there. However, this material was not available to me, both for language reasons and due to lack of organization. It is also probable that Eugeniusz Rudnik had some documents and sketches in his possession, but due to his failing health and subsequent death in 2016, I was unable to investigate any such material. Some research on Nordheim has been carried out by Polish writers, based in the material from Studio Experymentalne, but there were few historical details in these accounts that I was not already aware of through Norwegian sources.⁸⁶ With time though, more Polish material will hopefully become available for researchers.

Newspapers

For historical details on performances and Nordheim's travels I have made extensive use of the online newspaper archive *Retriever*, which contains searchable historical archives of the national Norwegian newspapers *Verdens Gang* and *Aftenposten*. I have also used *Aftenposten*'s own online archive, which often returned better results than *Retriever*. Furthermore, I have examined other newspapers and periodicals in specific time periods, both through online searches, in print and microfilm at the Norwegian National Library. Several quotes from Nordheim reprinted in this dissertation come from these sources. Even though these articles present the quotes as Nordheim's words, it should be kept in mind that they have all been filtered through the writing of the journalist. In addition, I have noticed that several of the articles carry factual errors, so I have always sought to crosscheck claims made in newspaper clippings with other sources. A complete list of dailies and periodicals consulted is included in the appendix to the dissertation.

Oral history interviews

Oral history interviews have not been an important part of my source material. I have conducted only 11 unstructured interviews with Nordheim's former colleagues, friends and family. Although these interviews helped me understand certain traits in Nordheim's persona and correlate some historical detail indicated in the sources, they proved to be of limited value for insight into the actual works I have been interested in.⁸⁷ The most valuable interviews have been the ones conducted with Nordheim's widow Rannveig Nordheim Getz, and his technicians Harold Clark and Mats Claesson. Sadly, I was unable to interview Eugeniusz Rudnik, who worked closely with Nordheim in Warsaw. I met Rudnik briefly during my visit to Poland, but due to health reasons he was not available for interview.

⁸⁶ For instance Bolesław Błaszczyk: "A Norwegian in Warsaw," liner notes to the CD AN.R80 *Solitaire* and Krajewski: "Lutosławski–Nordheim – two stylistic models and their interrelations," in ed. Stępień-Kutera (2016).

⁸⁷ These type of challenges is discussed by Paul Thompson in Paul Thompson: *The Voice of the Past. Oral History*, 3rd ed. (Oxford: Oxford University Press, 2000), pp. 25-82.

The most central person to talk to would of course have been the composer himself. In 2007, before I started working on this dissertation, I tried to get in contact with Nordheim. Sadly, he was already too ill to receive visitors at that time. It is therefore fortunate that Nordheim had been thoroughly interviewed on several subjects during his life. I have already mentioned the two extended interviews published by Yisrael Daliot and Andreas Beyer. In addition to the published interviews, I have had access to two video interviews, which shed some light on his biography and views on electroacoustic music. The first was a transcript of the entire three-hour interview that formed the basis for the 50-minute documentary *Mitt liv* ["My Life"], broadcast by *NRK2* on December 26th 2012.⁸⁸ The interview was conducted on February 17th 2006 by Eva Charlotte Nilsen. The second was a two-hour interview performed by Jøran Rudi and Tilman Hartenstein on September 20th 2005, following the spectacular finding and subsequent release of Nordheim's electronic music for the radio drama department at NRK.⁸⁹ Both interviews have given me valuable insight into Nordheim's view on his own electroacoustic music.

Sound

While most of the works discussed in this study can be found on commercially available recordings, I have been fortunate enough to receive additional sound material from a number of sources.

The Norwegian Academy of Music has kindly given me access to CDs and DAT cassettes from Nordheim's study in *Grotten*. I received a recording of the second act of *Katharsis*, the fixed media material for *Aurora*, some of the cues for AN.65 *Peer Gynt* and a four-channel version of *Solitaire*. I also obtained two CDs of sound examples that Nordheim used in his lecturing activities. These unlabelled CDs proved to include some of the missing tape cues for *Katharsis*, excerpts and details from *Pace* and *Poly-Poly*, as well as an unreleased recording of *Epitaffio* featuring the original 1963 version of the fixed media material. After the material from *Grotten* was transferred to the National Library in late 2016, I received some additional material, including the incidental music for AN.85 *Macbeth* and AN.148 *Kong Ødipus*. However, this material came so late in my writing process that I did not have the chance to use it for this project.

In the basement of the Acoustical laboratory at NTNU I found two tapes related to Nordheim. One was an original master tape of the material for *Ode til lyset*, which formed the basis for the analyses in this study. The second tape, labelled "Sunia," proved to contain the original 1966 fixed media material for *Response*.

⁸⁸ "Mitt liv," *NRK2*, December 26th 2012

⁸⁹ Arne Nordheim, interviewed by Jøran Rudi and Tilman Hartenstein on September 20th 2005. Video at NoTAM – Norwegian Center for Technology in Music and the Arts.

NRK has provided me access to some of Nordheim's radio and television dramas, as well as other programs. Most of this material is now accessible on restricted terminals at the National Library. Some programs are in the process of being publicized officially at the NRK website, and will show up on searches on Arne Nordheim on <https://tv.nrk.no/>.

I have also collected research material from private sources. Sigurd Saue has kindly provided me with the original source material for the sound installations *Ode til lyset* (1995 version), *Gilde på Gløshaugen*, AN.184 *Språkfødsel* and *Dråpen*. Ulf Nilsen has kindly provided me with the material for the sound installation AN.166 *Aqua – Terra*. Mads Nordheim has generously offered me access to the original sound material for AN.137 *Stille, Kepler tenker*. Finally, Edition Wilhelm Hansen in Copenhagen has kindly provided me with the tape cues for Nordheim's mixed orchestral and electronic works AN.105 *Tempora Noctis*, AN.109 *The Tempest* (ballet) and AN.110 *The Tempest* (suite) and AN.154 *Magic Island*.

As with the written material there is still much to collect and organize in connection with Nordheim's electroacoustic music. For instance, there seems to be no complete collection of sound cues from *Katharsis* and *Favola*, making these works impossible to perform in their original form. Much of Nordheim's theatre music, including central works like *Sigurd Slembe* and AN.10 *Don Juan*, seem to be lost. However, my hope is that some of these works will re-surface in one way or another at a later point in time. One of the findings of my work is that there is a need in Norway for a systematic collection and organization of the scattered history of Norwegian electroacoustic music. I see my thesis on Arne Nordheim's electroacoustic music as one of the early stepping-stones in this process.

2 CHILDHOOD, EDUCATION AND EARLY WORKS

In this chapter, I will follow Arne Nordheim through his childhood and formative years until he became established as one of the most prominent young composers in Norway, at the beginning of the 1960s. Although most of the content covered in the chapter predates Nordheim's electroacoustic music, I see this account as a necessary step in order to prepare the ground for the later discussion of his electroacoustic aesthetic. Many of Nordheim's preferences and ideas were established during these formative years, including the fascination for romantic and grave themes, his interest in literature and poetry, and his reverence for the music of composers like Béla Bartók, Gustav Mahler and Fartein Valen. One of the technical devices that I will describe in this chapter is the use of what Nordheim called *memorables*: his own take on creating themes and leitmotifs that either point back to references in music history or in other ways accumulate meaning within his catalogue.

A large part of this chapter will be devoted to Nordheim's compositional training and early works. Nordheim was no child prodigy, and the road from composer student to actual composer was long and hard. The three works I will focus on in this chapter, AN.5 *String Quartet no. 1* (1956), AN.7 *Aftonland* (1957-9) and AN.14 *Canzona* (1961), were written between the ages of 26 and 31. In other words, Nordheim must be regarded as something of a late bloomer, and it was only in the 1960s that his compositional career really got going. His compositional education was not an apprenticeship with a teacher that would place him within a clear school or tradition, but rather a patchwork of training experiences that led to a very open approach to composition. Although Nordheim is commonly regarded as a radical modernist composer, his first musical leanings were towards neo-classicism. In the 1950s he would publicly turn his back to the strict doctrine of the Darmstadt composers, proclaiming "no -ism's for me, please!"⁹⁰ It is unclear whether Nordheim ever went to any of the Ferienkurse in Darmstadt. He has made no mention of such a trip, but he had a lot of the Darmstadt literature in his bookshelf at the time of his death, including a complete German edition of *Die Reihe*. Some of the volumes seem to have been thoroughly read. Still, he scorned the pedantry of the then-current trend of musical pointillism, which however does not mean that he did not apply, for instance, the 12-tone method. On the contrary, he would borrow freely from the serialist palette of techniques if he felt it suited his expressive needs.

⁹⁰ Arco: "Ung alvorsmann ler av egen sørgemarsj." *Verdens Gang*, October 15th 1955.

2.1 Childhood and early life in Larvik

Arne Nordheim was born in 1931 in Larvik, a small city situated in the southern county of Vestfold, squeezed in a belt of land between the Larvik fjord, the beautiful lake Farris and the river Numedalslågen. As many Norwegian southern towns, Larvik is famous for its small white wooden houses and its picturesque coastal landscape. The city cannot boast of a particularly vibrant cultural atmosphere, but it has frequently been used by artists and writers as a retreat. Central Norwegian cultural figures like the author Knut Hamsun (1859–1952), the poet Herman Wildenvey (1885–1959) and the painters Carl Nesjar (1920–2015) and Ferdinand Finne (1910–1999), all lived in or close to Larvik during Nordheim’s childhood years.⁹¹ They all had important influence on Nordheim’s cultural education or his early years as an artist. In a later radio interview, Nordheim mentioned that already as a child he knew Hamsun’s *Pan* by heart, and that his friends called him “Løytnant Glahn” after the gloomy protagonist of the book.⁹² It can also be mentioned that Nordheim met and befriended Antonio Bibalo (1922–2008) in Larvik, shortly after the Italian composer had settled in the city in 1956. They would later both become honorary citizens of this city.

Nordheim came from a working-class family. His father, Erling (1902–1957), did various caretaker tasks for the municipality, such as controlling the gas meters in people’s homes. Sometimes Arne would join his father on these visits, and they were both well-known figures in the little town.⁹³ His mother Emma (1901–1967) stayed at home as housewife, taking care of Arne and his two older brothers. When Arne and his brothers grew older, she took up a position as a chambermaid on the Danish-Norwegian ocean liner Peter Wessel in order to compensate for the falling income from her husband, who gradually became too sick to work.⁹⁴

Over the years, Nordheim provided numerous anecdotes from what seems to have been a happy childhood, save for the financial hardships of growing up in a working-class home during the 1930s and 1940s. While these stories should be treated with caution for their accuracy – they occasionally change from interview to interview – they tell of an early fascination for sound and music. Music seems to have been a central part of the family life. Nordheim’s first childhood memory was of his father, a gifted amateur musician, singing and walking over the floor while

⁹¹ Hamsun lived in Larvik until 1917, when he moved to Nørholmen near Grimstad some 150 kilometers further south. The residence of the famous author in the city was well remembered by the citizens of Larvik. Herman Wildenvey lived in Stavern, nine kilometers outside the city, but went to Larvik almost daily to read fresh newspapers. Nesjar and Finne were residents of Larvik, although they frequently resided other places. Heyerdahl lived in the same street as Nordheim, but was, according to Nordheim, rarely at home.

⁹² Otto Haug: “Lunsjgjest: Arne Nordheim”, *NRK P2*, March 25th 1992.

⁹³ Carl Nesjar, interview by Ola Nordal and Lars Mørch Finborud, August 20th 2012.

⁹⁴ Herresthal (2015): *Fra hjertedypet stiger tonens strøm*. Pages 7 and 114.

playing the violin. His father also made a fiddle for the young Arne, using a wooden box and twine. This was Nordheim's first musical instrument, and the value he placed on it can be seen in that it was one of the few items he took care of throughout his life.⁹⁵ Other important childhood memories include listening to Beethoven on the radio (Nordheim's primary source of cultural education), playing on a harmonium belonging to his aunt, and listening to the magical sound of a music box, which belonged to an elderly woman living in the ground floor of his house.⁹⁶ The most recurrent of Nordheim's childhood recollections deals with how he and some friends tolled the bells in the local parish church the whole day on May 8th 1945 to celebrate the end of the Second World War. The sound and power of the bells made a strong impact on the then 14-year-old Nordheim, and he has later recalled this as one of the "profoundly poetic moments" of his life.⁹⁷ Growing up during the heyday of radio, it was also natural that he later would regard the radio as "an extremely poetic instrument" ["et uhyre poetisk instrument"] and technology as something with poetic potential; "most poetic is of course the Morse code" ["mest poetisk er selvfølgelig morsen"], he would sometimes say.⁹⁸

Often these childhood anecdotes were used by Nordheim to justify his later path towards composition. For instance, the stories of the music box and the ringing of the church bells were often used to explain his later fascination for bells and chiming sounds. Another important anecdote is Nordheim's extraordinary friendship with the poet Hermann Wildenvey. This story was used in order to highlight Nordheim's early fascination for literature and poetry. Legend, as told by Nordheim, had it that Wildenvey more or less accidentally met the then 10-year old boy on the streets of Larvik (after Nordheim had secretly trailed him around the city), and was deeply impressed by how Nordheim could recite his poems by heart. After this meeting, Wildenvey invited Nordheim to his home, *Hergisheim*, in Stavern. The friendship persisted, and over the years Wildenvey clearly encouraged Nordheim's artistic ambitions. Later in life Nordheim often said that he had "studied composition with Hamsun and Wildenvey," in order to emphasize the value of the friendship he had with the poet 46 years his senior. This "rare intellectual" in his early life was maybe the most significant of Nordheim's early influences in Larvik.⁹⁹

⁹⁵ Herresthal (2015): *Fra hjertedypet stiger tonens strøm*, p. 9. The fiddle is now at the Arne Nordheim Centre at the Norwegian Academy of Music.

⁹⁶ Beyer: "On Articulating the Existential Scream," (2001), p. 137.

⁹⁷ "Mitt liv," *NRK2*, December 26th 2012.

⁹⁸ Nordheim in a 1991 radio program, quoted after Herresthal (2015): *Fra hjertedypet stiger tonens strøm*, p. 26.

⁹⁹ The formulation "rare intellectual" ("et sjeldent åndsmenneske") is quoted from Herresthal (2015): *Fra hjertedypet stiger tonens strøm*, p. 19.

Chapter 2: Childhood, education and early works

Despite the frequent anecdotal focus on sound, music and culture, Nordheim did not show an outstanding early talent for actually playing music. The tale of Nordheim's compositional genesis is different from the stories of prodigy that have frequented music history since the times of Handel and Mozart. He took piano lessons and played valve trombone in a local marching band, having had also some early incursions into composition. At thirteen he set his favourite Wildenvey-poem "Eventyr til Ellen" to music. However, few events in Nordheim's upbringing may be said to have decisively pushed him towards music rather than any other vocation. In the 1930s and 1940s amateur music making was still prominent in many homes, and in that sense there is nothing extraordinary about the situations he described, save maybe for the friendship with Wildenvey.

The most important conclusion we can draw from these "creation myths" is that Nordheim showed early on a sensibility towards artistic expressions – music, poetry, art – and that this sensibility at some point grew so strong that he decided to turn it into his vocation. He also seems to have been something of a loner. In a late interview, he stated that he was looked upon as a freak ["en raring"] by the other children.¹⁰⁰ This might have been emphasized by his early morbid fascination with death. That Nordheim had "Eventyr til Ellen" as his favourite poem is a case-in-point: it is an elegy written to a young girl who is about to die. His widow, Rannveig Getz Nordheim told me about how Nordheim dressed in black "long before this got fashionable" and was a "graveyard romantic" that could be observed walking around by himself in the Larvik cemetery (figure 2.1).¹⁰¹ This graveyard fascination persisted throughout his life: he seemed enjoy meeting with people in graveyards, or he would visit them for contemplation and inspiration.



Figure 2.1: Arne Nordheim posing next to a grave in the Larvik cemetery, probably during the 1940s. Unknown photographer. Photo: Arne Nordheim Centre, Norwegian Academy of Music.

¹⁰⁰ "Mitt liv," *NRK2*, December 26th 2012

¹⁰¹ Rannveig Getz Nordheim, interviewed by Ola Nordal, September 13th 2012. Nordheim has stated that he learnt math by subtracting year of birth from year of death on tombstones. "Mitt liv," *NRK2*, December 26th 2012

2.2 Conservatory training and the Mahler revelation

In 1948 the 17-year old Arne Nordheim moved from Larvik to the Norwegian capital Oslo in order to study organ at the music conservatory. We know little about Nordheim's motivation for choosing this path in life, and sources are inconclusive on the matter. The move is rather uncommon in the Norwegian context. Few working-class children had the chance to study, and even fewer of them went into the arts. The move to Oslo therefore indicates one of two things: either Nordheim had exceptional grades and was pushed towards further studies, or he had a strong desire to get out of his hometown and choose a different path in life than that of his peers. The rationale for taking up organ studies varies from interview to interview. On one hand, and Nordheim emphasized this in several interviews, the organ studies were the only option available in Norway for those who wanted to study composition, even though it was not a composer-studium per se. However, it seems that Nordheim had not initially set out to be a composer. In some interviews it is indicated that he wanted to become a priest, or alternatively, that his father wanted him to become a priest.¹⁰² Harald Herresthal claims that Nordheim even toyed with the idea of becoming a bell-maker.¹⁰³ Rannveig Getz Nordheim has indicated that it was his father who pushed Nordheim towards organ studies, since he viewed this as a respectable vocation.¹⁰⁴ It should be added that it is completely normal for young people to have a wide variety of career dreams. Whatever his dreams and plans were, it seems certain that he went to Oslo with a strong desire to pursue a career related to the arts or the spiritual.

During his studies, Nordheim learned piano, music theory, counterpoint, instrumentation and music history. His teachers included Anfinn Øien (organ and harmony), Nicolai Dirdal (piano), Conrad Baden (counterpoint), Karl Andersen (music theory) and Jon Medbøe (music history).¹⁰⁵ The available school registers for the years 1948–1950 show that Nordheim's class attendance record was good.¹⁰⁶ However, several factors indicate that Nordheim was only mildly successful as a student. In the four years during which he was enrolled at the conservatory, Nordheim did not perform at any of the weekly student recitals,¹⁰⁷ nor did he complete his final organ exam. The school had many pupils (1303 in the year Nordheim started), and more than 100 of them studied organ. Few of these made it to the graduation exam, so the fact that Nordheim never had his debut concert was

¹⁰² Rannveig Nordheim Getz in a personal communication to Ola Nordal, September 2016. See also Beyer: "On Articulating the Existential Scream," (2001), p. 138.

¹⁰³ Herresthal (2015): *Fra hjertedypet stiger tonens strøm*, p. 15.

¹⁰⁴ Rannveig Nordheim Getz in a personal communication to Ola Nordal, September 2016

¹⁰⁵ Annual reports, Norwegian Academy of Music, 1948-1952. RA/PA-1761 Musikk-konservatoriet i Oslo.

¹⁰⁶ Attendance protocols, RA/PA-1761 Musikk-konservatoriet i Oslo.

¹⁰⁷ Concert programs, RA/PA-1761 Musikk-konservatoriet i Oslo.

not out of the ordinary. Still, his efforts seem to have been at best half-hearted. In an anecdote, his organ teacher Anfinn Øien recalls how Nordheim preferred to discuss the theoretical foundation of chords rather than actually play the assigned piece.¹⁰⁸ Jon Medbøe remembered Nordheim as being looked upon by some of the fellow teachers as “untalented, on the border of being a musical idiot.”¹⁰⁹ In a countering statement, Nordheim said that he found it so “deadly boring to play those four-part hymns. So, I quickly lost interest.”¹¹⁰

While it seems that Nordheim lacked the skill and tenacity required to become a performer on a professional level, he poured his energy into other matters. He seems to have absorbed as much as he could of the capital’s cultural life. It is illustrative that he would sometimes sign letters as “Sværmeren” [“the Dreamer” or “the Moth”] – a reference to Hamsun’s novel *Sværemere* [*Dreamers* – also published as *Mothwise*].¹¹¹ Harald Herresthal has documented how Nordheim thrived in Jon Medbøe’s music history classes. Medbøe was seen as an unconventional and eccentric teacher, who also taught philosophy and logic, and saw the history of music in light of philosophy and visual arts. Herresthal claims that this is an important background for understanding Nordheim’s later involvement with the “total works of art” of the 1960s.¹¹² Medbøe’s classes also included studies of Renaissance and Baroque music, as well as Paul Hindemith and other neoclassical composers. This was unknown music for Nordheim at the time, and something that he took great interest in. Medbøe also encouraged students to attend concerts, and Nordheim arranged to sit in on the rehearsals of the philharmonic orchestra, score in hand.¹¹³ Nordheim has later stated that he got most of his initial training as a composer from these intensive score studies.¹¹⁴ This also gave him an exceptional command of music history, something he would benefit from in his work as music critic and radio host.

On February 8th 1949, Nordheim experienced an often recounted and almost quasi-religious revelation: his “calling” to become a composer. On this day he attended a performance of Mahler’s *Resurrection symphony* with the Oslo Philharmonic Orchestra. It was the biggest production of the

¹⁰⁸ Herresthal (2015): *Fra hjertedypet stiger tonens strøm*, p. 32.

¹⁰⁹ [“Ubegavet, grensende inntil musikalsk idiot”], quoted after Herresthal (2015): *Fra hjertedypet stiger tonens strøm*, p. 43.

¹¹⁰ Beyer: "On Articulating the Existential Scream," (2001), p. 138.

¹¹¹ See letter transcribed in Herresthal (2015): *Fra hjertedypet stiger tonens strøm*, p. 41. Rannveig Getz Nordheim has indicated that it was the composer David Monrad Johansen that gave Nordheim the nickname. Personal communication with Rannveig Getz Nordheim, September 2016

¹¹² Herresthal (2015): *Fra hjertedypet stiger tonens strøm*, pp. 47-8..

¹¹³ Herresthal (2015): *Fra hjertedypet stiger tonens strøm*, p. 43.

¹¹⁴ Lorentz Reitan, "Arne Nordheim," in *Cappelen's musikkleksikon*, ed. Kari Michelsen (Oslo: Cappelen, 1980).

season, calling for more than 200 participants – 86 musicians, vocal soloists and a choir of 120 singers.¹¹⁵ The reviewer Hans Jørgen Hurum in *Aftenposten* called it an event that would be remembered for many years.¹¹⁶ The experience certainly left a lasting mark on Nordheim. In virtually every biographical interview, he quotes this overwhelming meeting with Mahler as a decisive moment in his artistic development. One example, out of many possible:

It made me understand that everything else was insignificant. I wanted to create music like Mahler showed us. [...] It was almost like a religious *requirement* [“et religiøst behov”] that emerged, and a seriousness, in which I believe. [...] It was so intense in the concert hall. I can still remember the peculiar warmth that was there. It made me want to make music like Mahler – a music that is something more than just music. Not just trumpets blowing in the kitchen, but a music that is everywhere.¹¹⁷

In Mahler, Nordheim found his love for the grand-scale orchestra, the use of religious and existential themes as conceptual keys and texts, and the use of song in an orchestral context. Even though Nordheim never called any of his works symphonies, Mahler’s famous comment to Sibelius that “a symphony must be like the world” found resonance in Nordheim’s music.

Despite his now burning desire to compose, Nordheim’s career got off to a slow start. First came the problem of how to learn the craft. There was no formal composer education at the conservatory, but some composers-to-be got their initial training from the theory classes and augmented this with additional studies elsewhere. This was not straightforward, as illustrated by the following excerpt from an interview with Anders Beyer in 2001:

In the first place, the idea of becoming a composer was so crazy that no-one could conceive of it. It was considered necessary to try to obtain a position in life, something secure that you could fall back on. Then you could compose in your free time. But basically, I was never particularly concerned about that. I didn’t listen to all the warnings. I wanted to compose...¹¹⁸

It is not known whether Nordheim completed any compositions during his student years. At least he did not have any works presented on the weekly student concerts, as some of his fellow classmates did.¹¹⁹ This might have been partly due to a refusal to play by the rules, a requirement in a

¹¹⁵ (Unsigned): “Oppstandelsessymfonien. 200 medvirkende ved Mahler-konserten fredag” in *Aftenposten*, February 1st 1949. The official name of the Oslo Philharmonic Orchestra was at the time Filharmonisk Selskaps Orkester (Orchestra of the Philharmonic Society).

¹¹⁶ (Unsigned): “Mahlers 2. symfoni” in *Aftenposten* February 5th 1949. The initial concert was held on February 4th, but Nordheim probably attended an extra performance held four days later. A concert program from this date is to be found in the Nordheim-collection at the Arne Nordheim centre.

¹¹⁷ “Mitt liv,” *NRK2*, December 26th 2012

¹¹⁸ Beyer: “On Articulating the Existential Scream,” (2001), p. 140.

¹¹⁹ Concert programs, Norwegian Academy of Music, 1948-1952. RA/PA-1761 Musikk-konservatoriet i Oslo.

conservatory setting. Harald Herresthal has observed that Nordheim's textbook on Bach counterpoint was left virtually unused. On the other hand, a book on harmony was studied extensively, especially the chapters on dominant 7th chords, altered chords, expanded tonalities, voice leading and dissonance treatment.¹²⁰ In the *Mitt liv* documentary, Nordheim somewhat unconvincingly praised his conservatory training with these words: "It was nice. We learned a great deal about harmony, counterpoint and these things. It was useful."¹²¹ It seems that Nordheim received his most decisive training *after* the four years at the conservatory.

2.3 Private studies after the conservatory

After leaving the conservatory in 1952, Nordheim continued with various private studies well into the 1960s. These tuitions make up a patchwork of trainings that left Nordheim with a very wide range of competences and preferences. The precise content of this patchwork has proven difficult to document in detail, but Nordheim's known studies after the conservatory is summarized in the following table (reference to sources are footnoted over the subsequent paragraphs).

Table 2.1: Nordheim's trainings after the conservatory

	Topic	Teacher	Where
Ca. 1952-1953	Harmony and counterpoint	Karl Andersen	Oslo
Ca. 1952-1953	Composition	Bjarne Brustad	Oslo
1952	Composition	Finn Mortensen	Oslo
Ca. 1953	Conducting	Rafael Kubelík	Amsterdam
1955	Composition/analysis	Nadia Boulanger	Paris
1955	Composition/analysis	Tony Aubin	Paris
1955	<i>Musique concrète</i>		GRMC, Paris
1956	Composition	Vagn Holmboe	Copenhagen
1958	Composition	Vagn Holmboe	Copenhagen
Late 1950s	Composition	Ingvar Lidholm (undocumented)	Stockholm
After 1961	Electronic music	Gottfried Michael Koenig	Bilthoven

It seems that Nordheim started out directly after the conservatory with lessons in harmony and counterpoint under Karl Andersen and composition under Bjarne Brustad. Again his effort seems to have been somewhat half-hearted.¹²² Egil Hovland (1924–2013), who took classes with Brustad at the same time as Nordheim, remembers the teacher as being slightly annoyed with

¹²⁰ Herresthal (2015): *Fra hjertedypet stiger tonens strøm*, p. 36.

¹²¹ "Mitt liv," *NRK2*, December 26th 2012

¹²² Nordheim refers to the training as being completed in a newspaper interview in March 1954. A.F.: "Ung komponist vil ut," *Aftenposten*, March 26th 1954.

Nordheim for sitting in on orchestra rehearsals, where Brustad played the viola, rather than turning in his assignments.¹²³

While struggling to master the compositional craft, Nordheim established himself in the centre of the young generation of composers coming of age in the early 1950s. This seems to have served as an informal training ground, and might have been just as important as the classes with Brustad and Andersen. Harald Herresthal has documented that during this period Nordheim had a close relationship to his fellow composer-students Øistein Sommerfeldt (1919–1994) and Johan Kvandal (1919–1999). They often gathered at the home of Kvandal's father, the renowned composer David Monrad Johansen (1888–1974). Herresthal further claims that Nordheim also took lessons with the professed dodecaphonist Finn Mortensen.¹²⁴

An event of particular importance for this generation of composers was the 1953 ISCM festival in Oslo. Previously, Nordheim's primary source of knowledge on contemporary music had been listening to Swedish radio, where he got to know composers like Karl-Birger Blomdahl and Ingar Lidholm. During the festival, he got to meet these composers in person. He was also introduced to works by composers such as Milton Babbitt, André Jolivet, Zoltán Kodály, Alberto Ginastera, Karel Goeyvaerts and Hans Werner Henze.¹²⁵ Moreover, the festival provided the first opportunity for Nordheim to hear in concert some of the music of Arnold Schoenberg. Most importantly, Nordheim arranged so he could sit in on the rehearsals for Karl-Birger Blomdahl's *Im Saale der Spiegel* – once again score in hand.¹²⁶ Nordheim and Blomdahl became friends, and kept in close contact until Blomdahl's death in 1968. Nordheim also established contact with the Swedish Monday group, including Blomdahl, Ingar Lidholm and Bo Nilsson.¹²⁷ Nordheim supposedly took lessons with Lidholm, but I have not been able to document when this took place.¹²⁸

It seems that from early on, Nordheim gravitated towards something different from the predominantly post-Griegian traditionalism that characterized Norwegian music in this period. In 1954, Nordheim proclaimed to the Danish newspaper *Berlingske Tidende* that there were no opportunities for experiments in new styles in Norway and if one wanted “to learn something” one

¹²³ Geir Harald Johannesen: *Egil Hovland. Engler danser på tangentene* (Oslo: Lunde forlag, 1999).

¹²⁴ Herresthal (2015): *Fra hjertedypet stiger tonens strøm*, pp. 39–44.

¹²⁵ Nesheim (2010): *Alltid på leting*, p. 59.

¹²⁶ Nesheim (2010): *Alltid på leting*, p. 60.

¹²⁷ Elef Nesheim, "Fra UNM til ISCM. Arne Nordheims karrierestart," in *Nordheim: en ordets komponist*, ed. Harald Herresthal and Elef Nesheim (Oslo: Akademika (e-book only), 2013).

¹²⁸ The training is mentioned in Hallgjerd Aksnes' article on http://nbl.snl.no/Arne_Nordheim/utdypning, visited September 23rd 2013. It is likely that the training with Lidholm took place in the late 1950s or early 1960s, since it is not mentioned in his application for membership in Ny musikk from 1956.

either had to study abroad or emigrate.¹²⁹ Despite being virtually penniless, Nordheim travelled extensively throughout Europe to supplement his training. In 1953 and 1954 he visited music festivals in Salzburg and Amsterdam.¹³⁰ In Amsterdam he briefly studied conducting with the Czech-born conductor and composer Rafael Kubelík.¹³¹ Here he also met Wieland Wagner, who invited Nordheim to Bayreuth to work as a volunteer for the Bayreuther Festspiele. Interestingly this led to Nordheim's first hands-on encounter with an electronic instrument: during rehearsals for *Parsifal*, Nordheim was appointed the task of playing the Grail bells of the first and third act, emulated on a traultonium.¹³²

2.4 Studies in Paris and Nordheim's early views on electronic music

A particularly decisive travel for Nordheim during these years was the period of several months he spent in Paris in 1955. The main reason for this extended visit to the French capital was to follow lectures by Nadia Boulanger (1887–1979) and Tony Aubin (1907–1981).¹³³ The two famous pedagogues were the crux of mid-20th century neoclassical training in Europe, and even if Nordheim was searching for a more modern expression than most of his Norwegian contemporaries, he was still framed by the neoclassical style. It must be stressed that Nordheim did not take lessons with Boulanger and Aubin per se, as his friend Øistein Sommerfeldt did, attending only their open lectures.

In Paris, Nordheim also got an introduction to *musique concrète* in the studio of Groupe de Recherché de Musique Concrète (GRMC). The prospect of learning about electronic music had been one of the reasons why Nordheim went to France in the first place. Nordheim had been introduced to *musique concrète* by Ingrid Fehn (1929–2005), a music student and wife of the renowned architect Sverre Fehn (1924–2009). She was also one of the central figures in Ny musikk, the Norwegian ISCM branch. Fehn had studied electronic music at GRMC in 1954, and when she returned to Norway she encouraged Nordheim to do the same.¹³⁴

¹²⁹ The interview in *Berlingske Tidende* is referred in the Norwegian newspaper *Aftenposten*. "Konserter hvor unge nordiske komponister får høre egne verker," *Aftenposten*, October 20th 1955.

¹³⁰ A.F.: "Ung komponist vil ut," *Aftenposten*, March 26th 1954.

¹³¹ The sources are inconsistent with regard to when the training with Kubelík took place. An article in *Programbladet* (no. 12/1956) claims that it took place earlier that year, but this might have been a misunderstanding by the journalist. In Nordheim's application for membership in Ny musikk from November 13th 1956, Nordheim dates the training to the spring of 1953, and it is more likely that this is the correct date. RA/PA-1445 Ny musikk, Da/L0002

¹³² Herresthal (2015): *Fra hjertedyper stiger tonens strøm*, p. 57.

¹³³ Application for membership in Ny musikk, November 13th 1956. RA/PA-1445 Ny musikk, Da/L0002

¹³⁴ Ingrid Fehn: "På sporet av en konkret musikk," *Ballade*, vol. 12, no. 2/3 (Ny musikk 50 år) (1988).

At first, Nordheim seemed critical. In an interview with *Larvik Morgenavis* in January 1955, some months before his trip to Paris, he dismissed *musique concrète* altogether as random collections of sounds, and stated that it was “of course not music” since it was too far removed from the “essence of music” [“musikkens opprinnelige vesen”]. Rather he would label it “Sound-art” [“Lyd-kunst,” with majuscule and hyphen].¹³⁵ Nordheim’s stance reflected a general uneasiness about how to regard this new art form. In 1968 the German musicologist Carl Dahlhaus (1928–1989) asked whether electronic music would actually be better off confined to another branch of art.¹³⁶ He was reflecting an alienation that also was felt among the practitioners. Famously, Edgard Varèse (1883–1965) had called his music “organized sound” and himself “a worker in intensities, frequencies and rhythms” rather than a composer in the traditional sense.¹³⁷ John Cage (1912–1992) stated that if the word “music” was “reserved for eighteenth- and nineteenth-century instruments” one should rather use Varèse’s term “organized sound” for these expressions.¹³⁸ As late as 1985, the Swedish electroacoustic composer Jan W. Morthenson (b. 1940) proposed to use the terms “electroacoustic art” or “audio art” in order to quietly bypass the expectations laid on the term “music”:

Electronic music is not rejected [by the general public] as meaningless because ordinary listeners are reactionary or insensitive, but because it cannot, under present cultural conditions [...] be psychologically classified as music.¹³⁹

These concerns are similar to the unease Nordheim seems to have felt. In a later interview, Nordheim stated that Fehn had to persuade him to go to the GRMC studio.¹⁴⁰ Some weeks before he went to Paris, on March 28th 1955, Nordheim attended the first concert of electronic music in Norway.¹⁴¹ The concert was arranged by Ingrid Fehn, who had invited Pierre Henry to give a

¹³⁵ All quotes from *Larvik morgenavis*, January 20th 1955, after Herresthal (2015): *Fra hjertedyppet stiger tonens strøm*, p. 62. See also Herresthal: “Musique concrète – ‘this is obviously not music’ – Arne Nordheim’s route from *Aftonland* to *Response*,” in ed. Stepień-Kutera (2016).

¹³⁶ Dahlhaus: “Ästhetische Probleme der Elektronischen Musik [1970],” in ed. Dahlhaus (1978). The article was based on a lecture originally given in 1968.

¹³⁷ Edgard Varèse: “The Liberation of Sound [Edited and Annotated by Chou Wen-chung],” *Perspectives of New Music*, vol. 5, no. 1 (1966).

¹³⁸ John Cage, “The Future of Music: Credo (1940),” in *Silence: Lectures and Writings* (Middletown, Conn.: Wesleyan University Press, 1961). In *Silence*, Cage claims that the article was based on a lecture held in 1937. However, Leta E. Miller claims that the correct date of the lecture was probably in 1940. Rob Haskins: *John Cage* (London: Reaktion Books, 2012), p. 41.

¹³⁹ Quoted from David Keane, “At the Treshold of an Aesthetic,” in *The Language of Electroacoustic Musicw*, ed. Simon Emmerson (1986), p. 97.

¹⁴⁰ Hild Borchgrevink, “Diamanter i en rød Volvo - Samtale med Arne Nordheim,” in *Høvikodden live 1968-2007: Henie Onstad kunstsenters som tverrkunstnerisk arena*, ed. Caroline Ugelstad and Hild Borchgrevink (Oslo: Henie Onstad kunstsenters, 2007).

¹⁴¹ There are slightly diverging reports on when the concert took place. Some sources, including Herresthal (2015): *Fra hjertedyppet stiger tonens strøm*, pp. 61–65, places the date at April 2nd 1955. A contemporary interview with Ingrid Fehn

presentation of *musique concrète* for a selected number of people from the Norwegian cultural circles. The program included Schaeffer's *Etude aux chemin de fer*, Schaeffer and Henry's *Symphonie pour un homme seul*, and Henry's *Batterie fugace*, *Tam Tam IV* and *La voile d'Orphée*.¹⁴² At first, Nordheim found these first encounters with electronic music "shocking." In a 1981 interview he stated:

In my first reactions, I remember that I was against it. I found it bloody awful ["jævla heslig"]. And when I hear these things today, I still feel that they not are like how I would have done it.¹⁴³

Still, Fehn later claimed that Nordheim was the only person in the audience that had been "deeply affected" by the event.¹⁴⁴ Even though this is not confirmed by the sources, it is probable that Nordheim met with Pierre Henry in connection with the concert, and that this was the decisive push to visit the GRMC studio.

In Paris, Nordheim followed the open lectures that GRMC provided. There is no evidence that Nordheim actually composed anything during his stay. Nordheim claims to have met Pierre Schaeffer and "some of the other big shots," but it is unclear if this actually was true. Schaeffer was living in the French colonies in Africa during this period, and although he came back from time to time, he was mostly absent from the studio.¹⁴⁵ Nordheim later downplayed the role of his visit to GRMC, and stated that it was "not really a course, but more an exposé":

There wasn't any sort of course of study; it was more a question of going to concerts, making introductions and analysing works, explanations of how a work was composed. I learned an incredible amount from that, but it wasn't anything like a systematic study. So, I have to clarify that bit of history.¹⁴⁶

The limited impact of the GRMC experience can be seen in that Nordheim did not immediately change his critical views on electronic music. In October 1956, about one year after he returned from Paris, he stated the following to newspaper *Verdens Gang*.

in *Verdens Gang* confirms the correct date to be March 28th. A.F: "Ingeniør på dirigentpulten," *Verdens Gang*, March 25th 1955.

¹⁴² Fehn (1988): "På sporet av en konkret musikk."

¹⁴³ Ståle Wikshåland: "-Ikke akkurat lystige dokumenter. Arne Nordheim i samtale om egne verk," *ibid.* vol. 5, no. 2-3 (1981).

¹⁴⁴ Ingrid Fehn: "På sporet av en konkret musikk," *ibid.* vol. 12, no. 2/3 (Ny musikk 50 år) (1988).

¹⁴⁵ Schaeffer's period in Africa is described in Chadabe (1997): *Electric Sound*, p. 32.

¹⁴⁶ Beyer: "On Articulating the Existential Scream," (2001), p. 141. The "exposé-formulation" is taken from Arne Nordheim, interviewed by Jøran Rudi and Tilman Hartenstein, September 20th 2005. Video at NøTAM – Norwegian Center for Technology in Music and the Arts.

When being with the electronic engineer composers and their ideas, one gets the impression that notions like human warmth are alien to their music. But it will be interesting to see if not soon there comes a reaction to all these barren experiments in sound. Often, I'm reminded of H.C. Andersen's profound and deeply human story of the emperor's new clothes. Maybe the little child soon comes and says: "But he doesn't have anything on..."¹⁴⁷

Only some years later, in 1960, did he take up electronic music composition himself. In other words, Nordheim did not do what Else-Marie Pade had done in Denmark: bring *musique concrète* back home after having studied in Paris. Aesthetically speaking, Nordheim was far removed from the sound worlds of Schaffer and Henry, as well as those of Stockhausen or Eimert. He seemed to have been more receptive to Nadia Boulanger's teaching, of whom he talked about with reverence.¹⁴⁸ There might also have been practical reasons for the lack of cultural transfer. In the mid-1950s there was no place that carried equipment for producing electronic music in Norway, so even if Nordheim would have had ideas about creating electronic sound in line with his aesthetic preferences, he would not have had the means to do so. The high cost of composing on tape was inconceivable outside of the universities or broadcasting corporations, and before the end of the decade there seems to have been no interest in electronic music within these institutions in Norway.

It seems that the most important impact of the months in Paris were the close ties Nordheim formed with the Norwegian artist colony in Paris' 6^e arrondissement. He would later collaborate with many of these artists, especially the couples Carl Nesjar (1920–2015) and Inger Sitter (1929–2015), and Guy Krogh (1917–2002) and Sossen Krogh (1923–2016). Other Norwegian artists that visited Paris in the same period, and who Nordheim made contact with, include Nikolai Astrup Geelmuyden (b. 1931), Jakob Weidemann (1923–2001), Gunnvor Advocaat (1912–1997), Gunnar S. Gundersen (1921–1983), Odd Tandberg (1924–2017), Anna Eva Bergman (1909–1987) and Sivert Donnali (1931–2010).¹⁴⁹ This group became important participants in the Norwegian arts, music, architecture and intermedia scene in the 1950s and 1960s.

As a side note, it should be mentioned that some biographical texts quote that Nordheim studied electronic music at the Geaudeamus institute in Bilthoven in 1959.¹⁵⁰ This claim is most likely wrong since there were no possibilities of studying electronic music in Bilthoven before

¹⁴⁷ (Unsigned): "Golde lydeksperimenter uten menneskelig varme," *Verdens Gang*, October 2nd 1956.

¹⁴⁸ Ibid.

¹⁴⁹ Nesheim (2010): *Alltid på leting*, p. 42.

¹⁵⁰ These claims seem to have started with the Wilhelm-Hansen Edition biography of Nordheim, (http://en.ewh.dk/Default.aspx?TabId=2449&State_2955=2&composerId_2955=1139) (visited September 16th 2013), and have later been reproduced on many other websites, biographical texts and articles; for instance, here: http://en.muziekbibliotheekvandeomroep.nl/mco_page/detail/20862 (visited September 16th 2013).

Gottfried Michael Koenig started teaching at Geaudeamus in 1961.¹⁵¹ It is confirmed that Nordheim took courses in electroacoustic music during later stays in the Netherlands in 1963 and 1965.¹⁵² At this time Koenig was teaching on a regular basis, and it is possible that Nordheim's attendance to these courses has been misdated in an often-quoted biographical blurb. I will conclude that Koenig did not influence Nordheim in taking up electronic composition, although he would influence Nordheim's aesthetics at a later point in time (see Chapter 3).

2.5 Completion of training and first compositions

During his training years, Nordheim disregarded electronic music and instead focused on honing his craft through writing string quartets. For a young composer, the task of getting his or her music performed was daunting, but the string quartet format offered some opportunities. Nordheim's first three compositions were all quartets that premiered at the annual Festival for Nordic Music Students (Ung Nordisk Musikk – UNM). The festival had been established in 1949, and circulated between the capitals of the Nordic countries. In this outlet, aspiring composers could hear their chamber compositions performed by professional musicians. The festival also enjoyed substantial attention from the press. Several of the Scandinavian post-war generation composers had their debuts, their entrance tickets to the compositional profession, in this setting. The first time Nordheim visited the festival was when it was held in Oslo in 1952. Two years later Nordheim had his compositional debut at the festival in Stockholm with AN.1 *Essay*. The reviews were positive, but it is evident that Nordheim saw the work as what the title reflected – an essay. "It was a presentation of student works, and it was naturally received as such," Nordheim stated in an interview.¹⁵³ There are no indications that *Essay* made a lasting impact. The work has never been published or recorded, nor was it later included in Nordheim's official list of works.¹⁵⁴

¹⁵¹ The information about Koenig's teachings in Bilthoven was made available to me by Kees Tazelaar in a personal communication on September 21st 2013. According to Davies, the course studio in Bilthoven only opened in 1962, and before this there were four studios in the Netherlands; the Philips studio in Eindhoven, the studio at TH Delft (1957-1960), the Dutch radio studio in Hilversum and a small private studio belonging to the composer Ton Bruynèl in Utrecht (Davies (1967): "International Electronic Music Catalog," pp. 121-24.) It is unlikely that Nordheim *studied* in any of these studios, but it is possible that he visited them.

¹⁵² In a postcard from Nordheim to Norsk komponistforening, dated Amsterdam May 25th 1963, Nordheim states that he will attend a course in electronic music in early June before attending the ISCM festival. RA/PA-1446/Da/1960-9. The proceedings of a meeting in TONO's Stipendkomité, March 30th 1965, refer to a travel grant Nordheim has obtained to study electronic music in Ghent, Brussels and Utrecht. Minutes from TONO's stipend committee, March 30th 1965. RA/PA-1446/TONO'S Stipendkomité.

¹⁵³ A.F.: "Ung komponist vil ut," *Aftenposten*, March 26th 1954.

¹⁵⁴ List of works at <http://arnenordheim.com>, visited September 23rd 2013.

In October 1955, Nordheim's second string quartet, AN.2 *Epigram*, premiered on an UNM-festival in Copenhagen. Even though it seems that this work did not have any subsequent performances either, it had a somewhat more lasting impact. Nordheim listed it as his debut in his catalogue of works for many years. The work premiered a few months after Nordheim's stay in Paris, and might reflect what he had learnt there. *Epigram* initially originated as incidental music to a short documentary about graphical techniques by Nordheim's friend Carl Nesjar, with whom Nordheim had kept a close relationship in Paris. When I interviewed Nesjar, he jokingly called the film score "Nordheim's first commission."¹⁵⁵ The film premiered during the Autumn Exhibition at Kunsternes Hus in Oslo in late November 1955.¹⁵⁶ It was distributed by the Norwegian Film Office and could thus be rented by schools, associations and private viewers. It is also possible that it was used as informational film in Norwegian cinemas. Even though it is unclear how broadly the film was disseminated, this was the first of Nordheim's music to reach a Norwegian audience.

The greatest significance of *Epigram* was putting Nordheim in contact with the Danish composer Vagn Holmboe (1909–1996). Nordheim met Holmboe during the festival, and after his return he proudly told the newspaper *Verdens Gang* that he had been invited back for private lectures with the revered composer the following year.¹⁵⁷ Holmboe was a teacher in composition at the music conservatory in Copenhagen, and took on several Norwegian students through a scholarship program of Danish-Norwegian cooperation. The students lived in the prestigious *Schæffergården* mansion outside Copenhagen. Other Norwegian composers who studied with Holmboe included Egil Hovland (in 1954) and Hallvard Johnsen (in 1957). Hovland wrote in his memoirs about Holmboe's strong fascination for Bartók, and how he had even studied Romanian folk music. According to Hovland the training consisted in part of studying the scores of Bartók.¹⁵⁸ The influence from Holmboe might explain why Nordheim's early compositions bear such resemblance to Bartók's music.

When he went to Denmark, Nordheim brought with him drafts for what would later become AN.5 *String Quartet no. 1*, which premiered at the festival for Nordic Music Students in Oslo the following year. As is evident from the numbering in the title, Nordheim saw this as his *actual* compositional debut.¹⁵⁹ Documents in the archives of Ny musikk, the Norwegian branch of ISCM,

¹⁵⁵ Carl Nesjar, interviewed by Ola Nordal and Lars Mørch Finborud, August 20th 2012. The point of the joke is that Nordheim probably did not receive any money for his "commission."

¹⁵⁶ Ask.: "–Alle nordmenn er geniale. Maler slår seg på film," *Verdens Gang*, November 21st 1955.

¹⁵⁷ Arco: "Ung alvorsmann ler av egen sørgemarsj," *Verdens Gang*, October 15th 1955.

¹⁵⁸ Johannesen (1999): *Egil Hovland. Engler danser på tangentene*.

¹⁵⁹ During the composition of the piece, Nordheim felt that he had enough material for a whole series of string quartets. This is mentioned in Arne Nordheim, "Strykekvartett 1956 - En Redegjørelse" (Larvik: Arne Nordheim Centre,

indicate that Nordheim used the quartet as his ticket into the Norwegian cultural elite. One month after the first performance, Nordheim sent the quartet to Ny musikk and asked to be accepted as member.¹⁶⁰ The society had a restrictive membership policy, and only merited musicians and composers were granted access. Nordheim's application was accepted with much enthusiasm from the chairman Pauline Hall. Ny musikk was just about to host a concert, their first since the financial disaster of the 1953 ISCM-festival, but one of the performers had called in sick. As a substitute, Hall arranged for Nordheim's quartet to be performed, without asking the composer first. "We hope you have no objections," she wrote in her letter of acceptance, and urged Nordheim to submit the work to the ISCM-festival of that year (Nordheim did, but the work was not accepted).¹⁶¹ The quartet received numerous performances over the next months, establishing Nordheim as one of the most promising new names in the Norwegian music scene. In addition to the debut and the Ny musikk-concert, it was played in the Norwegian Chamber Music Society, in NRK and at a concert in Larvik – a total of five performances in less than two months, which was highly unusual for a new work by an unknown composer.¹⁶²

The quartet also granted Nordheim membership to the Norwegian Composers Association and the Norwegian rights holders association TONO.¹⁶³ These societies proved very important to Nordheim as they provided various stipends that he would use to sustain his living. He also took up positions in the boards of all these associations, thus getting an important voice in Norwegian music politics. But more importantly, his acceptance by these societies was the official acknowledgement that Nordheim had fulfilled the dream he had been working towards since hearing Mahler that spring day in 1949 – he could now officially call himself *a composer*.

2.6 Nordheim, electronic music and the Norwegian music scene

Arne Nordheim's inclination towards electronic music seems to have started in 1958–59. During this time, Nordheim had started taking an active role in the small internationalist camp of Norwegian music. Nordheim participated in several more or less informal circles, and the most important of

Norwegian Music Academy, 1983), dated August 2nd 1983. In the Nordheim MS collection at the Norwegian National Library there exists a fragment to a *String Quartet no. 2*, but this was never completed.

¹⁶⁰ Arne Nordheim til Ny musikk, November 13th 1956. RA/PA-1445/Da/L0002

¹⁶¹ Pauline Hall til Arne Nordheim, November 24th 1956. RA/PA-1445/Da/L0002

¹⁶² This is pointed out in Herresthal (2015): *Fra hjertedypet stiger tonens strøm*, p. 106.

¹⁶³ Nordheim's application for membership in TONO, dated January 9th 1958. RA/PA-1446/Da/1950-9: N.

them was Gruppen [“The Group”].¹⁶⁴ Clearly inspired by the Swedish *Måndagsgruppen* [“The Monday Group”], some composers and musicians in Oslo with modernistic leanings started meeting on a regular basis. The leading figure was the composer Finn Mortensen, and the most active members in addition to Nordheim were Kjell Bækkelund (1930–2004), Egil Hovland (1924–2013), Knut Nystedt (1915–2014), Finn Arnestad (1915–1994) and Gunnar Sønstevoid (1912–1991).¹⁶⁵ The first meeting took place in 1958.¹⁶⁶ According to Elef Nesheim, Gruppen met once a month for the next couple of years to read and present scores, listen to records and discuss the state of Norwegian music.¹⁶⁷ The main focus was the 12-tone music of Schonberg, Berg and Webern, and Scandinavian composers like Karl-Birger Blomdahl, Ingvar Lidholm and Per Nørgård (b.1932). They also presented and discussed works composed by each other.¹⁶⁸

Several of the members of Gruppen took active part in the cultural debates of the time. In January 1959, Nordheim started working as a music critic for *Morgenposten*, a newspaper based in the worker districts of Kampen and Tøyen. These districts were located in the eastern part of Oslo, which contained an odd mix of conservative piety, radical leftism and cultural elitism. The editor Asbjørn Engen was known for finding young and talented writers, and he gave them free rein to develop their style.¹⁶⁹ Several of Oslo’s mid-century writers and intellectuals spent their formative years writing for this paper. In addition to Nordheim, other members of Gruppen also wrote for the paper on a regular basis. Kjell Bækkelund reviewed classical recordings, and Finn Mortensen and Egil Hovland reviewed classical concerts when Nordheim was absent. Nordheim quickly gained notoriety for his sarcastic and fierce writing style, which earned him the nickname “Nordheim the Butcher.” For most people Nordheim was better known for his reviews than his compositions. It has

¹⁶⁴ Herresthal points to at least three such artist groups where Nordheim was active on a monthly basis in 1958. Herresthal (2015): *Fra hjertedypet stiger tonens strøm*, pp. 144-45.

¹⁶⁵ Nesheim (2010): *Alltid på leting*, p. 123. Both Sønstevoid and Bækkelund had been active members in the Swedish Monday Group.

¹⁶⁶ Nesheim claims the group was established in March 1958, and that the first organized meeting took place on October 1st 1958. He refers to consecutive meetings in November and December 1958 and January 1959. Nesheim (2010): *Alltid på leting*, pp. 121-4; Nesheim: "Fra UNM til ISCM. Arne Nordheims karrierestart," in ed. Herresthal and Nesheim (2013). Herresthal indicates that the group was active through 1958 and 1959. Herresthal (2015): *Fra hjertedypet stiger tonens strøm*, p. 144.

¹⁶⁷ Nesheim (2012): *De heftige årene*, pp. 36-37.

¹⁶⁸ Nesheim (2010): *Alltid på leting*, p. 128.

¹⁶⁹ Kjell Bækkelund’s obituary for Asbjørn Engen, October 22nd 1985. Unmarked clipping in RA/PA-1213/Morgenposten z Avisklipp, historikk - Journalister og andre ansatte i Morgenposten: Bækkelund.

even been claimed that on the days Nordheim wrote for *Morgenposten*, the paper's circulation increased. "Everybody" wanted to know what he had to say about the previous night's concert.¹⁷⁰

Despite occasional newspaper ramblings on the sorry state of Norwegian contemporary music, Gruppen did not become the lasting force in Norwegian culture that Måndagsgruppen did in Sweden. Instead, some of the core members managed to make Ny musikk, the Norwegian branch of the International Society for Contemporary Music (ISCM), their platform. Ny musikk had enjoyed great success with the ISCM-festival of 1953, but the festival had been a costly affair, and afterwards the organisation sank into financial trouble. Despite Pauline Hall's enthusiastic leadership, public activity almost stopped. Initially, Gruppen criticized Ny musikk for not doing enough to promote new compositions. Hall had been an ardent follower of French music from Debussy to Les Six, and Ny musikk's activity was centred on the "classics" of early 20th century music. But in the late 1950s these works were already several decades old. The society did not arrange any public concerts between 1953 and 1955. In 1955, they put up two (one of them featuring Nordheim's string quartet), but in 1957 they once again did not arrange any concerts.

During the general assembly of 1959, the central members of Gruppen conducted what Pauline Hall later called a "neat form of mutiny" in order to revitalise the society.¹⁷¹ The general assembly rarely attracted a large audience, and it was easy for Gruppen to muster enough people to overthrow the old board and appoint Finn Mortensen, Egil Hovland, Kjell Bækkelund and Ernst Glaser as new members. Pauline Hall still served as chairman, but stepped down the following year, handing the leadership over to Mortensen. Nordheim was appointed as alternating member, and in 1964 he took over from Mortensen as chairman.

As Sanne Krogh Groth has shown, the Swedish ISCM-related group Fylkingen was undergoing a similar transition in the same period, with the appointment of the Norwegian born avant-garde composer and technologist Knut Wiggen (1927–2016) as chairman in 1959 as the crucial event.¹⁷² Under Wiggen's leadership, Fylkingen not only radicalized their concert programs, but also took an active political role, forming close ties with the social democratic government. One of Wiggen's main achievements was successfully lobbying for a Swedish electronic music studio, which made Sweden an active participant in the European electronic music scene. Ny musikk did not particularly push towards electronic music, even though some of the central members, Nordheim

¹⁷⁰ Kjell Bækkelund: "Musikkstoffet stod høyt i kurs" in Yngvar Holm: *Svarta. Morgenposten - en gang Norges største avis* (Oslo: Orion, 1999), pp. 107-11.

¹⁷¹ Hall's formulation "neat form of mutiny" ["et pyntelig form for mytteri"] is taken from a letter to Finn Mortensen, quoted after Nesheim (2010): *Alltid på leting*, p. 131.

¹⁷² Groth (2014): *Politics and Aesthetics in Electronic Music*, pp. 81-82.

in particular, showed interests in this direction. Neither did Ny musikk achieve the political leverage of their Swedish counterpart. Still, under the new leadership, it became a more dynamic organisation.

The first step was to arrange four subscription concerts per year, starting from the 1959–60 season. By the early 1960s, Ny musikk was again an important nexus of contemporary music in Norway. The society arranged controversial concerts with international names like Nam June Paik, Karlheinz Stockhausen and Henryk Górecki, and provided a platform where Norwegian composers could present new works. It is not coincidental that the Norwegian premiere of Nordheim's AN.7 *Aftonland* took place on Ny musikk's first subscription concert after the "mutiny."

Even though Nordheim generally supported new and experimental expressions, he did not enjoy the most outré explorations of the 1960s avant-garde, and seems to have observed these tendencies from afar. In 1961 for instance, the Korean–German artist Nam June Paik, a pioneer in performance art later associated with the Fluxus movement, visited Oslo. The performance has become an infamous event in Norwegian history of art, since it so clearly challenged the limits of what was allowed in "art" and "music" (quotation marks now a necessity).¹⁷³ Paik cut the tie of Ny musikk-chairman Finn Mortensen, threw peas at the audience, took a bath on stage, and destroyed an old piano. Nordheim was in the audience, and the artist Inger Sitter, one of his close friends, recounted how Nordheim was obviously uncomfortable during the performance.¹⁷⁴ He also panned it in his review for *Morgenposten* the following day, diagnosing the joyless iconoclasm of Paik as a symptom of the "obviously sick and dying cultural milieu in Cologne."¹⁷⁵ In other words, Nordheim kept his distance from the most extreme of the counter-culture movements of the times.

Nordheim warms up to electronic music

For Nordheim, Gruppen and Ny musikk were important both as social nexuses and outlets for having his music performed. They also provided a platform that Nordheim used to explore and present electronic music. It seems that Nordheim's initial scepticism towards electronic expressions waned as he became more familiar with the mid-to-late 1950s electroacoustic repertoire. "It matured in me, and I got more and more preoccupied with it," he stated in a retrospective interview from 1981.¹⁷⁶ In an interview from 2006, Nordheim explained how he had heard electronic music on Swedish

¹⁷³ The concert has been discussed in a variety of settings in Norway, most recently in Anne Hilde Neset, "Produktiv ulydighet," in *Lyd og ulydighet. Ny Musikk siden 1938*, ed. Anne Hilde Neset, Eivind Buene, and Audun Vinger (Oslo: Forlaget Press og Ny Musikk, 2016).

¹⁷⁴ Inger Sitter, interviewed by Ola Nordal and Lars Mørch Finborud, August 21st 2012.

¹⁷⁵ Arne Nordheim: "Nam June Paik-konserten: -Spekulasjon i siste stadium," *Morgenposten*, October 3rd 1961.

¹⁷⁶ Wikshåland (1981): "-Ikke akkurat lystige dokumenter."

radio, including Bengt Hambræus' *Doppelrohr II* (1955).¹⁷⁷ He also indicated that the music of Karlheinz Stockhausen was the main reason for his “maturation” with regard to electronic expressions. Nordheim claimed that he had first heard Stockhausen’s music whilst travelling in Germany in the mid-1950s. The concert was advertised as containing “nie gehörte Klänge,” and Nordheim stated that “this was important both for Stockhausen and me.” Nordheim presented *Gesang der Jünglinge* on one of the meetings in Gruppen, probably in late 1958.

Nordheim also presented other works that were important for his aesthetic development. He presented works by Karl-Birger Blomdahl, possibly either *Symphony no.3 'Facetter'* (1950) or the “space-opera” *Aniara* (1959). The latter contained electronic interpolations. More centrally, in a meeting in Ny musikk in 1958, Nordheim presented Henk Badings' electronic ballet *Kain en Abel* (1956).¹⁷⁸ Though almost forgotten today, Badings was one of the high-profile early pioneers of mixed orchestral and electronic music, working mainly at the Philips electronic studio in Eindhoven.¹⁷⁹ He had won Prix Italia for his mixed radio-opera *Orestes* in 1954, and the fully electronic ballet *Kain en Abel* was one of the earliest works of electroacoustic music to be released on record.¹⁸⁰ Badings represents a different approach to electronic music than what came out of Paris and Cologne. His electronic works were much closer to, sometimes almost imitative of, traditional musical instruments, and Nordheim’s early preference for bridging electronic and acoustic sound worlds might be attributed to inspiration from Badings. But Nordheim was also critical, and felt that Badings had pushed the similarity too far. When Nordheim later reviewed a recording of Badings’ *Capriccio* and *Evolutionen* he criticized Badings precisely for merely transferring conventional musical writing to the electronic instrumentarium.¹⁸¹

Altogether, Stockhausen seems to have been the most important source of inspiration for Nordheim. In January 1959 Nordheim wrote positively about *Gesang der Jünglinge* in an article on electronic music in *Morgenposten*. It is not known why Nordheim wrote this article, but it is probable that it can be interpreted as a prolongation of his activity of presenting music in Gruppen and Ny musikk. In his article, Nordheim praised Stockhausen for having managed to project artistic visions

¹⁷⁷ Arne Nordheim, interviewed by Jøran Rudi and Tilman Hartenstein on September 20th 2005. Video at NoTAM – Norwegian Center for Technology in Music and the Arts.

¹⁷⁸ Nesheim (2010): *Alltid på leting*, p. 126.

¹⁷⁹ Davies (1967): "International Electronic Music Catalog," pp. 121-26. Even though Badings composed more than 30 electronic works in the period 1952-1966, several of them for a concert setting, he is not mentioned in the already referenced survey books by Chadabe, Manning and Holmes.

¹⁸⁰ Henk Badings: *Electronic Ballet Music "Cain And Abel"* (Philips 400.036 AE, Netherlands, 1958), 45 RPM 7" "minigroove" EP.

¹⁸¹ The review is referred to in Herresthal (2015): *Fra hjertedypet stiger tonens strøm*, p. 174.

in a convincing manner. He also gave a general outlook on the prospects of electronic music – an almost programmatic statement from the young composer who was soon about to start writing electronic music himself:

[N]ow that man of today has the oceans of mechanized culture at his hand, it must be time to lift them up and bring them in harmony with the qualities of emotions [“de emosjonelle kvaliteter”].¹⁸²

Furthermore, Karlheinz Stockhausen’s performance of *Kontakte* in Oslo on November 25th 1960 with David Tudor on piano and Christoph Caskel on percussion is commonly regarded as the first public electroacoustic performance in Norway.¹⁸³ The concert was arranged by Ny musikk, and was a part of Stockhausen’s tour of the Nordic countries. Stockhausen held two concerts in Oslo, the smaller one in Deutsche Bibliothek, where Tudor played some of Stockhausen’s piano works, and the main concert in NRK’s concert hall, Store studio. In addition to *Kontakte* the program included *Zyklus*, *Klavierstück XI* and *Refrain*.¹⁸⁴ It is important to note however, that Nordheim had started his own electronic experiments more than half a year before the Stockhausen concert, and had already completed incidental music for two theatre plays at Nationaltheateret: Bjørnstjerne Bjørnson’s AN.9 *Sigurd Slembe* and Molière’s AN.10 *Don Juan*.

2.7 Two “memorables” in *Aftonland* and *Canzona*

Before 1960, Nordheim’s music was still far removed from the electronic music he had heard, and he was still focusing on developing his own blend of modernism and neo-classicism. Initially, Nordheim had problems following up on the success of his String Quartet. He wrote music for his first theatre commission, AN.6 *Det hemmelige regnskap* at the Norwegian National Theatre in February 1957, but after that he had no new works performed over the next two years. This might have been connected with his father’s terminal illness and eventual demise in July 1957. At some point Nordheim moved back to Larvik in order to tend to his care. While in Larvik, Nordheim wrote a song cycle to a series of poems from the Swedish Nobel laureate Pär Lagerkvist’s collection *Aftonland*. The cycle is written for mezzo-soprano and a reduced orchestra consisting of strings, harp, celesta and percussion. *Aftonland* showcases Nordheim’s deep sensitivity towards poetry and his ability to transform words into poetical musical images in a tasteful and restrained manner. The

¹⁸² Arne Nordheim: “Mot nye klanger,” *Morgenposten*, January 15th 1959.

¹⁸³ The importance of the concert is described in Nesheim (2012): *De heftige årene*, pp. 53-54.

¹⁸⁴ The date, program and other details on the concert is referred in a letter from Ny Musikk to NRK’s music department dated Oslo: October 6th 1960. RA/PA-1445/Da 1960-9.

work also introduces the central themes in Nordheim's oeuvre: loneliness, longing, religious mystery and the meaning of life and death.

At first, Nordheim had trouble getting the work performed. The premiere eventually took place at a concert in Danish radio in June 1959, almost two years after the work's completion, and during this period, Nordheim completed no new works. But as *Aftonland* went on to become Nordheim's Scandinavian breakthrough, it re-launched his career. As mentioned, the Norwegian premiere took place at the first Ny musikk subscription concert in October 1959. The following year *Aftonland* was played in Sweden, both on a concert at the Nordic Music Days and on a radio-concert at the Swedish national radio. The Swedish concerts were followed by a successful performance at the Bergen International Festival, which also earned Nordheim his first public accolade – the first (and only) Bergen International Festival Prize. The prize was announced in January 1961, and included a commission for a work for the following festival. This was to be Nordheim's first work for a full orchestra, *Canzona*.¹⁸⁵ By the time of the premiere of *Canzona*, Nordheim's writing hiatus was definitely over. Since the first performance of *Aftonland*, Nordheim had completed six commissions, including two works of electronic incidental music for the National Theatre, and the music for his three first radio dramas.

Lorenz Reitan has described how *Canzona* departs from the neo-classical influences of Nordheim's earliest works and points towards the more aggressive neo-expressionism that he would later come to be associated with.¹⁸⁶ I will argue that the work signals both his reverence of music history and his pledge to modern music. The title and the program notes link the work to Giovanni Gabrieli's (1557-1612) *canzoni* for the St. Mark's Basilica in Venice. Nordheim had been preoccupied with Gabrieli's music since he was introduced to it in Medbøe's music history classes during his studies. He was particularly fascinated by how Gabrieli placed horns and multiple choirs on the galleries of the basilica to heighten the spatial qualities of the room. This inspiration can particularly be observed in the fast B-section (bars 73-254) where motifs and sound blocks are traded between the orchestral groups in a quasi-antiphonal game.¹⁸⁷ Still, these references to Gabrieli should be treated as a conceptual point of departure, rather than direct imitation. *Canzona* is not a neo-

¹⁸⁵ According to Herresthal, the intention had been to have an annual prize in order to stimulate Norwegian composers, but the festival only managed to finance the prize this one time. Nordheim was thus the only recipient of the prize. There had been some dissent in the committee over who should receive the prize. The announcement was thus made only in January 1961, several months after the festival of 1960 was over. Herresthal (2015): *Fra hjertedypet stiger tonens strøm*, pp. 185-87.

¹⁸⁶ Reitan: "Arne Nordheim," in ed. Michelsen (1980).

¹⁸⁷ I am using Peter Wollnick's segmentation of the work. Wollnick (1971): *Arne Nordheims Canzona og Epitaffio*, p. 22.

classical evocation of ancient musical forms and language. The compositional techniques, dissonant tonal language and explosive dynamics make it a distinctly modernist work.

As Peter Wollnick observes in his motivic-thematic analysis of the work, *Canzona* is built in its entirety from horizontal and vertical transformations of a central eight-note theme.¹⁸⁸ The theme is presented in its full form in the bass clarinet in the second bar:

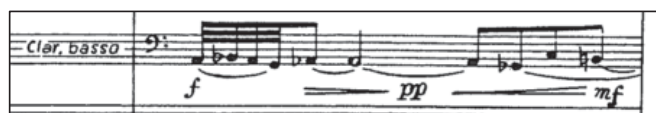


Figure 2.2: The *Canzona*-theme

The theme contains all the chromatic intervals within the tessitura of a tritone, a so-called “chromatic heptamirror” in Alan Fortes’ set theory (set 7-1, prime 0,1,2,3,4,5,6). This is a symmetric scale on Gb, and although *Canzona* is not a 12-tone work in the strictest sense, this opens up for the use of all the twelve pitch classes. The theme is treated in a similar manner as a tone row would be in a 12-tone composition, for instance through retrograde, mirroring, and retrograde mirroring and so on. Thus, *Canzona* can be seen as a work which is freely atonal, yet utilizes some of the compositional elements from the serialist’s palette of techniques. It is not my aim here to provide an exhaustive analysis of the work. Rather, I will discuss how the *Canzona*-theme is illustrative of the manner in which Nordheim constructs his *memorables*, something which will be relevant in the later discussion of his electroacoustic music.

Play on association is central to Nordheim’s music. Nordheim sometimes talked about wanting the listener to recognize something that s/he might never have heard, but nevertheless remembers. In an interview with Lorentz Reitan, he stated that he tried to let his music “evoke images from what I wish to call the deep memory material [“det dype erfaringsmateriale”], which is common to us all.”¹⁸⁹ In this quote, Nordheim seems to be thinking about a sort of Jungian collective unconscious; the shared set of “primordial images” in the mind that the psychologist Carl Jung famously claimed were common to all humans.¹⁹⁰ Hans-Georg Gadamer writes that this kind of recognizing is fundamental to the interpretation of art. In *Art and Imitation*, Gadamer wrote that when recognizing something in art one rarely recalls the memory of a precise object. “Rather,” he

¹⁸⁸ Wollnick (1971): *Arne Nordheims Canzona og Epitaffio*, p. 23.

¹⁸⁹ Reitan (1975): *Arne Nordheims Eco og Floating*, p. 26.

¹⁹⁰ See for instance “Chapter 2: Archetypes and the collective unconscious” in Anthony Stevens: *Jung: A Very Short Introduction* (Oxford/New York: Oxford University Press, 2001), pp. 46-59.

writes, "I now cognize something *as* something that I have already seen."¹⁹¹ It seems to be precisely this kind of mechanism that Nordheim was trying to verbalize.

Nordheim invented his own term for this phenomenon: the "memorable" ["memorable"] or "memory bubble" ["minneboble"]. In Nordheim's music, there are several motivic gestures or sonic constellations that recur as networks of references, both within and between works. Hallgjerd Aksnes distinguishes between what she calls *internal memorables* "which cannot be said to have any direct textural connection" and *semantic memorables* which are "a form of leitmotif."¹⁹² In other words, the memorables can be "corresponding with the history of culture" (Nordheim's words) or be more general references to conceptual types (for instance *bells*).¹⁹³ It is rare that Nordheim is directly referential to a specific extramusical token (*a specific bell*), although this happens sometimes as well. In the work AN.84 *Minnebobler* for instance, Nordheim quotes directly from Bach's *Tocatta and Fugue in D minor* (BWV.565), *Prelude in C major* (BWV.846), Beethoven's *Piano Sonata no.14* (the *Moonlight Sonata*) and Saint-Saëns' *Le carnaval des animaux*. This is, however, an exception. More often the memorables function as a collection of leitmotifs. To follow Roger Scruton's description of the term, Nordheim's memorables are "not a symbol in a code, but a musical magnet, around which meaning slowly accumulates."¹⁹⁴ This principle can also be understood in the light of Denis Smalley's concept of *source bonding*.¹⁹⁵ According to Smalley, most listeners would be naturally inclined to try to identify sources through association. However, in most cases this association lies within the horizon of reference of the listener, and not in the actual sound itself, and must therefore be coded actively through use.

One of the clearest uses of memorables in Nordheim's early music is the Canzona -theme (figure 2.2.). Peter Wollnick shows that the Canzona -theme is built up of two independent motives.¹⁹⁶ The first group of notes, which Wollnick calls "X", is a quick turn around the central note A that leads into a sustained note Ab. I wish to call this gesture "the Nordheim leitmotif," and it is a musical signature that is found in one form or another in most of Nordheim's acoustic music.

¹⁹¹ Hans-Georg Gadamer, "Art and imitation [1966]," ed. Bernasconi Robert (Cambridge, UK/New York: Cambridge University Press, 1986), p. 99. Gadamer's emphasis.

¹⁹² Aksnes (1994): *Musikk, tekst og analyse*, p. 106.

¹⁹³ Quoted after Aksnes (1994): *Musikk, tekst og analyse*, pp. 111-12.

¹⁹⁴ Scruton (1997): *The Aesthetics of Music*, p. 137.

¹⁹⁵ Smalley (1997): "Spectromorphology: Explaining Sound-Shapes."

¹⁹⁶ According to Wollnick, the theme is based on a passage that Nordheim previously used in his *String Quartet no 1*. There are several passages in the quartet that are reminiscent of the Canzona-theme, but only once does it occur in its entirety – in the violin part, on the 4th bar on page 20 in the score. The theme is well hidden in the polyphonic texture and does not stand out as highly focused passage in the piece. Wollnick (1971): *Arne Nordheims Canzona og Epitaffio*, p. 54.

The tessitura varies, but the turn usually consists of a half step up and a full step down, before coming to rest on a sustained note – usually the same as the central note in the turn. The turn is normally followed by two or three sustained notes.

The first occurrence of the Nordheim leitmotif that I have been able to trace is present in the film music to the documentary AN.3 *Grafikk I*, a precursor to AN.2 *Epigram*. Over the opening credits we hear a slow polyphonic non-imitative part that moves through several unresolved suspended chords, giving the opening a feeling of poignant suspension. After one minute the music falls to rest on a F major triad. At this point of heightened focus, we are presented with the motif played over the F major tonality. The turn is around the central tone C, and it is followed by a downward chromatic movement D – C# – C (figure 2.3). Although it is played only once, the prominent placement of the theme gives it particular significance.



Figure 2.3: The Nordheim leitmotif in AN.3 *Grafikk I*. Transcribed by Ola Nordal

There has been some debate about the origin and meaning of the motif. Wollnick has observed that it might derive from a passage in the opening of the final movement in Mahler's *Das Lied von der Erde*. In bars three and four we can hear a similar turn around a central note in the oboe.



Figure 2.4: Opening of 6th movement of *Das Lied von der Erde*

I have not seen anything in Nordheim's own writing that could verify the leitmotif as a direct quotation from Mahler, but knowing Nordheim's fascination with the composer it is not unlikely that he built his musical signature on Mahler's famous Farewell. However, one can also point to other possible origins. The turn around a central note is a typical way to ornament a tone in Renaissance and Baroque music. For instance, in Gabrieli's motet for 14 voices *In Eccelsiis* (C78, ca. 1575-77), a work Nordheim most likely knew from his music history studies, an ornamentation

strikingly similar to the Nordheim leitmotif is used repeatedly in a sequencing passage on the text “Deus auxilium meum et spes mea in Deo est” [“God is my aid, and my hope is in God”].¹⁹⁷

The image shows a musical score excerpt from Gabrieli's *In Eccelsiis*, starting at measure 109. It features eight staves: C.I (Cornet I), C.II (Cornet II), C.III/Tr.I (Cornet III/Trombone I), Vla/Tr.II (Violin II/Trombone II), Tr.III (Trombone III), Tr.IV (Trombone IV), A solo (Alto solo), and T solo (Tenor solo). The vocal parts have lyrics: "o, in Deo est. in Deo est." The score includes various musical notations such as notes, rests, and dynamic markings.

Figure 2.5: Excerpt from Gabrieli's *In Eccelsiis*

One could point to other similar gestures. My point is that the motif most likely does not come from a specific place, but is instead referring to gestures that can be found several places, in line with Nordheim's idea of the “deep memory material” that is “corresponding with history of culture.”

While Wollnick is correct in aligning the first part of the Canzona theme with the Nordheim leitmotif from *Grafikk I/Epigram*, he has failed to observe that last group of notes in the theme, which he calls “Y”, has also been presented in a previous occasion in Nordheim's music. Towards the middle of the second movement of *Aftonland* there is a passage that I would like to call the “O Lord-motif.” After a hurried first part of the movement, the tempo suddenly slows down and the voice sings /...*O Herre...*/ [/*...O Lord...*/] three times. It is like the protagonist suddenly pauses and cries out to heaven. While the first interval is different – in *Aftonland* a perfect fourth, in *Canzona* a major third – the gestural similarity to Wollnick's “Y” is strong – an upward leap followed by a falling semitone (figure 2.6).

The image shows a musical score excerpt from AN.7 *Aftonland*, 2nd movement, bars 84-85. It features a single staff with a vocal line. The lyrics are "O Herre". The music includes dynamic markings: *f* (forte) for the first note, *mf* (mezzo-forte) for the second note, and *p* (piano) for the final note. The melody consists of an upward leap followed by a falling semitone.

Figure 2.6: AN.7 *Aftonland*, 2nd movement, bars 84-85

¹⁹⁷ “Gabrieli's *In eccelsis*” in Burkholder, Grout, and Palisca (2014): *Norton Anthology of Western Music. International Student Edition*.

As with the Nordheim leitmotif the O Lord-motif might also point back in music history. In the already mentioned *In Ecclesiis* by Gabrieli, a similar gesture is sung on the word */...benedic.../* [*...blessed.../*] in bars 35 and 36. While the rhythm is slightly different, the intervals are the same (Forte set 3-4b, prime 0,4,5). Again, the motif is probably not a direct quote, but rather a general reference to such “musical cries” throughout history.



Over time, the O Lord-motif accumulates meaning as a motif of devotion and prayer in Nordheim’s catalogue. Most prominently, it is stated in the opening of AN.112 *Clamavi* for cello solo (1981) and in the movement “Clamavit cor eoyrym” in AN.126 *Tres Lamentationes* (1985). In *Clamavi*, the meaning attached to the motif is implied in the musical gesture, in the title of the work, which means ‘cry’ or ‘call’, and in the excerpt from Psalm 140 */Domine clamavi ad te festina mihi, exaudi vocem meam clamatis ad te/* printed as an epigraph on the title page of the score.¹⁹⁸ The quote is reflecting the contemplation and devotion of the act of praying, and the urgency of the person praying to feel contact with God.

I thus interpret the two gestures of the Canzona-theme as representing X: Nordheim and Y: prayer. The important point here however, is that while this meaning is hinted at, it is not stated clearly. The significance of the motifs might have meant something specific to Nordheim when he was composing, but it is not possible to determine an absolute semantic meaning of these motifs through listening alone. Nordheim did not feel it necessary to spell out any explicit significance to the performers or the listeners. This is typical in Nordheim’s construction of memorables, and is something that we will encounter again in connection with the electronic music – in particular in connection with Nordheim’s third and fourth periods in Chapters 8 and 9.

2.8 Nordheim and NRK

Nordheim’s second main source of income in the 1960s and 70s, next to his job as music reviewer, came from writing incidental music for the Norwegian Broadcasting Corporation’s (NRK) radio and television theatre departments. The key technological development in the history of electroacoustic music was the spread of commercially available tape machines in the early 1950s. This medium

¹⁹⁸ [“O Lord, I call upon you; hasten to me! Give ear to my voice when I call to you.”] Psalm 141: Give Ear to my Voice, *The Holy Bible*, ESV. Nordheim uses the Masoretic (Hebrew) numbering of the psalm. In most English translations (f.i. KJV and SV) it is listed as Psalm 141.

offered extensive editing possibilities through (very tedious) razor blade cutting and splicing of tapes. Further, tape was an easily transportable medium, making it feasible to set up concerts with music prepared in the studios. The tape medium was ideally fitted to the needs of broadcasting stations, and this was one of the reasons why tape music studios were set up in these institutions. As Peter Weibel notes, electroacoustic music was born out of radio – not out of the concert hall.¹⁹⁹ The broadcasters also had easy access to recording rooms, musicians and technical staff. Finally, there was a need for electronic music in the radio and television drama departments.

Some time in late 1959 Nordheim got in touch with Knut Johansen, one of the central instructors at NRK's department for radio theatre, and in February 1960 Nordheim finished the music for his first radio play, Yukio Mishima's *The Damask Drum* (AN.8 *Damasktrommen*). Although simple and short, this little piece of music was actually something of a break-through for Nordheim. It was the first work he had completed since *Aftonland* almost three years earlier, and it marked the beginning of an incredibly creative decade. In 1960 alone Nordheim would complete four more works of incidental music; AN.9 *Sigurd Slembe* and AN.10 *Don Juan* for the National Theatre, AN.11 *Vilanden* for NRK Radio theatre and an overture to Anne Brown's AN.12 *Medea* for Oslo nye teater.

The 1950s and 1960s were the golden age of radio and television drama in Europe. NRK's cultural role – especially after television was introduced in 1960 – was at its most powerful in these years. By 1970, more than one million viewers had a licence. This was four times NRK's own estimate, and meant that almost the entire country de facto had access to TV.²⁰⁰ During this time, NRK were among Norway's busiest theatre communities, and the radio drama alone could boast of more than 100 productions per year – often spectacular productions with remarkable artistic quality.²⁰¹ The impact of the radio and television dramas is illustrated by the fact that until the 1970s they were reviewed by most of the Oslo newspapers, alongside reviews from staged cultural activities (concerts and theatre). For composers, directors, actors, writers and musicians, the activities of NRK became an important creative outlet and source of income. NRK took its role seriously, and was clearly in line with the Labour Party's dominant ideology (that continued in the periods of conservative governments) of the broadcaster as a tool for democratization and education of a people

¹⁹⁹ Peter Weibel: "Preface" in Groth (2014): *Politics and Aesthetics in Electronic Music*, p. 11.

²⁰⁰ Lange (2005): *Samling om felles mål 1935-70*, p. 320.

²⁰¹ The history of the radio theatre department is described in Tilman Hartenstein: *Det usynlige teatret. Radioteatrets historie 1926-2001* (Oslo: Norsk rikskringkasting, 2001). The history of television drama at NRK is described in Jo Ørjasæter: *Fjernsynsteatret. Til glede og forargelse* (Oslo: Ad notam Gyldendal, 1994). See also Niebur (2010): *Special Sound*. and Groth (2014): *Politics and Aesthetics in Electronic Music*.

in accordance with the Labour Party ideology.²⁰² By today's standards, a remarkable part of the programming included "high art" culture, such as informative lectures, radio theatre, and classical music. This was also the heyday of anti-realism and anti-theater, and many of the radio and television dramas had quite strong avant-garde leanings. Nordheim's music was almost exclusively used in this kind of production.

During the decade of 1960-69 Nordheim composed music for 20 radio and 10 television plays whilst also carrying out several other projects in close cooperation with NRK. Hans Heiberg, the director of the radio department, was a great supporter of Nordheim and arranged for him to work with several of the most high-profiled directors. He also used Nordheim as consultant in technical questions. During the same period, in part through his theatre contacts from the radio, Nordheim composed music for seven theatre productions, all on large stages. Nordheim must be regarded as one of Norway's leading composers of incidental music during this decade and the next, alongside Maj and Gunnar Sønstevoid, Sverre Bergh and Finn Ludt.²⁰³

Many of these commissions were initially quite modest. A radio drama normally demanded a small overture (30'' to 1') and some shorter entr'actes, all in all usually between three and ten minutes of music. The stage productions often required more music, but there as well it was mostly an overture of a few minutes, and entr'actes based on the themes of the overture. Some pieces included underscoring: "mood music" to be played during scenes underlining the action on stage. However small, one shouldn't understate the significance of these commissions. Not only did they provide a much-needed income, they also allowed Nordheim to experiment with different expressions and techniques in a small-scale format. Some of his compositions, like AN.13 *Den lille prinsen*, which will be discussed in the next chapter, are like his aesthetic universe in miniature. More importantly, the commissions were a way for the composer to hear his music almost instantly. Several of the pieces Nordheim wrote for the stage and NRK were electronic, and one can say that Nordheim's palette of electronic techniques developed in the small electronic studio of the broadcasting corporation. I will get back to this when I write about Nordheim's first electronic period in the next chapter.

2.9 Chapter summary

In particular when it comes to his early life, Nordheim has provided plenty of what can be called *symbolic narratives* of how he became a composer and why he came to compose in the way that he

²⁰² Rune Slagstad: *De nasjonale strateger*, 2nd ed. (Oslo: Pax, 2001), pp. 508-09.

²⁰³ Hartenstein (2001): *Det usynlige teatret*, p. 151.

did. For instance, Nordheim often presented the revelation of encountering Mahler's Resurrection Symphony as an almost religious impetus to becoming a composer, imposed on him from the outside and not a result of his own personal choices. The concert was evidently important for Nordheim, but the desire to compose must have started already during his adolescence. Other aspects, such as his almost fanatical fascination for music history, his reverence for poetry and the arts as well as his lack of skill as a musical performer, should probably be added to the story. Nordheim would often admit that some of the stories that he told would be justifications that he had come to later in life. But he also insisted that "they were no less true" for that sake.²⁰⁴

Like most young composers, Nordheim was synthesizing many influences into his own style. Nordheim's early aesthetic was influenced by the neo-classicism of his teachers and peers, as well as a romantic longing for individuality and the modernists insistence on breaking with the past and constructing a new personal style. This style is marked by an eclecticism, where Nordheim would borrow the techniques he found necessary from history as well as from the modernists. The contrast to the so-called Norwegian traditionalists is the most striking. It is as if Nordheim wanted to show that it was possible to find inspiration from the past, without resulting in the "cheap utilization of folklore that has ridden Norwegian music as a mare," as he stated in a 1963 interview.²⁰⁵ Instead, he created his own system of references, or *memorables* as he called it: recognisable snippets of sounds or notes that sometimes allude to musical conventions or to elements in works by other composers, or form a system of internal references in his own catalogue. The most well known of these is "the Nordheim leitmotif," which has been commented on by various other authors. In this chapter, I have identified additional memorables in Nordheim's acoustic music, such as the "O-Lord-motif" in *Aftonland*. Throughout the rest of this dissertation I will occasionally refer to similar memorables in Nordheim's electroacoustic music.

Initially, Nordheim showed little interest in electronic music. He was introduced to the pioneering works of electroacoustic music in the mid 1950s, but it was only in 1960 that he started exploring electronic techniques as vehicles for his own aesthetic visions, first at the National Theatre and later at NRK. This will be the theme of the next chapter.

²⁰⁴ "Mitt liv," *NRK2*, December 26th 2012

²⁰⁵ Arne Nordheim to *Arbeiderbladet*, February 2nd 1963, quoted after Larsen (2003): *Rabulist eller ikon?*, p. 12.



3 THE EARLY ELECTROACOUSTIC PERIOD (1960–1967)

This chapter is a presentation of Arne Nordheim's first electroacoustic period (1960–1967). Most of Nordheim's electroacoustic works from these years remained unknown until the release of AN.R68 *The Nordheim Tapes* in 2008. While there has been some interest in this music lately, not least through the continuing online publication of several of the radio and television dramas, there are still few historical sources that give insights into this period.²⁰⁶ Nordheim rarely commented on his early electronic works in any detail, and with the exception of AN.28 *Epitaffio* and AN.34 *Response*, little of this music has been played since the 1960s. As my analyses will show, even these two works are mainly known through revised versions containing elements from later electroacoustic periods.

Even though the interest in the early period has been on the rise, several important questions about Nordheim's early electronic music have remained unanswered until now. These questions include when and why Nordheim started to work with electronic sounds, how he learned his craft, what the foundation was for his electroacoustic aesthetics, as well as how he viewed his electroacoustic works compared to his other output. Over the following pages, I will address these questions and present overviews of AN.9 *Sigurd Slembe*, AN.13 *Den lille prinsen*, AN.16 *Katharsis*, AN.28 *Epitaffio* and AN.34 *Response*.

This is not a complete survey of all the works from the early period. For instance, I have not considered the television ballet AN.29 *Favola* as thoroughly as the other compositions, even though it is also one of Nordheim's major works. This is due to the fact that most of the technical principles that the work represents are covered by the description of other compositions throughout the dissertation.

In my analytical discussions, I will give special emphasis to the relationship between electronic and acoustic sound in these works. This seems to be one of the central aesthetic principles for Nordheim throughout the period. I will argue that the exploration of this relationship takes three principal forms; through *contrast*, *contact* and *conversation*. Already in *Den lille prinsen*, Nordheim seems to make an aesthetic point out of blending electronic and acoustic sounds together. In *Katharsis* on the other hand, it is the 'contrast between the orchestral passages and the electronic "interpolations"' that stands out as the central principle. In *Epitaffio* the orchestral and the electronic elements blend together seamlessly (*contact*), while in *Response*, as the title indicates, the central compositional idea seems

²⁰⁶ Queries on "Arne Nordheim" at <http://tv.nrk.no> are returning more and more results as the digitisation of NRK archives progresses. Nordheim's radio theatre music has been discussed by Andreas Bergsland, see Bergsland: "Arne Nordheim og den tidlige elektroniske musikken i Norge," in ed. Bäckström and Børset (2011).

to be how the various forms of sound-classes respond to each other; sometimes imitating (contact), sometimes contrasting (contrast), like in a *conversation*.

The first period: demarcation

In table 3.1, I list the works I hold to make up the period. I have placed the starting point at the incidental music for *Sigurd Slembe* in 1960, and the end in 1967, the year when Nordheim starts working in Warsaw. I have included every work that contains electroacoustic elements, although in some of the NRK-commissions Nordheim used electronic elements sparsely. For instance, in AN.24 *Læraren* there is only a single brief moment of electronic sound. However, this moment occurs during one of the pivotal scenes in the film (the suicide of the character Helga, at [1.50.00]), and the pregnanz of the passage justifies including the work in the period. Two of the works, AN.17 *Isøya Radio Kaller* and AN.23 *Her bor vi så gjerne*, are strictly speaking not electroacoustic according to the definition put forth in Chapter 1. They have not been composed with tape studio techniques, but are played on electronic organ by a musical performer (possibly Nordheim himself). I have nevertheless included them in the table, since they sound similar to Nordheim's other electronic NRK-commissions and they underline how important electronic sounds were to Nordheim in this period. In fact, of the 32 works Nordheim composed during these eight years, only three, AN.14 *Canzona*, AN.11 *Vilanden* and AN.20 *Partita memoria*, do not contain some sort of electronic element.

Table 3.1: Nordheim's first electroacoustic period

Premiere	Commission	AN.#	Title	Studio, engineer
Apr 26 th 1960	National Theatre	9	<i>Sigurd Slembe</i>	Roger Arnhoff
Aug 30 th 1960	National Theatre	10	<i>Don Juan</i>	Roger Arnhoff
Mar 7 th 1961	NRK Radio theatre	13	<i>The Little Prince</i>	NRK
Jan 6 th 1962	NRK Radio theatre	15	<i>Intermezzo</i>	NRK
May 28 th 1962	Norwegian Opera Ballet	16	<i>Katharsis</i>	NRK, Viktor Sandal
Jun 15 th 1962	NRK Radio theatre	17	<i>Isøya Radio Kaller*</i>	NRK
Oct 11 th 1962	NRK Radio theatre	19	<i>Krangel ved bymuren</i>	NRK
Mar 9 th 1963	NRK Radio theatre	21	<i>Hjemkomsten</i>	NRK
Oct 17 th 1963	NRK TV (ballet)	22	<i>Kimære</i>	NRK
Nov 5 th 1963	NRK Radio theatre	23	<i>Her bor vi så gjerne*</i>	NRK
Nov 21 st 1963	NRK TV theatre	24	<i>Læraren</i>	NRK
Dec 11 th 1963	NRK TV documentary	25	<i>Edvard Munch</i>	NRK
1963	Norwegian State Railways	26	<i>På sporet</i>	Roger Arnhoff
Jan 2 nd 1964	NRK TV theatre	27	<i>Fangen i det blå tårn</i>	NRK
Mar 20 th 1964	Swedish Radio Orch.	28	<i>Epitaffio</i>	NRK, Viktor Sandal
Sep 7 th 1965	NRK TV (opera ballet)	29	<i>Favola</i>	NRK, Viktor Sandal
Oct 12 th 1965	NRK TV theatre	30	<i>Stoppstedet</i>	NRK
Oct 14 th 1965	Norsk Film	31	<i>Klimaks</i>	
May 20 th 1966	NRK Radio theatre	32	<i>Når vi døde vågner</i>	NRK
Oct 30 th 1966		34	<i>Response</i>	NRK/Utrecht
Jan 3 rd 1967	NRK TV theatre	35	<i>En gal manns dagbok</i>	NRK
Feb 7 th 1967	NRK TV theatre	36	<i>Don Carlos</i>	NRK

Mar 21 st 1967	NRK Radio theatre	37	<i>Papirfuglen</i>	NRK
Apr 18 th 1967	NRK TV theatre	38	<i>De blanke knappene</i>	NRK
May 2 nd 1967	NRK Radio theatre	39	<i>Hamlet</i>	NRK
May 28 th 1967	NRK TV music dept.	40	<i>Evolution</i>	NRK/Utrecht
Dec 10 th 1967	NRK Radio theatre	41	<i>Faust</i>	NRK

* = For electronic organ

I have not been able to document the instrumentation for AN.12 *Medea* and AN.33 *Othello*. They should possibly be added to the list.

Nordheim's two first electronic theatre commissions and the information film AN.26 *På sporet* were realized in Roger Arnhoff's Lydstudio, one of the few private studios in Norway. The main body of the output was realized in a small ad hoc electronic music studio at the radio theatre department of NRK. The table highlights how significant the NRK was for Nordheim in this period. Of the 27 works in the list, 20 were various commissions for NRK. Only three works, *Katharsis*, *Epitaffio* and *Response* were actually written for a concert setting. However, NRK was of great importance here as well, since Nordheim was allowed to use NRK's studio for realizing the electronic material, and they were all broadcast on national radio or television.

3.1 First experiments: *Sigurd Slembe* (1960)

Little is known about the two works that make up Nordheim's first endeavours into electroacoustic music: the incidental music for the plays *Sigurd Slembe* (April 1960) by Bjørnstjerne Bjørnson, and *Don Juan* (August 1960) by Molière, at the Norwegian National Theatre. The tapes seem to have been lost, and the music has received little comment in the literature and in Nordheim's own accounts. My main insights into these works are based on a single newspaper article on the realization of the music for *Sigurd Slembe*, written by *Aftenposten*'s regular music reviewer Hans Jørgen Hurum.²⁰⁷

Hurum's article is a rarity in the early writings on Nordheim, spanning five columns and presenting two pictures. This extraordinary devotion to a piece of theatre music can be attributed to public interest in the theatre's turn to electronically-mediated sound and the novelty in Nordheim's approach to the task. The Norwegian National Theatre had traditionally been one of the central stages for music in Oslo. Almost every play featured music, normally an overture and short entr'actes, but sometimes also dramatic underscoring, or song or dance numbers. The theatre employed its own orchestra, and before the opening of the Norwegian Opera in 1959 it also staged operas. The costs of maintaining a regular orchestra rose drastically in the post-war decades, and gradually the National Theatre moved away from using live music. In 1959 the theatre decided to install a stereo sound

²⁰⁷ Hans Jørgen Hurum: "Moderne lydbåndmusikk i Nationaltheateret i aften," *Aftenposten*, April 26th 1960.

system, with 12 speakers distributed around the hall.²⁰⁸ This was the first large stereo system in Norway.

The first play to use the system was Jørn Ording's staging of Bjørnstjerne Bjørnson's *Sigurd Slembe* – with music by Nordheim. As mentioned, Gunnar Sønstevoid had used electronic elements in his music for *The Tempest* at Det Norske Teater the previous year however, this consisted only of a few short sections in combination with acoustic instruments. *Sigurd Slembe* was the first example in Norway where a piece of music was composed entirely for loudspeaker playback.

While Nordheim's first theatre commission, AN.6 *Det hemmelige regnskap*, had been written by an unknown debutant, *Sigurd Slembe* was a completely different matter. It was the largest production of the season. Bjørnson is one of the major figures in Norwegian literature, and there was already a strong tradition of music connected to the play; the romantic era composers Johannes Haarklou, Richard Nordraak, Johan Svendsen and Olav A. Grøndahl had all written music for it. Grøndahl's *Ung Magnus*, set to one of the Slembe poems, was one of the most popular songs in the Norwegian male choir repertoire. As Hurum noted in his article, history weighed heavily on the young composer's shoulders.

Nordheim's idea was to compose music from electronically manipulated recordings of instruments and choir, and to use various miking techniques in order to heighten unusual timbres from the instruments. The overture for instance, was, according to Hurum, solely based on what he called the "unusual sounds" of a closely miked cembalo. Hurum's wider point was that Nordheim's strategy was to put history behind him – both the existing tradition connected with *Sigurd Slembe* and history of music in general. Most strikingly, Nordheim had avoided using violins, since, as he stated in his usually pointed style, "in every stroke on the violin is buried several hundred years of musical tradition."²⁰⁹ Instead he opted for instruments that were more in line with the modernist music of the time: trumpets, xylophone, vibraphone, percussion, two timpani, celesta and cembalo. All these instruments produce hard, pointy and clear sounds, in stark contrast to the lush romanticism associated with the *Slembe* tradition. Harald Herresthal has documented that Nordheim's raw material was typical of what we know about his other music from this period; blocks of sound in combination with short pregnant motifs and gestures.²¹⁰ We know little about what kind of electronic manipulations these recordings underwent, but Hurum pointed out that the female voices had been

²⁰⁸ Anton Rønneberg: *Nationaltheatret 1949-1974* (Oslo: Gyldendal, 1974), pp. 138-39.

²⁰⁹ Hans Jørgen Hurum: "Moderne lydbåndmusikk i Nationaltheateret i aften," *Aftenposten*, April 26th 1960.

²¹⁰ Herresthal (2015): *Fra hjertedypt stiger tonens strøm*, pp. 162-64.

transformed into sounding like a male choir: “These matters are in our times a question about which knobs one twists,” he wrote with a certain futuristic awe.²¹¹



Figure 3.1: Recording source material for *Sigurd Slembe* in the University Aula, August 1960. A rare shot of Nordheim conducting. Photo: The Arne Nordheim Centre, Norwegian Academy of Music.

The equipment Nordheim used came from Roger Arnhoff’s mobile sound studio, and it is likely that cutting and mixing were also done with Arnhoff’s equipment. Arnhoff was one of the first private sound studio providers in Norway. He had previously worked in ABC-film, one of two major film companies in Norway, where he had regular contact with Gunnar Sønstevoid who at the time was one of Norway’s leading film music composers.²¹² It is possible that Sønstevoid introduced Nordheim to Arnhoff, although no documentation exists that supports this claim. A later collaboration with Arnhoff, the information film *På Sporet* from 1963, seems to have been composed according to similar principles as *Sigurd Slembe*, and it is possible to extrapolate insights from this work into how Nordheim’s first experiment in electronic music must have sounded. In *På sporet* Nordheim also used close miking, and limited the manipulation techniques to cutting and

²¹¹ Hans Jørgen Hurum: “Moderne lydbåndmusikk i Nationaltheateret i aften,” *Aftenposten*, April 26th 1960.

²¹² Ivar Hartviksen: “Lydpioneren Roger Arnhoff ser tilbake.” Unpublished manuscript.

splicing, forward and reverse playback, and alteration of playback speed.²¹³ For instance, he used to great effect the sound of a vibraphone, possibly recorded from underneath the resonator tubes to heighten the tremolo effect of the butterfly valves and reduce the attack of the mallets. This recording is played back on 4x normal speed in order to obtain a shimmering and eerie effect. Nordheim seemed to like this technique, and used it in several works including *Den lille prinsen* and AN.22 *Kimære*. One of the reviewers of *Sigurd Slembe* described the music as being full of “shimmering eeriness,” a terminology fitting exactly to Nordheim’s 4x speed vibraphone technique.²¹⁴

Whether or not this was the same technique is beside the point. The important observation is that already in his first electronic work, Nordheim saw recording as more than a documentary process. Instead, he saw recording as a creative act providing raw material for later manipulation. The observation resonates with what Nordheim had written in his article “Mot nye klanger” in *Morgenposten* the previous year. Here he described how electronic music composers could “intervene in the actual sound structure, and, so to speak, from the inside adapt the audible reality of the music.”²¹⁵ It also resonates with how Nordheim would later compose in a “radiophonic” manner for broadcasting situations, often cutting and pasting segments, or disrupting the normal acoustical balance between instruments. Examples of such “radiophonic” compositions include AN.29 *Favola* from 1965, AN.100 *Forbindelser* from 1975, AN.111 *Nedstigningen* from 1980 and AN.159 *Ad fontes* from 1992. In other words, *Sigurd Slembe* can be seen as an early example of an approach that would later become a staple of Nordheim’s music.

Throughout the article on *Sigurd Slembe*, Hans Jørgen Hurum called Nordheim’s composition either “concrete” or “mechanical” music. With these labels he related Nordheim’s music to two distinct traditions: *musique concrète* and mechanical musical instruments. Hurum’s use of the term “concrete” is interesting, since it shows that *musique concrète* seems to have been a well-established concept for the readers of *Aftenposten*, although the general public’s acquaintance with the music form would be limited. Mechanical music had been well-known public entertainment in fairs and cafes since the 19th century. However, the term also included the many demonstrations of electronic musical instruments, such as the theremin and the ondes martenot, that had taken place in Norway in the interwar period. As Frode Weium has documented, many people had difficulty in

²¹³ Note that Nordheim did not drench his sounds in monumental reverb, a typical later trait of his electroacoustic music. Nor did he use Arnhoff’s famous self-built echo machine that had earned him the nickname Mr. Ekko-ekko-ekko...

²¹⁴ Aud Thagaard: “Sigurd Slembe som festforestilling,” *Morgenposten*, April 27th 1960.

²¹⁵ Arne Nordheim: “Mot nye klanger.” *Morgenposten*, January 15th 1959.

accepting these expressions as music proper.²¹⁶ This is probably why Hurum warned that while it was rare to hear “mechanical music” performed to sound so “lively,” some listeners might be baffled and probably say: “So many strange sounds! Can one call this music?”²¹⁷

One such sceptical listener was *Verdens Gang*'s Odd Eidem, who in his review of the premiere avoided the term “music” altogether, denouncing Nordheim's contribution as “bizarre sound effects” that were “ultramodern in their realization.”²¹⁸ It is clear from the review that the word “ultramodern” was not meant as a favourable term. However, most of the reviews were positive, and *Sigurd Slembe* ran for 18 performances with good attendance.²¹⁹ Nordheim's music seems to have gained him a certain notoriety. It secured him a second commission for the National Theatre later the same year, Molière's *Don Juan*, which was composed using similar techniques. Both works seem to have lived on for quite a while in public memory. As late as 1965 these two commissions were still referred to whenever Nordheim's music was introduced in NRK.²²⁰ Even though it was not the first example of electronic sound in Norway, the music for *Sigurd Slembe* must be regarded as an seminal event in Norwegian music history, as well as in Nordheim's oeuvre.

3.2 Technological tinkering: *Den lille prinsen* (1961)

There is little documentation available on precisely how Nordheim acquired the craft of electroacoustic composition. However, the first preserved work, *Den lille prinsen* from 1961, indicates that he must have learned a lot from *tinkering* with the available equipment. Partly inspired by Steve Waksman's use of the term in connection with his study on Southern Californian heavy metal, I understand tinkering to mean the enthusiastic play with technology and the creative reconfiguration of components often intended for other uses.²²¹ This is precisely what Nordheim was doing when he started including electronic elements in his radio theatre commissions for NRK.

Antoine de Saint-Exupéry's fable *Le petit prince* tells the story about a boy-prince who left his home planet Asteroid B-612, and, after having visited several other planets, comes to Earth where

²¹⁶ Frode Weium: "Ingeniørmusikk. Møtet med elektroniske musikkinstrumenter i Norge på 1920- og 30-tallet," *Tidsskrift for kulturforskning*, vol. 5, no. 4 (2006); Frode Weium: *Epokegjørende instrumenter eller kunstige surrogater? Elektroniske musikkinstrumenter i Norge før 1940*, PhD Dissertation (Trondheim: Institutt for historiske studier, NTNU, 2017).

²¹⁷ Hans Jørgen Hurum: "Moderne lydbåndmusikk i Nationaltheateret i aftnen," *Aftenposten*, April 26th 1960.

²¹⁸ Odd Eidem: "En lang jubileumsforestilling," *Verdens Gang*, April 27th 1960.

²¹⁹ Rønneberg (1974): *Nationaltheatret 1949-1974*, pp. 138-39.

²²⁰ Internal fact-sheet on Nordheim at NRK, dated 1965. The sheet was used in connection with program introductions. Untitled document, NRK Archive: Fjernsynsteateret.

²²¹ Steve Waksman: "California Noise: Tinkering with Hardcore and Heavy Metal in Southern California," *Social Studies of Science*, vol. 34, no. 5 (2004).

he meets the protagonist of the book. They develop a deep friendship, before the prince either returns to his asteroid or dies – the ending is ambiguous.²²² Nordheim's music for the radio adaptation of the book uses instrumental parts in combination with simple electronic effects. The orchestration is sparse; trombone, alto flute, vibraphone, celesta, woodblock, snare drum and two cymbals. Trombone and flute take the leading melodic roles, while harp, percussion and the electronic elements provide atmospheric background and colour. The electronic elements consist of gliding sine tones and a manipulated recording of the vibraphone on quadruple speed, the same technique described above in connection with *Sigurd Slembe*. However, this time Nordheim clearly plays on the conventions of the science fiction genre. The instrumental sounds are mixed dry and close, and the listener feels a close intimacy with the players. This kind of transparent texture is typical of radio theatre music from this era – the music had to sound clear and audible even on the simplest of radio receivers. The intimacy of the acoustic instruments is contrasted with the electronic sounds, which have a more distant character, partly from being made on "non-human" electronic equipment, and partly from being treated with generous amounts of reverb. One can interpret the music as being simultaneously otherworldly and deeply human, just as de Saint-Exupéry's touching story.

I will not review the entire radio drama in this section. Neither will I provide the kind of phenomenologically-inspired analysis that I will do for other works in the thesis. Instead I will attempt to give a poietic analysis of the overture, as it is released on AN.R68 *The Nordheim Tapes*.²²³ Even though this is a (very) short and relatively simple segment, it shows something central about Nordheim's early radio and television commissions. It also highlights some important aspects regarding Nordheim's approach to technology, and his way of working in this early period – especially how he by tinkering let the available resources shape the aesthetics of the works.

The NRK studio

It has been claimed in various accounts that NRK established an electronic music studio in 1961, but this is not exactly the case.²²⁴ For the early radio dramas to include electronic sound, the first being Gunnar Sønstevoid's *Regneoppgaven* from 1958, a small collection of equipment originally intended for acoustic measuring was brought into control room RK2 of the radio theatre department. The control room was already equipped with a few two-track tape machines and an eight-channel

²²² Antoine de Saint-Exupéry: *The Little Prince [1945]* (London: Egmont Gallimard, 2009).

²²³ The track on AN.R68 *The Nordheim Tapes* is 2'30 and consists of the overture (36'') and two entr'actes (20" and 1'40).

²²⁴ Davies (1967): "International Electronic Music Catalog," p. 135; Holmes (2008): *Electronic and experimental music*, p. 74.

mixing desk.²²⁵ From the control room, one could access the large recording room of the radio theatre department, as well as NRK's reverberation chamber. In 1961, the acoustic equipment consisted of one or two sine wave generators, a white noise generator and a third octave filter. The devices were not permanently hosted in the studio, but were assembled on an ad-hoc basis from around the building, according to the needs of the commission. In a later interview, Nordheim spoke about how the technical staff at NRK found it amusing when he was asking around for scientific instruments in order to make music.²²⁶

In addition to the technical equipment, Nordheim had access to NRK's regular group of musicians, including the renowned flutist Alf Andersen (1928–1962). These musicians would leave their mark on Nordheim's early NRK commissions as much as the electronic equipment would do. The music to *Den lille prinsen* is a case in point. Here both the Brüel & Kjær sine wave generator and Andersen's characteristic alto flute stand out as prominent elements in the musical texture.

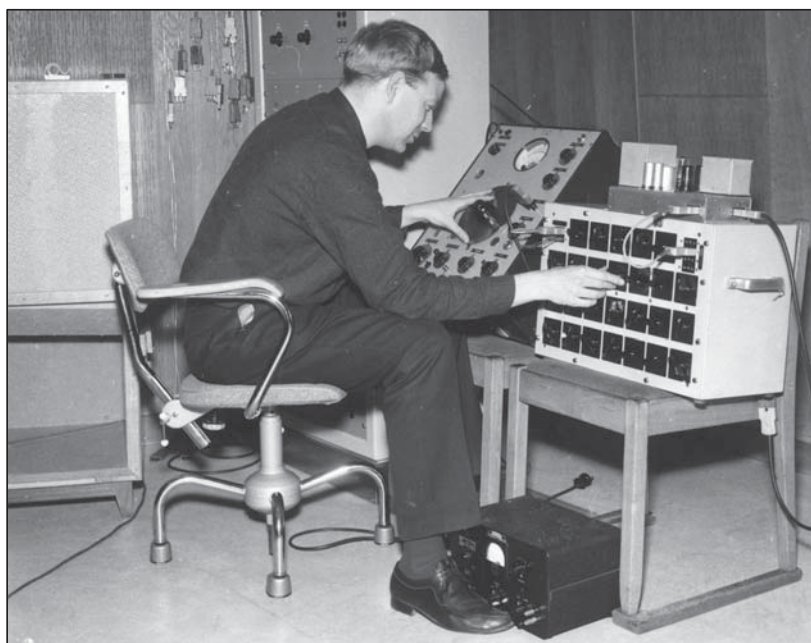


Figure 3.2: Nordheim working with a Brüel & Kjær beat frequency oscillator and third octave filter in the studio RK2, ca. 1961. Photo: Uncredited, Arne Nordheim Centre.

²²⁵ The self-built mixing desk from 1960 is depicted in Richard Andersen's "Lydstyr i kringkastingen," in *Kringkastings tekniske historie*, ed. Richard Andersen and Dagfinn Bernstein (Oslo: NRK, 1999).

²²⁶ Arne Nordheim, interviewed by Jøran Rudi and Tilman Hartenstein on September 20th 2005. Video at NøTAM – Norwegian Center for Technology in Music and the Arts.



Figure 3.3: Nordheim and Viktor Sandal at the mixing desk in RK2, ca. 1961. Photo: Uncredited, Arne Nordheim Centre.

The overture

The overture starts with a fanfare in the trombone, immediately followed by a response on the woodblock imitating the rhythm of the fanfare. After the response, we hear a series of short ascending sine wave glissandi – an effect I wish to call Nordheim’s *frequency sweep accumulation* (figure 3.4). The technique was obtained by using the “modulation” option on a sine wave generator, probably a Brüel & Kjær Beat Frequency Oscillator (BFO) type 1014 or similar (figure 3.5). The modulation setting on such a device will produce short ascending pitch sweeps, useful for acousticians wishing to detect resonance frequencies in a room. The length of the sweep can be adjusted with the “modulation swing” or “frequency deviation” dial, and the nominal frequency is adjusted by turning the large “ref signal” dial (Nordheim sits with his left hand on this dial in figure 3.2). Nordheim’s effect starts with discrete rising pitches using a frequency glide of approximately 450-500 Hz. He increases the nominal frequency at each iteration, starting around 250 Hz. When he has reached 2200 Hz, he holds the ref signal dial still, and then increases the speed of the sweep, whilst simultaneously lowering the volume. The increase in speed is obtained by adjusting the “modulation frequency” knob. The result is that what is first heard as discrete pitch sweeps gradually “accumulates” into a complex sustained sound, which is then faded “into the distance,” like a disappearing spaceship. That the little prince was not travelling by spaceship (he caught a ride with

a flock of migrating wild birds) is beside the point – it is the *idea* of otherworldliness that is embodied in this particular use of electronic sound.

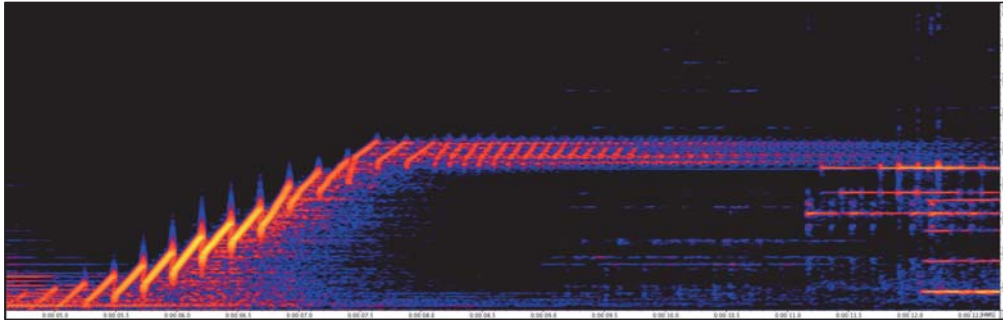


Figure 3.4: Frequency sweep accumulation in *The Little Prince* (1961) [00'04-00.12].



Figure 3.5: Close up on the modulation controls on a Brüel & Kjær BFO 1022, a model similar to the BFO Nordheim was using. Photo: Ola Nordal.

The frequency sweep accumulation comes back in various guises throughout Nordheim's first electroacoustic period, and although it does not take on the same pregnant character as the Nordheim leitmotif, it can to some extent be interpreted as a memorable. Variants occur in AN.15

Intermezzo (at [00.15], [00.31] and [01.12]), AN.35 *En gal manns dagbok* (at [44.53]), AN.16 *Katharsis*, AN.34 *Response* and AN.40 *Evolution*. Interestingly, in these works the sound has changed its signifying character. The association to space travel is lost, and the effect appears to be pure sound deprived of associative meaning. In other words, for the sound to be an allusion to a space ship it needs the surrounding context of the rest of the drama.

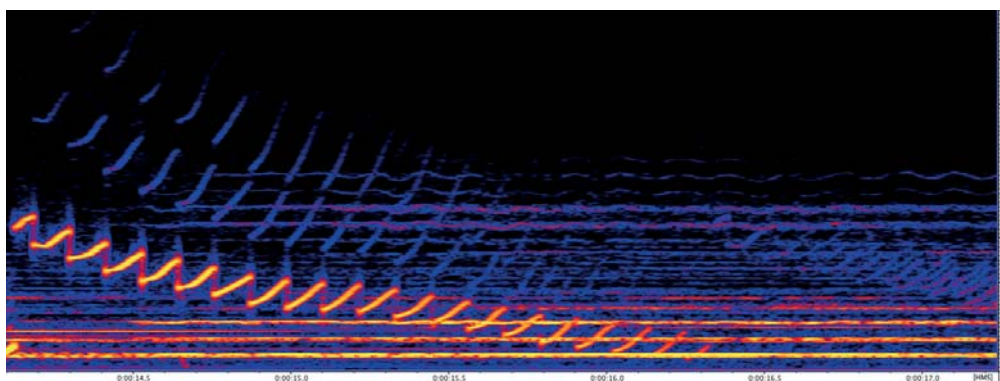


Figure 3.6: Similar technique used by Gunnar Sønstevoid in *The Tempest*, 1959

As a final note, it should be mentioned that Gunnar Sønstevoid used the same technique in his music to *The Tempest* two years earlier (figure 3.6). It is likely that Sønstevoid used a similar device – maybe even the exact same tone generator – to obtain the effect. This striking similarity is in accordance with the hypothesis that Nordheim learned from Sønstevoid in his early electroacoustic works. However, due to lack of documentation it is not possible to conclude exactly how direct the influence was. When Nordheim was composing *Den Lille Prinsen*, Sønstevoid and his family had just taken up residency in Vienna in order to study at the Academy of music, and it is unclear how much contact they would have had at that moment. It is possible that Sønstevoid instructed Nordheim in how to obtain the effect, or that Nordheim wanted to emulate what he had heard in *The Tempest*.

However, it is also possible that Nordheim came up with this particular sound because it was intrinsic to the device: it is obtained by simply flicking a switch and turning a dial. This is just how the Brüel & Kjør BFO sounds when it is used in a specific way. Since it was one of the devices readily available, it is not unthinkable that both Nordheim and Sønstevoid came to use the same effect by chance. This point illustrates how difficult it can be to talk about influence in electronic music, where so many of the aesthetic choices and preferences are *functions of the interface of the devices* being used.

3.3 Contrast: *Katharsis* (1962)

The frequency sweep accumulation at the beginning of *Den lille prinsen* leads seamlessly into a rapid tremolo in the harp and celesta, which themselves lead into a drum roll on the snare drum. These sounds are all ripple time iterations on various sources. It is as if Nordheim tries to make an aesthetic statement, like he is saying that *these different sound worlds are one*. It is an example of what I call *contact* between the electronic and the acoustic sound worlds. In the 1962 ballet *Katharsis*, Nordheim's first orchestral work to include electronic elements, the relationship between sound worlds was an equally important principle, but, as we will see from the analyses, it is the *contrast* between the sound of the orchestra and the electronic tape that was the aesthetic bearing idea behind the use of electronic sound in this work.

Katharsis was Nordheim's largest compositional task so far, and he later called it an important stage in his musical development.²²⁷ The ballet calls for fifty minutes of music in total, and was scored for orchestra with piano and a large percussion group, as well as tape elements. It was the signal production in the 1962/63-season of the Norwegian Opera Ballet, who premiered it during the Bergen International Festival on May 28th 1962, before it moved to the opera house in Oslo that autumn. The success of the ballet ensured that an orchestral suite was performed on NRK radio in October the same year, and in 1964 it ran for two performances at the Royal Danish Theatre in Copenhagen. Although it was badly received in Copenhagen, this was an unusual honour for a new Norwegian ballet.²²⁸

Katharsis was the first collaboration between Nordheim, the Swedish choreographer Ivo Cramér and the Norwegian artist Guy Krogh. The creators emphasized in interviews and articles that the different elements of the work were to be regarded as one integrated aesthetic unit: a *gesamtkunstwerk* for the 1960s giving equal importance to dance, music, scenography and

²²⁷ Wikshåland (1981): "-Ikke akkurat lystige dokumenter."

²²⁸ A misunderstanding existed in Norway on the reception of the ballet in Denmark. The Norwegian newspaper *Aftenposten* reported after the performance that "the audience applauded so intensely that one had to break the rule of not letting the dancers receive applause" – a curious claim since it is completely normal for dancers to receive applause. The report continued with the remark that "the Danish critics all agreed that the ballet was a victory, especially for the composer Arne Nordheim and the decorator Guy Krogh" (Untitled note in *Aftenposten*, March 24th 1964). However, the ballet was far from a victory. The choreography and the dancing were completely panned by critics. *Politiken* called it "a true desert" ["en sand ørken"] and wrote that "Anthony's temptations must have been few – except for boredom." The other major Copenhagen paper *Berlingske Tidende* was equally critical. Both papers however, gave credit to Nordheim's music and to Krogh's costumes (Harald Engberg: "En sand ørken," *Politiken*, March 26th 1964; Svend Kragh-Jacobsen: "Kunstnerens visjoner," *Berlingske Tidende*, March 26th 1964). A few days earlier, during a performance for disabled people, applause for the dancers was so intense that they got called back on stage for flowers, rightly so a breach of etiquette. This performance however, had nothing to do with *Katharsis* ("Henrykt publikum brød gammel regel i Det kgl. teater. Genfremkaldelser da handicappede fejrede Verdens Vanføredag," *Politiken*, March 23rd 1964).

costumes.²²⁹ This idea points forward to Nordheim's later collaborations with Cramér and Krogh, most notably the television ballets *Kimære* (1963) and *Favola* (1965). These two works also engage several art forms at once; poetry, instrumental music, electronic music, dance, costume and painting.

Katharsis is based on the temptations of Saint Anthony, a legend that has a long history in the arts. The popularity of the legend was just as due to its potential for explicit and grotesque treatment as to its religious precept. This made it a staple in medieval street puppet theatre. The 16th century artists Hieronymus Bosh, Pieter Brueghel and Matthias Grünewald all depicted the Anthony legend on large extravagant altarpieces. In the 19th and 20th century, the legend gained renewed popularity, particularly following the publication of Gustave Flaubert's novel on Anthony in 1874 and Paul Cézanne's famous painting from 1877. Around the same time Grünewald's altarpiece received renewed interest, and in the 1930s it provided inspiration for Paul Hindemith's *Mathis der Mahler* symphony and opera. Finally, Salvador Dalí's 1946 painting of the legend is one of the surrealist's most celebrated later works.

While undoubtedly drawing inspiration from the entire body of Anthony adaptations, Cramér Krogh and Nordheim focused on taking inspiration from the Bosh-triptych, which Cramér knew from having worked in Lisbon, where it is displayed.²³⁰ True to convention, Cramér, Krogh and Nordheim used the saintly myth in order to produce a work focusing on excess, sin and the grotesque. In a later interview, Nordheim recalled:

It was lots of sex and commotion [“jævli mye sex og et himla spetakkel”] when all the dancers got going. “What a damn ‘swinery’ [for et jævla svineri],” I thought, and went up to the agricultural university where I made recordings of pigs throwing themselves over the feeders. This I put on tape loops that were used in the ballet.²³¹

In the ballet, Anthony is first tempted by thirst, hunger, self-eroticism (masturbation) and women, and then by haughtiness since he manages to resist the other temptations. Through his trials he achieves *catharsis* – the purification needed to ensure his holiness. The ballet alternates between Anthony longing for salvation of his soul (with a “longing motif” as a central recurring theme), and wild episodes where the temptations are depicted. In the second act, Anthony suffers in the desert without food and drink and is haunted by memories of his sinful life. Some of these memories are musically represented by electronic tape cues inserted as “interpolations,” to use Edgard Varèse's term, between the orchestral sections.

²²⁹ E.A., “Ame Nordheims ballettmusikk ‘Katharsis,’” *Programbladet* no. 36, 1962. Celine, “Antonius fristelse,” *Dagbladet*, September 29th 1962.

²³⁰ Celine: “Antonius fristelse,” *Dagbladet*, September 29th 1962.

²³¹ Siv Eide: “-Kall meg gjerne hardcore,” *Dagbladet*, August 14th 1998.

The tape material

In an interview with *Verdens Gang*, Nordheim estimated that the approximately nine minutes of electronic material in *Katharsis* took 250 hours to conceive.²³² The material was realized in the Radio theatre studio at NRK in close collaboration with the in-house technician Viktor Sandal. Sandal was Nordheim's first regular technical collaborator. It is possible that they had already worked together on *Den lille prinsen*, which was produced around the same time, although this has not been confirmed. What is documented is that they worked together on three large external productions in the first electroacoustic period: *Katharsis*, *Epitaffio* and *Favola*.

Sandal seems to have been the technician in the Radio department who was most enthusiastic about working with electronic sound. He even composed his own electronic music for Thore Zetterholm's radio drama *Delt rom* in 1962. He later collaborated with Kåre Kolberg, who used him as technician on *Anne* (1969). Harald Herresthal claims that Sandal worked day and night on Nordheim's music in order to get a good result.²³³ Nordheim cherished Sandal's contribution. In the production plans for *Favola*, Nordheim praised Sandal's precise ear ("Sandal listens accurately" ["Sandal hører presist"] – Nordheim's emphasis), and stated that "we speak the same language already from when the first note comes to tape."²³⁴

It seems that Nordheim and Sandal combined intuitive methods, such as what I described in connection with *Den lille prinsen*, and precise composition from a prescriptive graphical score. A photograph at The Arne Nordheim Centre shows Nordheim and Sandal in the process of preparing tape loops, measuring ruler in hand. On the table in front of them, we can see sheets of instructions, giving precise insert points, timings and mixing directions for the different parts (figure 3.7 and 3.8, the score is now lost). In a later interview, Nordheim indicated that providing exact timings was one of the greatest challenges with this work, and the score might have been constructed in order to deal with this problem.²³⁵

²³² Quoted in Herresthal (2015): *Fra hjertedypet stiger tonens strøm*, p. 192.

²³³ Herresthal (2015): *Fra hjertedypet stiger tonens strøm*, p. 174.

²³⁴ Letter from Arne Nordheim to Arild Berggren, NRK TV, dated Oslo September 27th 1964. NRK Archive: Fjernsynsarkivet. Folder: Favola.

²³⁵ Siv Eide: "–Kall meg gjerne hardcore," *Dagbladet*, August 14th 1998.



Figure 3.7: Arne Nordheim and Viktor Sandal preparing tape loops for *Katharsis*. Photo: NTB.



Figure 3.8: Detail of previous picture.

Presentation of the electronic material

The orchestral manuscript for *Katharsis* has instructions for ten tape cues (nine numbered and one un-numbered). The tape-cues are all very distinct in character. Each of them is a self-contained unit, and they can almost be regarded as miniature compositions. As I will come back to in chapters eight and nine, this way of composing with discrete one-to-three-minute units is used in much of Nordheim's later electroacoustic music.

I have not been able to find recordings of the whole work, but a five-track CD marked "Katharsis" found among Nordheim's material from Grotten contains a 9'45 excerpt from the second act.²³⁶ The excerpt includes four of the ten tape cues. Since the five tracks come from a continuous session, I have stitched the sound files together into a single file. The file is included on the accompanying CD (**CD track no. 01**). This sound file is the basis for the analysis, and the time information in table 3.2 refers to this file. I have not been able to match the excerpt exactly with corresponding pages in the manuscript, so it is probable that Nordheim has made some alterations. For instance, a seven-minute tape cue called "Tape VII" should, according to the manuscript, have been included in the excerpt, but it is not present on the recording.²³⁷

I have found three of the cues from the above-mentioned excerpt in isolated form in a CD in the Nordheim collection at the National Library marked "Lydeksempler Arne Nordheim 24/7 1998." The sonograms used in the analysis are generated from these tracks. Timing information also relates to these tracks. In addition, this CD contains an unidentified cue, which is also likely to come from *Katharsis* – I have, however, not been able to determine which segment it might be. What is clear though, is that much of the music is still missing and possibly lost.²³⁸ For instance: in an interview with *Verdens Gang* from 1962, Nordheim referred to a tape segment with manipulated voices mimicking Gregorian chant and to a segment with manipulated sounds of tubular bells.²³⁹ There are no passages fitting this description in any of the material I have found.

Table 3.2: Listening notes, based on the 9'45 excerpt from the second act of *Katharsis*

My name	Dur	Cumul. time	Description
<i>Electronic 1</i>	[00.32]	[00.00]	Mysterious mood. A synthetically generated three-note motif is played <i>mf</i> (filtered noise), followed by an accumulation of concrete sounds

²³⁶ At the time of writing (January 2017), the CD is at the Norwegian National Library, but it has not yet been catalogued. It contains no information about the origin of the recording. I also have had access to a recording of the AN.18 *Katharsis suite* that was obtained from the NRK Archives by Lars Mørch Finborud.

²³⁷ Manuscript to *Katharsis*, p. 159. The manuscript is currently in the process of being catalogued at the Norwegian National Library.

²³⁸ I have, without luck, searched for the rest of the tape material at the Arne Nordheim Centre, The Norwegian National Library, Wilhelm Hansen Edition, Bergen International Festival and The Norwegian Opera and Ballet.

²³⁹ The article is referred in Herresthal (2015): *Fra hjertedypet stiger tonens strøm*, p. 192.

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			(clatter of glass and metal, occasional voices). Dynamic: <i>ff</i> .
Instrumental 1	[01.48]	[00.32]	Starts with antiphonal play between percussion and piano. Alternates with strings and orchestra playing a quasi-romantic melodic part in 3/4 rhythm (a “waltz”). Occasional loud burst from the orchestra. In a climactic part a <i>fff</i> three-note arpeggio is played ostinato. A lyric melody comes in, first in violin then in flute. The three-note arpeggio-ostinato returns. This leads into next part.
Electronic 2	[00.51]	[02.20]	Mystical gliding pitched sounds over a regular four-note bass ostinato (made electronically). The loops intensify, and go directly to next part.
Instrumental 2 with Electronic 3	[00.25]	[03.11]	After four timpani beats: a jazzy dance with steady 4/4 rhythm. Intensifies with a wild percussion solo and loud blasts from orchestra. Abruptly cut off by tape with “cheering audience.” Audience “morphs” into pig grunts and fades. The dance repeats, and the pig grunts return. On second volta the dynamics of the tape part is reversed (<i>p < f</i> instead of <i>f > p</i>) emphasising the reverb on the end of the tape segment.
Instrumental 3	[02.16]	[05.36]	After a calm prologue: a foreign sounding oboe melody plays Antonius’ longing motif. Gradual shift in focus to percussion and winds. Dramatic orchestral build up, culminates with the three-note arpeggio-ostinato from “Instr. 1.”
Electronic 4	[01.55]	[07.52]	Dominated by rhythmical ostinati that gives the part a march-like character.
		[09.45]	End

On the following pages, I will provide descriptions of the four electronic cues in the excerpt, and discuss their role in the composition. I will show that in some of the electronic parts Nordheim has retained traditionally musical qualities, such as clearly perceived pitch and rhythm. The cue I have called “Electronic 3” stands out as markedly different, being constructed from a clearly identifiable non-musical source (pig grunts and human chatter).

”Electronic 1” (figure 3.9) – CD track 01 (beginning)

The part lasts 28 seconds and is characterized by a “mysterious” atmosphere. The part consists of two layers. The bottom layer comprises the following elements:

[00.00] An emerging pitched sound in the profound register (register = 1), perhaps the sound of a double bass. The sound blends into a layered stratified sound with variable spectrum starting at [00.06].

[00.06] A deep-pitched four-note ostinato is running throughout the part in the profound register (1). I have transcribed the loop as a stratified complex object with vacillating sound spectrum and oblique rhythm. The rhythm of the ostinato can be approximated to an 8th note followed by two 16th notes. This is combined with a dystonic sound in the medium register (3) with a regular vibrato in gesture time.

Two events stand out as elements of heightened focus, and take position as foreground elements in the middle to treble register (3-6):

[00.10] A three-note motif possibly generated from filtered white noise. The pitch centricity is vague. The third note has a marked onset with a quick descending pitch glide.

[00.17] A compound texture with sounds of different character. Some of the sounds are referential, and one can recognize, amongst other things: [00.17] scraping metal [00.20] people talking [00.21] clinging glasses and [00.25] a man laughing.

Some of the electronically generated sounds are actual musical notes and tones: they have perceived pitch, and a regular “musical” pulse. This is one of the examples where the electronic and the orchestral parts share a foundation in musical elements. The “musical” electronic sounds contrast greatly with the “referential” concrete sounds. If the electronic segments represent Anthony’s sinful memories, one could interpret the referential elements in the sound segment starting at [00.17] as standing for gluttony.

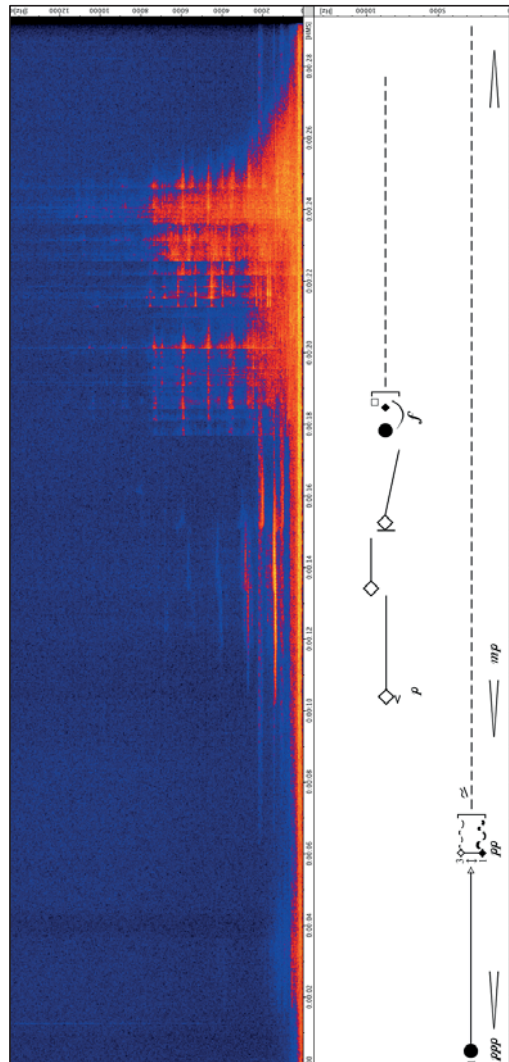


Figure 3.9: Spectrogram and transcription of "Electronic 1" from *Katharsis*

”Electronic 2” (figure 3.10) – CD track 02

“Electronic 2” lasts 0’57 and consists of two layers. The top layer is focused around the technique of variable playback speed. In a 2005 interview, Nordheim recalled how the tape machines at NRK did not have a variable-speed controller, and that Sandal had to control the speed of the machines by hand.²⁴⁰ It is possible that it was this segment that he was referring to.

[00.00] The top register consists of a “mystical” gliding pitched sound. As can be observed from the sonogram, the gliding sound is constructed from at least 12 layers of sound. The top register sound seems to be constructed in two phases: first the layered gliding sound is created as a loop, possibly from sine tones. Then the loop is played back with an oblique speed. The speed of the loop increases gradually throughout the beginning of the segment, and towards the end it accelerates faster and faster, giving a high sense of “climactic urgency.” The loop is abruptly cut off at [00.58].

[00.06] A four-note ostinato is played throughout the part in the deep register (register = 2). This sound makes up the bottom layer of the part. The speed of the ostinato is constant, and is not affected by the acceleration pattern in the top layer. Close listening reveals that the ostinato in the bottom layer is constructed from a four-note piano figure, played back on 25% speed. The original figure can be transcribed as follows:



It is impossible to recognize the slowed down signal as originating from a piano. This is a typical example of how Nordheim would use familiar sound sources to create “new” sounds and “mystical” textures, and is similar to the previously discussed 4x-speed vibraphone texture in *Den lille prinsen* and *På sporet* – only with the source sound slowed down instead of sped up.

It is probable that “Electronic 2” is the cue called “Tape III” on page 145 of the manuscript. In the manuscript the cue is described as a “slow Bacchanal” played during a scene where a boat is dragged across the stage. In the boat sits Onan, a character with a human body and a pig’s head, who clearly represents lust. This could explain the climactic character of the end of the cue.

²⁴⁰ Arne Nordheim interviewed by Tilman Hartenstein in “Elektronisk tidligmusikk,” *NRK Radio P2*, December 14th 2005.

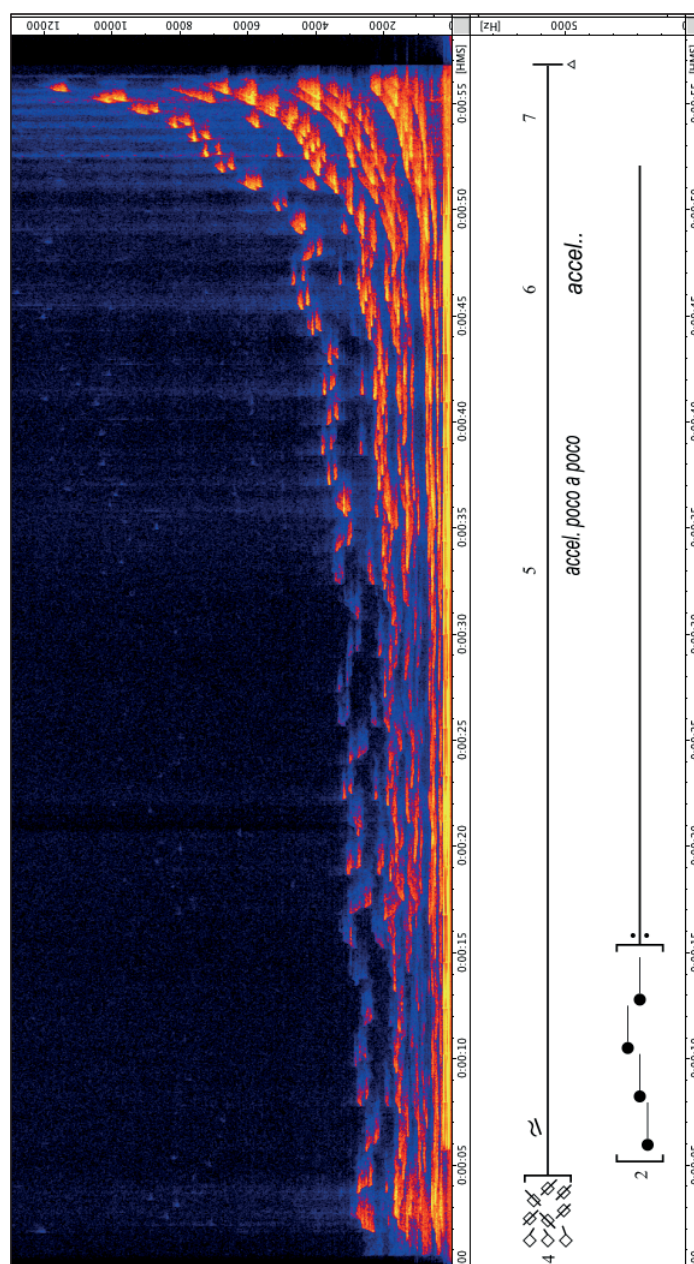


Figure 3.10: Spectrogram and transcription of "Electronic 2" from *Katharsis*

"Electronic 3" – CD track 03

The third electronic segment contains the pig grunts mentioned by Nordheim in the above quote. The cue seems to be constructed from two elements. In the beginning one can hear a cheering audience. This is then cross-faded into the sound of the grunting pig. The symbolism is very explicit:

the mass of people is transformed into, or is equal to, gobbling swine (possibly representing sloth, greed and/or gluttony).

The cue is the only electronic segment in *Katharsis* that is fully integrated in an orchestral passage. It is also part of one of the few repeated sections in the work, and is therefore heard twice, which gives the segment added emphasis. As in most of Nordheim's music he avoids exact repetition: In the first volta the cue is faded out before the end of the segment. In the second volta the tape is faded in, in effect removing the cheers-to-grunts morph and instead emphasizing the reverb at the end of the cue.

The pig-cue is played during one of the central parts of the ballets; a "tarantella" danced by villagers in a town square. The tarantella is originally a fast folk dance in 6/8-rhythm, danced as if the performers were maddened by the bite of a poisonous spider. The central character in the scene is a devil-like "spider man" called Dr. Tarantula. Musically speaking, the scene has a lightness and elegance we rarely see in Nordheim's music. It is traditionally tonal, and is set in a straight 4/4 swinging rhythm with a jazzy bass line (in other words, it is not a traditional tarantella). However, it is more likely that the scene is a sarcastic ironisation over jazz and popular music, rather than a celebration of it. Nordheim would voice critique on jazz and popular music at frequent intervals throughout his life. The interpretation of the scene as being ironic is supported by the grunting of the pigs in the tape-cue.

"Electronic 4" (figure 3.11) – CD track 04

"Electronic 4" lasts 2'22, and I have divided the cue into four phrase fields, with a bridged positioning (separated fields, but bridged by an uninterrupted background) between the second and third field. The manuscript instructs the performer to start the cue just before the sound of the orchestra has ended, with the effect that the cue seamlessly grows out of the orchestral sound.

The entire segment is focused on rhythmical ostinatos with strong associative character: The two first phrase fields suggest associations to marching steps (military, war), whilst the third evokes the ticking of clocks (bureaucracy, modern-day stress). The allusions to wrath and greed, another two of the seven deadly sins, are, in other words, abundantly clear.

[00.00] The part starts with a mystical deep sound with complex spectrum, fading out at [00.15]. The sound bridges the orchestral and the electronic part.

[00.11] A four-beat rhythmical ostinato with dystonic tones start in the deep register (register = 2). The even 4/4-rhythm resembles a slow (tempo approximately $\text{♩} = 60$) march with emphasis on the first and the third beat. A filter is opened stepwise at every third repetition of the ostinato. I have notated this as changing registers in the transcription. At [00.42] the filter is suddenly closed to its initial position for the last iteration of the ostinato.

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- [00.44] The second phrase field cuts in abruptly. It starts with a piercing organ note (Eb5) in a Morse-like disjunct rhythm over a three-note falling arpeggio ostinato. At every third repetition of the ostinato, new elements (counter-rhythms and doublings) are added in a brighter register, following a similar pattern to the use of the filter in the first phrase field.
- [00.53] A slow three-note ostinato is played in the profound register (register = 1). This “mystical” deep sound continues until the end of the part, bridging the second and the third phrase fields.
- [01.14] A downward frequency glide gesture marks disjuncture between the second and the third phrase fields in the brighter registers. This gesture is similar to the frequency sweep accumulation technique used in *The Little Prince*, but played faster and has falling instead of rising sweeps.
- [01.17] A four-beat clock-like ostinato runs throughout the beginning of the third phrase field.
- [01.30] A six-note filtered noise ostinato runs until the end of the third phrase field. The speed of the loop accelerates gradually, but it does not “climax” like the similar acceleration in “Electronic 2.”
- [01.51] The last phrase field consists of a series of stratified sounds with unstable pitch (notated as large slow vibrato). The sounds are drenched in echo and reverb. During this phrase field the orchestra comes back in with tubular bells, cymbals and a roll in the timpani.

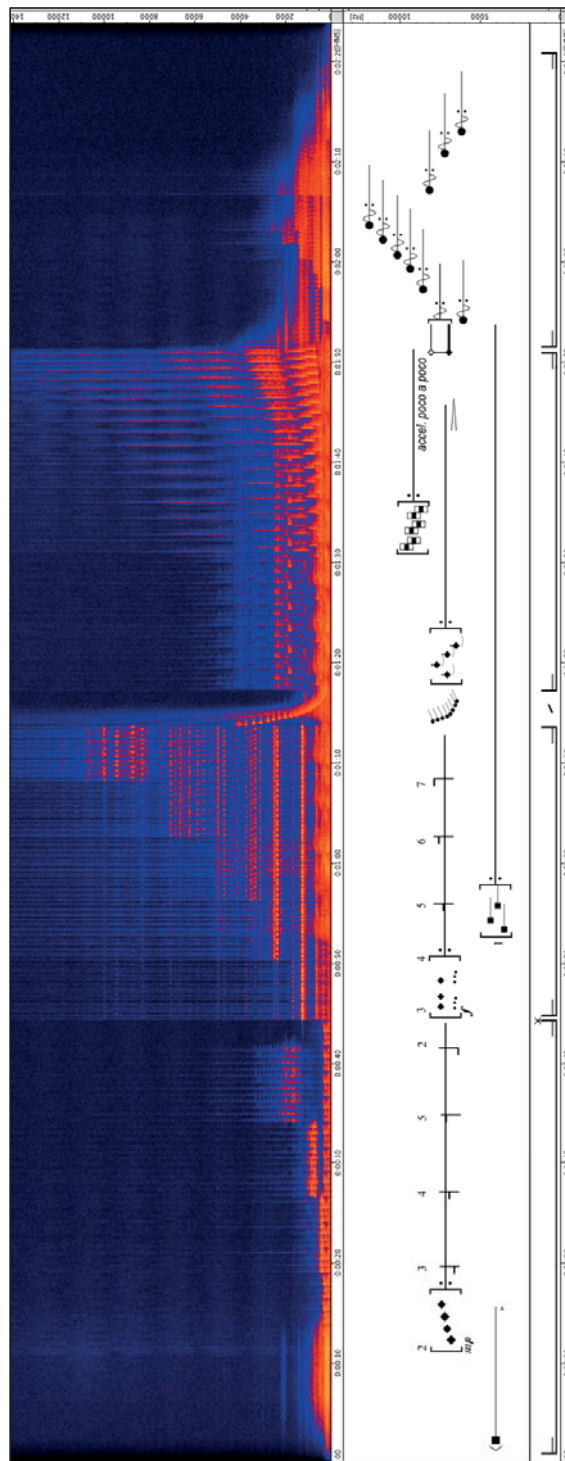


Figure 3.11: Spectrogram and transcription of "Electronic 4" from *Katharsis*

Final remarks on *Katharsis*

Nordheim's electronic segments in *Katharsis* are somewhat similar to the so-called "interpolations of electronic sound" of Edgard Varèse's *Déserts* (1954). As Paul Griffiths points out, in *Déserts*, Varèse brings the electronic and orchestral music "face to face."²⁴¹ This is also an apt description for the electronic and orchestral parts of *Katharsis*. However, there are also some important differences. The interpolations in *Déserts* can be seen as what I'd like to call "contrasting extensions" of the orchestra, often based on manipulations of the same sound classes. The interpolations seem to comment directly on the orchestral passages, sometimes even containing regular (at least in Varèsian terms) passages for flute or percussion. In *Katharsis*, the contrast between the two sound worlds is more pronounced. Still, there are similarities that could point to direct inspiration from Varèse. For instance, Nordheim often also used manipulated instrument sounds as his electronic raw material, like the piano-based ostinato in "Electronic 2." However, these sounds are manipulated beyond recognition. The only clearly referential sounds in my segment of *Katharsis* are the clattering glasses and the voices in in "Electronic 1" and the pig grunts in "Electronic 3." These are some of the few actual field recordings used in Nordheim's electronic music.

They key point is that the electronic sections in *Katharsis* are extensions into a "different realm" – a place that somehow exists outside the concert stage. They create a pause in the diegetic present of the narrative, and have as their dramatic function to represent Anthony's memories, in a similar manner to "flashback sequences" in a movie. This might explain why Nordheim's interpolations have a surreal tinge that heightens the discrepancy from the sound world of the orchestra.

A note that Nordheim scribbled on the last page of the manuscript might also be an apt description of how he viewed the relationship: "out of the orchestra emerges an electronic roar!"²⁴²

3.4 Contact: *Epitaffio* (1964)

In *Katharsis*, the *contrast* between electronic and acoustic sound is an important aesthetic principle. However, there are also passages where the two are more integrated, for instance with the insertion of "Electronic 3" into "Instrumental 2." Here the principle of *contact* seems to be most important. For the next work I will analyse, the mixed orchestral work *Epitaffio* from 1963-64, I will argue that the *contact* between the acoustic and the electronic sound is one of the bearing aesthetic principles

²⁴¹ Paul Griffiths: *Modern music and after*, 3rd ed. (Oxford: Oxford University Press, 2010), p. 139. See also Denise Von Glahn, "Empty Spaces': The Conceptual Origins of *Déserts*," in *Edgard Varèse: Composer, Sound Sculptor, Visionary*, ed. Felix Meyer and Heidi Zimmermann (Woodbridge, Suffolk: Paul Sacher Foundation/Boydell, 2006).

²⁴² Manuscript to *Katharsis*, p. 166, Norwegian National Library.

of the work. In *Epitaffio*, the electronic element is fully integrated into the orchestral texture, and at least while listening to the work on record, it can be difficult to judge which elements come from the tape material and which do not.

Epitaffio premiered on a Swedish ISCM concert on March 20th 1964, with the Swedish Radiotjänst Symphony Orchestra under the Swiss-American conductor Francis Travis. In his master thesis on the reception of Nordheim's music, André W. Larsen documented that the performance received favourable reviews in the Swedish press.²⁴³ The Norwegian premiere took place the following year, and again the reviews were, with a few exceptions, positive. In Norway, *Epitaffio* is now commonly regarded as a landmark piece in the post World War II symphonic repertoire. It is also Nordheim's most recorded orchestral work. It has been recorded three times: in 1967 by Oslo Philharmonic Orchestra under Herbert Blomstedt (AN.R2), in 1979 by the British Royal Philharmonic Orchestra under Per Dreyer (AN.R11), and finally with the Oslo Philharmonic Orchestra under Rolf Gupta in 2010 (AN.R72).

The score was published by Edition Wilhelm Hansen in 1964, and by 1966 the work had already been played in Stockholm, Oslo, Bergen, Madrid (at the International ISCM Festival) and Warsaw (the Warsaw Autumn Festival). It was also performed several times in the USA in the late 1960s.²⁴⁴ In other words, the work did for Nordheim what the String Quartet had done in the Norwegian context: it secured him a place among the international elite of the electroacoustic music composers and established him as a composer of international renown.

Nordheim constantly updated the score and the tape material in connection with the many performances and recordings. The score underwent a major revision in 1977, and this version was re-published by Edition Wilhelm Hansen in 1980. The changes consisted mainly of several minor alterations and corrections, as well as extra instrumental segments to be played during the mixed electronic and orchestral section. Dreyer and Gupta's recordings (AN.R11 and AN.R72) are based on the revised version of the score, while Blomstedt's (AN.R2) uses the 1964 version with some of Nordheim's preliminary additions. The fixed media material was revised for the first time in the late 1960s. The revision was either done in Warsaw, or by adding material produced in Warsaw to the original tapes, in or around 1969.²⁴⁵ Mats Claesson made a further revision for Gupta's 2010-

²⁴³ Larsen (2003): *Rabulist eller ikon?*, pp. 62–74.

²⁴⁴ "Norske verker oppført i U.S.A. 1969" and "Norske verker oppført i U.S.A. 1970." PA/RA-1446/Ac/L0001 & Ac/L0002: TONO's propagandakomiteé.

²⁴⁵ In the liner notes to AN.R68 *The Nordheim Tapes*, André W. Larsen claims that Nordheim revised the tape in Warsaw in 1978. However, the revision is in place already on in a radiobroadcast from 1973 (Nordheim, Arne and Sverre Lind: "Elektronisk musikk gjennom 25 år. Episode 4: Elektronisk musikk i Norge," *NRK Radio*, July 19th 1973). Wollnick claims that the tape was revised from mono to stereo in 1969 (Wollnick (1971): *Arne Nordheims Canzona og Epitaffio*, p. 85.). However, the electronic material used in the recordings in 1979 is still in mono. It is therefore more

recording. In other words, the three commercially available recordings of *Epitaffio* each have different versions of the fixed media material.

The work is dedicated to the memory of Nordheim's friend and colleague, the flute-player Alf Andersen, who died in 1962. Nordheim had used the title *Epitaffio*, which is Italian for *epitaph*, before, in the third movement of his 1956 string quartet. In other words, *Epitaffio* continues Nordheim's long-running thematic exploration of poetry, death and the meaning of existence.

Quasimodo's *Ed é subito sera*

Epitaffio is a programmatic piece, bordering on symphonic poem. The literary key is the poem "Ed é subito sera" by Salvatore Quasimodo (1901–1968). The following excerpt is printed on the first page of the score, and is featured in most program notes about the work (translation as printed in the score):

Ognuno sta solo sul cuor della terra
trafitto da un raggio di sole:
ed é subito sera

Everyone stands alone on the heart of the earth,
pierced by a ray of sunlight,
and suddenly it's evening

It seems that Nordheim found in Quasimodo a meditation over the eternal mystery of life and the feebleness of existence. The lines basically say: we are alone, and we are here only for a brief period of time, before it suddenly is over. The poem is not only the creative starting point of the composition; it is also used directly in the work. As I will come back to, some of the concrete material is in part based in manipulated recordings of three words found in the text: *solo* (alone), *terra* (earth) and *sera* (evening).

Quasimodo was a long-time fixation for Nordheim. The poem is taken from *Aque e Terre* (1930), the same collection that Nordheim later found material in for the orchestral cantata AN.54 *Eco* – a work that in many ways can be seen as a companion piece to *Epitaffio*. Nordheim would return to the collection again in an electronic work called AN.166 *Aqua Terra*, composed for an exhibition by the artist Ulf Nilsen in 1994.

likely that it was the adding of the Warsaw-elements that took place in the revision in 1969, unless, and this is of course also a possibility, the performance-tape was in stereo and only the version on the recording was in mono. Another aside: the 1980 score claims that the fixed media material is in stereo and that a four-track tape "with panorama" is available "on request." I have not been able to find this version, neither in Nordheim's own collection nor at his publisher Edition Wilhelm Hansen.

Background to the electronic material

As with *Katharsis*, Nordheim was allowed to use NRK's studio and regular musicians to prepare the electronic material. Documents in the archive of Norsk komponistforening indicate that Nordheim used the studio free of charge, even though NRK was not directly involved in the commission, but had to pay the two musicians playing percussion and harp, as well as five singers. The documents further indicate that the tape material was realized during January 1964, about two months before the premiere.²⁴⁶ Viktor Sandal was once again Nordheim's technical assistant.

According to an interview on NRK radio in 1973, Nordheim had originally planned *Epitaffio* as a large-scale work for chorus and orchestra.²⁴⁷ Somewhere in the creative process, he changed his mind and decided to replace the chorus with a fixed media element built around manipulation of human voices. He also wanted "steel sounds" to mix with the strings in order to achieve "a very shimmering sound, a *silver-like* sound."

The language Nordheim used in the interview is a prime example of *deterministic rationalization*. It is as if the use of electronic elements needs to be justified. As noted in the introduction to this dissertation, this type of language is frequent in Nordheim's descriptions of his own music – especially his electroacoustic works. The work "required" the voices to cover a register from "deep down where no basses can sing to high up where no sopranos can reach." The "logical consequence" was to use "electronic manipulation apparatus and with simple means change the sound of the human voice." In other words, Nordheim's expressive needs *demand*ed the use of electronics in order to overcome the limitations of the human body.

One should however be critical to such retrospective justification of aesthetic choices. The use of electroacoustic elements was a natural continuation of a style that Nordheim had already been exploring in *Katharsis* and in the music for radio and television. Another explanation should also be considered. In one of his last interviews, Nordheim indicated that the Swedish radio orchestra had instructed him to include electronic elements.²⁴⁸ The claim is plausible, even though this is neither mentioned in any of the documents I have found, or in any of the contemporary interviews. As Sanne Krogh Groth points out, the Swedish contemporary music community was particularly preoccupied with electronic music around this time. She has documented how a broad political process including

²⁴⁶ Nordheim applied to the Norwegian Composers Society to cover the expenses for hire of musicians (Letter from Nordheim to Norsk komponistforening dated Oslo, January 10th 1964). On January 29th Nordheim sent a note thanking the society for its contribution. Both documents: RA/PA-1446/Da/1950-69.

²⁴⁷ All quotes in this paragraph and the next are taken from the radio program Nordheim, Arne and Sverre Lind: "Elektronisk musikk gjennom 25 år. Episode 4: Elektronisk musikk i Norge," *NRK Radio*, July 19th 1973.

²⁴⁸ Arne Nordheim, interviewed by Jøran Rudi and Tilman Hartenstein on September 20th 2005. Video at NøTAM – Norwegian Center for Technology in Music and the Arts.

artists, institutions and politicians, first led to the establishment of a small electronic music studio in 1960, followed by the first Swedish electronic music festival in 1963 (featuring, among others, Józef Patkowski and Iannis Xenakis as speakers), and finally to the establishment of Sveriges Radio's Elektronmusikstudio (later EMS) in 1964 – the very year *Epitaffio* had its premiere.²⁴⁹ Despite this wide interest in electroacoustic music, few new mixed works had been composed in Swedish since Lidholm and Blomdahl's pioneering works from 1959 (*Riter* and *Aniara*).²⁵⁰ A request from the contracting entity to expand the mixed repertoire is therefore just as likely an explanation for the use of electronic elements as Nordheim's expressive needs. But of course, these three explanations are not mutually exclusive, and might all have contributed to shaping the work.

Sound mass composition

Epitaffio is scored for orchestra with a large percussion group, featuring also the unusual addition of electric guitar and electric bass. The score consists of 53 bars (52 in the first version) over 20 one-meter high (!) pages.²⁵¹ The fixed media element is indicated on pages 18 through 20, and is notated in seconds *senza misura*. The composition lasts about 11 minutes, and the taped element has a duration of about 5 minutes. Depending on the tempo of the first part, the insert point will come about halfway into the piece.

The work has previously been analysed in the master theses of Peter Wollnick (1971) and Andre W. Larsen (2003). Both authors claim that the work represented a distinct change in Nordheim's orchestral writing, and that he now fully took the step into the international avant-garde.²⁵² However, as Ole-Henrik Moe, Jr. has observed, the shift had already begun with AN.20 *Partita Memoria*, which premiered in March 1963.²⁵³ The more correct assessment is therefore to say that Nordheim's style gradually shifted during the years 1962-1964.

Over the next decade Nordheim was to be associated with neo-expressionism and sound-mass composition inspired by Eastern-European composers like György Ligeti, Krzysztof Penderecki and Witold Lutosławski, as well as Edgard Varèse and Iannis Xenakis' earlier explorations of the same techniques. In *Epitaffio*, one can in particular recognize influence from

²⁴⁹ Groth (2014): *Politics and Aesthetics in Electronic Music*, pp. 84-86.

²⁵⁰ Davies reports only two works: Siegfried Naumann's *Il Cantico del Sole* (1963) and Lars Johan Werle's *Drømmen om Thérèse* (1964). Since Davies only reports works composed in Sweden, it is possible that other works had been composed abroad.

²⁵¹ In the revised score from 1980, bar number 14 has been split in two. This version therefore has one more bar.

²⁵² Larsen (2003): *Rabulist eller ikon*; Wollnick (1971): *Arne Nordheims Canzona og Epitaffio*. See also Reitan (1975): *Arne Nordheims Eco og Floating*; Reitan: "Arne Nordheim," in ed. Michelsen (1980).

²⁵³ Hild Borchgrevink, "Klokkeklang og minnemekanismer," in *Lyd og ulydighet. Ny Musikk siden 1938*, ed. Anne Hilde Neset, Eivind Buene, and Audun Vinger (Oslo: Forlaget Press og Ny Musikk, 2016).

Penderecki's orchestral writing – including all-interval sound clusters played *divisi* by the strings and extended instrumental playing techniques. In a later interview, Nordheim recalled encountering *Threnody to the Victims of Hiroshima* (1960) as a “joyful shock with an inherent feeling of freedom to match the violent, strong emotional impact that naturally reflected the work's background.”²⁵⁴ Nordheim had used explosive orchestral outbursts and dense chords bordering on clusters in *Canzona* and *Katharsis*, but these passages were always contrasted with others that pointed back to Nordheim's neo-classical foundation. *Epitaffio* on the other hand, is almost solely built on transformation and combination of sound fields.

An illustrative example of Nordheim's new style can be seen in figure 3.12. The example shows how Nordheim builds up a sound field by gradually adding strings playing *divisi*, filling up almost all the chromatic intervals between D#4 and A6. When the cluster is complete, the field is gradually thinned out from the lowest to the brightest voice, before ending on a shrilling C7 in the piccolo flute. The excerpt not only illustrates the principle of “dark sounds wandering towards light” – Nordheim stated this as one of the aesthetic ideas for the work – but it also reveals the inspiration derived from electronic music production that is so characteristic of many sound mass compositions. The passage can be likened to the gradual opening and closing of a high pass filter with white noise as source. It is unclear whether Nordheim came to this technique via the works of the sound mass-composers, or if it came from his own experience working in the studio.

²⁵⁴ Beyer: "On Articulating the Existential Scream," (2001), p. 145. Similar quotes can be found in among others Reitan (1975): *Arne Nordheims Eco og Floating*.-3; Daliot (2001): *Klingende ord*; Wikshåland (1981): "-Ikke akkurat lystige dokumenter."

Figure 3.12: Example of sound field in *Epitaffio*, bars 6-10 in 1964 version of the score

Segmentation

As with most sonic works, *Epitaffio* has few clear cadencial gestures, and is therefore difficult to organize into clearly defined parts. This difficulty is reflected in the varying formal segmentation given in the two previous analyses of the work. Wollnick claims the piece has an ABA'-structure, based on the following bars: A: 1-30, B: 31-45, a transitional part in bars 46-52, and finally A': 47 and until the end.²⁵⁵ Larsen's segmentation is similar: A: 1-14, B: 14-30, C: 30-52, and D: 53 until

²⁵⁵ Wollnick (1971): *Arne Nordheims Canzona og Epitaffio*, p. 65.

the end.²⁵⁶ The main difference is that Wollnick sees some kind of recurrence of previous motivic material (thus ABA'), whereas Larsen sees the work as consisting of a sequence of independent parts (thus ABCD). This discrepancy in interpretation is understandable due to the lack of clear demarcations. However, since both authors seem to base their segmentation of the work on the score, they only treat the electronic part as a single unit tacked onto the end and fail to highlight that *Epitaffio* is a work clearly divided in two halves: one orchestral and one mixed.

In my interpretation of the composition, I see the balance of the two parts as *the* central aspect of the work. Therefore, I divide it in two form fields, A and B, separated by a short transitional passage in bars 47 to 53 (figure 3.13, table 3.2). The first form field (A) is orchestral, focusing on the shifting of sound masses and gradual transformations between dark and bright registers. In the second form field (B), the electronic tape is at the centre of attention, with the orchestra gliding in and out of the texture. I further divide both form fields into three phrase fields, giving the work the form scheme A1 A2 A3 Trans. B1 B2 B3.

Table 3.2: Three views on form in *Epitaffio*

Wollnick	Larsen	Nordal
A 1-13	A 1-14	A1 1-13
14-17	B 14-30	A2 14-34
18-29		
B 30-41	C 30-45	A3 35-46
Trans. 42-44*		
A' 47-53	D 46-52	Trans. 47-53
El. p.18	E 53 + el.	B1 [05.33]
p.19		B2 [06.48]
p.20		B3 [08.52]

* = Wollnick does not include bars 45-46 in his form scheme

Note: Wollnick initially referred to the 1964 version of the score, but I have adjusted the bar numbers to reflect the 1980 score in order to facilitate comparison with Larsen's and my own segmentation. Time markings refer to Gupta's 2010 recording (AN.R72).

²⁵⁶ Larsen (2003): *Rabulist eller ikon?*, p. 71.

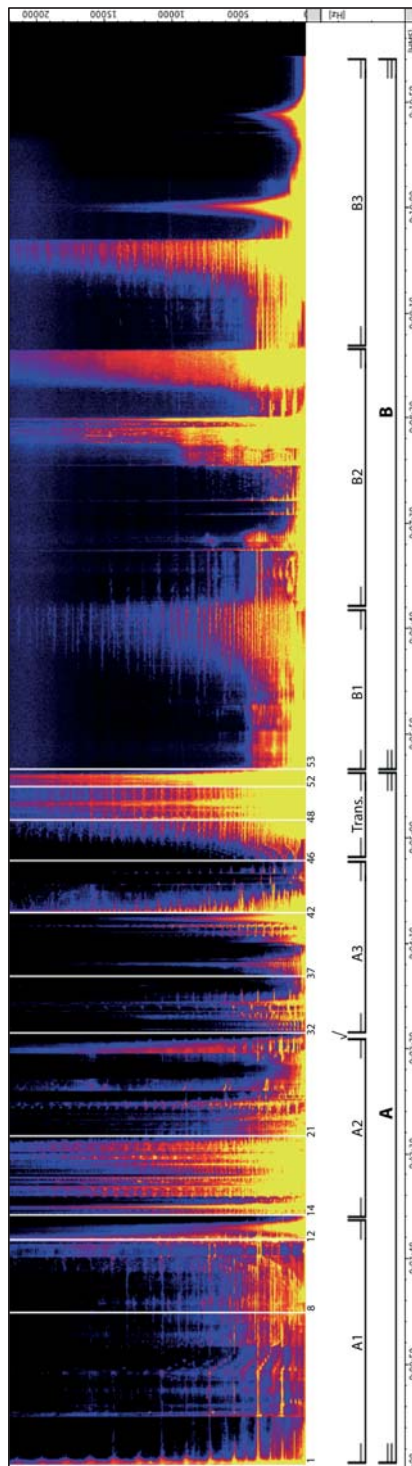


Figure 3.13: Spectrogram of Gupta's recording of *Epitaffio* (AN.R72), with selected bar numbers

Form field A

Since the motivic elements and orchestral sound fields in form field A have been thoroughly analysed by Wollnick and Larsen, I will provide only a short summary of my understanding of the first half of the work. The work begins with a rapid gesture, a “fanfare” in the upper register, where flute, vibraphone, campanili, celesta, harp and piano play individual gestures with their own rhythms. The resulting sound is more akin to a shred of notes than a clearly defined motif. The “fanfare” can be interpreted as a statement to the listener that *Epitaffio* is not a motivic-thematic work. Pulse and individual notes do not matter. Instead, emphasis lies on developments in sonic character.

The first sound field is introduced immediately after the opening gesture. It consists of the pitch class A laid out in different octaves. Several of the instruments play flageolets, either in order to reach the extremes of the sonic spectrum (the 1st violin goes as high as A7 with flageolets), or to produce a wide spectrum of overtones (such as the double bass that plays flageolets on A2 and A3). The rest of A1 is focused on slow transformation of such fields; especially the “travel” of sound from the extreme treble to the profound register or vice-versa, as per the above-mentioned example in figure 3.12.

A2 contrasts with the first sentence field by being based on short instrumental fragments and violent orchestral eruptions. Central to this section are a series of short quasi-motivic fragments traded between some of the instruments, most notably the electric bass, the electric guitar, harp, piano and the four percussionists. The instruction for some of these gestures is to play randomly over a given register (see for instance the vibraphone, marimbaphone and campanili in figure 3.14). As in the first bars, the importance of these gestures is found not in the individual notes that are played, but in the “swarming” sonic result.

Figure 3.14: Excerpt from *Epitaffio*, bars 18-20

In A3, the textures gradually thicken, before climaxing on an extremely dissonant cluster in bar 43. This cluster contains all 12 pitch-classes spread out over several octaves. I see the long held note after the end of the climax, a sustained G5 played on second violin I under the fermata in bar 46, as the end of A3. Even though this is noted neither by Wollnick nor Larsen, I hear this as the clearest points of rest in the entire composition, and I therefore mark bar 46 as the end of the form-field.

The transitional “leap”

The sustained G5 leads into the build up of a new sound field; a massive orchestral eruption that climaxes with loud hit on the tam-tam in bar 53. I see this eruption as a self-standing transition to form field B. With its extreme *ffff* dynamic by the hit on the tam-tam, the transition is the loudest event in the entire work. I interpret this moment as the central axis around which the rest of the composition is structured – the “leap” into the world of electronic sound.

Form field B1

I have used Blomstedt’s 1967 recording (AN.R2) as the basis for my analysis of Form field B (figure 3.15). This recording uses the original 1964 tape material, which will facilitate comparison with the later generations of the material. Timing indications in the following analysis are based on a digitisation I have made of the original LP (included on on the accompanying CD as **CD track no 5**). On this recording, the tape material starts on [04.50]. I have only provided spectromorphological transcription of section B2 (figure 3.16), where the most of the activity takes place.

Sentence field B1 consists of three electroacoustic elements, clearly recognizable as having the human voice as concrete source material. The elements are as follows:

[04.50] A “choir” of (individually taped?) voices sings with generous vibrato on the syllable /a/. I recognize both female and male singers. The voices hold the same note in a similar manner to how the string players hold one note when building up and tearing down a sound field. The “choir” part is varied through the addition or removal of tape layers – not via shifting the notes that the singers sing.

In the beginning the voices cover the medium (3) and high medium (4) registers. At [04.58] the ambitus expands to cover the spectrum between the deep (2) and treble (5) registers. The event is unstable, shifting in ambitus and dynamic.

[05.10] The hovering voices shift from the foreground to the middle ground as the strings build up a climactic sound field (marked “string cluster” in figure 3.15). At the same time, the ambitus expands to also include high treble (6). The combined fixed media chorus and the acoustic orchestra make up a complex, thick sound field with *fff* dynamic.

[05.44] The climax of the cluster is reached. The texture gradually thins out from the middle of the sound spectrum, leaving only the brightest and the lowest sounds towards the end of the phrase field.

It is possible to trace influences from Penderecki on the “choir” in this section. The “hovering” voices singing on the syllable /a/ with a wide and even vibrato bear striking resemblance to *Psalmus* from 1961, a work that Nordheim almost certainly knew. The similarity is so pronounced that it is unlikely that the resemblance is coincidental.

Form field B2

I interpret the two-pitched tones played loud in the foreground of the tape at [06.09] as the demarcation between sentence fields B1 and B2. In Blomstedt and Dreyer’s recordings these two tones come just after the end of the string sound field at the end of B1. In Gupta’s recording, which follows the published 1980 version of the score, the string cluster is finishing as these two notes are struck, weakening the feeling of demarcation. I still interpret the transition between the parts as happening at this moment.

The fixed media material in B2 contains the following main elements:

[06.09] Two pitched tones, Eb5 and E5 played on a clearly recognizable plucked string instrument (probably a harp). This signals the orchestra’s vibraphonist to play a short melodic fragment before piano, harp, vibraphone and percussion cut the texture with a sudden loud cluster chord (marked “short cluster chords” in figure 3.15).

Note that this is the only place in form field B where the musicians require a precise cue from the fixed media element. In the rest of the work, the mechanical time of the tape and the “human” time of the orchestra are allowed to drift slightly.

[06.13] Three tones Eb5, E5 and C#5 are played on a vibraphone on the fixed media element as response to the two plucked string notes and the melodic fragment on the orchestral vibraphone.

[06.16] Two stratified tones, sung by female voices with wide vibrato, make a dissonant chord (notes Eb5 and E5) on the syllable /a/.

[06.20] A female voice sings /so.../. At [06.24] a second female voice sings /...lo/.

[06.26] A bell.

[06.28] An arpeggiated vibraphone chord.

[06.36] A woman’s voice, divided onto three tape layers, sings the word /terra/.

[06.44] Before the voices fade out, a deep register (2) noisy sound is faded in. At [06.51] some dystonic sounds in the profound register (1) are added. This evolves into an accumulation of dystonic sounds (metal percussion) playing ever faster, and in an increasingly high register. The dynamic gradually evolves from *ppp* to *fff*.

[07.06] Orchestral strings play short arpeggiated figures (indicated as “string arpeggios” in figure 3.14). Together with the electronic sound, this makes for a chaotic climax.

[07.35] The sound field is abruptly cut off.

[07.38] A gradually evolving female voice sings the syllable */ssse../*. This is followed by a two-voice stratified cluster. At [07.44] a third layer states the syllable */.ra/*.

The most striking element in B2 is the concrete treatment of the words *solo* (alone), *terra* (earth) and *sera* (evening). In Blomsted’s 1967 recording, all the words are clearly audible, although manipulation has rendered them almost indiscernible. In Dreyer and Gupta’s recordings however, so many elements have been added to the tape and the orchestral part that the word */solo/* is entirely masked. There is also an additional layer of “bubbling sounds” that has been added to the sound field before the word */sera/*. This layer is similar to sounds heard in, for instance, AN.70 *Poly-Poly* and AN.73 *A forum for the arts*. It is therefore probable that this is a later addition made during the Warsaw period.

In the original generation of the tape material, sentence field B3 (starting at [07.53]) contains only one event in the taped part: a gradually evolving and disappearing sound field. The field starts with a high-pitched manipulated voice, a female voice on 4x speed singing a stratified syllable */a/*. Gradually, layers are added in the deeper and brighter register until the field covers almost the entire audible spectrum. Simultaneously, strings play the cluster indicated on page 20 in the score, filling almost all intervals between E2 and Ab8. At [08.50] white noise is added to the electronic texture in order to make the sound field even thicker. The climax of the field is met at [08.55], after which it gradually thins out and fades. The brightest elements disappear first, and gradually we are left only with a profound dystonic sound. In the revised version of the work, rolls on the timpani and grand cassa has been added to this section, giving the ending a feeling of sustained prolongation.

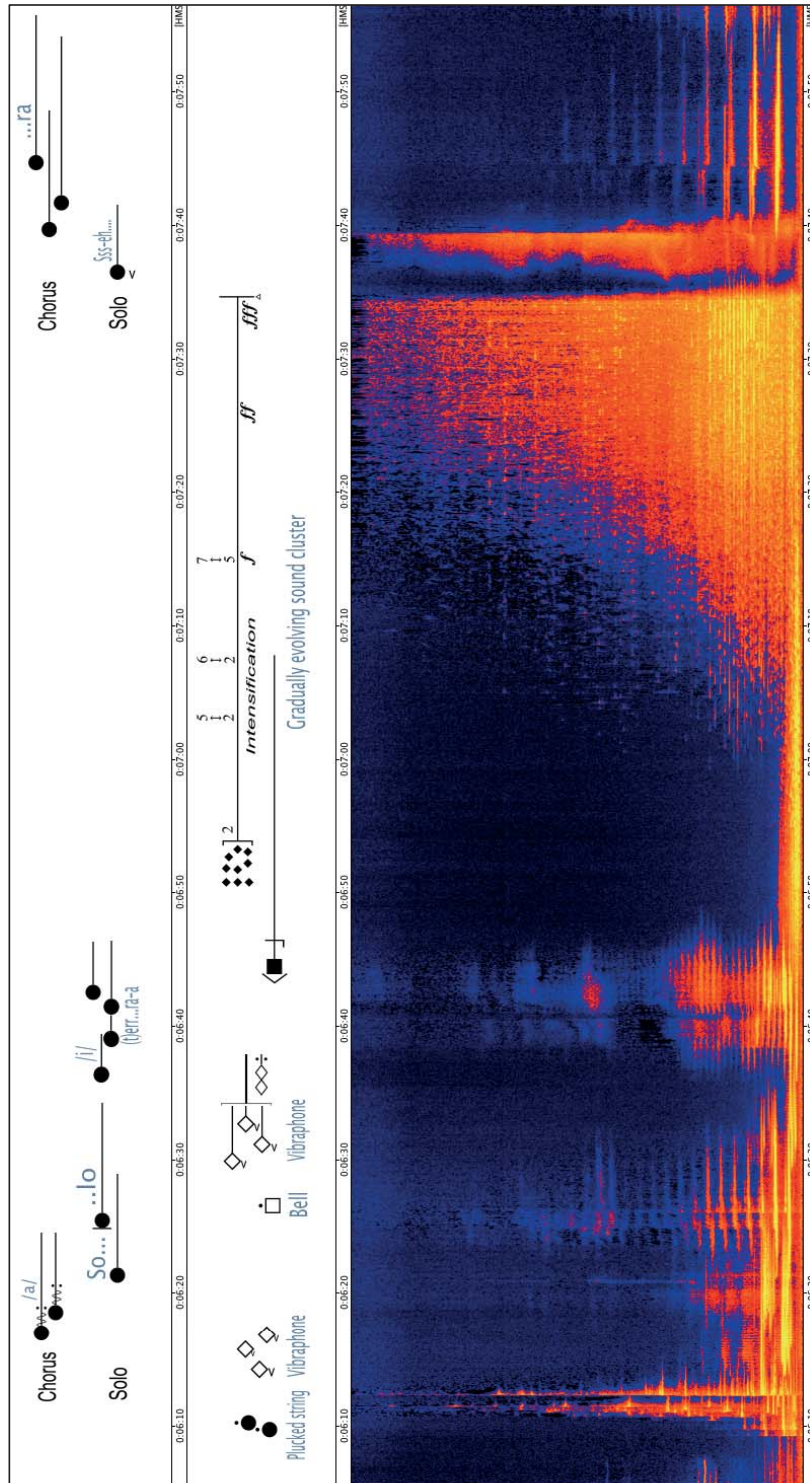


Figure 3.16: Transcription of sentence field B2, *Epitaffio*

A different realm

The *contact* between the acoustic and electroacoustic sound worlds can be observed on many levels in *Epitaffio*. Nordheim has not given the tape a separate melodic voice, as for instance Messiaen does with the ondes martenot in the *Turangalila symphony*. Instead the orchestral and electronic elements drift in and out of each other as two different streams of sound, sometimes standing out as separate entities, sometimes blending seamlessly together. Especially in the large orchestral sound field in B3, the frequency density in the orchestra is so high that it matches the noisy sounds from the electronic material. This at least appears to be the case, when listening to the recordings. As mentioned, it can be difficult to discern on the recordings which elements are performed by the orchestra and which originate from electronic material. This is obviously the result of deliberate choices made in the production and mixing process, and thus probably mirrors Nordheim's aesthetic views on the work.

Still, the two worlds do not mix entirely (the principle is *contact* and not *compounding*). This is in particular due to the generous amount of reverb used on the fixed media element, which creates a sense of distance. *Epitaffio* marks the beginning of something that was to become a hallmark of Nordheim's electronic sound: the creation of large sonic spaces through extreme use of reverberation. There had been prior examples of generous use of reverb in Nordheim's catalogue, but in *Epitaffio*, this became a central part of the aesthetic. By creating such large sonic rooms, the listener hears the sounds as if from a distance. This creates a somewhat unreal, different or otherworldly soundscape, which is central to the "extending" function of the electronic material.

In a concert setting, the difference would be even more pronounced. The score indicates that the electronic sound should be projected from speakers surrounding the audience. In concert, the electronic part would appear not just as an expansion of the orchestral sonic palette: it would also be an active ingredient in the spatial experience of the work.

It was very much a thing of the times to immerse the audience in sound. For instance, in the spectacular concert *Le Concert Collectif* arranged by GRM in 1963, which Nordheim might have been aware of, the audience was surrounded by speakers and a "spatialization unit" had been installed in the centre of the room in order to achieve what Emmerson has called a "controlled sound environment" – an idea that eventually led GRM to construct the *Acousmonium* loudspeaker orchestra in 1974.²⁵⁷ For Stockhausen's *Kontakte*, the distribution of sound in four-channel space was an important part of the composition. It seems that Nordheim took these ideas to heart, and used them in his own design of the concert experience. A photograph from an early performance of

²⁵⁷ Simon Emmerson: *Living electronic music* (Aldershot: Ashgate, 2007), pp. 151-57.

Epitaffio shows that Nordheim had placed his electronic playback unit in the middle aisle just in front of the stage. In this way, he could stay close to the ideal listening point for the orchestra (the conductor's place), whilst remaining clearly visible to the audience. The central placement of the diffusion station gave clear emphasis to the performance of the electronic tape. One could almost say that Nordheim claimed status as a secondary conductor. This underlined that a performance of *Epitaffio* was not just a regular musical event; it was also a technological occasion. The audience was from the start made aware that they were in for something out of the ordinary.

The dramatic function of the tape material in *Epitaffio* is therefore to be something that goes beyond the possibilities of the human body. Again, this would be a sign of the times. It is illustrative that *Epitaffio* premiered the same year that Marshall McLuhan published his seminal book *Understanding Media: The Extensions of Man*. Similar to how McLuhan saw technology and media as extensions of the nervous system, Nordheim seems to have been yearning to make sounds that were extensions of the human experience.

3.5 Conversation: *Response* (1966)

In *Epitaffio*, Nordheim had surrounded his audience with electronic sound. In AN.34 *Response*, composed for two percussionists and continuous electronic tape, he even took it a step further. *Response* premiered on October 30th 1966 at Kunstneres hus (The Artists' House), an art gallery in Oslo. Nordheim had placed speakers all over the building; not just around the stage and the audience, but also in the stairways and adjoining rooms. The concert seems to have been a success. According to one of the reviewers, several hundred people showed up, including many prominent members of the cultural elite.²⁵⁸ The reviewer focused on how Nordheim had made use of the unusual setting to challenge the traditional concert ritual. Not only were there sounds playing everywhere (one can imagine to the despair of people who wished to escape this overwhelming experience – Nordheim had a tendency to play his music extremely loud), but Nordheim had also placed the musicians as far away from each other as possible, in order to heighten the effect of sound travelling over very long distances between the two performers and between the performers and the electronic sound.²⁵⁹ Fittingly, Nordheim's motto for *Response* was "Huset synger!" - "The house is singing!"

Over the following pages, I will first review the "*Response* family" of compositions and present an attempt to resolve the confusion that has existed around all the different versions of the work. I will also trace the various versions of the fixed media material, and point to different sources

²⁵⁸ Ariane: "Respons på 'Response' på uroppførelsen i går," *Aftenposten*, October 31th 1966.

²⁵⁹ This is explicitly stated in the instructions of the score to *Response 1*.

of inspiration. In the subsequent analysis, I will argue that one can understand the formal disposition of the fixed media material of *Response* as an example of moment form, a concept initially developed by Karlheinz Stockhausen. Finally, I will investigate the relationship between the fixed media material and the performed material. I will conclude that the element of *conversation* has changed over time. In the first version of *Response*, the tape is a self-sufficient voice on par with the acoustic instruments, but as the series developed, the fixed material became more of a background element.

The *Response* family of works

The initial success of the concert at Kunstnernes hus might explain why *Response* became a treasured work for Nordheim. On its premiere, *Response* was presented only by its title, but already by the time of the first recording a few months later (first released on AN.R2 *Contemporary Music From Norway: Arne Nordheim*) the number “I” had been added, indicating that more versions were on the way. Since then, Nordheim viewed *Response* as a flexible piece that could be modelled after the current needs of an upcoming concert or the availability of players.

In total, I have identified ten works that belong to the *Response* “family” throughout Nordheim’s catalogue (table 3.3). There are eight *versions* of *Response* (including AN.161 *Link*). I have also included AN.40 *Evolution* and AN.193 *Nordklang* as part of the family, since they share much of the fixed media material. However, I regard them only as *related works*, not as versions of *Response*.

Table 3.3: The *Response* family of works

AN.#	Given title	Actual #	Instr.	First performance	MS/score	Comment
34	<i>Response</i>	1	2 perc.	Kunstnernes hus, Oslo, Oct 30 th 1966	EWB 1969. As <i>Response 1</i>	Given roman number I by the time of the LP release in 1967.
40	<i>Evolution</i>			NRK TV, May 28 th 1967		Equals [06.55] to [14.55] of the original <i>Response</i> tape.
43	<i>Response 2</i>	2	1 perc.	Stockholm, Jan 10 th 1968 ²⁶⁰	Lost?	Version for the Swedish Rikskonsertene tour
46a	<i>Response 3</i>	3	1 perc, live el.	ABC-Teateret, Oslo, Feb 17 th 1968 ²⁶¹	Lost?	Version with live electronic manipulation of perc. and tape material
46b	<i>Response III</i>	4	1 perc.	Henie Onstad Kunstsenter, Nov 22 nd 1970 ²⁶²	Lost?	Fixed media version of <i>Response 3</i> .
104	<i>Response IV</i>	5	4 perc.	Smithsonian, Washington, Mar 31 st 1977 ²⁶³	EWB (no date)	3 rd major revision of the tape material.

²⁶⁰ Moe-jr: "Verklister," in ed. Mehren, et al. (1991), p. 67.

²⁶¹ Program for concert at ABC-Theatre, February 17th 1968, from box marked “Arne” at The Arne Nordheim Centre, Norwegian Academy of Music

²⁶² (Unsigned): “Høvikmatiné imorgen viet tre Nordheim-verk,” *Aftenposten*, November 21st 1970.

²⁶³ Moe-jr: "Verklister," in ed. Mehren, et al. (1991), p. 88.

123	Response III	6	4 perc, ch.organ	Oslo Concert Hall, Oct 10 th 1984 ²⁶⁴	EWB (no date)	
150	Response ("1990")	7	1 perc.	Henie Onstad Kunstsenter Oct, 18 th 1990 ²⁶⁵	EWB 2002	Percussion part edited by Odd Børge Sagland and Nordheim.
161	Link	8	1 perc, synth.	Oslo Concert Hall, Mar 14 th 1993	MS	4 th revision of fixed media material.
193	Nordklang		1 perc, bass trb	ILIOS Festival, Harstad, Feb 2005	EWB 2007	Includes excerpts from <i>Response</i> "1990".

The *Response*-series highlights the problems of distinguishing between versions and related works in a composer's catalogue. Roger Scruton sees the problem of *versions, adaptations, arrangements, orchestrations* and *reductions* as examples of the classic *type vs. token* debate.²⁶⁶ He concludes that the demarcating line between instances of a type (tokens) and new types must be drawn on a case-to-case basis. It is clear that Nordheim was more lenient when it came to blurring these lines than some of his critics, in particular due to his fondness for constantly coming up with new titles ("I am a hound for titles," he claimed in an interview²⁶⁷). This led to a minor controversy regarding *Evolution*, the fixed media work that he lifted from [06.55] to [14.55] of the original *Response* tape material. The critic Kai Wentz had observed the similarity between *Evolution* and *Response*, and he pointed it out in an article called "Sann kunst er ærlig" ["True art is honest"], following the premiere of AN.46 *Response 3* in 1968. Wentz claimed that Nordheim was bluffing the audience when he presented *Response* as a new work (Note: No numbering of the *Response*-version was used in the debate). Nordheim's response was that *Response* was a further development of *Evolution*, and that he never had tried to hide that the two works were related.²⁶⁸ However, this argument is weakened by the fact that the connection to *Response I* was not pointed out in the 10-minute introduction to the *Evolution*-broadcast on NRK TV. It is not controversial in itself for a composer to re-use his own material. This has been common practice throughout the entire history of music. But it is understandable that controversy arises when a work based on something old is *presented* as something new, something that obviously was the case with *Response* and *Evolution*.

To some extent, one can point to a similar problem with one of the last instalments in the series. *Link* from 1993 was an *adaptation* of AN.123 *Response III* created for Cikada Duo; an

²⁶⁴ Moe-jr: "Verklister," in ed. Mehren, et al. (1991), p. 100.

²⁶⁵ (Unsigned): "Klang og bilder" in *Aftenposten*, October 18th 1990.

²⁶⁶ Scruton (1997): *The Aesthetics of Music*, pp. 99-106.

²⁶⁷ "Mitt liv," *NRK2*, December 26th 2012

²⁶⁸ Kai Wentz, 'Sann kunst er ærlig', *Verdens Gang*, March 1st 1968. Arne Nordheim, 'Kunst og forvrenging', *Verdens Gang*, 6 March 1968, p. 19. The claim that *Response* is a further development of *Evolution* is mentioned in (Unsigned): Program for the Swedish Rikskonsertene Tour, Arne Nordheim centre, 1968.

ensemble consisting of Kenneth Karlsson on synthesizer and Bjørn Rabben on percussion. Since the amount of alterations was quite extensive – the organ part was re-written for synthesizer, the percussion voice was reduced from four to one player, and the fixed media material was revised (it includes some new layers based in digital synthesis, provided by Mats Claesson) – Nordheim felt that the identity of the work had changed, and he renamed it. This time, no controversy arose, possibly because Nordheim was more open about the relationship between the two.²⁶⁹ Still, it is clearly a *version* of *Response*. One could even argue that *Link* is not actually a new instalment in the series, but an *arrangement* of *Response III* with slightly different instrumentation. It feels like the same work, and in my view, the use of a new name is hardly justified. I have nevertheless included it in my list of compositions as a separate entry, since Nordheim insisted on using this title.

Inconsistencies in the version numbering of *Response*

There has been some confusion over the years about the different versions of *Response*. Much of this confusion can be traced back to Nordheim himself. Not only was he inconsistent in numbering the series, he was also notoriously inaccurate when talking about the works. For instance, in an overview of the series in the score to AN.150 *Response “1990”* Nordheim dates *Response I* to 1967 instead of 1966, omits AN.43 *Response 2* and AN.46 *Response 3*, and confuses AN.104 *Response IV* with AN.123 *Response III*, claiming (understandably, from the numbering) that the latter was composed first. In the same overview, *Response IV* was misspelt as *Responce* and was dated to “19xx” [sic].²⁷⁰

Another factual inaccuracy that can be traced back to Nordheim is the claim that the different versions of *Response* “all share exactly the same electronic accompaniment,” and that this material functions throughout the series as “a *cantus firmus* against which the player will tell his tale.”²⁷¹ However, Nordheim revised the fixed media material for *Response* continuously, much in the same manner as he did for *Epitaffio*. The first updating of the material seems to have been undertaken already in 1967. The original tape starts very quietly with an emerging sound field of filtered white noise.²⁷² But in the 1967 recording (on AN.R2), the work begins with a rapidly ascending electronic gesture, which was not present in the 1966 tape. In the published score from 1969, we can further see graphical representations of elements that are not present in the 1967 recording. For instance, a

²⁶⁹ See liner notes to AN.R66 *Cicada Duo*: Nordheim.

²⁷⁰ Score for *Response “1990”*. English in original.

²⁷¹ Score for *Response “1990”*. English in original.

²⁷² In 2011, I found by chance a version of the original *Response*-tape in the basement of the Acoustical Laboratory at NTNU. The tape bore the inscription “Sunia.” All timing references to the 1966-version refer to a digitalized version of this tape. It is included on the accompanying CD as **CD track no. 06**.

rapid ascending and descending sine wave glide is indicated at 1'58 (the red square in figure 3.17). This element is not included in the first recording, but is present in all subsequent recordings of the work. A stable version of the *Response* fixed media material was not established before 1977.

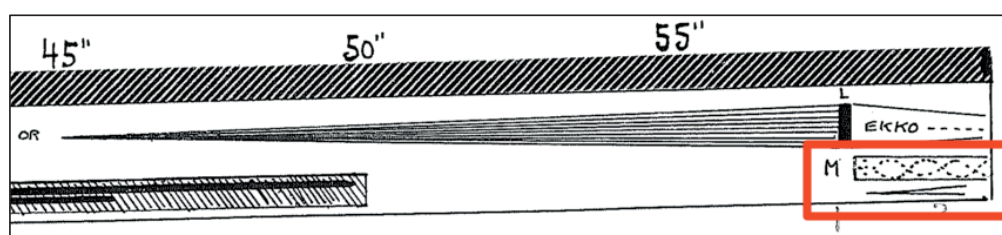


Figure 3.17: Excerpt from *Response 1*, Wilhelm Hansen ed 1969, p. 2

The confusion about numbering in the *Response* series seems to come from the three instalments that bear the number three (AN.46a & b and AN.123). The second *Response*, number 2 for one percussionist and tape (AN.43), premiered in January 1968 as part of a school tour in Sweden with Nordheim's works, arranged by Swedish Rikskonsertene. The tour featured Bent Lylloff on percussion, as well as the rest of the Danish ensemble Trio Mobile for the work AN.42 *Signaler*; Mogens Ellegaard on accordion and Ingolf Olsen on electric guitar. On February 17th 1968, Nordheim arranged a concert at ABC-teateret in Oslo featuring the works that had been played on the tour. *Response* now bore the number 3 and was billed as a premiere [“uoppføring”].²⁷³ However, since both *Response 2* and *3* are scored for one percussionist and tape, it is possible that Nordheim actually regarded these as the same version, even though he initially gave them different numbers. The percussion section seems to have been identical. Lylloff had played 56 concerts with *Response 2* over the last month and a half, and it is unlikely that he would have changed his part for a performance only a few days later. The rationale for giving a new number to the work instead seems to have been that Nordheim wanted to try out live electronic manipulation of the tape material during the ABC-teateret concert. As will be noted in Chapter 6, Nordheim and the sound engineer Meny Bloch were at the time experimenting with live filtering and ring modulation in connection with AN.49 *Warszawa* and AN.50 *Colorazione*, both works that would premiere a few months later. In the program for the ABC-teateret concert, *Response 3* is billed as a work for percussion and tape, with live electronic manipulation by Nordheim and Bloch.²⁷⁴ The reviews do not indicate whether

²⁷³ Program for concert at ABC-Theatre, February 17th 1968.

²⁷⁴ Program for concert at ABC-Theatre, February 17th 1968.

Response actually *was* a live electronic work during the performance, only that there were technical difficulties: halfway in, a fuse broke and the performance had to start over.²⁷⁵

The next time *Response* for one percussionist and tape was performed, at Henie Onstad Kunstsenter in 1970, it was given the Roman numeral *III* instead of the Arabic 3. The performance was billed as a “premiere in its current version” and it featured Per Erik Thorsen on percussion.²⁷⁶ It seems that the electronic material was once again fixed media only. I have not been able to locate this 1970 version of the tape, but the later 1977 version includes some passages that are similar to what Nordheim was working on in Warsaw in 1970 (from the sessions of AN.74 *Pace*). It is likely that these additions were new for the 1970 performance – thus explaining the billing as “premiere in its current version”.

The seemingly minor detail of the change between Arabic and Roman numerals for *Response* actually highlights a central point regarding Nordheim’s views on his music. Nordheim was never very precise in the organization of his catalogue. Keeping track of versions, and keeping naming and numbering consistent seems to have been low on the priority list. Here Nordheim contrasts greatly with, for instance, the fellow Norwegian composer Bjørn Fongaard, who kept a tidy list of opus numbers for almost every minor sketch that he wrote, even though very little of this actually got published or performed. Nordheim on the other hand, focused on upcoming concerts and current projects. Previous works were only interesting if they could lead to new performances. He would cannibalize old works if he felt they had fulfilled their role, but still contained something that could benefit later works.

This happened for instance when Nordheim was preparing the next major revision of *Response* – version *IV* from 1977. Nordheim had expanded the percussion part to four percussion players, and he overhauled the tape material (included on the accompanying CD as **CD track no. 07**). The greatest change was the addition of a long tape segment towards the end, which increased the length of the work by almost 2’30. This section is what I will term the “Angelic Choir” memorable. As I will come back to in Chapter 8, this segment originated in 1977 in connection with Nordheim’s reworking of AN.29 *Favola* to the ballet AN.105 *Ariadne*. It may seem as if Nordheim merely added to *Response* a passage that he was currently working on for his new ballet, which he was evidently very happy with. The consequence of this addition however, is that if one were to play the earlier version of *Response* with the 1977 tape material, the taped element would be too long.

²⁷⁵ Peter Rammo: "Musikalsk show i ABC-teateret," *Aftenposten*, February 19th 1968.

²⁷⁶ (Unsigned): "Høvikmatiné imorgen viet tre Nordheim-verk," *Aftenposten*, November 21st 1970.

The real confusion around *Response* began in 1984, when Nordheim expanded the version for four percussionists with a part for church organ. For some unknown reason this version was published by Edition Wilhelm Hansen as *Response III*. It is possible that the backwards numbering was a move by Edition Wilhelm Hansen to fill a hole in the series, since neither 2 nor 3 of 1968 or *III* of 1970 had been published. It is also possible that Nordheim had discarded the two previous versions he had numbered as 3. In a later interview with Swedish radio, Nordheim stated that he had previously attempted to write a version number three, but had given up and subsequently moved on to four.²⁷⁷ Whatever the reason, it seems that what Nordheim had given up on was keeping track of the versions. Next time he revised the work he named it after the year of its first performance: AN.150 *Response* "1990".

I will argue that the many versions of *Response* illustrate a larger point on how Nordheim saw his music as something flexible. For Nordheim, his works were not fixed in a specific moment in time, but followed him throughout his career and reflected his own development. This is particularly the case for *Response* and *Epitaffio*, but also something we will see in later compositions.

The production of the original tape material

There are some uncertainties around how, where and when the electronic tape for *Response* was composed. As I will come back to, the original 1966 version of the tape contained a mixture of sounds from an electronic organ, acoustical instruments, and standard electronic sounds like gliding sine waves and filtered noise. Some of this material points to the radio theatre studio at NRK, but there are also indications that a few elements were conceived at the Studio voor Elektronische Muziek in Utrecht. In the program for Nordheim's Rikskonsertene tour in Sweden in January 1968, Nordheim claims that the electronic material for *Response* was realized in Utrecht and later completed in Oslo.²⁷⁸ In an interview with *The Wire* in 2003 Nordheim made a comment that supports this claim:

I produced an enormous amount of sonic elements which had different connections to my feelings. I brought home a whole package of beautiful sounds and I went to the broadcasting people in Norway and they were so open and said go ahead – here's a room, equipment, a technician.²⁷⁹

²⁷⁷ Interview with Nordheim on Sveriges Radio in connection with a performance of *Response IV* in 1981. <https://www.youtube.com/watch?v=ULHrjoNDTt0>, visited April 12th 2016.

²⁷⁸ (Unsigned): Program for the Swedish Rikskonsertene Tour, 1968. Nordheim collection, Norwegian National Library.

²⁷⁹ Julian Cowley: "Eternal Return. Interview with Arne Nordheim," *The Wire*, no. 233 (2003).

In another interview, Nordheim claimed that he was in Utrecht “a lot”.²⁸⁰ However, this claim has proved hard to verify. Studio protocols only confirm that Nordheim visited the studio between April 18th and 21st 1966. The protocols show that Nordheim had meetings with members of the staff, including Gottfried Michael Koenig and Stan Tempelaar's, but there is no mention of him actually using the studio.²⁸¹ Considering the tedious process of composing electroacoustic music in the 1960s, if Nordheim visited the studio for only three days he would just have had time to generate some segments for later assembly, or alternatively, to do some processing on material that he had already prepared.

An argument that supports Nordheim's claim of using the Dutch studio, regardless of the lack of documental traces, is that there are sonic novelties in *Response* that point to the use of non-NRK facilities. These include ring modulation of some of the material, which up to this point had been absent from Nordheim's electroacoustic music. Examples include the overtone-rich organ sound that evolves from the deep register already at [00.50] and the up-and-down sine glissandi at [04.29] (both time indications refer to the original tape material). In a later interview, Nordheim stated that he had been reading about the ring modulator and other electronic manipulation units in a “little green book called *Elektronische Musik*.”²⁸² It is probable that Nordheim was referring to volume 1 of *Die Reihe*, which indeed had a green cover and was dedicated to electronic music.²⁸³ Nordheim further stated that he “wanted one,” but did not get hold of one in Norway before he got the acoustics department of The Norwegian Institute of Technology (today NTNU) and SINTEF to build one for him in 1968 (more about this in Chapter 7). Ring modulation is a central part of Koenig's aesthetics, and it is possible that this was what Nordheim was after in the Netherlands. What exactly what was done in the Dutch studio is, however, not documented.

On the other hand, it is rather certain that the laborious process of cutting, splicing and mixing the finished tape took place in Oslo. Again, I found no documents in the NRK archives documenting the production of *Response*. However, during a TV program on the state of Norwegian art from 1966, we can see Nordheim working together with an unidentified sound engineer in a room at NRK on a passage that later is to be found in *Response* (the ring modulated sine wave glissandi from

²⁸⁰ Arne Nordheim, interviewed by Jøran Rudi and Tilman Hartenstein on September 20th 2005. Video at NoTAM – Norwegian Center for Technology in Music and the Arts.

²⁸¹ Kees Tazelaar in a personal communication, September 16th 2013. I wish to thank Tazelaar for having checked the studio protocols.

²⁸² Arne Nordheim interviewed by Tilman Hartenstein in the program *Elektronisk Tidligmusikk* (part of *Musikk i brennpunktet*), NRK Radio P2, December 14th 2005.

²⁸³ When I visited *Grotten* in early 2011, I observed that Nordheim had a complete original edition of *Die Reihe* in his private book collection.

[04.29], part 8, cf. table 3.4).²⁸⁴ I will therefore conclude that the material for the original version of *Response* was generated in Oslo and Utrecht, as indicated in the interviews, and then later assembled and mixed in Oslo.

Electronic sound material and possible sources of inspiration

The fixed media part of *Response* consists mainly of manipulated sounds from percussion instruments, as well as electronic organ and other electronically generated sounds. On a general note, one can say that the electronic element is composed from the same classes of sounds that can be obtained from live percussion instruments.

The most important source is various sounds obtained from a large tam-tam (I will come back to this in a bit). Furthermore, Nordheim used a grand piano, played inside the lid as a percussion instrument. By holding down the pedal, Nordheim used the piano as a resonant body that could produce a large variety of sounds, much like in Mauricio Kagel's *Transición II* (1958–59) – a work that Nordheim was familiar with. Nordheim plucked the strings, beat or scratched the frame, threw the lid shut, or dropped objects onto the strings. Other elements in the tape include metallic percussion (in particular crotali and triangles), an electric organ playing stratified overtone-rich chords, ring modulated sine wave glissandi, and short motifs and sound fields constructed from filtered noise. The degree of manipulation has been kept rather low. Nordheim used reverb, but not as much as in *Epitaffio*, possibly since both the tam-tam and the grand piano are naturally resonant bodies. Elsewhere, Nordheim used backwards playback, speed alterations (2x or 4x) and manipulation of attack through diagonal cutting/splicing of the tape.

Nordheim seems to have drawn inspiration from a number of sources. The impact of Karlheinz Stockhausen is obvious, at least on the technical side. A leading idea in *Response* is the dialogue – the *conversation* – between the fixed and the performed parts. Stockhausen's *Kontakte* (1960) also focuses on the relationship between electronic and acoustic sound, and seems to have been a source of inspiration. Even the title *Response* could be interpreted as a reference to *Kontakte*. Further, the innovative use of tam-tam in *Mikrophonie* (1964–65) and *Momente* (1965 version) seems to have been important. A tam-tam can produce a rich set of resonant sounds and effects. In Stockhausen's works it is rubbed, scratched, struck with various objects (from large felted clubs to knitting needles), shouted into, and recorded from various positions and distances. Nordheim used many of the same techniques.²⁸⁵ Further, both Nordheim and Stockhausen used the ambiguous sound quality of the tam-tam as “mediator” between the electronic and the acoustic sound worlds.

²⁸⁴ Jan Horne (director): “Norske kunstnere på 60-tallet,” *NRK TV*, 1966, exact date unknown.

²⁸⁵ Nordheim demonstrates how this was done on the children's program “Falkeklubben,” *NRK TV*, June 3rd 1969.

In all these works, it is often difficult to determine whether a sound is electronically generated, or if it originating from the tam-tam. Finally, the non-conventional use of Hammond-organ in the 1965 version of *Momente* seems to have been a source of inspiration for the organ part in the electronic tape of *Response*.

The German star composer was clearly on Nordheim's mind a lot in 1965–66. Ny musikk (meaning Nordheim and Finn Mortensen) had just assisted the Bergen International Festival in arranging a whole-evening concert with Stockhausen's music, and they were in the process of preparing a Stockhausen festival in Oslo in 1967. One week before the premiere of *Response*, Nordheim wrote a long review for *Dagbladet* of a Swedish concert with Stockhausen's most recent electronic music.²⁸⁶ In the article, Nordheim praised Stockhausen for using the "technical apparatus in the service of expression" ["tekniske apparatur i uttrykets tjeneste"] and provided detailed descriptions of *Kontakte*, *Mikrofonie I and II*, and *Mixtur* – precisely the four works that resemble *Response* the most. Furthermore, I know from my visit to Grotten after Nordheim's death, that he owned a copy of the first volume of Stockhausen's *Texte zur Musik*. The book was published in 1963, and deals among other things with Stockhausen's electronic music and his idea of moment form. I don't know whether Nordheim had acquired his copy by the time he composed *Response*, but since it is worn and obviously well-read, a direct influence from these texts seems probable.

In other words, the impact of Stockhausen is fairly out in the open. But there is also a lesser-known source of inspiration that might have been just as important. On September 2nd 1962, Ny musikk arranged a concert presenting two works by the Belgian composer Henri Pousseur (1929–2009). The works were *Repons* (1960) for percussion, flute, violin, cello, harp, piano and electric organ, and the acousmatic work *Trois Visages de Liège* (1961).²⁸⁷ There are clear gestural parallels in percussion writing between Nordheim's *Response* and Pousseur's *Repons*. The similarity of title is also impossible to miss. Likewise, there is more than a passing resemblance between the electronic sounds and textures of *Trois Visages* and many of the passages in *Response*. It is also striking that Ny musikk programmed *Trois Visages* for a second time on March 12th 1966 – around the same time that Nordheim was assembling the tape material for his composition. In a later interview, Nordheim acknowledged inspiration from the Belgian composer, and stated that in particular *Trois Visages* harmonized with his "need for romantic forms."²⁸⁸ Nordheim might have been attuned to

²⁸⁶ Arne Nordheim: "Musikk ved en grense," *Dagbladet*, October 22nd 1966.

²⁸⁷ (Unsigned): "Sesongåpning i Ny musikk," *Verdens Gang*, September 20th 1962.

²⁸⁸ Arne Nordheim, interviewed by Jøran Rudi and Tilman Hartenstein on September 20th 2005. Video at NøTAM – Norwegian Center for Technology in Music and the Arts.

Stockhausen's ideas and grandiose visions, but his lyricism is far removed from Stockhausen's uncompromising modernism. Aesthetically speaking, Nordheim and Pousseur are much closer.

Moment form in *Response*

In the following, I wish to focus on how the fixed media material of *Response* has been composed in something similar to what Karlheinz Stockhausen has called *moment form*. The pivotal examples of moment form are Stockhausen's *Momente* from 1965 and *Telemusik* from 1966. In the article "Moment Form in Twentieth Century Music", Jonathan D. Kramer claims that these works are like "mosaics" where each "moment" is a "quasi independent section, set off from other sections by discontinuities."²⁸⁹ In effect, the composer invites the listener to focus on vertical time – the now – rather than on a goal that is to come or something that has passed. Kramer further writes that it is important that "the order of moments must appear arbitrary for the work to conform to the spirit of moment form."²⁹⁰ However, as Stockhausen explicitly pointed out, the moments are planned to come in a specific order, and cannot be moved around arbitrary as in the *mobile form* of aleatoric music.

The effect of moment form is that it invites the listener to a different type of focus, compared to traditional teleological form schemes such as the sonata form. Works in moment form rarely contain development and process, even though references to earlier moments can occur. Instead, the central aspects are juxtapositions, contrasts and discontinuity. Unity is not provided by development of material, but by other means, such as timbral coherence or other limitations to the musical material.

It must be stressed however, that even though Nordheim was acquainted with Stockhausen's theories and the mentioned works, he never explicitly stated that he had adapted Stockhausen's principle. As Kramer points out, discontinuity has been a central form principle in much of the music of the 20th century, and there are many other electroacoustic composers (or composers in general) that use this principle without attributing it to Stockhausen. It should also be mentioned that while Stockhausen was organizing his moments following serial principles, Nordheim seems to not have undertaken any kind of strict organization. Another important distinction is that Nordheim often allows different moments to float into each other or interlock, whereas Kramer maintains that discontinuity is a central principle.

²⁸⁹ Jonathan D. Kramer: "Moment Form in Twentieth Century Music," *The Musical Quarterly*, vol. 64, no. 2 (1978). See also Kohl: "Serial Form, and Process in Karlheinz Stockhausen's *Telemusik*," in ed. Licata (2002).

²⁹⁰ Kramer (1978): "Moment Form in Twentieth Century Music."

For my analysis, I use the version of the fixed media material that is included with the score from Edition Wilhelm Hansen (the 1977 version), with some references to changes from the original 1966 tape. I have interpreted a moment as being a discrete segment focusing on a few articulated ideas (usually three to four) that are kept quite static and uniform throughout the section. I have identified 14 individual moments (table 3.4), including an opening statement (1), a transitional passage (5) and a brief moment of silence (12). The sections are quite easy to identify, even though they are not marked by clear “moment dividers.”

In the published score, Nordheim states that the tape material contains six classes of sounds:

- HV: Elements of filtered noise
- S: Sine tones
- SK: Complexes of sine tones
- M: Elements of filtered metallic sounds
- OR: Elements of organ sounds
- BK: Extreme bass complexes of varied materials

This list is conceived for the help of the performer, who has to synchronize his or her activity with a graphical representation of the fixed media material. I will refer to some of these abbreviations. I will also refer to some of the written “labels” that Nordheim has inserted in the score to facilitate orientation in time for the performers.

Table 3.4: Response (1977-tape): Moments and listening notes. Labels refer to Response I, III and “1990” score

#	Dur.	Cum. time	Comment
1	0m 4s	0s	Opening statement. Organ chord + upward glissando (not on 1966-tape).
2	1m 53s	0m 4s	Organ chord slowly fading out. Noisy broadband sound, slowly descending, fades out at [00.50]. Sound web of metallic sounds (crotali?) throughout the moment, individual sounds in gesture time, several with falling pitch (also not on 1966 tape). At [00.44]: organ cluster in the deep register. A “sinus accumulation” (cf. <i>Den lille prinsen</i>) can be heard in the background. Towards the end, noisy diffuse sounds like light brushing on tam-tam. Emerging organ cluster leads into next moment.
3	44s	2m 1s	Loud bang marks transition (label = “Explosion”). Sharp up and downward arpeggio, synthetic ring modulated sound (label = “M” in <i>I</i> -score, “Hysteric organ” in <i>1990</i> -score). Not on the 1966 tape. Overlaps with next moment.
4	1m 09s	2m 35s	Several dystonic sounds with soft attack, possibly brushes on tam-tam to emulate “whispering voice” or “breaths” (label = “Tamt. breath”). Emerging low-pitched complex note blends in (voices slowed down to ¼ speed and ½ speed).
5	17s	3m 44s	Transitional moment. Wind chime-like bells (crotali?). Slow intensification to climax. Abrupt transition to next moment.
6	1m 20s	4m 01s	Pregnant five-note motif of filtered noise with diffuse pitch. Leads into stratified synthetic cluster chord. A second pregnant five-note motif, followed by synthetically generated chords. New stratified synthetic cluster chord, combined with a number of sharp, high-pitched cluster. At [04.29]: series of rising and falling sine tone glissandi (ring modulated), fades out at [04.56]. High-pitched chords intensify until the end of the moment.
7	1m 44s	5m 21s	Abrupt transition. Moment starts with three emerging pitched dystonic sounds (possibly crotali in reverse). At [05.30] an accumulation-layer emerges, consisting of a “mysterious” bell-like sound (not on 1966 tape, sounds like

			coming from the <i>Pace</i> sessions). At [06.04]: a third accumulation-layer with "music box-like" bell-sound. Gradually dissolves towards end of the moment.
8	2m 21s	7m 5s	Emerging complex sounds in the deep register, possibly broadband filtered noise. Merges into a more high-pitched chord with inharmonic spectre and strong emphasis on the upper partials. At [07.42]: a clearly articulated organ chord. The complex sound from the start of the moment comes back, and merges back and forth with the high-pitched chord. Occasional recurrence of the "music-box accumulation" from the previous moment. Organ chord fades in towards the end of the moment. "Sinus accumulation" in transition.
9	1m 29s	9m 26s	Fortissimo sharp rising and falling arpeggio, dystonic synthetic sound, similar to arpeggios in moment 3 (label = "Hysteric siren"). From [09.42] fades into accumulated layer with sounds like randomly plucked piano strings (label = "Ping Pong Pno"). ²⁹¹ At [10.25]: Loud bang on piano. ²⁹² "Sinus accumulation" returns in transition to next moment.
10	1m 42s	10m 55s	Sinus glissandi hinting to moment 6 + deep register pitched down bell-sounds. Fades into a segment of loud "plucked sounds" with irregular rhythm, gradually combined with unidentifiable very short sounds, also in irregular rhythm.
11	2m 27s	12m 37s	Several cluster chords on organ with various attack profiles (alternating forwards and backwards playback?). At the same time occasional hints to several earlier moments (recapitulation?): [12.54] sinus glissandi from moment 6, [12.56] the complex sound at the beginning of moment 3, [13.25] wind chimes sounds from moment 5, [13.43] and [13.53] the two five-note motifs from moment 6, and [14.14] several hints to earlier organ-chords and filtered noise cut abruptly short. End: pregnant organ chord with inharmonic spectrum.
12	0m 5s	15m 4s	Silence.
13	0m 45s	15m 9s	Emerging high-pitched dystonic chords, similar to sounds in moment 6, combined with several high-pitched "grain" accumulations (label = "Crazy birds")
14	4m 16s	15m 54s	Long hovering mixed chorus singing /a/ ("Angelic Choir" memorable), "glittering" bell-sounds (a new element) and <i>Pace</i> -like bells, cf. moment 7. Entire moment not on 1966 tape.
		20m 10s	END

The relationship between the fixed and performed elements

As mentioned, one of the central compositional principles of *Response* is the *conversation*, the interplay and counterpoint between the acoustic and the fixed media element. In traditional music vocabulary, counterpoint means the moment-to-moment relationship between notes in individual lines. Every note influences the totality of the perceived musical entity, for instance by forming strings of chords. My point is that a similar mutual interdependency occurs between the taped elements and the performed element in *Response*, and in his other works for soloist and continuous fixed media (table 3.5).

Table 3.5: Nordheim's work for soloist and continuous fixed media

AN.#	Work	Instrumentation	Year
34	<i>Response</i>	Percussion and various combinations	1966 (first version)
79	<i>Dinosauros</i>	Accordion	1971
81	<i>OHM</i>	Lure	1972

²⁹¹ In an interview Nordheim referred to having dropped Ping-Pong balls inside a grand piano during the composition of *Response*. It is likely that he was referring to this segment. Arne Nordheim, interviewed by Jøran Rudi and Tilman Hartenstein on September 20th 2005. Video at NOTAM.

²⁹² This sound was produced by slamming shut the lid of the piano with the pedal held down. Nordheim produced the same sound as the sound effect of an exploding car in the movie AN.31 *Klimaks* (1965). Arne Nordheim interviewed in "Norsk filmmusikk i fokus," NRK TV, June 11th 1996.

136	<i>Acantus Firmus</i> (series)	Hardanger fiddle + various	1987 (first version)
140	<i>The Return of the Snark</i>	Trombone	1987
197	<i>Gong Do</i>	Timpani	2007

In all these works, the fixed media element is based on recordings of the same instrument as the soloist is playing. The *conversation* between the performed and the fixed elements happens in a number of ways. Sometimes the performer(s) interact with the tape in a call/response-like manner, sometimes s/he complements the tape with contrasting sounds, and sometimes s/he imitates the same type of sounds that are on the tape. I will now point to some examples of this in the *Response* series, and discuss how the relationship between the fixed and the performed has evolved over time.

An example of call/response can be found in *Response 1* between 4' 15 and 5' (moment 6). Here, the percussion first answers to the five-note motif labelled SK in figure 3.18. Then it expands on this sonic idea by playing fast rhythmic figures on tom-tom and bongo.

The figure shows a musical score for 'Response 1' from 4' to 5'. It is divided into two systems. The first system covers the time from 4' to 2.5'. It includes parts for I A, I B, II A, and II B. A five-note motif labeled 'SK' is marked at 4' 15''. There are handwritten annotations 'Sesoo' and '1 2 3 4'. The second system covers the time from 4' 30'' to 5'. It includes parts for I A, I B, and II B. There are handwritten annotations 'Kubjell' and 'M'. The score includes various musical notations such as notes, rests, and dynamic markings.

Figure 3.18: 4' to 5' in *Response 1*.

An example where the percussion imitates the tape is the section from 2'35 to 3' (moment 4), where the performer mimics on piatti the dynamic profile of the noise sound with soft attack (the “breaths”) in the fixed part (labelled “M” in figure 3.19).

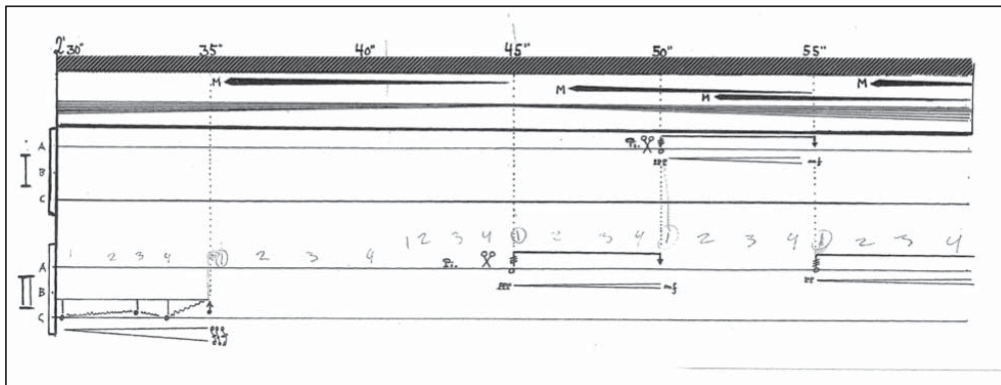


Figure 3.19: *Response 1* (1966) 2'30'' to 3'

This particular passage is also illustrative of how the relationship between the performed and fixed material has developed throughout the different versions of *Response*. In *Response III* (figure 3.20) the four percussionists imitate the tape in the same way as in *Response I* (figure 3.19), but the conversational effect is weakened by the organ. Even though the organ also imitates the dynamic profile of the “electronic breath” with its single C# in the deep register, it is not responding to the tape. Instead it masks the call/response-effect through its continuous playing. In *Response III* the responsive interplay is happening just as much between the percussion and the organ as between the performers and the tape, giving the tape a less profound role in the composition.

In *Response “1990”* the contrapuntal effect is re-instated in this passage, since the organ part is removed. However, the sobriety of the passage is weakened by a rapid descending figure in the vibraphone at the beginning of the passage (figure 3.21). This is an example of how *Response “1990”* is strongly focused on Odd Børge Sagland’s virtuosic vibraphone playing, and again how the fixed media material plays a more secondary role.

Figure 3.20: Same passage as figure 3.19 in *Response III* (1984)

Figure 3.21: Same passage as figure 3.19 in *Response "1990"*

The independent role of the fixed part has also been weakened over the years though a gradual introduction of instrumental passages in sections where the tape used to play alone. In *Response I* the two percussionists do not start playing until 02'05. In *Response IV* the performers come in at 0'05 and in *Response III* the organ plays from the start. In the earliest versions of *Response*, the tape

plays alone in seven longer stretches: 0'–02'05, 3'15–3'35, 7'10–07'40, 9'25–9'40, 10'30–11', 12'15–12'55 and 13'–13'25. In *Response III* (1984) only the 12'15–12'55 pause has been kept. All the others have been filled out with instrumental voices.

There are several possible explanations for this development. In 1966, electronic music was seen as exciting and new, and the taped elements were consequently given a profound place in the formal organisation of the work. As the novelty of electronic music wore out, the taped elements were moved more and more into the background. A second explanation might be that as the series developed, Nordheim focused more on the performed elements since this is what was under revision (even though the tape material was also updated). As he revised the performers' parts, he gradually increased the number of elements at the expense of the tape. Regardless of his reasons for doing so, the idea of conversation between two equal elements – the electronic and acoustic – became less pronounced over the years.

3.6 Chapter summary

In this chapter, I have followed Nordheim through his first electroacoustic period, from his earliest experiments until he had achieved a well-developed electroacoustic aesthetic with works like *Epitaffio* and *Response*. I have devoted some attention to how Nordheim built his craft as an electroacoustic composer, in part through exploring the available equipment, and in part by drawing inspiration from composers such as Gunnar Sønstevold, Edgard Varèse, Karlheinz Stockhausen, Krzysztof Penderecki and Henri Pousseur. That is not to say that Nordheim was only imitating these composers. He adapted models for some of his sounds and techniques, but as compositions, his works are entirely self-standing.

Several of Nordheim's works explored the relationship between the electronic and acoustic sounds, and I used the analytical categories *contrast*, *contact* and *conversation* to highlight the various forms of this relationship. Nordheim also produced a few memorables, like the "sine wave accumulation" from *Den lille prinsen*. However, the use of memorables is far less prominent than in his acoustic music from the same period. Nordheim did not produce an electronic equivalent to the "Nordheim leitmotif" or the "O, Lord-motif" during these early years. Nor did he try to bring his acoustic memorables into his electronic compositions. This indicates that even though Nordheim devoted almost equal attention to electronic and acoustic sound in the first period, he still viewed them as two separate modes of expression.

Nordheim showed technical proficiency, but he also relied on technical assistance. He seems to have thrived in the collaborative spirit of electronic music production of the era, and the cooperation with Viktor Sandal in NRK seems to have been of particular importance. The good-will

that he enjoyed at NRK can be seen in how he was allowed to use both the in-house technical staff and studios free of charge for composing works not directly related to NRK. However, he always made sure that NRK benefited from these works – all of them were featured in programs either on radio or television. Even though some people regarded the electronic music as difficult, it seems like Nordheim had almost free access to having his music performed in nationwide channels. Few if any Norwegian composers managed to exploit the possibilities of the new media reality of the 1960s as well as Nordheim did.

During these years, Nordheim was, alongside Finn Mortensen, more or less the face of contemporary music in Norway. He was the person most frequently mentioned in newspapers, radio and television when such expressions were discussed. The role was even more pronounced with regards to electroacoustic music. At the beginning of this period, Nordheim stood virtually alone as an electronic music composer in Norway. The only real predecessor – Gunnar Sønstevoid – had moved to Vienna, and younger composers like Bjørn Fongaard and Sigurd Berge would not start their electroacoustic experiments until the middle of the decade. Nordheim, on the other hand, seemed to be everywhere: in radio and television, on the theatre stage, in festivals, in concerts and in art galleries.

The change only came towards the end of the period. In 1968, mixed works by Bjørn Fongaard and Alfred Janson were included on the compilation LP *Norwegian Electronic Music* (AN.RC1) alongside Nordheim's *Response 1* and *Epitaffio*. Nordheim later recollected how there was an emerging wave of enthusiasm for electronic music in the late 1960s: "It was a profound feeling of joy and expectations over the fact that one had managed something that no one had managed before," he stated in a 2005 interview.²⁹³

By this time, it was obvious that Nordheim wanted to expand beyond Norway to work further on his electroacoustic techniques. As we have seen, he probably prepared some of the material for *Response* in Utrecht. In the next chapter, we will see how this move was part of a greater effort to find better working conditions, which eventually led to Nordheim beginning to work regularly in Studio Experimentalne in Warsaw.

²⁹³ Arne Nordheim, interviewed by Jøran Rudi and Tilman Hartenstein on September 20th 2005. Video at NøTAM – Norwegian Center for Technology in Music and the Arts.

4 THE WARSAW PERIOD (1967–1974)

Chapters 4 through 7 will be devoted to Nordheim's second electroacoustic period: the Warsaw years (1967–1974). The present chapter will function as an introduction to the period and as a contextual frame for the following three analytical chapters. First, I will discuss what I hold to make up Nordheim's Warsaw period. I will propose that the period has to be understood as having two parts; a *Warsaw period proper* lasting from September 1967 to the end of 1970, and an *extended Warsaw period*, which lasts until 1974. Nordheim did most of his studio work in the first three years, but between 1970 and 1974 the Warsaw works still continued to have a great presence in his compositional output. In this section, I will also discuss how the work in Warsaw relates to the work he continued making for NRK at the studio in Oslo.

Next, I will map out the background for Nordheim's decision to go to Poland. I will show how he at first wanted to try out other options, including Utrecht, Cologne and Milan, before he settled on using the Polish studio. I will conclude that the decision seems to still have been up in the air by the time of his visit to the Warsaw Autumn festival of 1965, but that he gradually became more settled on the idea of working in Poland over the course of 1966. The decisive moment seems to have been his second meeting with the studio manager Józef Patkowski in early May 1966.

I will give a short introduction to the history of the Experimental Studio of the Polish National Radio in Warsaw, better known as Studio Experimentalne, and look at Nordheim's relationship with the Polish music scene. Towards the end of the chapter, I will discuss the influence of the Polish sound engineer Eugeniusz Rudnik (1932–2016) on Nordheim's music in this period.

4.1 The Warsaw period: demarcations

In the three years between September 1967 and September 1970 Nordheim composed his best-known electroacoustic works, including AN.49 *Warszawa*, AN.50 *Colorazione*, AN.52 *Solitaire*, AN.55 *Ode til lyset*, AN.70 *Poly-Poly*, and AN.74 *Pace*. The Warsaw period *proper* thus lasts only three years. The realization of these works coincides with the travels to Poland that I have been able to confirm, as summarized in table 4.1.

Table 4.1: Known travels to Warsaw, 1967-1970

Dates
August 31 st – September 1967 ²⁹⁴
March 20 th – April 1968 ²⁹⁵
August 1968 ²⁹⁶
June 8 th to 22 nd 1969 ²⁹⁷
September 14 th – 30 th 1969 ²⁹⁸
January 17 th to 27 th 1970 ²⁹⁹

In a newspaper interview from January 1970, Nordheim stated that he had travelled to Poland “at least ten times” over the last three years.³⁰⁰ While this might have been an exaggeration, it is still reasonable to think that Nordheim travelled to Poland more frequently than I have been able to document.

It should be noted that travelling between Norway and Poland in this period was no small matter. The price of a plane ticket between Oslo and Warsaw could in 1967 be as high as 1215 NOK, which equaled roughly the gross monthly salary of a shop assistant.³⁰¹ Nordheim, being exceedingly proud of his red Volvo 123GT, seems to have preferred to travel by car, even though this meant driving for more than 1500 kilometres – not an easy trip to make. Nordheim first had to go by ferry from his hometown Larvik to Fredrikshavn in Denmark. Then he had to pass three high security border controls; West Germany, East Germany, and finally Poland. Such a trip would take at least

²⁹⁴ Nordheim had intended to stay longer, but for various reasons he had to return to Norway already in September. Rannveig Getz Nordheim has indicated that the stay had to be cut short because of the illness of Nordheim’s mother, who died that autumn. According to Getz, Nordheim arrived just in time before her passing. Rannveig Getz Nordheim, interviewed by Ola Nordal, September 13th 2012.

²⁹⁵ The date for the travel to Warsaw is mentioned in a letter from Nordheim to the Bergen International Festival, dated “medio march” of 1968. It is not known exactly when he returned, but the final letter in the exchange with Bergen International Festival is dated “Warsaw, April 17th 1968,” so Nordheim was still in Poland at this point. BCA/A-4265/Da 120.

²⁹⁶ In 2007, Nordheim claimed to have driven home during the march-up of the forces to USSR’s invasion of Tsjekkoslovakia. The invasion took place on the night between August 20th and 21st 1968, and it therefore probable that Nordheim passed through the area some days before. Borchgrevink: “Diamanter i en rød Volvo - Samtale med Arne Nordheim,” in ed. Ugelstad and Borchgrevink (2007).

²⁹⁷ Dates indicated in a letter from Arne Nordheim to the Department of Foreign Affairs, dated Oslo June 2nd 1969. Archives of Kulturkontoret, Norwegian Department of Foreign Affairs. Folder: 60C31 Musikk og opera: Polen.

²⁹⁸ Ibid.

²⁹⁹ Ariane: “Til Japan med verdens lengste komposisjon,” *Aftenposten*, January 31st 1970.

³⁰⁰ Ibid.

³⁰¹ This price of a flight to Warsaw was calculated by the Department of Foreign Affairs, Office for Cultural Contact with Poland [“Kontoret for kulturelt samkvem med Polen”] in connection with a travel to Warsaw for Live Glaser in May 1967. Archives of Kulturkontoret, Norwegian Department of Foreign Affairs. Folder: 60C31 Musikk og opera: Polen. The monthly salary of a shop assistant can be found in *Statistical yearbook 1967*, Norwegian Bureau of Statistics, p. 250.

two days, and must have required vast amounts of paperwork. In spite of the effort involved, he went back to Poland as often as he could.³⁰²

Most accounts, for instance the liner notes to the recent CD release AN.R80 *Solitaire*, refer Nordheim's Warsaw works as consisting only of *Warszawa*, *Colorazione*, *Solitaire*, *Ode til lyset*, *Pace*, and *Poly-Poly*. I have documented that there are a few more works that should be included in this list, in particular the film music to the documentary AN.73 *A Forum for the Arts*, the incidental music to AN.65 *Peer Gynt* and AN.85 *Macbeth*, and the fixed media elements to the mixed work AN.79 *Dinosauros*. Table 4.2 below summarizes the works that with a reasonable degree of certainty can be attributed to having been realized in Studio Experymentalne during the Warsaw period.

Table 4.2: Works realized in Studio Experymentalne

AN.#	Title	Type	Comment
1968	45 <i>Machina</i>	Live electronic performance	Derivative work from <i>Ode til lyset</i>
1968	49 <i>Warszawa</i>	2-channel acousmatic	Material prepared in Warsaw. Final mix in Oslo. Planned as live electronic piece.
1968	52 <i>Solitaire</i>	4-channel acousmatic	
1968	55 <i>Ode til Lyset</i>	Sound installation	Two stereo tape-loops in parallel
1968	65 <i>Peer Gynt</i>	Incidental for theatre	
1970	70 <i>Poly-Poly</i>	Sound installation	For Japan Expo '70. Six tape-loops.
1970	71 [No title]	Interval signal	Interval signal for NRK Radio
1970	73 <i>A Forum for the Arts</i>	Documentary film music	
1970	74 <i>Pace</i>	2-channel acousmatic	
1970	77 <i>Lux et Tenebrae</i>	2-channel acousmatic	Derivative work from <i>Poly-Poly</i>
1971	79 <i>Dinosauros</i>	Mixed tape and accordion	Tape supposedly realized in Warsaw
1972	85 <i>Macbeth</i>	Incidental for theatre	

I have not been able to verify whether the following works from the same years contain electronic elements and should therefore be added to the list: AN.47 *Fruen fra havet* (incidental, 1968) and AN.56 *Brand* (incidental, 1969). I have also not been able to verify whether the electronic sound installation AN.75 *Lydbar* (1970) or the electronic material for AN.81 *OHM* (1971) were realized in Warsaw or Oslo. Further, Nordheim's score to the movie AN.78 *A Day in the life of Ivan Denesovitsj* (1970) includes some electronic passages that could be attributed to Warsaw. The same is the case with AN.59 *Solar Plexus* (1973), which includes "a suicide tango from pre-war Warszawa [and] two old German machine guns."³⁰³ It is therefore possible that these works should also be added to the list. Finally, as noted in the previous chapter, Nordheim updated the tape material for *Response* and *Epitaffio* with sounds conceived in Warsaw. Again, it is difficult to know whether this work was actually conducted in Studio Experymentalne or if the Polish material was just superimposed on the old tapes at a later stage.

³⁰² I have no precise documentation of Nordheim's itineraries, but Rannveig Getz Nordheim has confirmed that the route I have described seems plausible in light of what Nordheim told her about his travels. Personal communication with Rannveig Getz Nordheim, November 2016.

³⁰³ Nordheim in the liner notes to AN.R6 VA: *Popofoni*. According to Nordheim, the work also includes "a Norwegian toilet" – however, if it is from the same collection of tapes, the toilet might actually have been Polish...

It is significant that *Colorazione* was composed in this period. In a letter to NRK dated December 1967, Nordheim stated that the work, which was initially a NRK commission, had been developed while he was in Studio Experymentalne.³⁰⁴ Since *Colorazione* is a live electronic work and not a studio work, I have not included it in the above table. Still, it bears the mark of Warsaw. It is probable that the idea of using live ring modulations, filtering and long tape delay came from Nordheim's experiences in the studio, and this idea might have been influenced by Eugeniusz Rudnik, who is credited for "filtering and ring modulation" on the cover of the first LP release (AN.R4). I will discuss this claim more in depth in Chapter 7.

When does the Warsaw period end?

Even though the main part of the output was composed before 1971, Nordheim's Warsaw period is commonly believed to have lasted until 1972. The claim was first stated on the cover of the album AN.R7 *Electronic Music of Arne Nordheim* from 1974. Since the album was released shortly after the period, it is a credible assessment. But due to lack of documentation, it is not completely clear what Nordheim's activities in Warsaw were during the two last years. It is possible that he worked on the above-mentioned works that are not commonly attributed to his Warsaw years. It is also possible that he conducted affairs unrelated to electroacoustic music. During the Warsaw Autumn of 1972, the Polish Radio Orchestra performed AN.76 *Floating* and the Warsaw Music Workshop premiered the work AN.87 *Help (Pomodzy)*, which it had commissioned from Nordheim. It is also possible that he went to the 15-year anniversary celebration of Studio Experymentalne, where his Norwegian colleague Kåre Kolberg had been commissioned to compose the official anniversary work (the work *Anonymous*). Furthermore, it is conceivable that Nordheim went to Warsaw to prepare versions of his compositions for the recordings AN.R7 *Electronic music by Arne Nordheim* and AN.R5 VA: *Contemporary music from Norway*. The more correct statement is therefore to say that Nordheim's Warsaw period proper lasted from 1967 to 1970 or 71, which extends into a later less productive period.

How long this extension should be is a matter open for discussion. I will propose that the Warsaw period should be extended as far as 1974, and not just not to 1972 as Nordheim suggests. The reason for choosing 1974 is that the ballets AN.B2 *Strender* (choreographed by Glen Tetley) and AN.B3 *Stoolgame* (choreographed by Jirí Kylián), which both premiered in 1974, use music from Nordheim's Warsaw period. This is also the year that Nordheim released most of his Warsaw output on LP (the two albums mentioned above).

³⁰⁴ Arne Nordheim to Gunnar Sønstevoid: "Ad. Fjernsynets bestilling, datert 7.1.1967," dated Oslo, December 12th 1967. NRK Archive: Fjernsynet. Folder: Response I. 437, date 28/5/1968.

Electronic compositions for NRK during the Warsaw period

In between his trips to Poland, Nordheim continued to compose incidental music for NRK. These works should be counted as part of the Warsaw period, even though the demarcation between this period and the previous is not as strong as for his non-NRK works. For these commissions, Nordheim was still using the NRK studio, and even if it is possible to trace some influences from Poland these works are remarkably consistent with the style of his pre-Warsaw years. This is most likely due to the fact that Nordheim continued to use the same equipment and collaborate with the same people as before. In table 4.3, I list Nordheim's NRK commissions that contain electronic elements for the years 1968 to 1973. 1973 was the last year that Nordheim wrote incidental music for NRK on a regular basis. I have marked out the works which I feel were clearly inspired by Warsaw. It is even possible that some of these might have been composed during Nordheim's Warsaw trips. This is, however, not confirmed by any of the documents I have found.

Table 4.3: Compositions for NRK with electroacoustic music, made during the Warsaw period

AN.#	Title	Commissioned for	Comment
1968	44 <i>Vikingenes veger</i>	NRK TV documentary	Inspired by Warsaw
1968	51 <i>Mot bristepunktet</i>	NRK Radio theatre	
1968	53 <i>Lille bror – Lille søster</i>	NRK Radio theatre	
1969	58 <i>Dagen vender</i>	NRK Radio theatre	
1969	60 <i>Ansiktene</i>	NRK TV theatre	Lost
1969	61 <i>Mandagsbilen</i>	NRK Radio theatre	Directed by Nordheim
1970	64 <i>Myrfolket</i>	NRK Radio theatre	Inspired by Warsaw
1970	72 <i>Vi på Alfabulator</i>	NRK Radio theatre	Inspired by Warsaw
1971	83 <i>Kodémus</i>	NRK TV theatre	With analogue synthesizer
1972	84 <i>Minnebobler</i>	NRK TV music dept.	Live electronic, inspired by <i>Colorazione</i>
1972	86 <i>Dei kjennelselause</i>	NRK Radio theatre	
1973	91 <i>Amaryllys</i>	NRK Radio theatre	

I have not been able to verify whether the following works for NRK contain electroacoustic elements: AN.48 *Lille Eyolf* (1968) AN.57 *Hvisomatte* (1969), AN.62 *Ingen himmel for Gunga Din* (1969), AN.67 *Gjengangere* (1970), AN.69 *Vidnene* (1970), AN.80 *Dødsdansen* (1971) and AN.90 *En havefest* (1973). They should possibly be added to the list.

A short note on the interval signal

The best-known Nordheim sound from this period, at least for Norwegians from a certain generation, was the interval signal (AN.71). Louis Nibur writes that radio interval signals were its own little genre within broadcasting.³⁰⁵ The signals were used to fill up breaks between radio programs, or were played during unscheduled breaks in the broadcasting. The signals tended to be short, rhythmical and sonically uniform, and were often made by simple electroacoustic techniques.

In 1970, Nordheim won a competition for a new interval signal for NRK radio, ahead of several prominent Norwegian composers such as Klaus Egge and Geirr Tveitt. It is composed from

³⁰⁵Nibur (2010): *Special Sound*, p. 83f.

a simple rhythmical motif of sine tones, and is tonal in character. Nordheim has indicated that the intervals follow the nature tone row. The new interval signal was first broadcast on March 20th 1970, and was used for many years alongside Eivind Groven's (1901–1977) more famous signal from 1939. The signal was almost certainly composed in Warsaw. According to Nordheim, he made the little composition when he had the studio to himself for a couple of hours on an occasion when Rudnik had gone to the dentist.³⁰⁶

4.2 The choice of Studio Experymentalne

I have found little documentation explaining why Nordheim did not wish to continue using NRK for his own electronic compositions, but it is possible that either he was not granted enough studio time or, more likely, that he wished to move on to better-equipped facilities. It seems that Nordheim saw the equipment at NRK as more and more out of line with the current trends in electronic music composition. In a later report, which led to the founding of the Norwegian Studio for Electronic Music (NSEM) at Henie Onstad Kunstsenter in 1975, Nordheim reviewed the situation of electronic music production in Norway. Here he concluded that “the sounding result” of electronic music produced at NRK was of “no interest in professional contexts.”³⁰⁷ Although this was written almost a decade later, he must have considered the NRK studio as second grade already in the mid 1960s.

As we will see in the next chapter, it was the generous budget for the sound sculpture *Ode til lyset* that eventually opened up the possibility to travel abroad to work. But it was by no means certain that Nordheim would go to Poland to do this. A document in the Erling Stordahl archive indicates that Nordheim initially wanted to use *Studio di Fonologica Musicale* in Milan for producing the sound material, and that he was planning a trip to Italy already during the spring of 1966.³⁰⁸ But according to a later document, the studio in Milan was under refurbishment and thus unable to take commissions.³⁰⁹ Nordheim then seems to have considered several other alternatives.

In the same document, Nordheim mentioned plans for travelling to Stockholm in order to discuss with Knut Wiggen, who by now was more or less the leading authority on electroacoustic music in Scandinavia. Some years earlier, Wiggen had made a “music machine” – a sound

³⁰⁶ (Unsigned): “Vond tann ga pausesignal” at *nrk.no*, published March 15th 2005, visited March 21st 2014.

³⁰⁷ “Utredning fra en arbeidsgruppe oppnevnt av Norsk kulturråd 1973: Studio for elektronisk musikk.” Archives of NRK, Correspondence with Norwegian Arts Council; Folder 23-8-28: Om norsk studio for lydopptak.

³⁰⁸ Letter from Støredalstiftelsen to Norges Kulturråd, dated June 7th 1966. Copy of letters from the Arts Council Archives. Nordheim's papers at the Arne Nordheim Centre, Norwegian Academy of Music.

³⁰⁹ Støredalstiftelsen to Norges Kulturråd, 7.6.1966. Copy of letters from the Arts Council Archives, sent to Nordheim in 1992. Arne Nordheim Centre.

installation with interactive principles similar to what Nordheim was envisioning for his sound sculpture. Wiggen's *Musikmaskin nr. 1* had been installed in the exhibition *aspect61* at Liljevalchs konsthall in Stockholm in 1961. The sculpture consisted of several metal plates wired to the roof, each with its individual sound-producing unit – basically a collection of self-constructed and rudimentary transistor-circuits. According to Hugh Davies, these circuits would alter various input sounds in real-time; white noise, impulses and other sound sources.³¹⁰ A central principle was that the units could be individually configured, and that the manipulation happened in real-time.

Nordheim visited Stockholm in October 1966, but it seems that the trip was fruitless.³¹¹ It is possible that Nordheim received signals that it was impossible to do anything in Stockholm, as the studio that was later known as EMS – Elektronmusikstudion in Stockholm – was still under construction. According to Sanne Krogh Groth, the studio did not accept commissions before late 1968, much after the deadline for Nordheim's sculpture project.³¹² However, Nordheim's use of an almost identical title and the similarity in fundamental working principle indicates that he at least knew about Wiggens' work, even though he never referred directly to Wiggen's sculpture.

Another possible reason that Nordheim did not use the Stockholm connection is that he had already found a better alternative. On April 15th 1966 the newspaper *Morgenposten* reported that Nordheim had packed his car full of tapes, and was about to leave for a six-week study trip to the continent.³¹³ This travel came to be one of the central events in the history of Nordheim's electronic music. His proposed itinerary included visits to electronic music studios in Utrecht, Milan, Cologne and Warsaw, and it seems he had projects in mind for each of the visits: *Response* in Utrecht, *Eco* in Cologne (see below) and *Ode til lyset* in either Milan or Warsaw. At first, things seem to have gone according to his plan. He went to Utrecht on April 18th and stayed there for three days. As mentioned in the previous chapter, Nordheim had meetings with Gottfried Michael Koenig and Stan Tempelaars, and produced material that was later used in *Response*. On April 24th he was in Amsterdam for a performance of *Canzona* with the Royal Concertgebouw Orchestra.³¹⁴ The next stop was planned to be Cologne. Before leaving for his trip, Nordheim sent a letter to Jaap Speck,

³¹⁰ Wiggen's *Musikmaskin nr 1* is mentioned in Davies (1967): "International Electronic Music Catalog," p. 308. There is also a short description in Tilman Hartenstein, "Maskinsång från världens största instrument: Knut Wiggen, Fylkingen, EMS og Musicbox," in *Norsk avantgarde*, ed. Per Bäckström and Bodil Børset (Oslo: Novus, 2011).

³¹¹ No trip to Sweden is mentioned in connection with the documents on *Ode til lyset*, but as mentioned in the previous chapter, Nordheim reviewed a concert with Stockhausen's electronic music in Stockholm in October 1966. Arne Nordheim: "Musikk ved en grense," *Dagbladet*, October 22nd 1966

³¹² Sanne Krogh Groth: "The Stockholm Studio EMS during its Early Years," *Proceedings from EMS08*, (2008).

³¹³ (Unsigned): "Polyfon studiereise med forhåndsarbeide," *Morgenposten*, April 15th 1966.

³¹⁴ The concert received a very negative review in *Utrechts Nieuwsblad*, April 25th 1966. Thanks to Kees Tazelaar for bringing my attention to the review.

one of the engineers at the Studio für elektronische Musik and a frequent collaborator of Karlheinz Stockhausen. In the letter, Nordheim asks for a visit to the studio on the 26th and 27th of April in order to “discuss certain elektronikc [sic] problems.”³¹⁵ In the letter, Nordheim was investigating the possibility of working in Cologne on electronic material for a mixed work featuring soloists and chorus. Nordheim was particularly interested in using the ring-modulator and vocoder to treat the recording of voices, something that indicates that this was the later discarded electronic element for *Eco*.

Nordheim did not go to Cologne. We don't know whether this was due to a negative response from the German studio, or other matters. There is no answer from Spek kept in the archive. What we do know, however, is that in the days following the *Canzona* concert in Amsterdam, Nordheim rushed to Warsaw in order to meet with Józef Patkowski, the director of Studio Experymentalne. Patkowski was planning to go travelling on May 4th, and it seems from what we have left of the correspondence that Nordheim had to hurry to get there before Patkowski left.³¹⁶

4.3 The history of Studio Experymentalne

Studio Experymentalne, the electronic music studio of the Polish National Radio, sometimes known as PRES (Polish Radio Experimental Studio), was the fourth major electronic music studio in Europe at the time of its opening in 1957.³¹⁷ The director Józef Patkowski (1925–2005) was conscious that the studio would belong to the “second generation” of electronic music studios, and was a proponent for bridging the differences between *musique concrète* and *elektronische Musik*. He was not a composer himself, but a musicologist, and he insisted that his studio should be a “laboratory, where sound is researched” [“ein ‘Laboratorium,’ in dem Töne erforscht werden”].³¹⁸ Therefore, several of the first pieces produced were exploratory manipulations of recorded instrumental sounds and voices. The best-known compositions from the early years of the studio include Włodzimierz Kotoński's *Study on One Cymbal Stroke* (manipulations of a stroke on a medium sized Turkish cymbal), Andrzej Dobrowski's *Passacaglia* (manipulations of five percussion sounds) and

³¹⁵ Letter from Arne Nordheim to Jaap Speck, dated Oslo, April 9th 1966. Arne Nordheim centre, Norwegian Academy of Music. The idea of using electronic elements in *Eco* was later abandoned.

³¹⁶ Letter from Arne Nordheim to Józef Patkowski, dated Amsterdam, March 22nd 1966. Arne Nordheim centre, Norwegian Academy of Music.

³¹⁷ Monika Pasiiecznik, "A History of Electroacoustic Music in Poland From the Perspective of the Polish Radio Experimental Studio 1957–1990," in *Sound Exchange. Anthology of Experimental Music Cultures in Central and Eastern Europe 1950–2010*, ed. Carsten Seiffarth, Carsten Stabenow, and Golo Föllmer.

³¹⁸ Józef Patkowski and Anna Skrzyńska: "Fünfzehn Jahre Experimental-Studio des Polnischen Rundfunks," *[Unknown]*, no. November 31 (1972).

Krzysztof Penderecki's *Psalmus* (manipulations of singing and speaking voices). The profile of the studio was therefore a good fit for Nordheim's own fascination with manipulated instrumental timbres and voices. By the time of Nordheim's visit in 1966 it had become the dominating centre of electroacoustic music in Eastern Europe, not least because of its close affiliation to the Warsaw Autumn Festival.

Poland was one of the countries that had suffered the hardest from the Second World War. Almost one fifth of the country's population perished, and Warsaw was one of the most damaged cities in Europe. Reconstruction took time, and as in the other countries that ended up under the influence of the USSR, political and cultural oppression was hard. Still, Poland found more cultural wiggle-room than its fellow Eastern Bloc countries. During the so-called Khrushchev Thaw that followed Stalin's death in 1953, Poland experienced a remarkable cultural blooming in film, theatre, poetry, visual arts and music. Lidia Rappoport-Gelfand writes the following about the cultural rebirth of these years:

While in the first postwar decade the communist composers of Poland blindly copied Soviet methods of leadership and held art under rigid control, by the middle 1950s increasing pressure by artists for a renewal of Polish national artistic traditions forced [Władysław] Gomułka's regime to relax its ideological control and cease its official support for any particular stylistic trend. Mistakes made during the age of the Cult of Personality were publicly admitted, and twists and turns on the part of the leadership of culture were condemned. From that moment began the real rebirth of artistic life in Poland.³¹⁹

Speaking to the Norwegian newspaper *Dagbladet*, the composer Włodzimierz Kotoński voiced a similar perspective when he visited Norway in 1966:

After we finally made contact with the world – after the Stalin period – it was like a dam breaking.³²⁰

Władysław Gomułka had been instated as general secretary of the Polish communist party after the Poznań uprising in June 1956. During his first year in office he undertook several measures to open up and loosen the tight grip on culture and censorship. The first Warsaw Autumn festival, arranged by the composers Tadeusz Baird and Kazimierz Serocki in October 1956, was one of the many events related to the so-called Polish October or Gomułka Thaw. It turned out to have a lasting impact on Polish cultural life. Already by 1960 the festival was one of the most important cultural events in Eastern Europe.

³¹⁹ Lidia Rappoport-Gelfand: *Musical Life in Poland: The Postwar Years, 1945-1977* (New York: Gordon and Breach, 1991), p. xi.

³²⁰ erle: "Lik en demining som brøt løs," *Dagbladet*, January 18th 1966.

The festival focused almost exclusively on contemporary music. According to Rappoport-Gelfand, it had been Serocki and Baird's vision that "Warsaw could become a centre of contemporary music no less important than Darmstadt, Donaueschingen, Köln, Milan or Venice."³²¹ It gave Polish composers an outlet in which to present music written using modernist techniques and idioms, and it made new Polish music known abroad. It was particularly important for the success of the sound mass idiom of composers such as Krzysztof Penderecki (b.1933), Henryk Górecki (1933–2010), and Witold Lutosławski who, after the defection of Andrej Panufnik (1914–1991) in 1954, was hailed as Poland's leading composer. The festival attracted participants from all over Europe, and the Warsaw Autumn provided a hole in the Iron Curtain, and facilitated at least some contact between the East and the West.

From the beginning, the festival collaborated closely with Studio Experimentalne, and the studio director Patkowski had a central position in the festival's program committee. The first electronic music concert in Poland took place during the 1958 edition of the festival and included works by Karlheinz Stockhausen and John Cage. Two years later a work produced in Poland was presented at the festival for the first time; Włodzimierz Kotoński's *Study on One Cymbal Stroke*. During the early years, the studio mainly made music and sound effects for radio and TV, but gradually more concert works were produced.³²²

In the 1960s Studio Experimentalne was among the best-equipped electroacoustic music studios in Europe, far ahead of anything that could be found in Norway. Since 1962 the studio had been situated in a 6 m x 5 m room designed by the renowned architect Oskar Hansen. It was equipped with three Telefunken M15 stereo tape recorders (the "Rolls Royce of tape machines," according to Kåre Kolberg³²³), a mixing desk with eight inputs and two outputs, and an abundance of advanced sound generating and manipulating equipment. There were also possibilities for using the many recordings rooms of the radio as well as its vast tape archive. A workshop could provide custom-built equipment when needed.³²⁴

The following overview compiled by the German engineer Wilhelm Steinke in 1975 shows some of the equipment at the studio. Most of this equipment, except the Moog synthesizer and the sequencer, was in place already by the time of Nordheim's first visits.

³²¹ Rappoport-Gelfand (1991): *Musical Life in Poland*, p. 44.

³²² The compositions in PRES are listed in Davies (1967): "International Electronic Music Catalog," pp. 139-41.

³²³ Kåre Kolberg, interviewed by Ola Nordal, September 22nd 2012. Kolberg claimed that the studio was equipped with Telefunken M10 tape machines. Bechstein's report from 1975 claims that the model was M15. Either Kolberg remembered wrongly, or the studio had been upgraded after his visits, which took place in 1970.

³²⁴ Pasiiecznik: "A History of Electroacoustic Music in Poland From the Perspective of the Polish Radio Experimental Studio 1957–1990," in ed. Seiffarth, Stabenow, and Föllmer.

Table 4.4: Equipment in Studio Experymentalne 1975³²⁵

Equipment	Company
Wave generator: sine, square, saw tooth 1 Hz to 200 kHz, with multiplier x1/x10/x20	Zopan, Warsaw
Two noise generators (white and pink noise)	Self build
Impulse generator, 0,1 to 1000 ms With self built modulator	Tonografic H83b
Bandpass filter (octave)	Bruel & Kjer
Bandpass filter (third octave)	Funkwerk Erfurt
UW 100 Universal filter	
Narrow band filter, 3 to 200 Hz	Self build
Frequency shifter*	Self build
Expander ("Schwellwert-Expander")	Self build
Modular synthesizer	Moog (bought ca. 1970)
Sequencer	Self build (recently completed)

* = For the frequency shifter, Steinke has noted: "very important, since it sounds similar to ring modulator, but much cleaner! Speech manipulation ["Sprachverfremdung"]."

In addition to Patkowski, the regular staff of the studio included vice-director and co-founder Krzysztof Szlifirski (b. 1934), and the sound engineers Eugeniusz Rudnik (1932–2016) and Bohdan Mazurek (1937–2014). I met Szlifirski in late 2017, just before finishing the manuscript for this PhD thesis, and he confirmed to me that the frequency shifter and a frequency divider (which is not on Steinke's list) were two important pieces of equipment that were frequently used in the studio. The devices has among other put their marks on Nordheim's composition *Solitaire* (see Chapter 7).

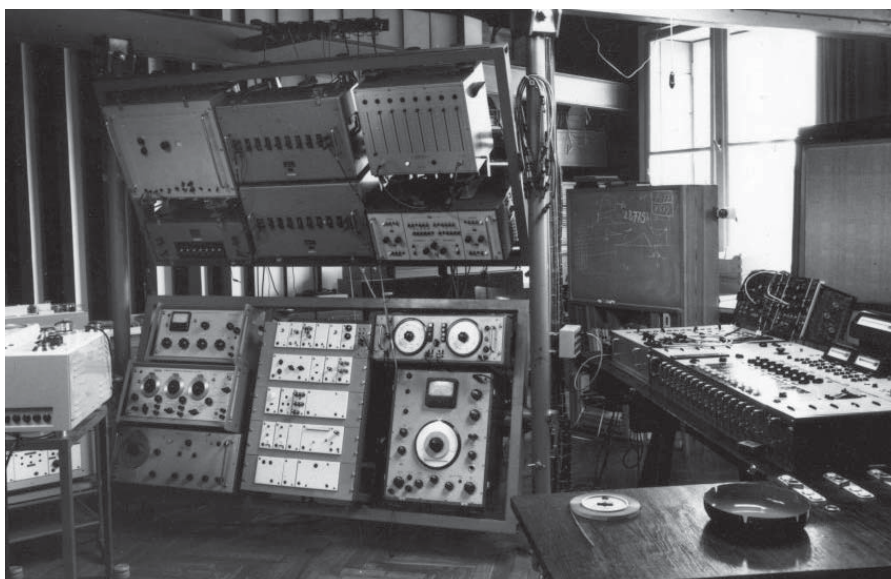


Figure 1.1: Studio Experymentalne around the time of Nordheim's visits.

³²⁵ Bechstein: "Experimental Studio Warschau Bereich", Report dated September 15-19 1975. Copy from Steinke's private archive, given to me by Ina Pillat. Translated from German by Ola Nordal.

4.4 Nordheim and the Polish music scene

By the time Nordheim contacted Patkowski in 1966, he was already well acquainted with the dynamic Polish music scene. *Epitaffio* had been performed at the Warszawa Autumn festival of 1965, and Nordheim had stayed ten days in the city as an official visitor under the Norwegian-Polish cultural exchange program.³²⁶ This visit was a very important premise for Nordheim's later affiliation with the studio.

According to the official documents in the archives of the Norwegian Department of Foreign Affairs, the background for Nordheim's visit to the Autumn Festival was that the Polish embassy in Norway had contacted the Norwegian Ministry of Church and Education requesting the acceptance of a Polish "observer" to the Bergen International Festival of 1965.³²⁷ The embassy suggested, as was common under contemporary culture arrangements, a return visit by a Norwegian representative to the Warsaw Autumn festival the same year. In June 1965, the Ministry asked Ny musikk to propose a candidate, and Finn Mortensen replied with a letter suggesting Nordheim.³²⁸ As soon as Nordheim's name was decided upon, it was quickly arranged that one of his works be played during the festival. It seems that this was arranged solely from the Polish side, since there is no mention of any planned Nordheim performance in the early correspondence between Ny musikk and the Ministry. Initially, Nordheim wanted to travel to Poland on September 21st and return to Norway on the 28th because of "pressing issues here in Oslo."³²⁹ The "pressing issue" could have been family-related, since Nordheim's son Mads had been born earlier that year. These travel dates were confirmed as late as August 18th in a letter from the Norwegian Ministry to the Polish Embassy.³³⁰ But then, only three days later, the Ministry sent a new request to the embassy in order to prolong Nordheim's stay until October 1st. The reason was that *Epitaffio* had been scheduled for a concert on September 30th and Nordheim needed to participate in the performance.³³¹ This is the first mention

³²⁶ Letter from the Polish Embassy in Oslo to the Department of Foreign Affairs, Office for Cultural Contact with Poland ["Kontoret for kulturelt samkvem med Polen," aka "Kulturkontoret"], dated Oslo, August 16th 1965. Archives of Kulturkontoret, Norwegian Department of Foreign Affairs. Folder: 60C31 Musikk og opera: Polen.

³²⁷ Letter from Bergen International Festival by Gunnar Arne Jensen, to the Norwegian Department for Church and Education, dated Bergen, February 16th 1965. Archives of Kulturkontoret, Norwegian Department of Foreign Affairs. Folder: 60C31 Musikk og opera: Polen.

³²⁸ Letter from Helene Andersen (Kulturkontoret) to Ny musikk, dated Oslo, June 10th 1965. Archives of Kulturkontoret, Norwegian Department of Foreign Affairs. Folder: 60C31 Musikk og opera: Polen.

³²⁹ Letter from Arne Nordheim to the Department of Foreign Affairs, dated Oslo, August 13th 1965. Archives of Kulturkontoret, Norwegian Department of Foreign Affairs. Folder: 60C31 Musikk og opera: Polen.

³³⁰ Letter from Kulturkontoret to the Polish Embassy in Oslo, dated Oslo, August 18th 1965. Archives of Kulturkontoret, Norwegian Department of Foreign Affairs. Folder: 60C31 Musikk og opera: Polen.

³³¹ Letter from Kulturkontoret to the Polish Embassy in Oslo, dated Oslo August 21st 1965. Archives of Kulturkontoret, Norwegian Department of Foreign Affairs. Folder: 60C31 Musikk og opera: Polen.

of a Nordheim performance in any of the correspondence. Last-minute arrangement or not, this was the beginning of Nordheim's long and close relationship with the Polish culture scene.

During his stay in Warsaw, Nordheim was introduced to the studio director Patkowski, as well as the composer Włodzimierz Kotoński, whom he became good friends with. When the Norwegian ISCM branch Ny musikk invited Kotoński to Norway in the following year to attend a performance of his *Trio for flute, guitar and percussion* (possibly put on the program through Nordheim's influence), he stayed in Nordheim's apartment.³³² While in Norway, Kotoński and Nordheim discussed possibilities for Nordheim to come and work in Warsaw. Nordheim described his plans for the sound sculpture *Ode til lyset* to Kotoński – his “music machine” as he now was calling it. In a letter sent some days before Nordheim's trip to Europe, Nordheim asked Kotoński to mention the project to Patkowski and request a meeting.³³³ It seems that Nordheim received no answer, but while in Amsterdam in late April, he learnt from Kotoński that Patkowski was planning to go travelling on May 4th. Nordheim then wrote to the studio director directly in hurried and clumsy English:

From our friend Kotoński have you heard that I am interested in the possibility of working in the Warszawa-Studio. As probably also Wodek have told you I am making a kind of music-machine, and the work I eventually will do in the studio is a making of the basic sound-material for this maschine [sic]. [...] I am especially hunting for pieces of hard metallic [sic] sound, and I am bringing with me som [sic] basic material as we eventually can use for research and for my understanding of the working prinsip [sic] of the studio.³³⁴

Nordheim concluded his letter with the words “I great hurry”, and set out for Warsaw. He reached the Polish capital on May 2nd, just in time before Patkowski's travels. I have found no documentation about the meeting's outcome, but knowing the later story it must have been a success. By January 1967 formalities between the Polish and Norwegian governments had been arranged so that Nordheim could plan for an extended stay in Warsaw. Any plans for going to other studios seem to have been abandoned. Patkowski calculated that the project would require 150 studio hours, and as shown in table 4.2, Nordheim arrived in Warsaw for his first studio session on August 31st 1967.

Nordheim was probably unaware that these decisions would lead to a long-lasting relationship with the Polish music scene. He became close friends, not only with Kotoński and the people around Studio Experymentalne, but also later Witold Lutosławski and several others whom

³³² The concert is mentioned in (Unsigned): “Prisma-ensemblt i Oslo,” *Aftenposten*, January 20th 1966. That Kotoński lived with Nordheim is mentioned in the later Kotoński-correspondence.

³³³ Letter from Arne Nordheim to Włodzimierz Kotoński, dated Oslo, April 10th 1966. Arne Nordheim Centre.

³³⁴ Letter from Arne Nordheim to Józef Patkowski, dated Amsterdam, April 22nd 1966. Arne Nordheim Centre.

he met on the Warsaw Autumn festivals. The frequent programming of Nordheim on the Warsaw Autumn festival is an indicator of the standing Nordheim achieved in the Polish music scene. It is illustrative that for instance *Eco* was performed on the festival four years before the Norwegian premiere of the work.

Table 4.5: Performances of Nordheim on the Warsaw Autumn festival, 1965-1998³³⁵

	Work	Performer
1965	<i>Epitaffio</i>	Silesian Philharmonic Orchestra, cond.: Karol Stryja
1969	<i>Solitaire</i>	(Acousmatic)
1970	<i>Pace</i> ³³⁶	(Acousmatic)
1970	<i>Eco</i>	Sop.: Taru Valjakka, Warsaw Philharmonic Orchestra, cond.: Andrzej Markowski
1972	<i>Floating</i>	Polish Radio Symphony Orchestra, cond.: Kazimierz Kord
1972	<i>Help (Pomodzy)</i>	(World premiere)
1975	<i>Dinosauros</i>	Acc.: Mogens Ellegaard
1975	<i>Signaler</i>	Trio Mobile
1978	<i>Spur</i>	Acc.: Mogens Ellegaard, Radio Chamber Orchestra Hilversum, cond.: Ernest Bour
1983	<i>Nedstigningen</i>	
1984	<i>Clamavi</i>	Vlc.: Aage Kvalbein
1987	<i>La mia canzone</i>	Sop.: Małgorzata Armanowska, perc.: Marta Ptaszyńska, pno.: Szabolcs Esztényi (World premiere)
1987	<i>Tenebrae</i>	Vlc.: Roman Jabłoński, Silesian Philharmonic Orchestra, cond.: Karol Stryja
1994	<i>Adieu</i>	Sinfonietta Cracovia, cond.: Wojciech Michniewsk
1997	<i>Solitaire</i>	(Acousmatic)
1998	<i>Tractatus</i>	Fl.: Thivång, Ensemble Ars Nova, cond.: Harald Eikaas

4.5 The influence of Eugeniusz Rudnik

Good equipment was not the only reason why Nordheim chose Warsaw as his primary workplace for electroacoustic music for almost half a decade. The main reasons seem to have been his warm welcome into the Polish cultural circle, as well as the very good working conditions offered by the Polish studio. He was also promised full support from the workshop and granted free access to the sound library. "Everything was so convenient," Nordheim stated in a later interview, "they were so positive!"³³⁷

Nordheim was assigned one of the studio's two engineers, the Toningenieur Eugeniusz Rudnik, as his personal sound engineer.³³⁸ Alongside Bohdan Mazurek, Rudnik was the main

³³⁵ Unless otherwise noted, the list is compiled from http://greatcomposers.nifc.pl/en/nordheim/catalogs/places/352_warsaw-autumn, visited December 12th 2016.

³³⁶ The performance of *Pace* is noted in Patkowski and Skrzynska (1972): "Fünfzehn Jahre Experimental-Studio des Polnischen Rundfunks."

³³⁷ "Mitt liv," *NRK2*, December 26th 2012

³³⁸ That Rudnik was called Toningenieur and not Tonmeister indicates that he had no formal sound engineer education. The second sound engineer in the studio, Bohdan Mazurek had the title Tonregisseur since he held music academy education. The titles are specified in Bechstein: "Experimental Studio Warschau Bereich", Report dated September 15-19 1975. Copy from Steinke's private archive, given to me by Ina Pillat.

technical staff of the studio. Rudnik had worked for Polish radio since 1955 and came to Studio Experymentalne in 1958, shortly after the studio's opening.³³⁹ At first, he assisted on film and radio soundtracks, but he quickly displayed a well-tuned intuition for sound-based composition. He was soon used as sound engineer for other composers. He worked on Penderecki's *Psalmus*, a work that Nordheim admired, and he was picked out to join Kotoński on a trip to Cologne in 1966-67 to realize the work *Klangspiele*. While in Cologne, Rudnik met and worked briefly with Karlheinz Stockhausen.³⁴⁰ Rudnik also began composing on his own. His first independent work to be listed by Hugh Davis was the work *Kolaż* (Collage) from 1965.³⁴¹ His works held a high standard, and his next composition, *Dixi*, got shortlisted for the Dartmouth Arts Council Price of 1968.³⁴²

Rudnik's expertise lay particularly in composing sound collages and performing concrete manipulations on soundbites from the vast tape archive of Polish Radio. He had made his own private sound library from what he called "smudge material"; discarded sound clips and short fragments from other compositions and radio programs. Rudnik often used this "dust-bin" library as foundation for a work, including when he assisted other composers.³⁴³

The chemistry between Nordheim and Rudnik seems to have been very good, both on the creative and the personal level. Their good working relationship might even have been the primary reason why Nordheim went back to the Polish studio so many times. In a later radio interview, Rudnik explained how Nordheim came to his flat virtually every day to have dinner and talk.³⁴⁴ Nordheim repeatedly praised his "excellent technician" in interviews, program notes and liner notes for LPs and CDs. Even though there is little documentation detailing their collaboration, it is safe to assess that Rudnik had a strong impact on Nordheim's sound. This is clear for instance when juxtaposing the tape-material for AN.34 *Response* from 1966 with the composition *Solitaire* from two years later. The latter is by far a much more technically-accomplished composition.

This also brings us to some of the more complicated issues of the collaborative process of composing electronic music in the 1960s. Again, the problem is that of influence and inspiration. It would later become common practice to credit technicians with "realization" or "co-production" in

³³⁹ http://monoskop.org/Eugeniusz_Rudnik, visited October 6th 2014.

³⁴⁰ <http://www.thislongcentury.com/?p=6613&c=262> visited November 14th 2014

³⁴¹ Davies (1967): "International Electronic Music Catalog," p. 140.

³⁴² (Unsigned): "EMscope," in *Electronic Music Review*, vol.2, issue no.5, January 1968, pp.6-9.

³⁴³ Pasiiecznik: "A History of Electroacoustic Music in Poland From the Perspective of the Polish Radio Experimental Studio 1957–1990," in ed. Seiffarth, Stabenow, and Föllmer.

³⁴⁴ Zofia Paszkiewicz: "Radiodokumentaren: Den glemte teknikereren. Et annerledes portrett av Arne Nordheim," *NRK P2*, October 2nd 2014.

order to acknowledge their contributions. However, no such practice was in place, at least not in Norway, around the time of Nordheim's early Warsaw works. It is illustrative of the practice of the late 1960s that while Rudnik was credited on AN.R4 *Colorazione, Solitaire, Signals* for performing "filters and ring modulators" on *Colorazione*, in other words being acknowledged on the same level as the performer of the organ and the percussion part, there was no such credit given for *Solitaire* – a work that he probably contributed even more to. But this does not mean, as it was implied in a recent radio program on NRK P2 called "Den glemte teknikerer" ["The forgotten technician"], that Nordheim tried to hide the influence of Rudnik.³⁴⁵ In the program, Rudnik expressed dissatisfaction with the lack of credit for his work with Nordheim, especially in connection with *Solitaire* and *Poly-Poly*. However, in the liner notes to AN.R7 *Electronic music by Arne Nordheim* from 1974, Nordheim clearly stated that the techniques developed for *Solitaire* and *Pace*, were conceived together with his "friend and co-worker" Rudnik.³⁴⁶ Considering that the Norwegian branch of Philips, which released Nordheim's music in this period, did not start listing proper credits for technical personnel before the late 1970s, it is actually quite extraordinary that Nordheim drew attention to Rudnik's contribution to the extent that he did.

Still, Rudnik's reaction is understandable. As mentioned in the introduction, composing sounds is an integrated part of the creative process in electronic music. Rudnik undoubtedly had a large say in this part of the process, since in most cases it was he who was pushing the buttons and turning the knobs. In an interview, Nordheim stated that he trusted Rudnik so much that, for instance, the realization of *Solitaire* was put "entirely into Rudnik's hands."³⁴⁷ Further, Rudnik would often choose similar strategies to what he had done in his own music, when asked to create something for Nordheim. This is why one might recognize certain elements from *Dixi* in *Solitaire*, *Warszawa* and *Ode til lyset*, and from *Kolaż* in *Poly-Poly*. For the latter, it might even be as Rudnik claimed, that it was he who came up with the initial idea for the composition. But one should be careful to not overstate the point. Rudnik claimed in the radio program that Nordheim was "completely green" when he arrived in Warsaw, but as we saw in the previous chapter, this was far from the truth: Nordheim had more than seven years experience with the medium and a well-developed set of aesthetic preferences. Even though Nordheim might have left the twisting of the knobs to his collaborator, he

³⁴⁵ Zofia Paszkiewicz: "Radiodokumentaren: Den glemte teknikerer," *NRK P2*, October 2nd 2014. I commented on the critique in the op-ed "Hvilken hemmelighet, NRK?" on *ballade.no*, October 13th 2014 and in the radio program "Spillerom" on *NRK P2*, October 14th 2014.

³⁴⁶ In the English translation on the album cover, the word "co-worker" ["medarbeider"] has fallen out of the text.

³⁴⁷ Arne Nordheim, interviewed by Jøran Rudi and Tilman Hartenstein on September 20th 2005. Video at NøTAM – Norwegian Center for Technology in Music and the Arts.

kept close control over the sounding result. Rudnik might have had influence on some elements, but it was still Nordheim who was the originator, director and producer of the composition.

4.6 Chapter summary

Arne Nordheim came to Poland for the first time in 1965, and gradually established a strong relationship with the country. He was well-regarded as a composer there, and he was frequently featured on the program of the Warsaw Autumn festival. The state-of-the-art equipment and good working conditions he got in Studio Experimentalne, as well as the important working relationship with Eugeniusz Rudnik, laid the foundation for some of Nordheim's most important electroacoustic compositions. Even though the *Warsaw period proper* only lasted three to four years, the Polish studio continued to have a strong influence on Nordheim's music for over half a decade.

The contextual framework of this chapter gives background to the three analytical and work-driven chapters that now follow. Here, I will go in-depth on what I see as the six most important works that Nordheim composed or realized in Warsaw. The works I have selected exemplify what I see as the most important principles, both technologically (poietic) and soundwise (aesthetic) in Nordheim's Warsaw period. The chapters will be thematically organized, and in each of them, I will look at two works from a specific point of view. First, I will discuss the concept's site, situation and duration in the sound installations *Ode til lyset* and *Poly-Poly*. Here I will introduce the concept of the *derivative work* in order to highlight Nordheim's view of the relationship between sound art and musical works. In Chapter 6, I will discuss Nordheim's work-concept in relation to fixed media and liveness in *Warszawa* and *Colorazione*. In Chapter 7, I will give a poietic description of some of the voice transformation techniques used *Solitaire* and *Pace* in order to discuss the relationship between sound, voice and poetic message.

Chapter 4: The Warsaw period

5 SITE, SITUATION AND INFINITE DURATION IN *ODE TIL LYSET* AND *POLY-POLY*

A significant change started taking place in the arts towards the end of the 1950s. Within the avant-garde, a new generation of experimental artists began producing *situations* rather than *works*. They demanded that art should be something that was *happening*, not just something that *had happened*. The older generation also felt the impact. In 1959, Umberto Eco coined the term *open works* to describe the aleatoric compositions of the well-established composers Karlheinz Stockhausen, Henri Pousseur, Luciano Berio and Pierre Boulez.³⁴⁸ This became one of the important concepts of the next decade. In the *open work* the performer was not just interpreting written music. S/he was also to “impose his judgement on the form of the piece,” as Eco noted. This was a clear shift away from the static work concept the very same composers had championed only a few years earlier.

The John Cage-inspired happenings of the Fluxus movement, free improvisation groups like the Association for the Advancement of Creative Musicians (AACM), AMM and Musica Elettronica Viva (MEV), or the counter culture of the San Francisco Tape Music Center (SFTMC) pushed these ideas even further. This young generation demanded that audience and performers should not just be passive recipients or mediators of a finished and closed product. On the contrary, they should be involved as active co-authors in the production of meaning. This was in tune with the general societal process of democratization and increasing participation that was taking place at the time. Simultaneously the emotional turmoil brought about by cold-war politics and a growing conscience about environmental damage was looming in the background. The optimism of the first post-war years had started to fade. Collective action and institutional critique became the norm. In 1969, Nordheim’s colleague Kåre Kolberg summed up the mood of the era with these words:

Earlier one talked about the artwork as a completed entity, it could be recreated, but was still finished. In the new way of expressing oneself, one is not creating alone in order to produce or reproduce an artwork, the artwork becomes the creative act.³⁴⁹

³⁴⁸ Umberto Eco, “The Poetics of the Open Work [1959],” in *Audio Culture. Readings in Modern Music*, ed. Christoph Cox and Daniel Warner (New York: Continuum, 2004).

³⁴⁹ Kåre Kolberg, “Ny musikk i en endret verden,” in *Kunst eller kaos?*, ed. Kjell Bækkelund (Oslo: Gyldendal, 1969).

The growing popularity of the multi-modal sound installation should be understood as part of this general cultural shift.³⁵⁰ The collaboration between Edgard Varèse, Iannis Xenakis and Le Corbusier on the Philips Pavilion at the world exhibition in Brussels in 1958 is a case in point. There are earlier examples of sound installations in the international repertoire; most notably, the so-called spatiodynamic towers, built by the French sculptor Nicolas Schöffer in the mid 1950s, some of which featured electronic sounds by Pierre Henry. The Brussels exhibition marked, however, the first time experimental electronic music reached a wider audience as an all-encompassing situation. The structure of the pavilion is a collection of sky-reaching hyperbolic paraboloids (a Xenakis speciality). It is both an architectural masterpiece and a striking modernist statement, combining artistic mastery with advanced mathematics and new building materials. But it also looks at the darker side of modernity. Le Corbusier envisioned the pavilion as a kind of stomach. As Olivia Mattis writes, “the audience was to enter from one end of the Pavilion, be ‘digested’ in the middle, and then emerge, transformed, on the other side.”³⁵¹ As they walked through the “digestive system,” the visitors experienced an electronic sound collage by Edgard Varèse streaming from 400 speakers placed around in spectacular structure, and a series of projected images, displaying everything from African masks and new-born babies, to abstract images and nuclear mushroom clouds. The sounds, the pictures and the structure all alluded to the creative and the destructive potential of human activity. Le Corbusier, Xenakis’ and Varèse’s *Poème électronique* was a true gesamtkunstwerk for the modern age.

I have not been able to document whether Nordheim experienced any of these artworks in person. He was living in Paris around the time of the first Schöffer-Henry exhibitions, but he has never mentioned any knowledge of the sculptures. He clearly knew about *Poème électronique*, having written in 1959 that the work shows “how our mechanical culture is striving for clarification – for harmony.”³⁵² However, I have not seen any documents suggesting he experienced the artwork first-hand.

³⁵⁰ For overviews of the development of sound art in relation to these processes, see for instance Helga de la Motte-Haber: *Klangkunst: Tönende Objekte und klingende Räume*, vol. Bd. 12 (Laaber, 1999); Claire Bishop: *Installation Art. A Critical History* (New York: Routledge, 2005); Kersten Glandien, “Analysing Sound Art: Douglas Henderson’s *Fadensonnen* (2009),” in *Expanding the Horizon of Electroacoustic Music Analysis*, ed. Simon Emmerson and Leigh Landy (Cambridge: Cambridge University Press, 2016).

³⁵¹ Olivia Mattis, “From Bebop to Poo-wip: Jazz influences in Varèse’s *Poème électronique*,” in *Edgard Varèse: Composer, Sound Sculptor, Visionary*, ed. Felix Meyer and Heidy Zimmermann (Woodbridge, Suffolk: Paul Sacher Foundation/Boydell, 2006). See also Chapter 5: “The Philips Pavilion” in Nouritza Matossian: *Xenakis [1981]* (Lefkosia: Moufflon Publications, 2005), pp. 121-40.

³⁵² Arne Nordheim: “Mot nye klanger” in *Morgenposten*, January 15th 1959.

In this chapter, I am going to present Nordheim's first sound installations: the large outdoor sound sculpture AN.55 *Ode til lyset*, made in collaboration with the artist Arnold Haukeland (1920–1983), and the multi-media installation AN.70 *Poly-Poly*, created for the Scandinavian Pavilion of Japan Expo '70.³⁵³ There are certain parallels that can be traced to the Schöffer-Henry collaboration in *Ode til lyset*.³⁵⁴ *Poly-Poly* also echoes the digest-and-transform idea of the Philips Pavilion. Direct inspiration or not, Nordheim's turn to sound art reflects the general interest in sound sculptures of the mid 1960s. In his catalogue of the electroacoustic repertoire, Hugh Davies lists 54 sculptures that were either completed or in progress at the time of writing (mid 1967).³⁵⁵ Almost half of these date to the years 1965 to 1967 – precisely the moment Nordheim started planning *Ode til lyset*.

I have devoted more space in this chapter to *Ode til lyset* than to *Poly-Poly*. This is partly for pragmatic reasons. The available source material for *Ode til lyset* is rich and varied. I have had access to several hundred documents detailing the process leading up to the realization of the sculpture, as well as several book chapters and articles discussing the work. For *Poly-Poly*, the situation has been almost the opposite. I have found no documents featuring Nordheim's aesthetic considerations prior to this work's completion.

There are other reasons for the imbalance in emphasis. *Ode til lyset* holds a significant place in Norwegian art history, and it is referenced in most accounts on Norwegian 20th century modernism and avant-garde.³⁵⁶ It is also considered a remarkable work in the international context. Even though the installation was revised in 1995 with new sound material, it is one of, if not *the* longest-running electroacoustic sound installation in the world. Finally, *Ode til lyset* is an important transitional work in Nordheim's aesthetic development. It was his first experience with sound art, and, as discussed in the previous chapter, it was the decisive factor that made him travel to Poland to work in Studio Eksperymentalne. Several of the concepts discussed with regard to *Ode til lyset* point to ideas that are present in all of his later sound installations. This includes the use of multiple tape-loops and various interactivity principles in order to provide works of indefinite duration, and the elaborate use of spatial sound distribution as a vital part of the totality of the artwork. *Poly-Poly* on the other hand,

³⁵³ Parts of this chapter has been published earlier as Nordal: "Ode til lyset. En samtidsmusikkdetektivhistorie," in ed. Finborud (2013); Nordal: "The sound sculpture Ode to Light – Arne Nordheim's first project at the Studio Eksperymentalne," in ed. Stępień-Kutera (2016).

³⁵⁴ This was first noted in Svein Aamold: *Arnold Haukeland: liv og verk*, Hovedoppgave i kunsthistorie (Oslo: Universitetet i Oslo, 1992). Vol. 1, p. 196.

³⁵⁵ Davies (1967): "International Electronic Music Cataloge," pp. 305-06.

³⁵⁶ See for instance Ole Henrik Moe, "Toner, form og farge," in *Norges kulturhistorie, Bind 7: I velstandens tegn*, ed. Ingrid Samningsen, et al. (Oslo: H. Aschehoug & co.). Svein Aamold, "Lek, brudd og tilfældigheter i skulpturen: Isern og Haukeland, Kleiva og Heyerdahl," in *Norsk avantgarde*, ed. Per Bäckström and Bodil Børset (Oslo: Novus, 2011).

was part of one of the less notable exhibitions at the Japan Expo and has later come to be known mainly through its derivative work AN.77 *Lux et Tenebrae*. It holds a significant place within Nordheim's catalogue, but in the larger cultural context it has been a less notable work than *Ode til lyset*.

5.1 Nordheim's sound installations – some theoretical considerations

One of the premises for this chapter is that as *sound art*, Nordheim's sound installations must be approached slightly differently than his other compositions. I will therefore start by establishing a working definition of sound installations. The theoretical discourse on sound art is vibrant and fast-paced, and I will not attempt to cover the entirety of this complex field. Instead, I wish to zoom in on some terms that I find useful in the case of Arne Nordheim's take on the medium.

Sound installations are by definition *site-specific*. In its most direct form this means that the artwork is installed at a specific location, a tangible (or, in the case of certain types of new media art, virtual) space whose identity is a "unique combination of constitutive physical elements: length, depth, height, texture, and shape of walls and rooms; scale and proportion of plazas, buildings, or parks; existing conditions of lighting, ventilation, traffic patterns; distinctive topographical features," to quote the curator and art historian Miwon Kwon.³⁵⁷ In short, every place has its own sonic signature of reverberation, frequency response and background sound, and in its most basic form the term site-specificity refers to how installations relate to these physical qualities. However, Kwon also points out that there are conceptual elements to the site. Our experience of the work is a function of the socio-political identity of the space. A work that is placed within the confines of a museum or gallery is approached differently from a work installed in a public place, where it can become an integrated part of everyday life. In her book *One Place after Another*, Kwon lists six different typologies of site-specificity. She writes that artworks can be site-determined, site-oriented, site-referenced, site-conscious, site-responsive or site-related.³⁵⁸ Her point is that elements of the site act as co-creators of the totality of the artwork in many different ways. Sometimes it is just as functions of the site (physical or socio-political), at other times it is deliberately brought into the aesthetics of the work.

³⁵⁷ Miwon Kwon: "One Place after Another: Notes on Site Specificity," *October*, vol. 80, no. 1 (1997).

³⁵⁸ Miwon Kwon: *One Place After Another: Site-specific Art and Locational Identity* (Cambridge, Massachusetts/London, England: The MIT Press, 2004), p. 1. I wish to thank Asbjørn Tiller for drawing my attention to Kwon's work.

As Asbjørn Tiller pointed out in his analysis of AN.188 *Dråpen*, the notion of *site-response* is particularly interesting with regard to Nordheim's sound installations.³⁵⁹ All of Nordheim's sound art is *site-oriented* in the sense that it highlights special qualities of the place where it is installed; the open environment of *Ode til lyset*, the multi-media exhibition space of *Poly-Poly*, the dark wastewater plant of *Dråpen*. However, some of the sound art also contains features that make the installation respond directly to environmental input from the site. In *Ode til Lyset* for instance, Nordheim used the intensity of sunlight to influence the spatial diffusion of sound from two tape loops. Table 5.1 lists all of Nordheim's sound installations. The column marked "Input" lists what kind of environmental input the installations take.

Examining the table more closely, we can note that there are only a few elements which are influenced by external input. No real-time sound processing is taking place, except for the colouring that will happen from routing sounds to different types of speakers. The installations always use sound material that has already been finished, mixed and polished in the studio. In his later installations, a sound segment might come in different versions, for instance with varying amounts of reverb or with slight pitch alterations (I will come back to this in Chapter 9 with regard to AN.182 *Gilde på Gløshaugen*). But the variation comes from calling another sound file, not from subjecting the file to sound processing. This is as close as Nordheim gets to aleatoric composition. He lets go of some of the aspects in the production of form and spatial distribution. He lines up his sound elements and distributional algorithms, and then steps back to let the composition unfold. The actual sound however, is tightly controlled.

For Nordheim, the central aesthetic problem seems to have been how to deal with duration and form. As pointed out in the introduction to this dissertation, Joanna Demers claims that one of the characteristics of sound art is that it uses non-narrative sound.³⁶⁰ Her point is that most sound art does not follow the narrative structure associated with music: a clearly-defined beginning, middle, and end. Instead, sound art tends to be more cyclical and focused on the moment.

³⁵⁹ Tiller (2011): *Opplevelse av rom*, p. 224.

³⁶⁰ Demers (2010): *Listening Through the Noise*, p. 6.

Original				Derivative			
AN.#	Title	Type	Input	Output	AN.#	Title	Type
55	<i>Ode til lyset</i>	Sound sculpture, two loops	Sunlight	Sound distribution and levels	45	<i>Machina</i>	Live electronic performance
70	<i>Poly-Poly</i>	Fixed media (FM) in art exhibition, six loops			(1) 77	(1) <i>Lux et Tenebrae</i> (from 1988: Polypoly)	(1) 1970 (1) 2 chnl. acousmatic LP: AN.R7
75	<i>Lydbar</i>	Temporary installation, 12 telephones			(2) 1975	(2) <i>Five osaka-fragments</i>	(2) LP: AN.R5
102	<i>H20</i>	FM, art exhibition			(3) 2007	(3) <i>Das Alte Luft</i>	(3) 5 chnl. acousmatic
128	<i>Zwitschen mit donner</i>	FM, art exhibition					
137	<i>Stille, Kepler tenker</i>	FM, art exhibition, two loops, four channels					
166	<i>Aqua Terra</i>	FM, art exhibition					
55	<i>Ode til lyset</i> (revised)	Sound sculpture	Sunlight	Soundfile choice, distribution and levels		<i>Stille, Kepler tenker</i>	1 CD track: AN.R80
182	<i>Gilde på Gløshaugen</i>	Public installation in building	Weather station ++	Soundfile choice, distribution and levels	(1) 180	(1) <i>Fonofonier</i>	(1) 1995
184	<i>Språkfødsel</i>	Permanent museum exhibit	Movement of people	Soundfile choice, distribution and levels	(2) 169	(2) <i>Parita Electroencephalsonica</i>	(2) 1995
188	<i>Dråpen</i>	Permanent installation, waste treatment plant	Amount of waste water	Soundfile choice, distribution and levels	(1) 190	(1) <i>Dodeka</i>	(1) 2003
					(2)	(2) <i>Alpha-Alpha (+ 2)</i>	(2) 2013
					196	<i>Dodega</i>	2006
							Live electronic performance

Table 5.1: Sound installations and derivative works

Some sound art theoreticians therefore draw a distinction between sound art as spatial expression and music as time-based expression.³⁶¹ For instance, Brandon LaBelle writes that “the activation of the existing relation between sound and space” is at the core of the practice of sound art, and that it shifts emphasis from the “time of music” to the “space of sound.”³⁶² Alan Licht has a more pragmatic definition, claiming that sound art “belongs in an exhibition situation rather than a performance situation,” which would be the case of music.³⁶³ The key point is that in sound art, as Salomé Voegelin puts it, it is the spectator who “produces the duration of the aesthetic moment” and therefore also decides on the level of involvement.³⁶⁴ Voegelin writes that she is listening *in* sound artworks as opposed to listening *to* musical works.³⁶⁵ In music, that which constitutes what I will call a “valid experience” of a work, is decided by the formal boundaries of the composition. If one has heard only the two first bars of Beethoven’s fifth symphony, one has listened *to* The Fifth, but one has not *experienced* the work. For sound art however, no matter how brief the moment of involvement might be, even if one has heard only a few of the many possible sonic constellations that the installation can produce (and even if the installation should contain some Beethoven), it is still “valid” as an experience of the work.

Nordheim seems to have been aware of this problem. Already in the plans for his first installation he proposed a work with indefinite duration in order to adapt to the exhibition setting. He continued doing this for almost all of his subsequent installations. In the column “Output” of table 5.1 we can see the various strategies that Nordheim used to provide infinite duration. In most instances he simply uses loops (often of varying length), but, as mentioned, in some instances he lets environmental input influence the ordering of sonic elements.

In table 5.1 I have also listed what I call *derivative works*. These are acousmatic compositions or LP/CD tracks that share material with a sound installation. One of the premises in my discussion of Nordheim as sound artist is that he saw the difference between sound art and music as a conceptual, rather than sonic, difference. As the table indicates, the derivative work was an important work category for Nordheim. Some of them are clearly linked to the installation that they share material with. For instance, *Lux et Tenebrae* has always been presented in liner notes and concert

³⁶¹ For a recent critique of the music vs. sound art debate, see Brian Kane: “Musicophobia, or Sound Art and the Demands of Art Theory,” *Nonsite.Org*, (2013).

³⁶² Brandon LaBelle: *Background Noise: Perspectives on Sound Art* (New York: Continuum, 2006). Pages *ix* and 162.

³⁶³ Alan Licht: *Sound Art. Beyond Music, Between Categories* (New York: Rizzoli International Publication, 2007), p. 14.

³⁶⁴ Salomé Voegelin: *Listening to noise and silence* (New York: Continuum, 2011), pp. 171-72.

³⁶⁵ Salomé Voegelin: *Listening to noise and silence* (New York: Continuum, 2011), p. 29.

programs as being taken from the Japan Expo '70 installation, even though it has a new name. For the re-release of *Lux et Tenebrae* on CD in 1998 (on AN.RC9 *Electric*), Nordheim even changed the name back to *Polypoly* (no hyphen) in order to heighten the connection to the original sound installation. On the other side of the spectrum we find *Dodeka*, which my analysis in Chapter 9 proves is derived from *Gilde på Gløshaugen*, although Nordheim never pointed out this connection.

5.2 Ode til lyset – Nordheim's first sound installation

The following section presents a study of Arne Nordheim's music for Arnold Haukeland's sound-sculpture *Ode til lyset* (1968). The sculpture was a collaborative artwork in the interdisciplinary spirit of the 1960s, bringing together plastic and aural dimensions into one aesthetic whole, as well as forming a multisensory experience with the surrounding landscape and weather conditions.



Figure 5.1: *Ode to Light* in the flower garden at Storedal Centre for the Arts. Photo: Ola Nordal

Previous studies of *Ode til lyset* have focused on the plastic aspects of the sculpture.³⁶⁶ In the following, I will present the first comprehensive study addressing the history, aesthetic, and

³⁶⁶ Aamold (1992): *Arnold Haukeland: liv og verk*.

technology of the aural side of the work. I have divided my account into three main sections. First, I will review the background of the commission as a philanthropic-turned-controversial art project. I will then explore Nordheim's visions for what he wanted to make, and how this relates to the sound material he produced in Studio Experymentalne. Finally, I will provide a description of the interactivity and sound diffusion principle of the project; the "Music Machine" that Nordheim conceived in cooperation with the Acoustical Laboratory at the Norwegian Institute of Technology in Trondheim (today NTNU).

The historical context: A monument for the blind king

The blind popular music singer and accordionist Erling Stordahl (1923–1994) enjoyed great success in Norway during the 1950s and 1960s, releasing more than 120 records and touring intensively all over the country.³⁶⁷ He had far-reaching philanthropic ideas. The bulk of his earnings were donated to the Norwegian Association of the Blind and Partially Sighted. He realized a remarkable number of large projects benefiting people with physical disabilities, most notably an international Health Sports Centre at Beitostølen in Valdres. In 1957 Stordahl inherited the family farm Storedal in Skjeberg, some 100 kilometres south of Oslo. In the early 1960s he started planning an art and culture centre for the visually impaired on the farm. The central element of the centre was a flower park where the blind could experience the texture and smell of a wide range of plants. In the multisensory experience he was preparing for his visitors, he also wanted to include cultural expressions such as music, drama and sculpture.

Stordahl constructed a unifying theme for his centre around the myth of the saga king Magnus the Blind. In the *Sagas of the Norse Kings*, Snorre Sturlason chronicles how the 15-year old Magnus inherited a disputed Norwegian throne after the untimely death of his father Sigurd the Crusader in 1130.³⁶⁸ This sparked a period of civil war lasting over one hundred years. After only five years as king, Magnus was caught by his enemies, blinded, castrated, dismembered, and imprisoned in a monastery in Trondheim. A few years later he reluctantly answered a call to support Sigurd Slembe, another claimant to the throne. But Slembe lost the ensuing war, and Magnus was killed in the battle of Holmengrå in 1139. The saga claims that as his servant tried to carry the wounded Magnus away from the battlefield, a single spear killed them both. Some readings of

³⁶⁷ Stordahl performed regularly together with the blind singer Gunnar Engedahl (1919-1969). For a biography of Stordahl, see Espen Andersen: *Erling Stordahl. Ildsjel og banebryter* (Oslo: Akilles, 2010); Otto Johansen: *Ridderspranget: Erling Stordahl og hans verden* (Oslo: Gyldendal, 1972).

³⁶⁸ "The Saga of Sigurd, Inge and Eystein, the sons of Harald" in Snorre Sturlason: *Heimskringla - The Chronicle of the Kings of Norway. The Saga of Sigurd, Inge and Eystein, the sons of Harald* (English translation by Samuel Laing, 1844).

Haukeland's sculpture interpret the two black pillars as hands reaching up towards the sky, and the stainless steel rod in the middle as the spear that killed Magnus and his servant.³⁶⁹

Family legend had it that Magnus had been born in Storedal and was part of Stordahl's ancestry. Fascinated and proud of his heritage, Stordahl transformed this tragic story into a heroic allegory over blindness defeated. In his rewriting of the saga, Stordahl claimed that it was only after that he had been blinded that Magnus could "see for real" ["virkelig se"] the flowers, plants and humans around him. Stordahl saw in Magnus a man who through hardship overcame his handicap. This fitted Stordahl's life motto: "through darkness there is always a path towards light."³⁷⁰

Stordahl wanted to erect a monument for Magnus in his park, and in 1962 he contacted Arnold Haukeland (1920–1983), at the time one of the most renowned sculptors in Norway. Together they envisioned a monumental project: a 20-meter steel monument and a series of bas-reliefs depicting scenes from Magnus's life. At some point, sound was included in the visions, and Stordahl got in touch with the composer Geirr Tveitt (1908–1981). Tveitt was given three tasks. He was to provide music for an outdoor play about Magnus, he was to make short tunes for each of the flowers in the park (it was planned that the visitors should be able to listen to these tunes through small coin-operated telephones), and finally the "monument of blindness defeated" was to be "made in material and tones."³⁷¹ Although Nordheim sometimes claimed otherwise, it is evident that the idea of having music as a part of the sculpture was discussed long before he got involved in the project.

As work on the monument progressed, Haukeland ran into problems with the figurative reliefs. In the early 1960s, Haukeland was gradually moving away from figurative expressions, and as his sculptures became more abstract he also turned into a more controversial figure. The fate of the reliefs became an intense point of debate, almost halting the entire project.³⁷² When Haukeland eventually dropped them from the project, several members of the team were enraged. Geirr Tveitt was the first to leave, with harsh words to Stordahl:

³⁶⁹ For a critique of this interpretation, see Aamold (1992): *Arnold Haukeland: liv og verk*. Vol. 1, pp. 193–8.

³⁷⁰ For Stordahl's interpretation of the saga, see the audio drama Erling Stordahl, "Fra mørke til lys." Original production by NRK, 1970. Re-released on CD by Stordahl Art and Culture Centre in 2001.

³⁷¹ Quoted from a letter from Stordahl's correspondence assistant Otto Johansen to Arnold Haukeland's widow Randi, Oslo April 30th 1992. RA/PA-0939/D/L0008/0008. In the letter Johansen quotes extensively from the correspondence between Tveitt and Johansen/Stordahl in the period 1963-1965. The original correspondence seems to be lost.

³⁷² Johansen (1972): *Ridderspranget*, pp. 61-77.

If the expression is unclear and abstract, I have no faith in the viability of the artwork. The abstract artists can say what they want, and overestimate their fantasy until they go blue in the face!³⁷³

Tveitt was working in a national romantic style typical of the mid 20th century in Norway, and can be included among the “traditionalists”, in the context of the then raging controversy over abstraction, tradition, and modernism in the arts. In this light, it is striking that his successor was Arne Nordheim, one of the most outspoken persons associated with the modernist camp. It is possible that Haukeland had mentioned Nordheim’s name to Stordahl, but it is also possible that Stordahl came up with the suggestion himself. He might have felt that his increasingly modern sculpture demanded modern music. The only comment from Nordheim about the choice is a vivid depiction of how Haukeland late one night at the Artist Restaurant Blom towered over him proclaiming: “we’re going to make a sculpture together, goddamit!” [”Nå skal vi pinadø lage en skulptur sammen!”].³⁷⁴ The appointment of Nordheim was a clear indication of which aesthetic direction the project was heading in. The link to tradition and the saga was retained, but in a different form. First and foremost, the project was now one of internationally and technologically-inspired modernism.

The modernism-vs-traditionalism controversy was also visible in the financing of the sculpture. Stordahl had financed the park partly from his own funds and partly with contributions from the Society for the Blind and Partially Seeing. However, Haukeland’s visions for the monument went far beyond what would be justifiable to take from charity funds. Coincidentally, The Cultural Fund of Arts Council Norway had been established in 1964, and was just starting to process its first applications. The budget for the fund was rather generous during its first years, and it had the possibility to take on bold projects.³⁷⁵ The decision to apply to the council was taken some time in December 1965, a few months after Nordheim was on board with the Stordahl team.³⁷⁶

The Arts Council had a broad representation, covering all of the arts.³⁷⁷ Nordheim had several contacts among the council members. The pianist Kjell Bækkelund (1930–2004), who represented music, was a personal friend. Visual arts were represented by the painters Håkon

³⁷³ Letter from Geirr Tveitt to Otto Johansen, original date November 23rd 1963, quoted after Johansen to Haukeland, Oslo April 30th 1992. RA/PA-0939/D/L0008/0008.

³⁷⁴ Quoted from memory by Nordheim in Arne Nordheim: “Skulptur og musikk,” *Kolon*, vol. 1, no. 1 (1967).

³⁷⁵ Soon, much of the budget was taken up by running projects. See Bergjot Engeset and Pål H. Djuve: *Bevaring, utvikling, nyskaping. Norsk kulturråd 25 år* (Oslo: Norsk kulturråd, 1989).

³⁷⁶ Aamold (1992): *Arnold Haukeland: liv og verk*. Vol. II, p. 256.

³⁷⁷ Jan Brønne, “Veien ut av uføret,” in *Bevaring, utvikling, nyskaping. Norsk kulturråd 25 år*, ed. Bergjot Engeset and Pål H. Djuve (Oslo: Norsk kulturråd, 1989).

Stenstadvold (1912–1977) and Inger Sitter (1929–2014), and Sitter was another close friend. The majority of the council consisted of men in their 50s, with Bækkelund, Sitter and the architect Torbjørn Rodahl making up a group of younger people in their 30s. The appointment of these three younger men to the council indicated that new currents were taking hold of Norwegian cultural politics. Bækkelund was a prominent performer of contemporary music, Sitter was an abstract painter based in Paris, and Rodahl was a modern style architect. One can say that in the mid 1960s the *abstract generation*, who had been somewhat marginalised during the 1950s, was slowly moving from opposition to position. The Stordal project can be interpreted as a programmatic statement from this young generation on what kind of art they wanted the council to support.

The sculpture was considered a visual arts project, and thus it was Stenstadvold and Sitter who held professional responsibility in the council. Stenstadvold proved hard to convince. Three times, in January, April and May of 1966, he postponed processing the application on the grounds that he found the technical specifications to be too vague. According to Inger Sitter, the real reason was that he “abhorred abstract art” and wanted to stop the project.³⁷⁸ In his biography on Erling Stordahl, Otto Johansen vividly recounted how Stordahl personally contacted Stenstadvold and invited him to visit Haukeland’s atelier in Oslo.³⁷⁹ During the meeting, Haukeland, Nordheim and Stordahl pulled out all the stops to try to persuade Stenstadvold. Only partly convinced, he demanded new drafts on a very tight schedule, perhaps hoping that Haukeland would not be able to make it in time. But Haukeland managed to meet the deadline, and a revised application was sent to the Arts council just in time for the meeting on the 27th of June 1966.³⁸⁰ Sitter recalled how Stenstadvold was still full of contempt and reluctance, and how she had to fight hard to get the application processed and accepted.³⁸¹

A reason for the hardships was the considerable size of the project. The Stordal-committee asked for 340 000 NOK, which at that time was an astronomical sum for a single artwork. The budget included 70 000 NOK for Nordheim’s part of the project, which was to cover everything from technical equipment and studio hire to Nordheim’s remuneration. Incredibly (from today’s perspective), the proposed budget was accepted without cuts, and financing was granted over the

³⁷⁸ Inger Sitter, interviewed by Ola Nordal and Lars Mørch Finborud, August 21st 2012. This claim is confirmed by Randi Haukeland, quoted in Aamold (1992): *Arnold Haukeland: liv og verk*. Vol. II, p. 65.

³⁷⁹ Johansen (1972): *Ridderspranget*, pp. 74-75. The meeting is also described in Aamold (1992): *Arnold Haukeland: liv og verk*. Vol. II, p. 65 and Andersen (2010): *Ildsjet og banebryter*, pp. 143–44.

³⁸⁰ On the Arts Councils processing of the application, see Aamold (1992): *Arnold Haukeland: liv og verk*. Vol. II, pp. 262–265.

³⁸¹ Inger Sitter, interviewed by Ola Nordal and Lars Mørch Finborud, August 21st 2012.

next two years. The actual realization of the sculpture then occurred rather fast. As described in Chapter 4, Nordheim had already established contact with Józef Patkowski in Studio Experimentalne, and throughout the fall of 1967 he went to Warsaw to realize the sound material. Simultaneously, he was in contact with the Norwegian Institute of Technology and SINTEF in Trondheim, who constructed the intricate playback unit. Haukeland, having created several miniature versions of the sculpture, started crafting the various parts around the same time. The on-site montage commenced in May 1968, and by October 1st, both the physical sculpture and the sound unit were finished.³⁸² A small inauguration ceremony was held, but for reasons unrelated to the sculpture it would take another two years before the Stordal Arts and Culture Centre was officially opened. But when this finally took place on August 12th 1970, eight years after the planning process had started, it was with considerable media attention and the royal presence of Crown Prince Harald.³⁸³

Nordheim's visions

If it had initially been Haukeland's idea to use sound in the sculpture, it was Nordheim who envisioned how it should be done. In November 1965, he wrote the following to Stordahl:

Instantly when Arnold Haukeland mentioned this project for me, I knew that the music/sounds should be controlled by the light. This is not difficult to achieve, it only needs thorough planning and solid technological preparations, electronically speaking.³⁸⁴

Nordheim focused on two principal ideas. First, he wanted to place multiple speakers into the actual sculpture. For this idea Nordheim was inspired by Stordahl's ability to describe the physical properties of a room just by snapping his fingers and listening back to the reverberation. Nordheim imagined that as the sounds moved from speaker to speaker, the non-seeing would somehow feel the physical properties of the monument. He also wanted the sounds to "reflect the materials of the sculpture": hard and metallic for the dark iron hands and bright and glimmering for sunlight reflected in the stainless steel.

The second principal idea was to let the sun "conduct" the behaviour of the material. Nordheim had observed how photoelectric cells could be used to control "everything from elevator doors to streetlights." So then, he asked rhetorically, "why can they not also control sounds?"

³⁸² Toppen Bech: "Ode til lyset – et håndtrykk mellom mennekser," *Aftenposten*, October 2nd 1968.

³⁸³ Knut Bjørnskau: "Seier for en kongstanke. Stordal-anlegget nå tatt i bruk," *Aftenposten*, October 13th 1970.

³⁸⁴ Letter from Arne Nordheim to Otto Johansen, November 9th 1965. RA/PA-0939/D/L0008/0008. All quotes in this section are taken from this letter. Nordheim's later refined his vision in a newspaper article: Arne Nordheim, "Skulptur - Musikk," *Morgenbladet*, July 1st 1966.

Nordheim initially wanted to use the intensity of the sunlight to control manipulation in real time, controlling sound colour (filtering and ring modulation), pitch (playback speed) and loudness. He hoped that the natural light variations would change the perceived sound behaviour, and thus provide an aural effect equivalent to seeing light move over the surface of the sculpture. As I will come back to, some of these initial ideas had to be modified in the practical realization of the sculpture, but the main principles were kept. Stordahl seems to have been enthusiastic about Nordheim's synesthetic vision, and Nordheim received full support from the park committee and from Haukeland, who had to make some adjustments to his design to accommodate the speakers (figure 5.2).³⁸⁵



Figure 5.2: Detail showing some of the speakers in the “cloud” and the “spear.” Note how the speakers are integrated into the structure, neither entirely hidden nor imposing. Photo: Ola Nordal

The proposed sound material

Just before leaving for Poland for his first studio sessions, Nordheim published an article about *Ode til lyset* in the short-lived Norwegian art magazine *Kolon*. The article contained a graphical score – basically just a sketch – of the dramaturgy of the music he was envisioning (figure 5.3). The sketch

³⁸⁵ The exception was NRK's Arne Altern, who quit the Stordal-committee soon after Nordheim was appointed as Tveitt's successor. The parting words were once again harsh. The incident is mentioned in Johansen to Haukeland, Oslo April 30th 1992.

indicates the use of filtered noise, sine tones, concrete sounds and metal and steel sounds. We can also note what seems to be a Bartók-like arch-disposition of the material.

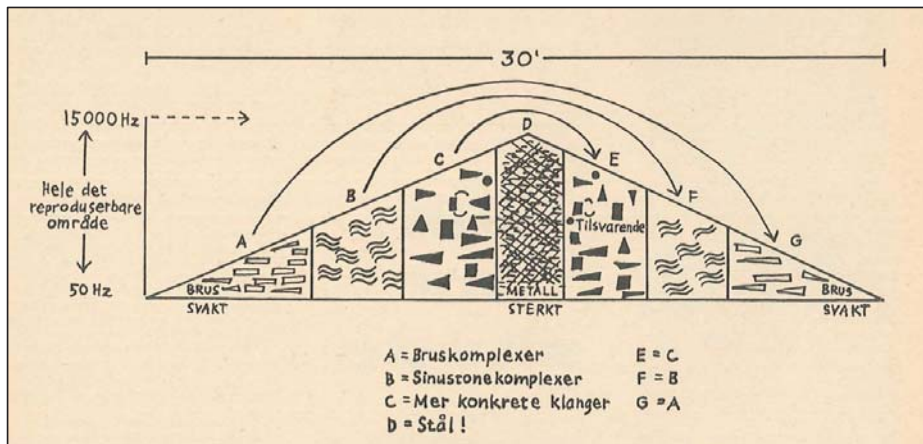


Figure 5.3: Nordheim's "score" for *Ode to Light*

The adjacent description gives some insights into Nordheim's aesthetic ideas for the work:

This composition is planned to pass through different stages of material, and will be built on modulations of these. It will be stretched out over a suspension curve from soft and faint sounds to hard and loud. Over a span of about 30 minutes the development will go from complexes of soft rustles, over increasingly purer electronic sounds (sine tone complexes), to more concrete sounds, where the manipulation of steel and metal sounds will make up the climax point and core of the tape. It is intended that this point will be reached in the middle of the composition, after which a mirrored dissolution process will start.³⁸⁶

In the article, Nordheim also addressed the problem of duration. He envisioned that he could obtain an infinite work by copying the same material onto two separate tape loops, and then run them in parallel at slightly different speeds. The result would be, as Nordheim called it, a "sort of two-voice canon" (figure 5.4).³⁸⁷

³⁸⁶ Nordheim (1967): "Skulptur og musikk."

³⁸⁷ Ibid.

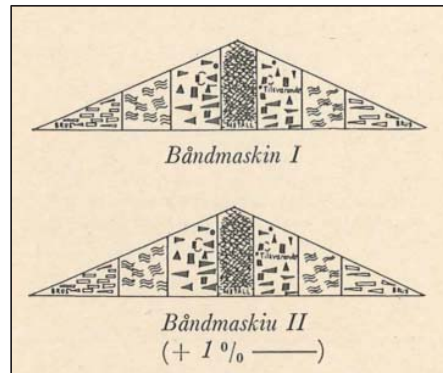


Figure 5.4: The initial idea of running two loops of the material at different speed

There are some parallels between this idea and the principle of *phasing* that Steve Reich was exploring around the same time. However, it is unlikely that Nordheim knew of Reich's work at this point. Reich's first phase work *It's Gonna Rain* dates from 1965, but was not well known in Europe at the time. Reich's first widely-circulated recording (*Come Out*, Odyssey 32.16.0160), was released in November 1967, two months after Nordheim went to Warsaw, and several months after Nordheim's article. Nordheim has neither acknowledged any inspiration from the phasing-principle, nor shown any interest in Reich's music. I will therefore conclude that in this case, the similarity of technique is more likely a result of working with the same equipment, rather than any transfer of ideas.

The produced sound material

As is often the case in electronic music, there was a gap between intention and realization. What Nordheim finally turned out to compose was quite different from what he initially described in his proposal. Instead of a long stretch of music running in parallel on two tape machines, he composed 18 individual parts distributed onto two different tape loops. *Program 1*, to use Nordheim's own term, contained ten parts and had a total duration of [16.42]. *Program 2* consisted of the remaining eight parts, and had a duration of [11.24]. In figure 5.5, I have approximated the length of program 1 to 680 seconds and program 2 to 1000 seconds. As the figure shows, a rough alignment of the two tapes will be reached only after every 4th round of program 1. Exact alignment would be even more infrequent, and for all practical purposes, the duration of the work would be experienced as indefinite.



Figure 5.5: Approximation of the varying synch point for the two tape loops

Figure 5.6 shows a sonogram of the original 1968 version of the tape material for *Ode to Light* with my numbering of the parts; the first digit indicates the program and the second indicates the position internally on the tape. For some time, the original tapes of *Ode til lyset* were thought to be lost. In 2011, I discovered a copy of the master tape in the basement of the acoustics group at NTNU. Later, a second master tape, with considerably better sound quality, was unravelled in the archives of Studio Experimentalne. The Warsaw master has been released as *Ode to Light (sculpture) – Studio mix 1* and *Studio mix 2* on the CD AN.R78 VA: *Sounding the Body Electric*. In this version, the ordering of the parts is slightly different. My numbering is based on the Trondheim tape, since it seems to be the one used in the sculpture. It is included on the accompanying CD as **CD track no. 08**). A stereo mixdown of the two programs that was released by Nordheim and Rudnik in Warsaw follows the ordering of the Trondheim tape. This mixdown was used in a 1968 TV documentary about the sculpture, and was released as “Ode to Light” on the CD AN.R80 *Solitaire*.³⁸⁸

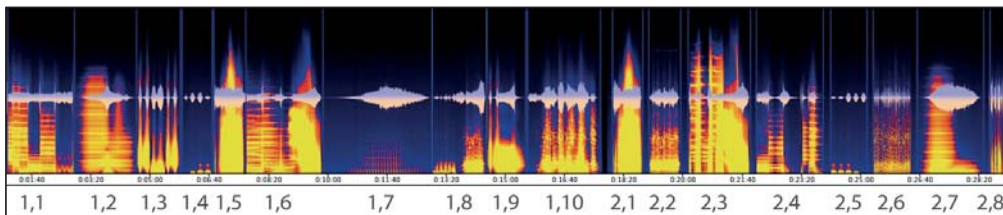


Figure 5.6: Spectrogram of the original *Ode to Light* tape

In table 5.2, I give brief descriptions of the 18 parts. Following Lasse Thoresen’s form-building vocabulary, I interpret each part as a form-field with some kind of clear demarcation to the next – mostly a stretch of silence or a clear change of sonic material. A few of the parts have two sentence fields. Each of the parts contains only a few elements, and seems to be built around one or two sonic ideas. More complex sound textures are obtained by mixing the two loops together.

Most sections are divided into clearly-identifiable layers (maximum three), and I will comment on them independently. Some of the parts are almost like miniature compositions that in principle could be listened to as stand-alone elements. As in AN.34 *Response*, the formal disposition resembles that of moment form, where the parts can in principle be listened to in any order. I will come back to this, in particular with regard to “Part 1,1”, which in its microstructure also seems to

³⁸⁸ “Lydskulptur,” *NRK TV*, October 25th 1968.

Tape 1		Dur.	Pause
1,1	Six static sections (“moments”) each separated by a loud dystonic impulse (“moment divider”). Each section contains a stratified sustained sound with undulating pitch, “arpeggiating” randomly over a few resonating frequencies. The frequencies seem to be the partials of the inharmonic spectrum of a bell. This is the “signature sound” of the composition. It comes back in various guises throughout the tape: in 1,6 , 1,8 , 1,10 and 2,3 . The part is similar to 2,4 .	[01.55]	[00.00]
1,2	Stratified sound with inharmonic frequency spectrum, fundamental ca. Eb1. Dynamic profile: $p < f > p$ with slightly more energy on the decrescendo.	[01.44]	[00.00]
1,3	Six accumulations of “clattering” sounds that produce wave-like gestures of slightly unequal length.	[01.13]	[00.04]
1,4	Four semi-pitched sound of filtered white noise, suggesting associations to electronic “breaths” or “sighs.” Cf. part 2,5 .	[01.00]	[00.02]
1,5	Accumulations of short “noisy” or “burning” sounds. Arch-like dynamic with climax on <i>ff</i> . Short impulses, later to be heard in part 2,8 , used as contrasting element.	[00.54]	[00.00]
1,6	“Resonance arpeggios” like in part 1,1 , but without the “moment dividers.” Three layers of resonances, in the profound, mid, and treble registers. Towards the end of the part, a loud and piercing downward undulating movement, reminiscent of a passing or crashing aeroplane.	[02.11]	[00.01]
1,7	Two layers. Bottom layer: Stratified electronic sound like in part 1,2 , tonal centre ca. Ab1. Top layer: Approximately every 6 th second: a short synthetic chord (reminiscent of Ab major). Almost symmetrical dynamic $p < f > p$.	[03.10]	[00.01]
1,8	Two sentence fields with two layers. Field 1, layer 1: Three falling and rising pitched synthetic tones (“whistles”), frequency development: ca. 2400Hz → 1800Hz → 2400Hz. Field 1, layer 2: Synthetic overtone row arpeggio (different from part 1,1 and 1,6 but reminiscent of part 1,10). Field 2: slower arpeggios over upper partials (inharmonic spectrum).	[01.34]	[00.03]
1,9	Accumulations of “clattering” sounds like in part 1,3 and a diffuse synthetic noise chord $p < mp > p$.	[01.05]	[00.01]
1,10	Three layers. 1 st layer: <i>pp</i> resonance arpeggio like in part 1,8 . 2 nd layer: <i>mf</i> glimmering sound like in part 1,8 (bells on 4x speed). 3 rd layer: <i>ff</i> bell-like sounds (bells on 2x speed with prolonged sustain).	[02.06]	
Tape 2		Dur.	Pause
2,1	Two layers. 1 st layer: loud four-note statement, repeated and varied 6 times (third time: 8 notes). 2 nd layer: accumulation of “burning” or “clattering” sounds cf. part 1,5 . Layer 3: Diffuse synthetic unpitched noise, deep register.	[00.50]	[00.09]
2,2	Two layers. 1 st layer: Diffuse “floating” sounds. 2 nd layer: Shimmering high pitched bell-like impulses.	[00.55]	[00.15]
2,3	Two sentence fields. Field 1: two layers. 1 st layer: High pitched “fluttering” or “glimmering” sounds. 2 nd layer: Overtone row arpeggio, vaguely reminiscent of 1,1 , 1,6 , 1,8 and 1,10 . Field 2: downward undulating movement, cf. 1,6 .	[01.44]	[00.21]
2,4	The entire part is very similar to part 1,1 , but instead of having stable dynamic, each moment fades out towards the end.	[01.54]	[00.10]
2,5	Five sounds like in part 1,4 , but with a different pitch.	[01.02]	[00.10]
2,6	23 dystonic impulses with distinct echo (made from bell-sounds on 4x speed).	[01.03]	[00.10]
2,7	Evolving synthetic chord with broad inharmonic spectre, fundamental ca. Eb1.	[00.51]	[00.11]
2,8	Several short semi-pitched impulses, call/response: “Call” with reverb. “Response” without reverb.	[01.30]	

adhere to Stockhausen’s form principle, and might even contain references to Stockhausen’s *Telemusik*.

Table 5.2: Parts in *Ode to Light*, duration and pause until next sound

Internal referencing and the relationship between the programs

Figure 5.7 summarizes the relationships between the parts. In contrast to the formal outline on the graphical sketch (figure 5.3), the parts do not seem to follow a fixed pattern. Recurring elements are always varied to a greater or lesser extent. I distinguish between strong relationships, where there are clearly-audible links, and weaker relationships that are less obvious. I see a shared characteristic as being two sounds based in the same source material or being composed with similar techniques (for instance the “breath sounds” in parts 1,4 and 2,5). As we can observe in the figure, there are relationships both internally within a program, and between the two programs. It is important to keep in mind that elements from the same program will never occur simultaneously. However, elements from the different programs will coincide. Even if one cannot read out a clearly planned system of relationships between the parts, the figure illustrates how the shared characteristics of several of the parts contribute to the aesthetic unity of the work.

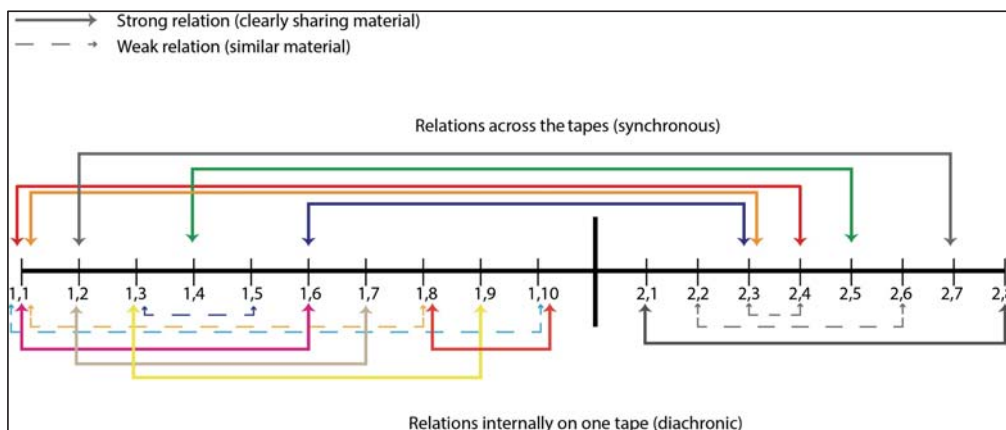


Figure 5.7: Internal relationships between parts in *Ode til lyset*

There is a slight difference in character between the programs. On a general note, one can say that *Program 1* has background character. Several of the parts are atmospheric or textural, often composed of static surfaces with unchanging dynamics. The parts are also slightly longer (median 01'41) than on *Program 2* (median 01'14). The breaks between the parts are short (one to four seconds), and the almost constant flow of sound on this loop glues the composition together. On *Program 2* the sounds are more distinct and gestural, and thus have more of a foreground quality. The breaks between parts are also longer (nine to eleven seconds). It must be stressed that this foreground/background division is not absolute. Sometimes the role changes, and sometimes two parts with background character or two parts with foreground character are played at the same time.

When parts with very similar character, like 1,1 and 2,4, are played simultaneously, the sounding result can come across as somehow overloaded and chaotic.

Part 1,1

I wish to argue that Part 1,1 is the “signature sound” of the composition. As can be observed in figure 5.7, it is the part that has the most relationships to other segments in the composition, both synchronically and diachronically. It is also a part that clearly embodies the idea of sound reflecting the material of the sculpture. I see the part as composed from six successive “moments.” I use the term “moment,” since the allusion to Stockhausen’s *Telemusik* (1966) is quite evident. Each “moment” is followed by a loud dystonic impulse, possibly a clapper or some other concussion idiophone, that functions as a sort of “moment divider.” I see this as a clear allusion to the Japanese temple instruments used in *Telemusik*, or alternatively, to the loud clacks separating the parts in Witold Lutosławski’s *Venetian Games* (1961).

In figure 5.8 I have notated the entire part as one form field, and each “moment” as a sentence field with a cut demarcation. The abrupt cuts are the result of the moment dividers. Each sentence field is a static texture (another striking similarity to *Telemusik*), where the partials of a sustained stratified sound slightly undulate in intensity and pitch. I wish to call this technique a “resonance arpeggio” since the perceived effect is that of playing randomly over a collection of resonant frequencies. It is likely that the pitches relate to the inharmonic spectre of a bell. The sounding result also resembles the pitches that can be found on certain Norwegian folk instruments, such as the *lure*, a wooden natural horn with no finger holes or valves, or the *seljefløyte*, a willow flute playing the upper partials of the harmonic series. The allusion to folk instruments seems quite explicit, and Nordheim would revisit both the *lure* and the willow flute in later compositions.

Part 2,6

Part 1,1 can be said to be a typical example of a part with background character – it presents a static texture against which other sounds can act as foreground. This can be contrasted with Part 2,6 (figure 5.9), which contains more gestural sounds. It consists of regular bursts of semi-pitched and dystonic impulses, all treated with generous amounts of echo and reverb creating a spherical and ethereal tinge. The entire part contains only this single sound-category.

Listening back to the part on $\frac{1}{4}$ speed, one can recognize the source material as being based on a series of recorded bells, drenched in echo and reverb. Even though the manipulation removes the direct mimetic link to the bell, the metal-like quality of the sound is retained. This is typical of the sounds in *Ode til lyset*. Many of the sounds can be traced back to the striking of concussion idiophones, bells, or pieces of metal, but they are rarely given extra-musical references.

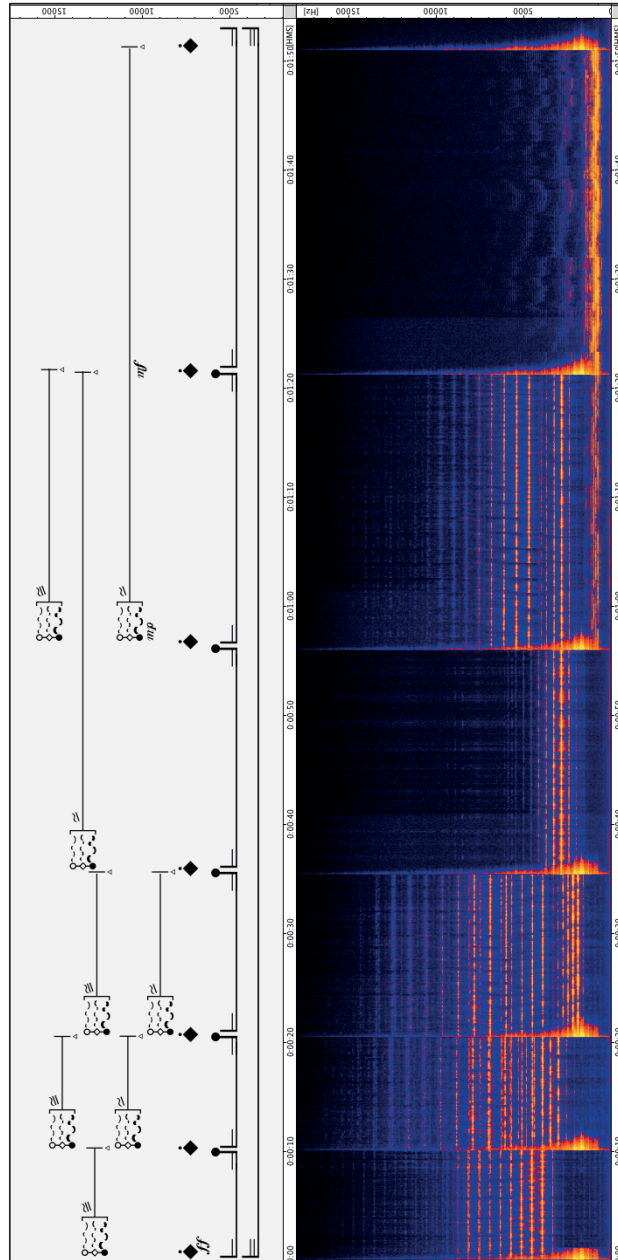


Figure 5.8: Part 1,1, dur = 01'55

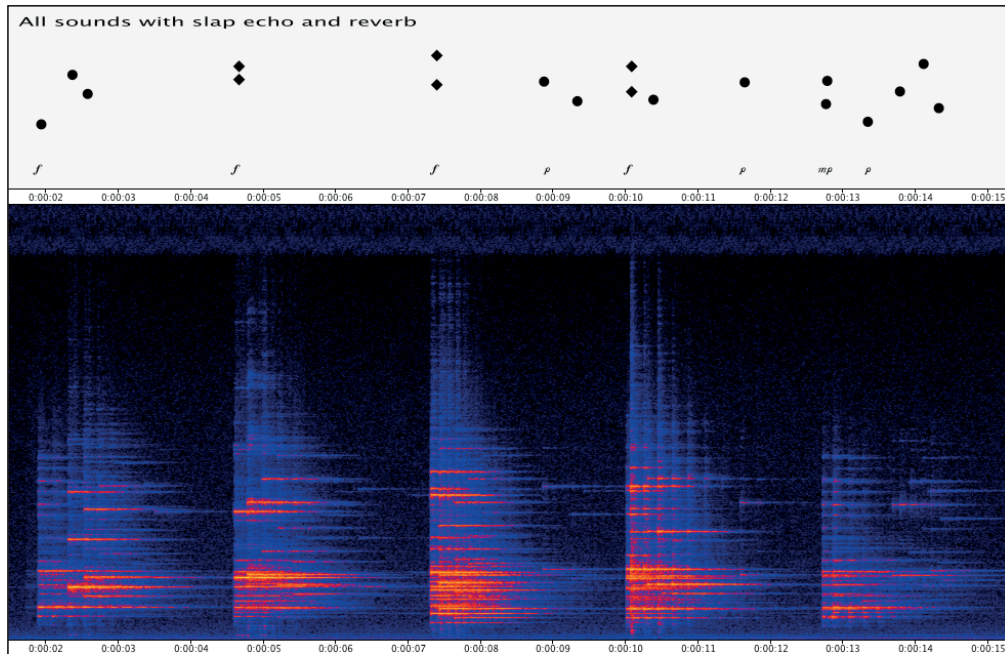


Figure 5.9: The first 15 seconds of Part 2,6

Reference to AN.37 *Papirfuglen*

Even if *Ode til lyset* can be said to break with the aesthetic practice developed in Nordheim's first electroacoustic period, there are also aspects that can be traced to his earlier compositions. The most striking sonic links are to a work that Nordheim completed in NRK a few months before going to Warsaw. In the music for the Radio drama AN.37 *Papirfuglen*, we can find several techniques that foreshadow elements in *Ode til lyset*. In figure 5.10, an excerpt taken from *Papirfuglen*, we can see four evolving "breath sounds" over an undulating "resonance arpeggio", in striking similarity to the technique discussed above in connection with Part 1,1. In figure 5.11, we can observe how these "breath sounds" are almost identical to sounds in *Ode til lyset*'s Part 1,4. The main difference is that Nordheim used a more limited number of frequencies in *Papirfuglen* than in *Ode til lyset*. For instance, the "breath sounds" in *Ode til lyset* are constructed from two layers of filtered noise (centre frequency 536 Hz and 2210 Hz) whereas *Papirfuglen* contains only one such layer (2210 Hz). The resonance arpeggios also cover a wider frequency spectrum in *Ode til lyset*.

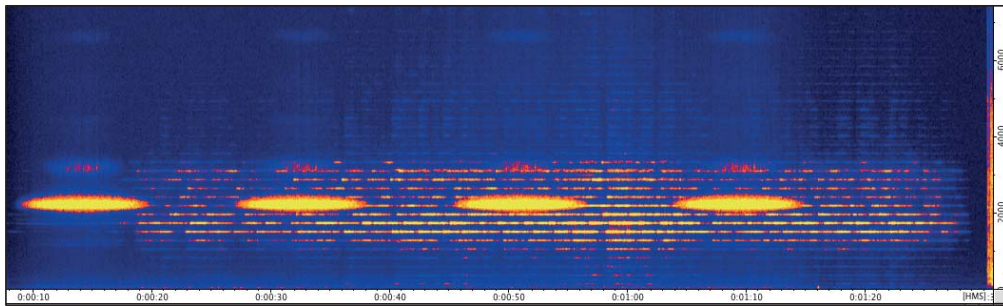
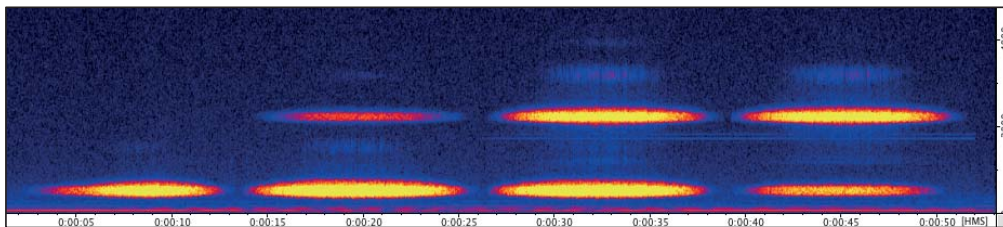


Figure 5.10: Papirfuglen, [00.08] to [01.14].

Figure 5.11: *Ode til lyset*, part 1,4

The similarity could suggest that in his first project in Studio Experymentalne, Nordheim wanted to recreate sounds he already knew how to make. It is also possible that these sounds were inserted in *Ode til lyset* from the previous NRK studio sessions and elaborated on. Another possible, but unconfirmed, theory is that Nordheim had conceived the sounds for *Papirfuglen* during an undocumented trial run of Studio Experymentalne during his visit to Warsaw in 1966. There are certain similarities between the resonance arpeggio in *Papirfuglen* and sounds in Eugeniusz Rudnik's *Dixi* from 1966. This is striking, since both works pre-date Rudnik and Nordheim's working relationship. It could indicate that Nordheim met and worked briefly with Rudnik, or heard some of his music, during the 1966 visit. Then again, without access to the informants, any such theory must be confined to the realm of speculation. The only certainty is that while working on these sounds in Warsaw, Nordheim must have been pleased by them. Otherwise, they would not have had such a prominent place in the composition.

Site-responsiveness in *Ode til lyset*

I will now move on to the elements of what Kwon has called *site-responsiveness*. According to professor emeritus in technical acoustics Asbjørn Krokstad (b. 1931), Nordheim had heard at NRK that if he needed complex audio equipment, he should get in touch with the newly opened acoustical

laboratory at the Norwegian Institute of Technology in Trondheim.³⁸⁹ Nordheim took the advice and made contact in January 1966. Krokstad, the laboratory director, was a conductor and double bass player, and served as the chairman of the ISCM-branch in Trondheim. He was immediately enthusiastic about the project. They met several times during 1966, and when funding for the project was finally secured in mid 1967, the whole laboratory got involved. A young engineering student, Odd Erik Resell, was assigned to the project full-time for a year. The laboratory saw the project as an exciting challenge. They had to push their technical creativity to the limits, which led to the development of several new circuits and systems. They also saw it as a prestige project that granted the new laboratory national media coverage.

Krokstad's first task was to translate Nordheim's somewhat far-flung artistic ideas into something that was technically feasible. The greatest change, which diverged strongly from Nordheim's initial visions, was to use fixed media playback only, instead of real-time manipulation of the material. As mentioned, Nordheim wanted to use on-site ring modulation, filtering and transposition, but Krokstad saw this as too demanding to develop. Instead Nordheim was urged to finalize the material in the studio, and leave only the sound distribution up to the interactive elements. Some other technically-challenging ideas, like movable directional speakers and individual photocells for each speaker, were also abandoned.

In figure 5.12, I summarize the working principle of the "music machine," based on information provided to me by Krokstad. (I) A photoelectric cell was used to measure light intensity at the top of the sculpture. (II) The input data from the light sensor was used to control the speed of a rotating glass disc. Randomised control patterns for a 12-channel voltage controlled matrix amplifier (III) had been printed on the disc. The tape programs were played back from two Tandberg TB-1300 series tape-loop machines (IV), mixed together, fed into the amplifiers, and then routed to 25 speakers installed in the sculpture (V).³⁹⁰ The disc with the control patterns would rotate quicker on high light intensity, making the sound levels change faster in a seemingly random pattern; a "stochastic" pattern, as Krokstad called it. The result was that the stronger the light, the more intense the sonic activity on the sculpture. This is akin to what is called "diffusion" in the performance of acousmatic music. However, in the common understanding of the term, diffusion requires some sort

³⁸⁹ Asbjørn Krokstad interviewed by Ola Nordal, October 10th 2011. See also Ola Nordal: *Akustisk laboratorium ved NTH/SINTEF. Om utbyggingen av anvendt akustisk forskning i Norge, 1948-1965*, Masteroppgave i historie (Trondheim: NTNU, 2005).

³⁹⁰ The TB-1300 series could play back Fidelipac "Endless" tape loop cartridges, each holding approximately 16-17 minutes of sound. (Unsigned): "Operating Instructions Tape Recorder 13-22" (Tandberg Radiofabrikk, 1967). The decision to use the TB-1300 is mentioned in a letter from Nordheim to Norsk Kulturråd on December 18th 1967, quoted in Aamold (1992): *Arnold Haukeland: liv og verk*. Vol. II, p. 271.

of creative input from the person at the mixing desk. Here, everything is left to the “machine,” which combines the pre-configured patterns with the sunlight input.

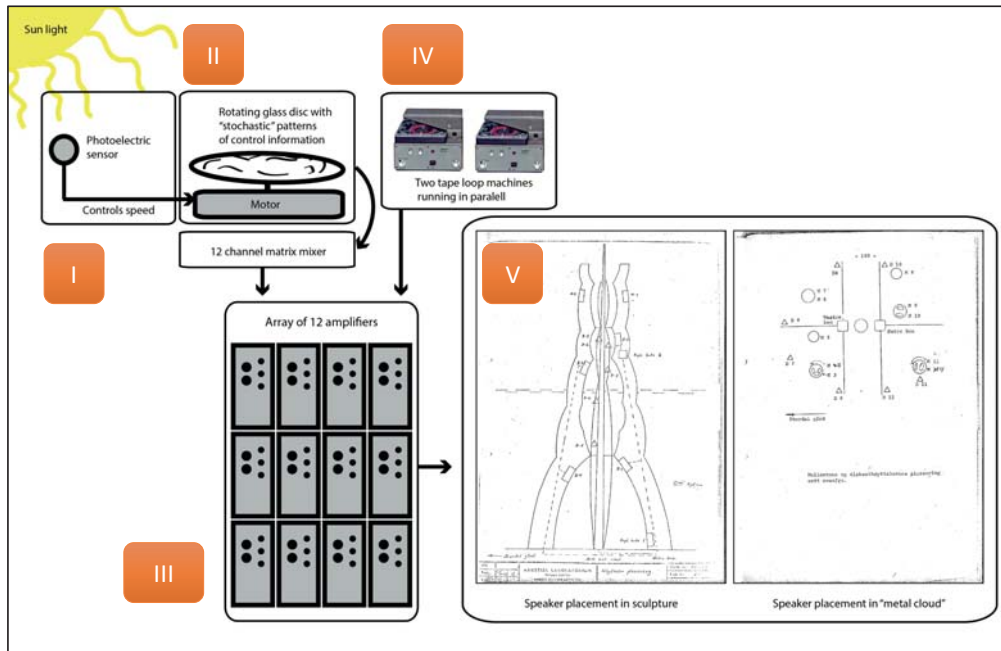


Figure 5.12: Working principle of the “music machine.”

As the schematics in figure 5.15 indicate (see also figure 5.2), the speakers were fully integrated into the sculpture. Larger bass elements were installed in the “hands”, whereas tweeters were installed in the “spear” and in the “metal cloud.” The interactivity principle would constantly route sound segments to different channels, and the different character of the speakers would therefore result in a constant shift in sound colour of the material. It would also result in the spectator experiencing the sound from a different place on the structure. Thus, even though the two sound programs would sometimes align in a previous position, the exact same sonic image would never occur twice.



Figure 5.13: Nordheim in front of his Music Machine. Eva Brustad. "Lydskulptur", NRK TV, October 25th 1968. The amplifiers can be seen in the bottom of the rack. Tape machines in the middle of the rack.



Figure 5.14: Left: Tandberg 1324 'endless' tape loop machine, similar to the one Nordheim used. Right: "Endless" tape loop cassette used in *Ode to Light*³⁹¹

³⁹¹ Photo of tape machine from (Unsigned): "Tape Player/Recorder Series 1300 for Endless Tape" (Tandberg Radiofabrikk, n.d.). Photo of cassette from "Lydskulptur", NRK TV, October 25th 1968.

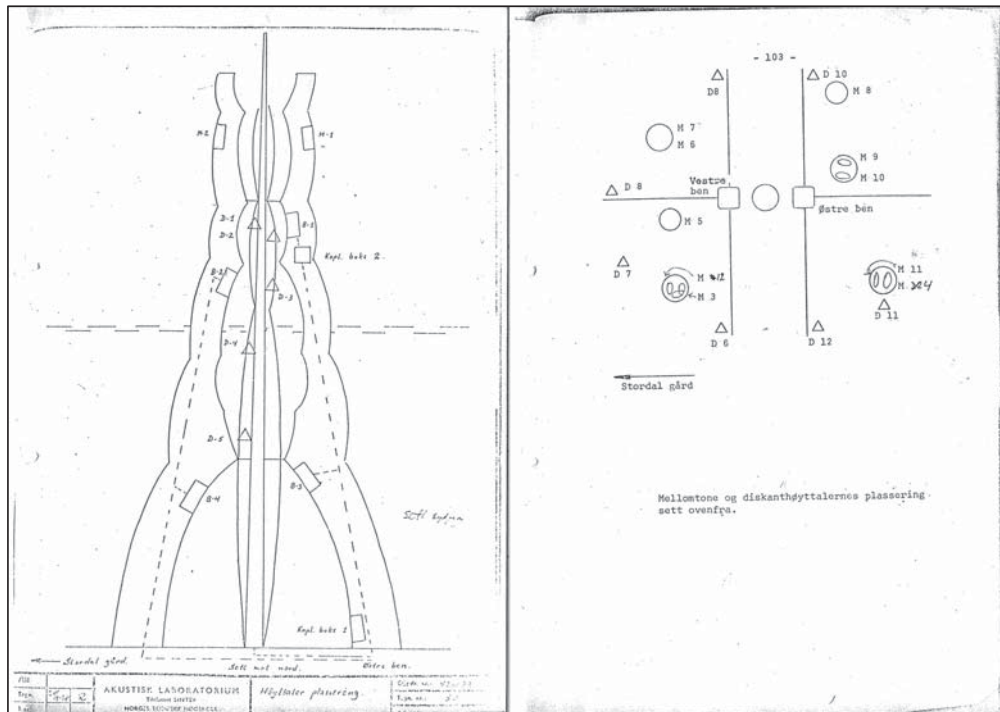


Figure 5.15: Speaker placement in the sculpture³⁹²

Final remarks on *Ode til lyset*

From the perspective of sound production, the 1950s and 1960s were characterized by two main types of sound sculptures. First, there are plastic constructions that are in some way or another self-sounding. Second, there are constructions where sound is being diffused from some kind of fixed media. Nordheim and Haukeland's sculpture belongs in this category.

The very abstract sounds used in *Ode til lyset* are markedly different from the sound material from Nordheim's first electroacoustic period, where he referred to sounds produced by the human body: for instance the voices in AN.28 *Epitaffio* or the manipulated percussion instruments in AN.34 *Response*. Parts of the difference come from the ideas behind the commission. Nordheim wanted the sounds to reflect the metal of the sculpture. And, as Nordheim talked about the project as his "music machine," there is no surprise that some of the sounds are very "machine-like" and un-human.

The "music machine" produced in Trondheim has received much attention in connection with the sculpture – much more than the actual sounds that the machine played. This indicates that

³⁹² Copies of documents from a folder on *Ode til lyset* in Sigurd Saue's private papers. These schematics were part of a now lost technical report on the *Ode til lyset* project.

Ode til lyset was primarily understood as a technological project, bringing together the latest developments in audio research and electronic music production, and not just a philanthropic initiative bringing current trends in the arts to the visually impaired. While the benefit of hindsight may now allow us to point to similar or related projects internationally, it is important to keep in mind that both Nordheim and the technical staff at the acoustical laboratory, as well as the Norwegian audience, felt that this was something completely new.³⁹³ It is therefore understandable that the sculpture generated considerable media attention. Both the inauguration of the sculpture and the official opening of the park were covered by most of the major Norwegian newspapers. The work at the acoustical laboratory resulted in a several-page feature in *Aktuell*, the most important illustrated magazine of Norway.³⁹⁴ On October 25th 1968, NRK broadcast a 50-minute TV documentary about the sculpture, interviewing Haukeland, Nordheim and Stordahl, and showing several clips from the production and montage of the sculpture. The scale of the project and the generous financing granted by the Arts Council also attests to the work as a monument, not just to King Magnus the Blind and the visionary Erling Stordahl, but also to Norwegian abstract modernism.

It is difficult to know how Nordheim judged the outcome of the project, but there are some indications that he was not completely satisfied. The original version of *Ode til lyset* is the only major sound installation that Nordheim made – and the only large-scale project from Warsaw – that was not released on LP as a derivative work. Nordheim made a short electronic music performance called AN.45 *Machina* demonstrating the sound material and the music machine, but that's all. Even though he prepared an 18-minute stereo mixdown of the work, this remained unreleased until 2013. In the liner notes for the LP AN.R7 *The Electronic Music of Arne Nordheim*, Nordheim stated that the Poland experience had started as a “badly prepared safari into the unknown possibilities offered by the studio.” It is likely that this was a reference to the work on *Ode til lyset*.

When the sculpture was renovated for the 25th anniversary of the Storedal Park in 1995, Nordheim did not merely add new layers to old tapes as he had done with *Response* and *Epitaffio*. He provided entirely new sound material. While an argument can be made that so much time had passed that an update to digital sound was in the cards (this was, after all, long before the 1960s electronic music nostalgia that we see today), it is nevertheless striking that Nordheim, then a notorious recycler of old material, chose to discard all of the sound from old version. For the 1995

³⁹³ In my interview with him, Krokstad talked a lot about the novelty of the project in the interview. Asbjørn Krokstad interviewed by Ola Nordal, October 10th 2011.

³⁹⁴ Bjørn Bjørnsen: “Ny norsk lyd,” *Aktuell*, July 29th 1967.

version, only his visionary ideas – using the sunlight as “conductor” and synaesthetically allowing the sound material to reflect the material in the sculpture – were kept.

No matter how satisfied or dissatisfied he was, *Ode til lyset* was an important project in Nordheim’s aesthetic development. I see it as one of the most important transitional works in his electroacoustic catalogue. Not only did he get to explore what it was like to work with electronic music in Poland, he also had his first major experience with sound art. Even though he later discarded the sounds, he would build on the conceptual side of *Ode til lyset* in all his later sound installations.

5.3 *Poly-Poly*: “A kaleidoscope of sound”

Nordheim’s second major sound installation from the Warsaw period, *Poly-Poly*, was conceived for the Scandinavian pavilion at the world exhibition in Osaka Japan Expo ’70. The exhibition was an important event in the history of electroacoustic music. Among the high points were Stockhausen’s famous 50-speaker spherical concert hall in the West-German pavilion and the premiere of Iannis Xenakis’ 12-channel *Hibiki Hana Ma* in the pavilion of the Japanese Steel and Iron Federation. Xenakis’ work was perhaps the most stunning. It was played back from 800 speakers in tight synchronization with a spectacular laser and light show.³⁹⁵ Compared to these giant set-ups, Nordheim’s work, which had “only” six tape loops played through 36 speakers, was modest. Overall, the project was not entirely successful. In an internal report to the Government, The Norwegian Osaka Committee summed up the Scandinavian collaboration for the exposition as a failure.³⁹⁶ It had been costly, the collaborative effort had not been satisfactory, and the PR impact had been low. The Scandinavian contribution was just dwarfed beside the more spectacular pavilions of the other countries.

Nordheim’s contribution to the project, on the other hand, achieved a special place both in Norwegian music history and in Nordheim’s catalogue. It has enjoyed a long life since the exhibition. Nordheim created two derivative works from the installation. Already in November 1970, just two months after the closing, Nordheim presented a 19-minute acousmatic concert version under the name *Lux et Tenebrae*. As I will come back to, *Lux et Tenebrae* seems to be a fully structured composition, consisting of all the elements included in the six loops. In 1973, yet another work derived from *Poly-Poly* was released on record, under the name *Five Osaka Fragments* (on

³⁹⁵ Matossian (2005): *Xenakis [1981]*, p. 266.

³⁹⁶ “Rapport om deltagelse på Verdensutstillingen, Expo ’70 – Osaka, Japan.” RA/S-5006/3/E/Ea/L0211/0001.

AN.R5).³⁹⁷ As the title indicates, this work consists of “theoretical excerpts” that provide a glimpse into how the exhibition might have sounded in its original set-up. Unlike *Lux et Tenebrae*, I see this work more as a documentation of the installation, rather than a stand-alone composition. I have not had access to the original tapes of *Poly-Poly*, and the following analysis is therefore based on the two derivative works.

Background

It has proven difficult to trace the details for Nordheim’s role in the Expo ’70 project. Documents in the archives of the Department of Foreign Affairs and the Department of Commerce indicate that Norway was invited to participate in the exposition circa mid-1967. The government accepted in March 1968, somewhat reluctantly due to fears of extensive costs, and only as part of an all-Scandinavian participation.³⁹⁸ In an interview with *The Wire* from 2003, Nordheim indicated that he had been asked to participate in the project already in 1967.³⁹⁹ However, since the official decision to participate was only reached the following year, this is most likely wrong. Nordheim probably mixed up the Osaka-commission with *Ode til lyset*, which in 1967 was well under way.

In the archives, there are several folders of documents detailing the cumbersome process leading up to the exhibition, but Nordheim’s name does not appear in any of them. This is probably due to the fact that the government was solely responsible for the principal questions such as level of involvement and financing. The actual exhibition was produced by a private company named Norway Trade Fairs, and it is likely that they were Nordheim’s partner in the project. I have been in contact with Norway Trade Fairs, but the company have not been able to find any documentation from the project. Nor are there any documents on the matter among Nordheim’s papers.

What we *do* know is that the actual pavilion was drawn by the Danish architects Jesper Tølgern (1924–1988) and Torkil Ebert (1928–2004), and that their prospect was called + –, plus and minus (figure 5.16). Inside the pavilion, a 600 m² room was reserved as exhibition area, while a slightly larger room was used as a restaurant, run by the catering division of Scandinavian Airlines, who had recently launched their first route to Japan.

³⁹⁷ It is possible that the work premiered even earlier. A “prototype” of the installation called *Osaka Music* was broadcast on KPFK Radio, Los Angeles, March 19th 1969. I have not been able to document what kind of work this was, but it is possible that it was an early version of *Five Osaka Fragments*. “Norske verker oppført i U.S.A. 1969” PA/RA-1446/Ac/L0001 & Ac/L0002: TONO’s propagandakomiteé.

³⁹⁸ Stortinget accepted the budget on May 4th 1968. Department of commerce: St.prp. 78. (1967–68) “Om tilleggsbevilling for 1968 under kapittel 825, andre handelsformål, ny post 26: deltaking på verdensutstilling i Osaka.”

³⁹⁹ Cowley (2003): “Eternal Return. Interview with Arne Nordheim.”

Chapter 5: Site, situation and infinite duration

The exhibition consisted of a multi-media show thematizing the positive and negative sides of man's existence in nature – a theme that the Scandinavian governments had deemed to be in correspondence with the motto of the exhibition: “Progress and Harmony for Mankind.”⁴⁰⁰ However, the environmental focus actually seems to have spurred a bit of controversy with the Japanese partners, who saw it as a veiled criticism of the Japanese Wirtschaftswunder of the 1960s.⁴⁰¹ Several hundred photos showing everything from beautiful nature to devastating environmental damage, taken by the photographers Bjørn Winsnes, Hans Hammarskiöld and Stuart Fox, were projected on to screens in the angled ceiling and to boards that the audience could carry around in the hall. Nordheim's electronic music was streaming from speakers placed along the roof and in the walls.



Figure 5.16: The Scandinavian Pavilion at Japan Expo '70

⁴⁰⁰ The idea of focusing on the environment was initially suggested by the Swedish delegation. The issue was discussed in a meeting in Stockholm on May 15th 1968, referred to in the following report: “Verdensutstillingen i Osaka”, dated Tokyo June 5th 1968, signed by Knut Thommessen, the Norwegian ambassador in Japan. Archives of the Norwegian Department of Foreign Affairs. Keyword: World Exhibitions. Period: 1960–1969.

⁴⁰¹ “Skandinavisk EXPO-paviljong lager politisk røre i Japan,” *Dagbladet*, 1970 (date unknown – press clipping in the archives of Henie Onstad Kunstsenter).

Sound material and aspects of form

Poly-Poly is quite different from the rest of Nordheim's Warsaw output. Whereas the other works are based on a few sonic ideas and were composed with a clear form, *Poly-Poly* consists of hundreds of short sound snippets assembled into a burlesque collage. The composer called it a "kaleidoscope of sound."⁴⁰² He also called it a "soup of associations ["assosiasjonssuppe"], boiling on low heat, which the spectators can scoop up a sip from."⁴⁰³ Over the following pages I too will dip some spoons into this soup, and discuss characteristics of the material used in the work. In particular, I will take a closer look at what I wish to call *the ritornello*, an important form-giving segment that I see as the signature sound of the work. Furthermore, I will look at aspects of form in both the installation and the derivative works, and discuss whether *Lux et Tenebrae* can be understood as an electronic rondo.

The title of the installation, *Poly-Poly*, literary means "many-many," and might play on the overwhelming wealth of material in the work. The title of the derivative work, *Lux et Tenebrae*, is Latin for "light and shade/darkness." This title seems to play on the duality of the material – the continuums between human and machine, good and evil. In other words, the environmental program of the pavilion project is strongly thematized in Nordheim's composition. Nordheim has later called it his "pollution symphony" and claims that the work is about "what we take out and what we put back" in nature.⁴⁰⁴ In a later interview, Nordheim focused on this humanistic aspect:

In that work I tried to get an overview of everything that is found in sound. I began assembling all this material. All human sound. All sounds from known things, daily situations, kindergarten, everything from children at play to test shooting of new products at a weapons factory. [...] First I made a list of categories and then we set about the work of assembling the material. We found a lot.⁴⁰⁵

The "we" in this quote is Nordheim and his sound engineer Eugeniusz Rudnik. As mentioned in Chapter four, *Poly-Poly* might be the work where Rudnik had the largest influence on Nordheim's sound. Even though it is difficult to evaluate Rudnik's claim that it was he who came up with the idea for the composition, it is evident that many of the sounds in *Poly-Poly* originate from Rudnik's extensive library of "dust-bin material" and from the sound archive of Polish Radio.

⁴⁰² Liner notes for AN.R7 *The Electronic Music of Arne Nordheim*.

⁴⁰³ "Arne Nordheim og Sverre Fehn om komposisjon, rom og erindring." Lecture by Sverre Fehn and Arne Nordheim at Arkitektenes hus, 1994. Available online at <https://www.youtube.com/watch?v=YKXs2X4kzIk>, visited April 23rd 2016.

⁴⁰⁴ Liner notes for AN.R7. English in the original. The formulation "pollution symphony" was used by Nordheim on several occasions, for instance in Gunnar Filseth: "Beskjeden nordisk Expo-paviljong." *Aftenposten*, March 13th 1970.

⁴⁰⁵ Beyer: "On Articulating the Existential Scream," (2001).

Form-wise, *Poly-Poly* is an extension of the loop-technique used in *Ode til lyset*. It is probable that the installation was constructed with the very same types of tape loop cartridges used in Nordheim's first installation. *Poly-Poly* uses six loops with uneven length running in parallel. The variable playback time of the loops gave the installation a theoretical playing time of 102 years – something Nordheim often pointed out when talking about the work (even though the actual playing time was “only” the six months the exhibition was open, March 15th to September 13th 1970). The tapes contained a continuum of sounds, ranging from the purely electronically generated to the concrete. The following table, taken from Nordheim's TONO-report, gives a short description of the material:

Table 5.5: The six tapes in *Poly-Poly* (English in original)⁴⁰⁶

	Dur	Content
1	22'	Elementary electronic sound material. "White Noise" treated in different filters.
2	17'	Short electronic sound particles, essentially based on material from sinewave generators
3	18'	Greater electronic sound-parts where the material is a combination of the two foregoing programs
4	19'	Percental compositions between electronic sound and concrete sound material
5	20'	Concrete material, where the termination sounds are advanced via filters, ring modulation and other sorts of sound changes
6	21'	Varied concrete material

I will suggest that it is likely that *Lux et Tenebrae* consists of all the sounds used in *Poly-Poly*. This assumption is based on my observation that except for a ritornello (I will come back to this later), no sound segment is repeated in *Lux et Tenebrae*. Sometimes one can recognize the same source in different parts of the work, but every time a recurrence takes place it is slightly altered, either by being taken from a different part of the source sound, or being reproduced with a different type of manipulation. In other words, none of the looping from the installation can be heard in *Lux et Tenebrae*. This is different in *Five Osaka Fragments*, where the looping is clearly perceivable. Furthermore, *Lux et Tenebrae* is constructed in such a way that the different sounds rarely get in the way of each other. This is most obvious in connection with the ritornello, a 39-second segment that opens and closes *Lux et Tenebrae*, and is repeated eight times throughout the composition (approximately every 3 minutes and 10 seconds). Whenever it plays, no other element is sounded, with the effect that it basically makes *Lux et Tenebrae* an electronic rondo. In *Five Osaka Fragments* the ritornello is often overlapped with other sounds, thus weakening its structuring function. I will

⁴⁰⁶ Letter from TONO to the Japanese rights holder association JASRAC: "Poly-Poly" – Arne Nordheim – Expo '70, dated August 17th 1970. Arne Nordheim centre, Norwegian Academy of Music. English in the original.

therefore argue that Nordheim's highlighting of the ritornello is the clearest difference between the original installation and *Lux et Tenebrae*.

The ritornello

As in a traditional rondo, the 39-second ritornello functions as an important structuring device. According to Nordheim, it is both a "clearly recognizable musical signal" providing musical order, and something that gives "the associating mind a well-earned rest," providing a feeling of homecoming.⁴⁰⁷

The ritornello starts with a number of short, pitched impulses, grouped in three sentence fields (figure 5.16). A four-tone main motif stands out with *pregnanz*, notated in red in the transcription. It can be approximated to the notes A6, C7, C6, where the last note is repeated.⁴⁰⁸ The motif is stated fully in the first sentence field, where it is treated with a generous amount of reverb. In the second field, only the first two notes are sounded, this time without reverb. In the third field, the entire motif is repeated, again with reverb. On this third iteration of the motif, the additional notes (notated in black) are varied. This provides a constant sense of variation of the pitched sounds. In addition, one can hear a thick noisy texture that gradually fades in and comes to the foreground of the segment after the third sentence field. I have notated the texture as a layer of iterated dystonic sounds with vacillating pitch. The iteration is oblique in ripple time. The texture gradually evolves from high treble (register = 6) to fill the whole register, before it finally dissolves towards the profound register (register = 1). Occasional bursts of other sounds come in at [00.19], [00.22] and [00.29] (sentence fields 4-6 in the transcription). As the sound field is faded out, the third sentence field with pitched sounds is repeated, providing a sense of closure to the part. The alternation between the gestural pitched sounds and the textural sound field is clearly visible in the sonogram.

The ritornello is both the work's signature sound and one of the most recognizable sound bites from Nordheim's Warsaw period. It clearly functions as a "memorable" within the composition. It has not been used across compositions during the Warsaw period, but it is an important memorable in Nordheim's fourth period (see Chapter 9). It is prominently featured in AN.188 *Dråpen*, which reuses a lot of the material from *Poly-Poly*. Further, the memorable "Jegerpling" from the revised *Ode til lyset* and AN.182 *Gilde på Gløshaugen* is played with a similar sound source to the four-tone main motif of the ritornello. There is a clear sonic link between the two, even if the notes played are different.

⁴⁰⁷ Liner notes for AN.R7 *The Electronic Music of Arne Nordheim*.

⁴⁰⁸ The exact discrepancies are A6 -24 cent, C7 +31 cent and C6 -33 cent.

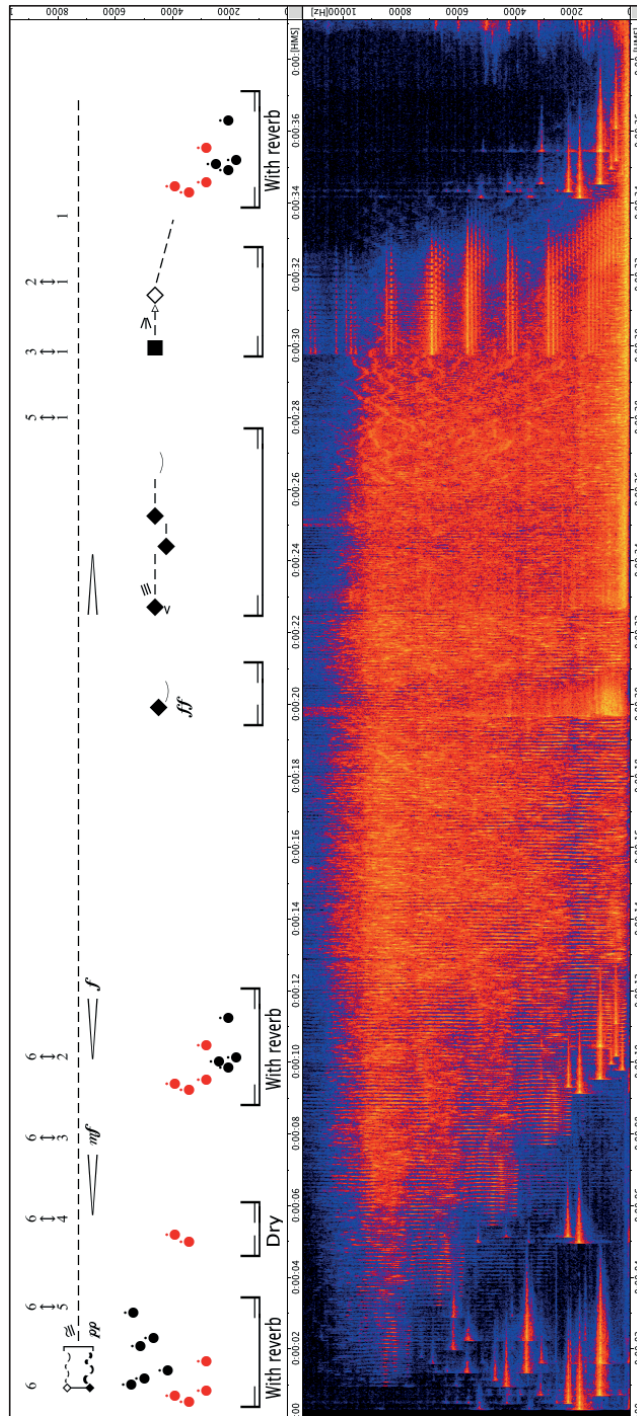


Figure 5.16: Transcription and sonogram of the *Poly-Poly* ritornello

Listening notes from *Lux et Tenebrae*

As mentioned, the form of *Lux et Tenebrae* resembles that of a rondo, and it is possible to see each segment between the ritornellos (R) as episodes (E_n). This would indicate the following form scheme: R E₁ R... E₇ R. However, the episodes do not feel like independent parts with identities distinct from each other. Instead they constitute a constant stream of new material that is occasionally broken off by the ritornello. To some extent, this stream of material can be divided into discrete sections. For my analysis, I have defined a “part” as a segment that is clearly separated from others by a period of silence or by a distinct change of material. In table 5.5 (based on *Lux et Tenebrae* as heard on AN.RC9 *Electric* where it is called “Polypoly”), I have identified 39 such sections. Each section typically lasts about half a minute and contains four to five events.

As to be expected from the list of tapes quoted above, every part contains both concrete and electronically generated material. I have indicated this in two separate columns. The slight variation in the duration of the ritornello is due to differences in the transition between parts.

Table 5.5: *Lux et Tenebrae*: listening notes

Part	Dur	Cumul. time	Electronic material	Concrete material
Ritornello	[00.39]	[00.00]		
1	[00.39]	[00.39]	Electronic textures, “bubbling” electronic sounds, electronic “voices”.	Church sermon. Occasional voices. A clock.
2	[00.49]	[01.18]	Short electronic impulses and “bells”. Glissandi up and down. Electronic “clock”	Circus sounds with lion roar, lion tamer smacks whip and shouts “Bravo!” Typewriter. Folk song.
3	[00.33]	[02.07]	Chopped up electronic sound. Electronic “alarm clock.”	Chopped up record with music. Church sermon (continued), cuts abruptly.
4	[00.30]	[02.40]	Rapid impulses. “Resonance arpeggio” (cf. <i>Ode to Light</i>). Morse code.	Alarm bell. Rhythmic shouting (protest march?).
Ritornello	[00.37]	[03.10]		
5	[00.44]	[03.47]	Morse code. Electronic sound field cf. <i>Warszawa</i> .	Dance music. Piano chords and a choir warming up. Motor starting.
6	[00.36]	[04.31]	Thick electronic texture, occasional glimmering sounds. Occasional electronic bursts.	Musical fragments heard through the electronic texture. Orchestra tuning up.
7	[00.29]	[05.07]	Electronic speech-like sounds. Tape slowed down and sped up. Electronic popping.	A man cries.
8	[00.32]	[05.36]	Hard metallic upward glissandi. Electronic impulses with echo.	Chopped up music recording. Telephone ringing.
9	[00.16]	[06.08]	“Hard” electronic texture.	Dance music on piano. Voices. Willow’s flute.
Ritornello	[00.36]	[06.24]		
10	[00.20]	[07.00]	Electronic string sounds (electric piano?). Metallic sounds.	More willow flute. A female voice.
11	[00.40]	[07.20]	Various electronic sounds.	Fragments of music. Sewing machine. Children singing. Child coughing and throwing up.
12	[00.36]	[08.00]	Falling and rising electronic glissando. Various electronic sounds.	Whispering voices. Violin music. Voice humming a melody.

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13	[00.26]	[08.36]	Ringling sounds.	Church sermon, cut off abruptly by the electronic sounds.
14	[00.06]	[09.02]	Low frequency tones	A man saying in Norwegian <i>/...men sku'kke den være fin 'a? /</i>
15	[00.03]	[09.08]	Radio static.	Recording of folk music instrument.
16	[00.11]	[09.11]	Sharp electronic sound.	Recording of folk dance music.
17	[00.13]	[09.22]	Slowly emerging sounds. Downward sine glissando.	Machine gun.
Ritornello	[00.37]	[09.35]		
18	[00.11]	[10.12]	Spiky metallic sounds. Electronic melodic fragments.	
19	[00.31]	[10.29]	Various electronic sounds, noises, ringing sounds. Thick texture.	
20	[00.23]	[10.54]	Repeated electronic chords.	Crying baby. Whispering voices.
21	[00.17]	[11.17]	Hard electronic rhythmical sounds.	Woman, man and child reading in Norwegian from the declaration of human rights (cf. <i>Pace</i>). Man speaking.
22	[00.21]	[11.34]	Electronic bursts.	Dance music.
23	[00.23]	[11.55]	Electronic glissandi. Occasional electronic bursts.	People talking. Typewriter. Voice fragments
24	[00.23]	[12.18]	Electronic emerging sound fields.	Voices chanting (street protest?). Motorbike or chainsaw.
Ritornello	[00.40]	[12.42]		
25	[00.36]	[13.21]	Noise texture slowly emerges. Electronic bursts. March rhythm emulated electronically.	Voice fragments.
26	[00.24]	[13.57]	Electronic sounds.	Rhythm from dance music.
27	[00.11]	[14.21]		Rhythm from a stringed folk instrument
28	[00.17]	[14.32]	Electronic voice-like sounds.	Excerpt from radio program in Polish. The presenter mentions the name Arne Nordheim. Gradually, semantic clearness disappears. Voice fragments.
29	[00.11]	[14.49]	Short impulses. Resonance	
30	[00.47]	[15.00]	Short electronic bursts. Electronic ostinato.	Gunshots. Voices speaking (Polish). Shout and response (Arabic). Sewing machine. A position-report (English).
Ritornello	[00.37]	[15.47]		
31	[00.35]	[16.24]	Electronic emulation of birdsong	People applauding combined with electronic sound to thick texture.
32	[00.26]	[16.59]	Electronic rhythmical sound.	Frog sound (cf. John Cage's <i>William's Mix</i>). Chatter. Coughing. Some fragments of music.
33	[00.16]	[17.25]	Electronic gliding sounds.	Recording of folk music. Machine gun. Male voices chanting.
34	[00.31]	[17.41]	Electronic bursts. Blips	Some music fragments.
35	[00.04]	[18.12]	Upward electronic glissando.	
36	[00.39]	[18.16]	Harsh electronic texture. Electronic fragments.	Trad. funeral music plays for a while, abruptly broken off by electronic sound, but returns.
Ritornello	[00.38]	[18.55]		
37	[00.46]	[19.33]		Trad. funeral music continues. Voices singing. Machine gun. Short voice fragments.
38	[00.15]	[20.19]	Short impulses.	Man and woman speaking in Polish.
39	[00.27]	[20.34]	Short impulses. Electronic bird emulation? Electronic sounds.	Accordion music from scratched vinyl record.
Ritornello	[00.41]	[21.01]		
		[21.42]		END

Continua of material

Nordheim seems to have been thinking in continua in *Poly-Poly/Lux et Tenebrae*. In figure 5.17, I have summarized what I see as the most important fields within which the sound material can be said to exist.

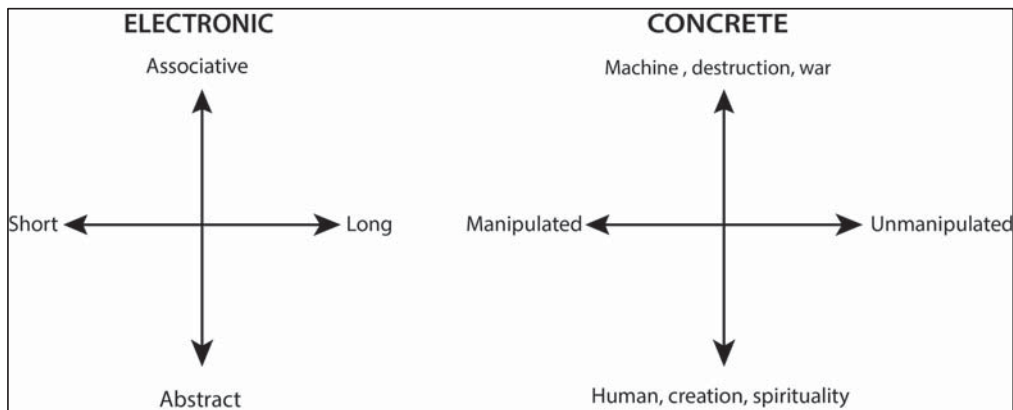


Figure 5.17: Continua in *Poly-Poly*

For the electronic sounds, the X-axis in the figure deals with duration. The sounds range from extremely short blips, pops and squeaks to static sound fields or textures lasting several seconds. The Y-axis in the figure deals with referentiality. Most of the electronic sounds are completely abstract. However, some seem to emulate human activity (for instance gunshots or alarm bells) or natural phenomena (for instance birdsong). The most striking referential sound is the electronic emulation of birdsong in parts 33 and 39. Nordheim would later include a similar emulated bird in the opening to AN.109 *The Tempest* (1979). One can also point to two other continua in the electronic material: from dry and close to reverberated and distant, and from pitched to textural. Some sounds are “vertical,” almost like electronic chords. Others are “horizontal” gliding pitched sounds.

For the concrete sounds, the Y-axis deals with various facets of human activity. The material is taken from a number of human situations, ranging from the creative to the destructive. Some material can be classified as spiritual, for instance, a clearly recognizable recording of a sermon (parts 1, 2 and 13), which Nordheim has indicated was recorded at St. Peter’s Cathedral in Rome.⁴⁰⁹ Other material alludes to the playfulness of man, in children’s games, in dance and music. Especially

⁴⁰⁹ Nordheim has referred to the recording from St. Peter’s Cathedral on several occasions, for instance in the documentary István Korda Kovács: “Yrke: Komponist,” *NRK TV*, September 24th 1974. It is not known whether Nordheim recorded the sound segment himself, or if he had found it in the Polish radio archives.

striking is an excerpt from a circus where a female lion tamer cracks her whip before shouting “Bravo!” (part 2).⁴¹⁰

The idea of continuum can also be seen in the sounds produced by human voices. We hear a male voice (part 21), a female voice (part 10), a man and a woman talking with each other (part 38), a child crying (20), children singing (part 11), a child coughing and then throwing up (part 11), whispering voices (part 12), a shouting voice (part 7), the chatter of people (part 32), and a street protest (parts 4 and 24). It seems that Nordheim has taken care to include voices from all over the world. I can recognize at least seven languages: Norwegian (parts 14 and 21), Polish (parts 28, 30 and 38), Italian (parts 36 and 37), Latin (parts 1, 2 and 13), Arabic (part 30) and English (part 30).

In the other end of the Y-axis we find sounds associated with machines (motorbikes, alarm clocks) and the destructive forces of man. We can hear rifle shots (part 30) and the distinct clatter of a machine gun (parts 17, 33 and 37). Another allusion to death is the funeral march in parts 36 and 37. The part stands out due to its length within the composition (the total length is more than a minute), and its prominent position coming towards the end of the work.

There are also sounds that mediate between human and machine activity, such as the sounds of a typewriter (parts 2 and 23), a sewing machine (parts 11 and 30) or Morse code (parts 4 and 5).

Nordheim has also included allusions to himself and his own music production. In part 28 we hear a short segment from a polish radio program that mentions Nordheim’s name. In part 4 we hear a sound segment similar to the resonance arpeggios in *Ode to Light* and in part 5 we hear a sound-mass similar to the one heard in section B of AN.49 *Warszawa* (see Chapter six). In part 21 we hear a man, woman and child reading in Norwegian from the declaration of human rights. This is probably the same recording that was used as source material for AN.70 *Pace* (see Chapter 7).

Final remarks on *Poly-Poly*

To some extent, the Japan Expo pavilion can be seen as a Scandinavian take on Edgard Varèse, Iannis Xenakis and Le Corbusier’s *Poème électronique*. Not only is the setting similar; a world exhibition, an exhibition room where visitors would be immersed in the installation (and afterwards end up in the restaurant, an ironic twist on the digestion process of Le Corbusier’s stomach-design), the multiple speaker set-up, the artistic collaboration, the projected images and the thematizing of the creative and the destructive potential of humankind.

Another similarity is that the music for both exhibitions has lived on outside of the original context. Varèse’s composition from the Philips Pavilion was released on record as early as 1959, and

⁴¹⁰ This segment is also referred in the Kovács-documentary.

is now a standard reference in the history of electronic music.⁴¹¹ Similarly, Nordheim had *Lux et Tenebrae* ready for performance just two months after the exhibition was over, and committed to record in 1974. Further, *Poly-Poly* is a work that shows how Nordheim was clearly attuned to Varèse's hope that "music will eventually engulf and surround you."⁴¹² This statement can be used as a motto for almost all of Nordheim's compositions, but it rings particularly true here.

As mentioned, Eugeniusz Rudnik probably had decisive influence over several parts of *Poly-Poly*. Yet the work is also Arne Nordheim's homage to John Cage. Nordheim hailed Cage as *Poly-Poly*'s "conditio sine qua non," and dedicated the work to him.⁴¹³ The frenetic jump cuts, the warm humour, and the grouping of sounds in categories from the abstract electronic to the clearly referential, all this is obviously inspired by Cage's *William's Mix* (1952). In particular, the frog croaking in part 32 seems to be a direct sonic reference to the famous frogs in Cage's composition.

Influences aside, there is still something distinctly "Nordheim-esque" about the work. It might lack the sweeping gestures that were Nordheim's hallmark, but we still hear the Great Questions of Existence all over the composition; the sermon speaks of Nordheim's omnipresent fascination with religion, the multiple languages speak of his globally reaching humanism, the references to life (the baby) and death (the machine gun) speak of his constant pondering over the meaning of existence.

5.4 Chapter summary

The two installations discussed in this chapter show how Nordheim was especially attuned to the exhibition setting, and they showcase the relationship between his music and the site. I have found Kwon's idea of site-response to be useful for describing this relationship, and coming back to the analytical terms *contact*, *contrast* and *conversation* used in Chapter three, it is possible to see how Nordheim's installations relate to the site in various ways. *Poly-Poly* engulfs the spectator (*contact*). *Ode til lyset* responds to the site through the environmental input (*conversation*), yet stands out from its surroundings, both through its monumental construction and its artificially created sound field (*contrast*).

⁴¹¹ Varèse's music for the pavilion was first released on the compilation *Memories Aux Bruxelles* by Carlton Recording Company in 1959. Here the music was just credited as "Electronic Music from the Netherlands Pavilion (Varese)." The first release under the name "Poème électronique" came with Edgard Varèse: *Ionisation / Density 21.5 / Intégrales / Octandre / Hyperprism / Poème Electronique* (Philips, 1960).

⁴¹² Varèse stated this in 1936. Quoted after Mattis: "From Bebop to Poo-wip: Jazz influences in Varèse's *Poème électronique*," in ed. Meyer and Zimmermann (2006).

⁴¹³ Liner notes for AN.R7: Arne Nordheim: *Electronic Music of Arne Nordheim*.

Chapter 5: Site, situation and infinite duration

Nordheim's installations were in keeping with the 1960s idea of getting music out of the confines of the concert hall. However, through the insistence on creating derivative works, we can also note how Nordheim still was rooted in a traditional understanding of the work-concept. I also see it as significant that Nordheim always kept tight control over the sounding result of his installations. Elements of form and sound distribution might have been left open to influence from the site – in particular the environmental response built into *Ode til lyset* – but he still maintained complete control over the actual sounds. Nordheim is clearly linked to the tape-studio tradition, and the two installations bear the marks of Warsaw more clearly than Skjeberg and Osaka.

Both installations represented something new and extraordinary, and this has dominated the reception of the works in the Norwegian context. However, in this chapter I have attempted to show how Nordheim was also attuned to what was happening internationally. Electronic composers all over the world were exploring the possibilities that new technology offered. In this regard, Nordheim formed part of a general trend within electronic music composition, even though his installations were seen as unconventional and innovative in the Norwegian context.

Nordheim's first love affair with sound installations was short-lived. After the grand statements of *Ode til Lyset* and *Poly-Poly*, he only made two more installations, AN.75 *Lydbar* in 1970 and AN.102 *H20* in 1976, both for smaller exhibitions at Henie Onstad Kunstsenter. Nordheim would only return to the sound installation as medium in his late electroacoustic period, a topic which I will come back to in Chapter 10.

HÅKONSHALLEN

TIRSDAG 28. MAI KL. 20.00 □ TUESDAY, MAY 28, AT 8 P.M.



NY NORSK MUSIKK
CONTEMPORARY NORWEGIAN MUSIC

ARNE NORDHEIM

WARSZAWA

for elektroniske klanger, filtere og ringmodulatorer
□ for electronic effects, filters and ring modulators

Ur-premiere — World Première

COLORAZIONE

for elektronisk orgel, slagverk, filtere og ringmodulatorer
□ for electronic organ, percussion, filters and ring modulators

Ur-premiere — World Première

Pause • Interval

RESPONSE I

for to slagverkgrupper og elektroniske klanger
□ for two groups of percussion instruments, and electronic sounds

Medvirkende — Those taking part:

KÅRE KOLBERG, *elektronisk orgel* □ *electronic organ*

PER NYHAUG, *slagverk* □ *percussion*

PER ERIK THORSEN, *slagverk* □ *percussion*

MENY BLOCH og ARNE NORDHEIM,
klangfordeling, filtrering og ringmodulasjon

□ *sound distribution, filtering and ring modulation*

6 THE FIXED AND THE LIVE IN *WARSZAWA* AND *COLORAZIONE*

In this chapter, I will conduct a performativity-inspired examination of AN.49 *Warszawa* and AN.50 *Colorazione*. In the article “Between Process and Product: Music and/as Performance,” Nicholas Cook calls for giving performances and performance practice a more prominent place in musicology.⁴¹⁴ I will try to answer Cook’s call in my outlining of the contextual framework for this chapter. Both of the works that I will be examining premiered during a concert at the Bergen International Festival on May 28th 1968. The concert also featured a performance of AN.34 *Response I*. I will use the concert as a framing device in order to launch into a larger discussion on Nordheim’s work concept, his ideas on flexibility of interpretation, and the relationship between live and fixed elements in his music.

In performance theory, there has been much debate on the relationship between the live and the fixed; what is responsive to the mediating situation and what is not. In popular music, this debate has often been linked to questions of authenticity. As Philip Auslander points out, the live and the mediated might often seem as an “ideologically charged binary opposition,” where the live takes on the more privileged and authentic position.⁴¹⁵ This problem is echoed in much of the debate around electroacoustic music concerts. In acousmatic music for instance, there is no performer on stage. This breaks with one of the central social elements of the concert situation. If one agrees with the arguments of Christopher Small, a concert should affirm that performers and audience are “musicking” together; that they are engaged in a social exchange and not just in a transmission of sound.⁴¹⁶ This is possibly one of the reasons why the loudspeakers-only concerts found a limited audience.

In the late 1950s and early 1960s composers and musicians started bringing electronic music apparatus out of the studios, and using it in more familiar concert settings with real performers.⁴¹⁷

⁴¹⁴ Nicholas Cook: “Between Process and Product: Music and/as Performance,” *Music Theory Online*, vol. 7, no. 2 (2001).

⁴¹⁵ See for instance Phillip Auslander, “Liveness. Performance and the Anxiety of Simulation,” in *The Popular Music Studies Reader*, ed. Andy Bennet, Barry Shanck, and Jason Toynbee (New York: Routledge, 2006).

⁴¹⁶ Christopher Small: *Musicking. The Meanings of Performing and Listening* (Middletown, CT: Wesleyan University Press, 1998).

⁴¹⁷ See for instance Chapter 4: “Out of the Studios” in Chadabe (1997): *Electric Sound*, pp. 81-107. See also Emmerson (2007): *Living electronic music*.

The gradual shift in emphasis towards live electronic performance can be interpreted as part of the same general cultural shift that led to the rise of sound installations, as discussed in the previous chapter. This is another way in which the focus shifted from producing works to producing situations in the 1960s.

6.1 Nordheim and live electronic music

Nordheim picked up on these trends in the middle of the decade. As discussed in Chapter three, Nordheim had already worked with mixed music, combining live performers with fixed media electronic sound. In 1967 and 1968 he undertook a series of investigations into live electronic manipulation. However, these investigations must have proven only partly successful.

Warszawa is a case in point. The work is not commonly associated with Nordheim's live electronic music, but for its premiere it was billed as featuring real-time manipulation of taped material. In the program note Nordheim wrote:

[...] the basic material for this composition was first developed in Studio Experymentalne in Warsaw, but its evolution continues in the concert hall, as it is being played. New tone combinations can be produced in each performance.⁴¹⁸

I have not been able to document whether the premiere actually was a live electronic performance, and there is a possibility that Nordheim had abandoned the idea between the time the program was printed and the concert took place. What actually happened during the concert is not the crucial issue here (even though it would be interesting to know). The most relevant factor is that *Warszawa* was, to start with, part of this larger investigation into live electronics, alongside Nordheim's attempt to make a live-electronic version of AN.46 *Response 3* (see Chapter 3), and his initial ideas for using real-time manipulation in AN.55 *Ode til lyset*. We can also note that AN.63 *Partita II* (1969) for electric guitar and effect pedals was composed around the same time.

The fact that the idea of live manipulation was later abandoned in these works (except in *Partita II*) shows how Nordheim must have realized that he preferred the absolute sonic control that only the studio environment could provide. *Colorazione* was actually the only work from these years where Nordheim fully embraced live electronics. With a few notable later exceptions, in particular AN.84 *Minnebobler* from 1972 and AN.127 *Partita für Paul* from 1985, Nordheim would also largely stay away from live electronic in the future. Instead he preferred to pair soloists with a continuous fixed media element (as described in table 3.5 on page 119).

⁴¹⁸ Program booklet for *Bergen International Festival 1968*, p. 66. Copy from BCA/A-4265

Background to the Bergen concert

The concert at the Bergen International Festival was a significant event for Nordheim. It was billed as an evening of “contemporary Norwegian music,” but was entirely devoted to Nordheim’s electroacoustic works. This was one of his highest profiled concert to date in Norway.

Letters in the festival archives indicate that Nordheim’s original plans had been far more modest. In the beginning of 1967, Nordheim was making arrangements to follow up on the successful AN.34 *Response* concert from October 1966 (see Chapter 3). Nordheim wanted to use the concert to present compositions that he was intending to develop in Warsaw, a trip that by this time was drawing closer as formalities were being arranged (see Chapter 4). The concert was loosely scheduled to take place in November, and the documents indicate that he planned to perform three works: two new compositions that were still only at the planning stage and *Response I* for two percussionists and tape, possibly with electronic material to be updated in Warsaw. The first new work bore the working title *Warszawa 67*, and was planned as “a play on electronic and concrete sound material” where “different [degrees] of sound material will be explored, dissolved and reassembled.” In the second work, already called *Colorazione*, Nordheim wanted sounds from percussion and a Hammond organ to be manipulated live by two performers controlling “filters and other electroacoustic instruments.”⁴¹⁹ This work was a commission from NRK, who was involved in the plans with a possible televised transmission in mind.⁴²⁰

However, in August 1967 Nordheim met with Åsmund Oftedal, the new director of the Bergen International Festival, and the plans were radically altered.⁴²¹ With his usual display of self-confidence, Nordheim suggested that festival should dedicate a full evening concert to his music. Oftedal seems to have been immediately positive. Earlier in the year, the festival had a successful concert with Karlheinz Stockhausen’s *Klavierstück IX* and *Mikrofonie I*, an event that had been arranged with the aid of Nordheim and Finn Mortensen.⁴²² The Bergen International Festival is first and foremost a festival of the mainstream repertoire, and many had experienced the concert as a “shocking experience” – in other words it was a sort of *succès de scandale*.⁴²³ For the following year’s festival, Oftedal wanted a new concert of contemporary music, and this might be the reason

⁴¹⁹ Letter from Nordheim to Åsmund Oftedal, dated Oslo, August 5th 1967. BCA/A-4265/Da 120.

⁴²⁰ The work had been commissioned on January 7th 1967, and the involvement of NRK is referred in a letter from Arne Nordheim to Gunnar Sønstevoid: ”Ad. Fjernsynets bestilling, datert 7.1.1967,” dated Oslo, December 12th 1967. NRK Archive: Fjernsynet. Folder: Response I. 437, date 28/5/1968.

⁴²¹ Letter from Nordheim to Åsmund Oftedal, dated Oslo, August 10th 1967. BCA/A-4265/Da 120.

⁴²² The formulation “good help” is taken from (Unsigned): ”Moderne musikk til moderne malerkunst,” *Dagbladet*, November 3rd 1966.

⁴²³ The formulation “shocking experience” is used in Reidar Storaas: *Fest og spill i 35 år* (Bergen: Eide, 1987), p. 29.

why he contacted Nordheim again. Initially, the festival had received an offer from the Polish experimental group MW-2, but by this point Oftedal saw Nordheim's proposal as a better idea. The festival could premiere two works by a Norwegian composer, and Oftedal saw this as more in line with the festival's policy of being a driving force in Norwegian culture.⁴²⁴ After some back and forth on choosing the right venue, Oftedal proposed to give Nordheim *Håkonshallen*, a large gothic stone hall from the 13th century. Nordheim got the hall for two entire evenings; one for rehearsals and setting up, and one for the performance – a testament to the festival's faith in Nordheim.

Nordheim wrote to Gunnar Sønstevoid in order to secure NRK's support for premiering *Colorazione*, which after all was "their" work, in Bergen.⁴²⁵ I have not found Sønstevoid's answer, but there seems to have been no controversy around this shift of events. Involving NRK in the Bergen concert was also a pragmatic solution to a technical problem. This opened the possibility of using NRK's equipment. Nordheim arranged to borrow, free of charge, several microphones and cables, two Telefunken M5 tape machines, and a four-channel mixing desk.⁴²⁶

Live electronics in ABC-teateret

The prospected concert in Oslo was not cancelled, but instead of the new works, Nordheim decided to feature a program that he had prepared for a school tour with the Swedish Rikskonsertene in early 1968. The concert took place on February 17th, a few days after the tour was over, and included AN.42 *Signaler*, AN.45 *Machina* and AN.46 *Response 3*.⁴²⁷ *Machina* was the only work left over from his original plans.

For the Oslo concert, Nordheim was working together with the sound engineer Meny Bloch, who would later also participate on the premiere of *Warszawa* and *Colorazione*. It seems that Bloch was a central part of the live electronic idea. For the performance of *Response*, Bloch is credited alongside Nordheim for "recording and electronic equipment" ["opptak og elektronisk utstyring"]. The program states that the percussion and fixed elements were to be recorded live, manipulated and played back "with different time intervals from different groups of speakers in the hall." This principle is strikingly similar to the live manipulation later used in *Colorazione*. As mentioned in Chapter three, the reviews do not indicate whether *Response* actually *was* performed with live

⁴²⁴ Letter from Åsmund Oftedal to Arne Nordheim, dated Bergen, August 8th 1967. BCA/A-4265/Da 120.

⁴²⁵ Arne Nordheim to Gunnar Sønstevoid: "Ad. Fjernsynets bestilling, datert 7.1.1967," dated Oslo, December 12th 1967. NRK Archive: Fjernsynet. Folder: Response I. 437, date 28/5/1968.

⁴²⁶ List of equipment in undated letter from Nordheim to NRK marked "COLORAZIONE." NRK Archive: Fjernsynet. Folder: Response I. 437, date 28/5/1968.

⁴²⁷ The concert took place on February 17th 1968 at ABC-teateret, as a collaboration between Teatersenteret Bikuben and Ny musikk. Concert program in box marked "Arne" at The Arne Nordheim Centre, Norwegian Academy of Music.

electronics, only that there were technical difficulties: halfway into the work, a fuse broke and the performance had to start over.⁴²⁸ During the same concert, Nordheim also performed a small live electronic piece that he called *Machina*, using the tape material from *Ode til lyset* and playing on the prototype of the “music machine” with a flashlight as light source.

Reactions to the Bergen concert

Even in the late 1960s, electroacoustic music was still an unfamiliar and perhaps somewhat threatening experience for the regular concertgoer – at least in Norway. This was exactly the kind of audience Nordheim’s concert at the Bergen International Festival was aimed at. This might explain why Nordheim wanted to underline both the elements of liveness and technology in the concert. Figure 6.1 shows the stage plot that was used for *Colorazione*. We can note how the speakers were placed on each side of the concert hall, facing the audience. This is the same set-up that Nordheim had previously used for AN.28 *Epitaffio*. We can also note how Nordheim has placed himself and the tape-machines right in front of the stage, roughly on the same place as the conductor would be if this was an orchestral concert. This underlined the fact that both the technological artefacts and himself as composer were at the centre of the performance, sharing the attention with the musicians. In other words, Nordheim consciously wanted to create an atmosphere of the concert as a technically sophisticated event and evening of cutting-edge musical modernism – offering stark contrast to the setting of the medieval hall.

Instead of a new *succès de scandale*, the strategy seems to have worked only partly to Nordheim’s advantage. The reviewer from *Adresseavisen* (from Trondheim) indicated that the hall was far from full, and that several in the audience left during the performance since “they had come under the wrong premises.”⁴²⁹ The reviewer from *Morgenbladet* (from Oslo) however, pointed out that those who remained applauded enthusiastically.⁴³⁰ According to Hanne Ørstadvik, the Bergen newspapers seemed unsure of how to evaluate the concert. One of the Bergen reviewers wondered whether his traditional musical competence was sufficient when faced with this kind of expression.⁴³¹ Ørstadvik concludes that even though some of the negativity can be rejected as reactionary “old-fashioned reluctance,” the concerns were also touching on “important and well-founded questions” of the times. Perhaps most understanding of the complexities of what they had experienced were *Morgenavisen*, who wrote:

⁴²⁸ Peter Rammo: "Musikalsk show i ABC-teateret," *Aftenposten*, February 19th 1968.

⁴²⁹ Martin Nordvik: "Selsomme lydvirksomheter for et fåtallig publikum," *Adresseavisen*, May 29th 1968.

⁴³⁰ Aslak B. Syse: "Nordheim i Håkonshallen," *Morgenbladet*, May 29th 1968.

⁴³¹ Ørstadvik (2013): *Overraskende romantisk*, pp. 53-54.

There is something with Nordheim's music, something strangely remote and timeless, something impersonal, almost dehumanized, which at some times can seem strangely attractive, but almost as often ghastly and repulsive. It is a kind of 'science fiction' music that seems to originate from remote galaxies, millions of light years away; it is signals we cannot decipher, yes not even discern.⁴³²

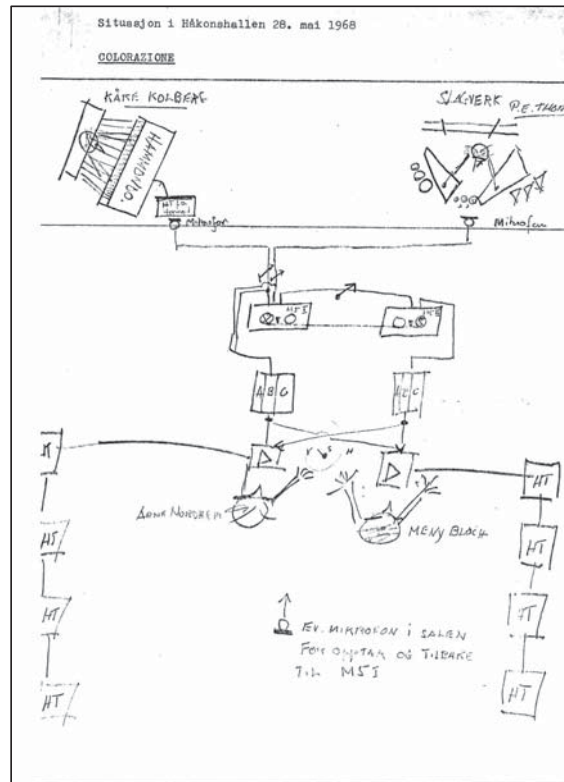


Figure 6.1: Stage-plot for *Colorazione*, Håkonshallen May 28th 1968. Not shown: For *Response I*, the second percussionist was placed on a gallery in the back of the hall.⁴³³

6.2 Warszawa

From the correspondence between Oftedal and Nordheim we can see that *Warszawa* was initially planned as a 20 minute, four-channel work for tape and live electronic manipulation with filters and ring modulators. It ended up as a stereo piece, lasting only 11'30, possibly due to the time constraints that Nordheim faced in Warsaw. Nordheim had been working on *Warszawa* during his sessions in September 1967 and April 1968, but had not had enough time to finish it. On April 27th – only one

⁴³² *Morgenavisen*, May 29th 1968, quoted after Ørstadvik (2013): *Overraskende romantisk*, p. 54.

⁴³³ Document in NRK Archive: Fjemsynet. Folder: Response I. 437, date 28/5/1968.

month before the premiere – Nordheim wrote to Oftedal, informing him that that he would bring the incomplete work to Oslo and finish the editing and mixing at NRK.⁴³⁴

Warszawa is a haunting and associative, almost cinematic, work. Both the title and its intense expressivity induce associations to the violent history of Warsaw, which at the time of Nordheim's visits was still very much felt. To some extent one can call *Warszawa* an electronic tone poem or a "war cantata" portraying impressions of a city that had been destroyed by the evils of World War II. "Warszawa 67" had been the preliminary working title for the composition, and as the premiere drew nearer Oftedal prompted Nordheim to come up with something definite that he could put in the program folder. As late as December 13th 1967, only a few days before the program was to be announced, Nordheim was still looking for another title.⁴³⁵ In the end he kept the name of the city but dropped the reference to the year of composition. In the liner notes for the later LP release, Nordheim stated that it is possible to "to perceive the city itself, the great shock, the silence, the poetry."⁴³⁶ Nordheim seems to have felt that the city was so much a part of the work that it had to be kept in the title. He also called *Warszawa* a "diary on tape" from his sessions in Studio Eksperymentalne:

This work was based on the sounds I jotted down in my tape-recorded "note-book" during the time I spent in their midst at the Studio Eksperymentalne. [...] The experiences I had gained while working on the material for the music machine, on SOLITAIRE, on COLORAZIONE and on my film and stage music were blended with fragments of stock recordings which I had found in the archives of the Polish radio, and to which I added a children's song.⁴³⁷

The somewhat casual tone of this quote might actually have damaged the later reputation of the work. It almost implies that *Warszawa* was created as an after-thought in between his other more serious commissions. However, as the correspondence with Oftedal shows, the work was one of three central commissions Nordheim brought with him on his first session in Poland (the other two being *Ode til lyset* and *Solitaire*). To my ears, *Warszawa* does not rank behind any of the other works Nordheim composed in this period in artistic quality.

Form in *Warszawa*

I have divided *Warszawa* into three contrasting form fields, A, B, and C, and six sentence fields indicating the following segmentation: A1 A2 A1' B1 B2 C1 C2 (table 6.1).

⁴³⁴ Letter from Nordheim to Åsmund Oftedal, dated Warsaw, April 27th 1968. BCA/A-4265/Da 120.

⁴³⁵ Letter from Nordheim to Åsmund Oftedal, dated Oslo, December 13th 1967. BCA/A-4265/Da 120.

⁴³⁶ Liner notes for AN.R7 Arne Nordheim: *Electronic Music of Arne Nordheim*. English in original.

⁴³⁷ Ibid.

Table 6.1: Form in *Warszawa*⁴³⁸

	A			B		C	
Dur	[02.46]			[04.08]		[04.09]	
Overall dynamic	<i>Loud</i>			<i>Quiet</i>		<i>Loud</i>	
“Tonal centre”	~C#3			~F#4		~G#3	
Sentence field-level	A1	A2	A1'	B1	B2	C1	C3
Dur*	33"	1'26	46"	1'46	2'22	1'52	2'06

* = Duration of the sentence fields are approximations, since several of the fields overlap

The three form fields are distinct in character. They have different intensity in sound level, and it is possible to detect contrasting dominant frequencies, something akin to tonal centres, separating the parts.⁴³⁹ Some of the tonal feeling comes from the fact that Nordheim's sound fields are relatively static. They are constructed from the gradual addition and removal of partials, but the fundamental (theoretical or audible) remains constant throughout the texture. Form field A is somehow centred, albeit barely perceptibly, on ~C#3. B, where the tonal feeling is stronger, is centred on ~F#4 (with slight deviations). The tonal elements of C are centred on ~G#3.

They form fields also stand out from each other as “scenes” in a movie – presenting a sort of continuous narrative. This point is in keeping with Nordheim's diary metaphor for the work, and his claim that he had “put these sonorous events together to tell a musical tale, the deeper significance of which should be barely perceptible.”⁴⁴⁰ The first scene, A, is characterized by “catastrophic” sounds and expressivity. I will argue that it functions as a sort of exposition for sonic drama. The opening “catastrophe” is followed by an immediate withdrawal to silence (A2). This is by now a typical opening gesture for Nordheim, and it sets the tone of the piece. A1' presents a condensed recapitulation of A1. This adds importance to the sound events of the beginning, and provides a strong sense of closure at the end of form field A.

The second scene, B, is calm and hints at innocence (we hear for instance a child singing a folk tune), and functions as a temporary moment of equanimity before the catastrophe returns in the last scene.

C recalls some of the character and intensity from the opening, and C2 in particular points back to A1 from the intensity point-of-view. But since C is made from entirely new material, I do not see it as a recapitulation (therefore not A'). The linearity of form is also underlined by the

⁴³⁸ All timing references are based on the CD-track “Warszawa” on AN.RC9 *Electric*.

⁴³⁹ Also Flø notes that “tonal elements [...] form one of the main formal principles” of *Warszawa*. Flø (2012): “Memorable. Om Arne Nordheims elektroniske musikk.”

⁴⁴⁰ Liner notes for AN.R7 Arne Nordheim: *Electronic Music of Arne Nordheim*. English in original.

“wandering” through tonal centres. Tonally speaking, the work ends up somewhere else than its starting point.

Layering and cutting rhythm in *Warszawa*

Most of the time, *Warszawa* is composed of two or three layers of sound. The layers roughly follow the placement of the sound events in spectral space: high, middle and low. In the transcriptions, I have not marked out every single event in the work. Instead I have sought to group events that seems to me to belong in the same layer. This is done in order to highlight what I see as a characteristic feature of Nordheim’s compositional thinking in *Warszawa*: an emphasis on horizontal lines rather than on successive vertical blocks.

The textures are often made up from a continuous sound event in the lower register that is contrasted with more gestural sounds in the higher frequency layers. On a general note, the continuous sound provides the “mood” of the segment, whereas the gestural sounds contain “events” that unfold, contributing to the work’s almost cinematic and narrative structure. The long duration events transform slowly, but the overall cutting rhythm is relatively calm and slow for the other elements as well. A new element is added or removed approximately every 1 to 1.6 seconds.

Iver Frounberg has claimed that *Warszawa* (as well as *Solitaire* and *Pace*) is built from an “architectural modulo-principle” where segments of approximately 15 seconds are the basic formal unit, and the formal outlays of the work are multiplications of this modulo.⁴⁴¹ My segmentation of the sentence level in table 6.1 seems to roughly agree with this theory. However, I have not been able to detect such a principle in the microstructure of the work.

⁴⁴¹ Frounberg: "Specimen fra Arne Nordheims elektroniske biosfære," in ed. Herresthal and Nesheim (2013). See especially pages 42-43.

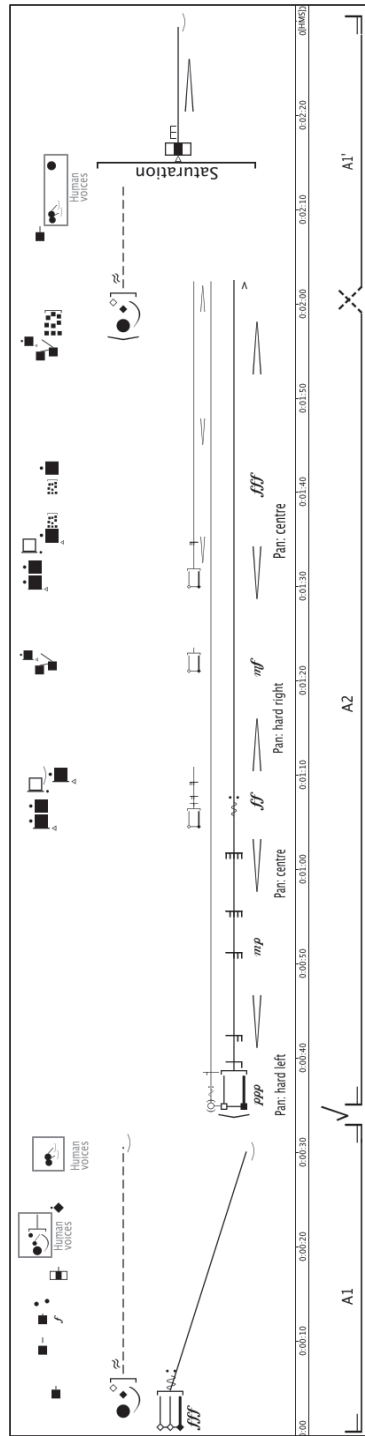
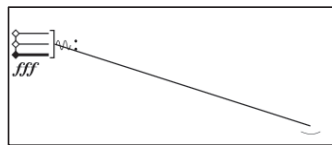


Figure 6.2: Spectromorphological transcription of form field A, Warszawa

Form field A [00.00-02.46]

Over the following pages, I will describe what I hold to be the most central sound events in each section. I have provided transcriptions for each form field separately, and I have provided additional pictures for central events, so that the reader can more easily relate the description to the corresponding event in the figures.

[00.00] Sentence field A1 starts with a sudden loud 30-second long "catastrophe-sound"; a violent descending movement that direct associations to passing planes or falling bombs. In the transcription, I have notated this sound as a stratified complex sound with medium spectral gait. I have added the spectral gait since the downward movement is not completely even. This indicates that the movement is either done by hand or is controlled by a concrete sound source.



The sound complex seems to have been constructed from several layers of filtered noise, where the filter frequency is gradually decreased. This can be observed in the sonogram of the event (figure 6.3).

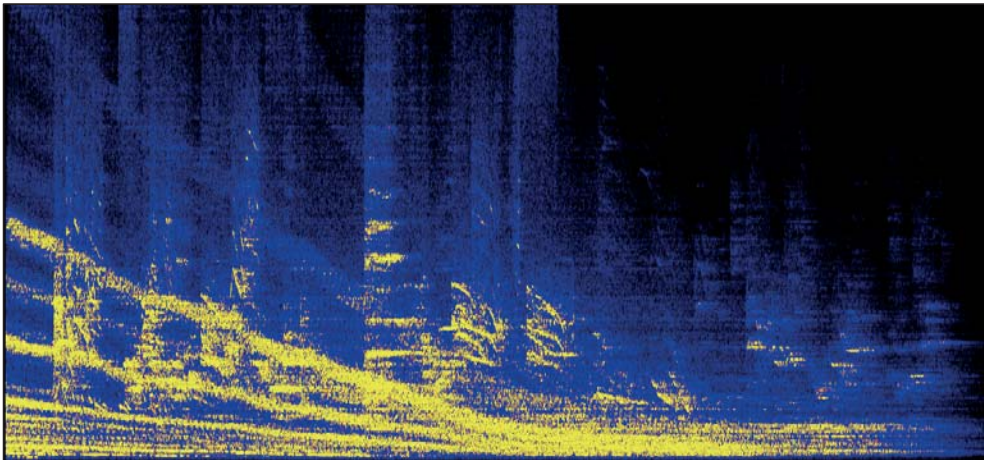
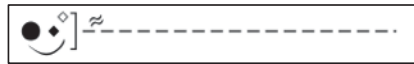
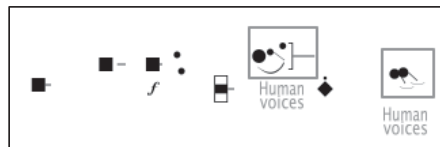


Figure 6.3: Spectrogram of the "opening catastrophe"

[00.02] In a separate ("middle") layer running simultaneously with the downward movement, one can hear a series of short complex sounds. In figure 6.3 the sounds can be seen as vertical events against the horizontal downward movement. Most of the sounds have clear origins in concrete material, although it is difficult to hear exactly what the source was. The sounds induce associations to breaking glass and human cries, and add to the very dramatic effect of the opening. I have notated the sounds as a composite irregularly iterated layer consisting of events from different sound classes.

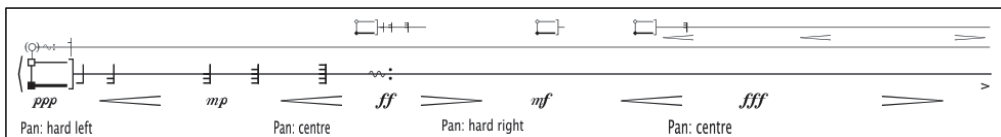


[00.19] Some sounds in the chaotic opening stand out as a separate “top layer.” This layer contains a mix of concrete and electronically generated elements. The first three events can be clearly recognized as filtered noise. At [00.19] we can recognize human cries or moans, possibly from children. This time there is no doubt that the sounds originate in the human voice. I have highlighted the occurrence of human voices in the transcription.

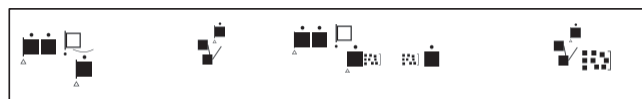


[00.33] The middle and top layers keep resonating as form field A1 fades out into silence.

[00.35] Sentence field A2 starts with a gradually evolving sound layer lasting until [02.02], notated as a stratified complex sound with a separate high-pitched slightly undulating top layer. The sound might be generated as a cluster chord on an electronic organ. The sound is rich in overtones and has no clear pitch centricity, but spectral frequency analysis indicates that the fundamental frequency is 134.9 Hz (C# -47 cents). I have also noted the use of spatial transformation for this event: The layer starts panned hard to the left, it gradually moves to the centre, and then later hard over to the right channel, before it moves back to the centre.



[01.04] A number of complex impulses with marked onset start occurring in a top layer above this event. The sounds have different character, and I have written them out with different symbols. At [01.37] and [01.40] bursts of accumulated sounds function as something akin to a rhythmic statement played on a semi-pitched instrument (for instance a drum). The events at [01.20] and [01.54] stand out with a falling and rising pitch glissando.



[01.59] The recapitulation (A1') is a condensed repetition of elements from A1. Towards the end of the “catastrophe” glissando, all the sound events morphs into saturated noise, and this noise field crossfades into the first elements of form field B.

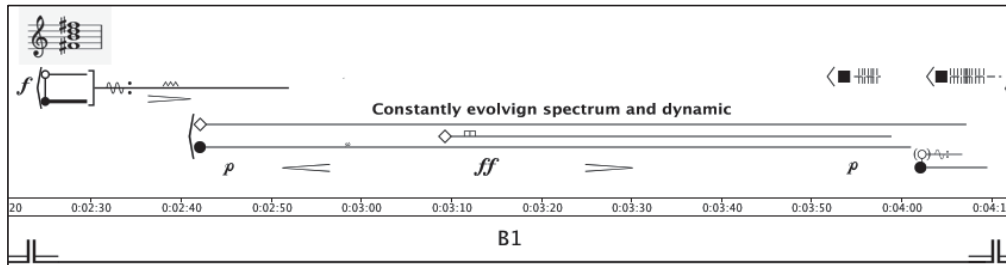
Form field B [02.24-06.32]

Figure 6.4: Transcription of sentence field B1

[02.24] Form field B starts with the fading in of a synthetically generated chord imbued with a clear feeling of harmonic tension. I have notated the event as a stratified pitched sound with slightly undulating spectral gait and medium coarse granularity. The strongest frequencies can be approximated to the tones ~F#4 ~B4 ~D5 and ~F#5. This is equivalent to a B minor 6/4 chord, but the emphasis on the F# – it is doubled and has the strongest energy articulation – gives the chord a sense of being a (unresolved) cadencial I 6/4 in F# major rather than a B minor in second inversion.

The chord contains other frequencies as well, but they have such low energy that I have seen them more as colouring than as individual tones. I have interpreted this chord as a transitional element between form field A and B.

[02.40] The opening chord is followed by a second layered event that dominates the rest of B1. This is also a synthetically-generated chord, with a strong nominal frequency in the lower register (152 Hz = D#3 –37 cents) and several partials in the higher register. It evolves over time, both in spectrum and dynamic. As more partials are added, the event gradually resembles a sound mass more than a chord with individual fundamentals. Around [02.57] we start hearing a beat frequency vibrato between two of the frequencies in the lower register. Around [03.00] the lower frequencies gain more dominance in the sound spectrum.

[03.52] A separate layer of high-pitched “clatter” sounds is introduced. I have notated these as complex sounds where the vertical lines indicated the speed of the iterations. The layer intensifies its presence in the overall sound texture as the iterations go faster, and fades to the background as they slow down.



This “clatter-layer” comes back several times: [04.03], [04.12] at lower pitch and with extra high frequency resonance when the clatter intensifies, and [04.37] at initial pitch. These are the only sonic events that overlap between sentence field B1 and B2.

[04.05] A deeply pitched stratified sound is introduced, but disappears quickly. The sound has an irregular pitch gait, vacillating in gesture/ripple-time. I see this sound as the end of sentence field B1.

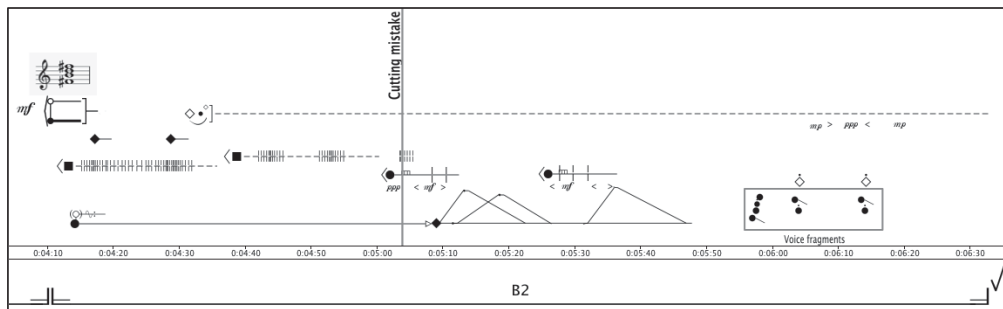


Figure 6.5: Transcription of B2

- [04.10] Sentence field B2 starts with a repetition of the F# 6/4 chord from [02.24], but at lower intensity.
- [04.13] A deep-register pitched sound, reminiscent of the sound briefly introduced at [04.05], comes in and remains as a pedal point throughout the rest of the sentence field. The central frequency is 180 Hz (F#3 –45 cents). The pedal point reinforces the F# tonality, but at a slightly lower pitch. At [05.10] the pedal point starts evolving. I have notated this as a transformation into a dystonic sound where the sound spectrum alternately becomes brighter or darker.
- [04.31] A series of high-pitched “glimmering” sounds make up a top layer in the texture. The foreground alternates between these glimmering sounds and the subsequent elements.
- [05.07] A tonal sound similar to the one from [02.24] and [04.10] takes strong presence in the texture. It is in a deeper register and with grittier sound (notated as having more intense granularity) than the previous versions. The sound is possibly created from playing the note F#4 on a cello. This event comes back in a slightly altered form at [05.26].
- [05.56] Fragment of a child or baby’s voice. Further fragments come in at [06.03] and [06.12].
- [06.32] The glimmering sounds from [04.31] fade to silence. This marks the transition to part C.

Form field C [06.34-11.42]

I see form field C as having two sentence fields; field C1 with low dynamic intensity focused on the lower register, and field C2 with high dynamic intensity, filling the entire frequency spectrum. C2 also has a sense of tonal centre around 101 Hz (G#3 –40 cents). The frequency varies slightly over time.

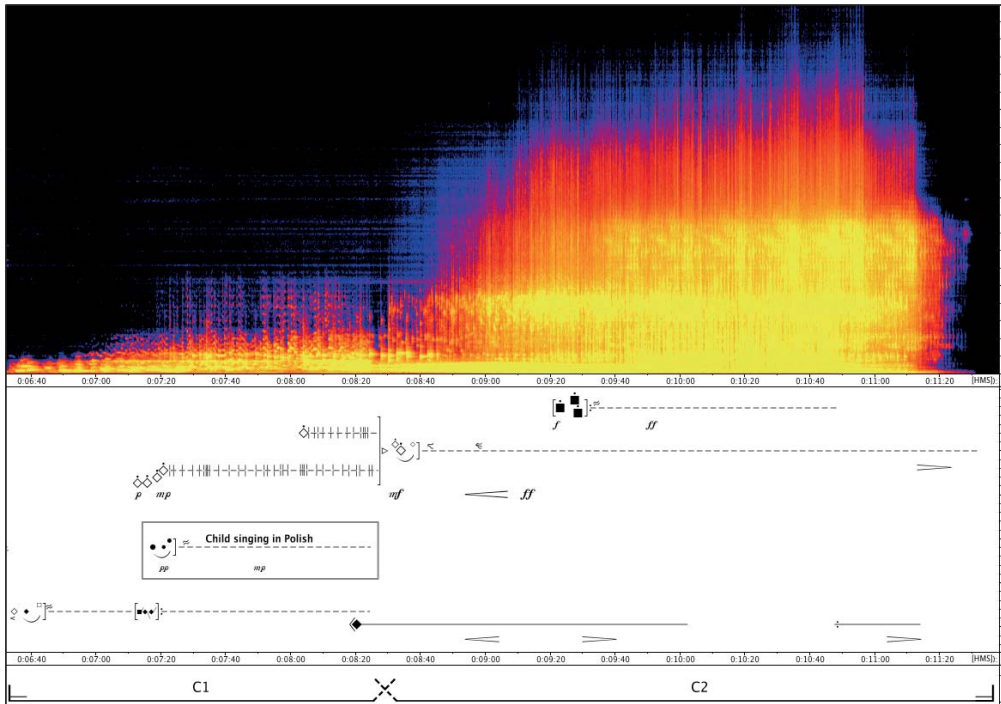
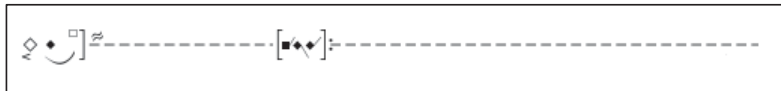
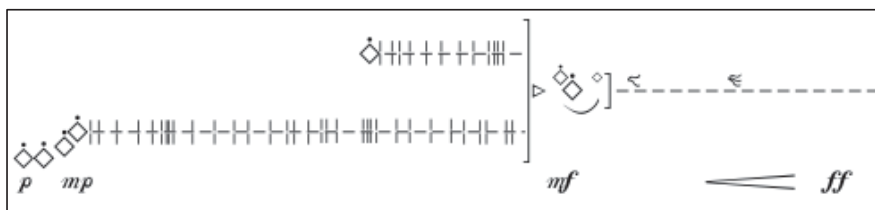


Figure 6.6: Transcription and sonogram of form field C

[06.34] The first sentence field of C starts quietly with a composite of low-pitched dystonic and complex sounds. The sounds are treated with a generous amount of reverb. The iteration is irregular. Around [07.13] gliding sounds are added to the compound.



[07.11] A sound layer of short fragments, notated as dystonic impulses with undefined pitch in the upper mid register. The fundamental frequency of the sounds varies. As the iteration of the sounds goes faster I have notated them as vertical lines. At [08.02] a layer of sounds at a distinct higher pitch is added. Simultaneously, the iterations start coming so fast that the layer changes from distinct sounds to a layer of accumulated sounds. Around [08.30] the accumulation starts to intensify, and gradually takes over as the foreground of the texture. The accumulation continues through part C2 and remains until the end of the work.



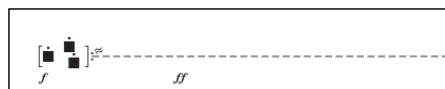
[07.17] Gradually one can make out the sound of a child (girl) singing a Polish folk song. The song drifts in and out of the musical texture, and it is difficult to distinguish the words. The song in question was the traditional Polish folk tune *Trudno, U-cha-cha*. On the recording the listener can make out the following words:

ty mi serca odmieniłaś	you changed my heart
nie mam serca ni ochoty boś ty [...] do roboty trudno, u-cha cha, trudno boś ty [...] do roboty	I don't have the heart nor desire because you are [...] for working a pity, u-cha cha, a pity because you are [...] for working
do roboty toś leniwy do kochania aż za chciwy trudno, u-cha cha, trudno	for working you are lazy for loving all too greedy a pity, u-cha cha, a pity
do kochania aż za chciwy	for loving all too greedy
kiedy miałam lat 13 miałam chłopca [...]	when I was 13 I had a boy [...] ⁴⁴²

The key of the song is unrelated to the tonal centre of the underlying electronic part, something that adds to the sinister mood of the segment.

[08.26] Several elements mark the transition to part C2: The child stops singing, and the compound sound layer from [06.34] fades out. A low-frequency dystonic sound is introduced, providing a new fundamental layer. Spectral analysis reveals that the sound has three resonant tones: G#3 (−40 cents) B3 (+23 cents) and G#4 (+48 cents). However, the sound contains too many additional frequencies to be regarded as a chord. Instead the sound feels like a cluster with pitch vaguely centered on G#3. At the same time as this sound is introduced, the fragments in the upper mid register intensify in iteration speed and loudness. All these elements indicate that a new sentence field starts.

[09.20] A layer of metallic impulses is added to the top layer of the texture. I have notated these as complex impulses. The dynamic is loud, and the layer adds to the intensity of the texture.



[10.00] The low-pitched “G#”-sound stops, providing a shift in attention to the elements in the higher register. The overall dynamic is loud.

⁴⁴² The text is transcribed from the Warszawa-recording by Pawel and Justyna Pilarczyk, who also translated the words to English.

[10.47] The metallic sounds from [09.20] stop, and the “G#”-sound comes back. Emphasis is now on the bottom and the top part of the frequency spectrum. The texture gradually thins and fades out *al niente* at [11.32].

The voices in *Warszawa* function as a contrasting element to the otherwise hard and inhuman sounds that dominate the work. Sometimes the voices relate themselves directly to the electronic material. For instance, the “moaning” of the voices towards the end of A1 seems to imitate the falling glissando that just preceded them (the human cries reflect the catastrophe of the opening). The fragments of “baby-sounds” in B2 and the child singing the folk song in C1 hint at the innocence of youth. I don’t know whether Nordheim was aware of the meaning of the lyrics of the song, but the text with its focus on the mundane worries of love and everyday life contrasts with the violence depicted elsewhere in the work. It is as if Nordheim is saying that despite the horrors the city has seen, it carries on living. But at the same time, this continuation is ambiguous. The song is occasionally drowned out by dystonic and complex impulses that might lead the mind to burning embers, and it is followed by a new catastrophe.

6.3 *Colorazione*

The second work to premiere at the Bergen concert was *Colorazione* for Hammond Organ X66, percussion, ring modulator, filter and 15-second time delay. The premiere featured Kåre Kolberg on organ and Per Erik Thorsen on percussion, while the ring modulators and filters were operated by Nordheim and Meny Bloch. While I called *Warszawa* an electronic tone poem, *Colorazione* is absolute music. Its conceptual key is elements found inside the work; technical factors like the Hammond organ, the tape delay, the filtering and ring modulation, and special compositional techniques such as the use of graphic gestural instructions. In an undated lecture manuscript found among his papers, Nordheim had jotted down in the margin that the message of the work was “memories of the time that is created by space” [“erindring av tiden som skapes av rom”] – a much more abstract concept than the cinematic soundscapes of *Warszawa*.⁴⁴³

In the liner notes for the later LP release, Nordheim wrote the following about his aesthetic programme for *Colorazione*:

The **exact** intention in COLORAZIONE is that the musician’s actions in the present meet, after some delay, the ring-modulated and filtered sounds from their instruments. This situation develops some fascinating possibilities for play on time, color and space. **Time** because of the meeting between present playing and the musical action fifteen seconds ago, **color** because of the altering – the coloring and deformations of the delayed sounds, and

⁴⁴³ Undated and untitled lecture manuscript. Arne Nordheim centre, Norwegian Academy of Music.

space because of the wide scattering of the sounds that arises from both the playing in the present and the colored results from the instrument's ring-modulated and filtered life that will be distributed in the hall [emphasises in original].⁴⁴⁴

I wish to interpret *Colorazione* as a composition focused on the *conversation* between the performers and the technology – in particular the “memory” of what the performers had just done a few moments earlier, projected to the stage in a more or less manipulated form. In that regard it is similar to the “response” between the performed and the fixed elements in the *Response* series, and the trading of “sonic signals” between performers in AN.42 *Signals* – a composition that I have not covered in this dissertation, but which should be regarded as part of the same group of compositions. It is fitting that *Signals* and *Colorazione* were released on the same LP.

The time delay

The 15-second time delay is one of the central aspects of the composition. In order to achieve such a long delay, Nordheim used two separate reel-to-reel tape machines. The sound of the performers was recorded on the first tape machine, and then played back on the second machine fifteen seconds later (figure 6.7). Nordheim and Bloch would manipulate the delayed signal with the ring modulators and the filter, before it would be mixed with the dry signal and played back over the speakers. Thus, the performers would continuously be confronted with what they did just a moment ago, sometimes similar to what they had played, sometimes manipulated beyond recognition. Some of the delayed sound would be picked up by the microphones on stage, and fed back into the manipulation circuit. In one of his typical poetic phrasings, Nordheim said that this would cause “great spiralling sounds [to] tower above each other.”⁴⁴⁵ About the choice of the particular length of the delay Nordheim stated:

I chose 15 seconds because then the distance [in time] is so long that it is not perceived as a mechanical reproduction, but still it was close enough [in time] so one can recall it in the memory when the sound returns.⁴⁴⁶

⁴⁴⁴ Liner notes to AN.R4: *Colorazione, Solitaire, Signals*.

⁴⁴⁵ Letter from Nordheim to Åsmund Oftedal, dated Oslo, August 5th 1967. BCA/A-4265/Da 120.

⁴⁴⁶ “Colorazione,” *NRK TV*, October 30th 1970.

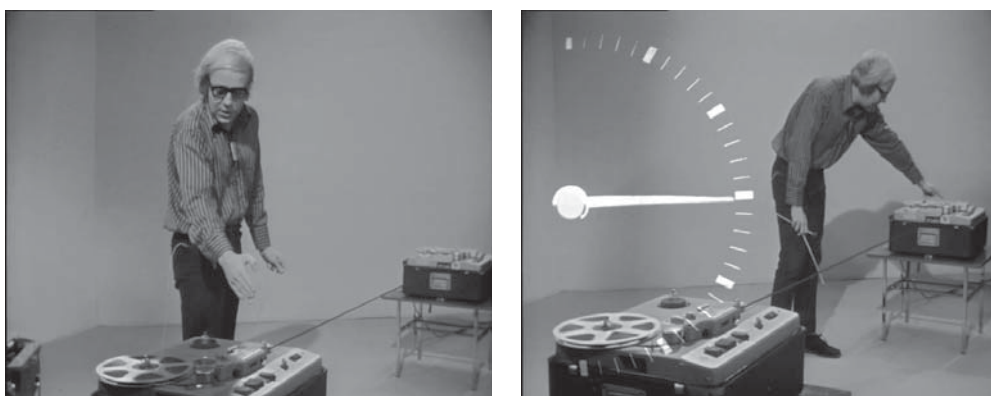


Figure 6.7: Nordheim explains how the sound travels from one machine to the next.

Nordheim has not given any indication to where the idea of using long time delays came from, but it is possible that he picked up on an idea that was floating around in the electronic music communities at the time. The most notable pioneers of extended delay time were Terry Riley and Pauline Oliveros from the San Francisco Tape Music Center. Riley had experimented with long delays already in 1963 while working with Chet Baker in Paris on *Music for the Gift*, and Thom Holmes claims that this constituted the first use of two tape machines to achieve long delay times.⁴⁴⁷ However, not only did Riely use much shorter times than Nordheim (2–3 seconds), he also only used the delay to produce background textures that a live performer could improvise against. Oliveros' experimentation with delay times up to eight seconds was closer to Nordheim's technique. Holmes claims that Oliveros' recording of *I of IV*, released on the same LP that featured Reich's *Come Out* mentioned in Chapter six, "can be credited with seeding the musical world with the idea of the tape delay."⁴⁴⁸ However, as mentioned earlier, this LP came out in late 1967, some time after Nordheim had sketched out the plans for the compositions he would make in Warsaw.

If Nordheim took inspiration from other composers for this technique, it is more likely that he borrowed ideas from Alfred Janson's *Canon for Chamber Orchestra and Two Tape Recorders* (1964–65) – sometimes credited as the first Norwegian crossover composition between jazz and contemporary music.⁴⁴⁹ In this work, Janson recorded the musicians and played the resulting sounds

⁴⁴⁷ Holmes (2008): *Electronic and experimental music*, p. 132. Riley also used long delay loops in *Dorian Reeds* (1965) and *Poppy Nogoood and the Phantom Band* (1966-7). Bernstein (2008): *The San Francisco Tape Music Center*, p. 108 and 217.

⁴⁴⁸ Holmes (2008): *Electronic and experimental music*, p. 133. The technique is described in Pauline Oliveros, "Tape Delay Techniques for Electronic Music Composers (1969)," in *Software for People: Collected Writings 1963-80*, ed. Pauline Oliveros (Baltimore: Smith Publications, 1984), pp. 36-46.

⁴⁴⁹ Nesheim (2012): *De heftige årene*.

back 25 seconds later, using a set-up quite similar to what Nordheim conceived for *Colorazione*.⁴⁵⁰ Nordheim most certainly knew about this work, as it had been played during a concert arranged by Ny musikk, and it was featured alongside *Epitaffio* and *Response 1* on AN.RC1 from 1968.

Nordheim would come back to the technique of the extra-long time delay several times, most striking in *Minnebobler* (1972) and *Partita für Paul* (1985). For *Minnebobler* I have measured the time delay to be 10 seconds in some parts and 15 seconds in others. In the fifth movement of *Partita für Paul* the time delay is, according to the score, set to 12 seconds. However, in these works Nordheim used no further live electronic manipulation.

The ring modulators

The use of live ring modulation deserves special note. As mentioned in Chapter three, Nordheim did not have access to a ring modulator earlier in the decade, and I concluded that this was one of the reasons why he started exploring studios outside of NRK. As a side project to the development of the “music machine” for *Ode til lyset*, Nordheim asked the Acoustical Laboratory at the Norwegian Institute of Technology/SINTEF to construct two ring modulators for him which he could use for live performances.⁴⁵¹ The photo in figure 6.8 shows Nordheim seated in front of the ring modulators during a performance of *Colorazione*.



Figure 6.8: Performance of *Colorazione* in the University Aula, Oslo, September 6th 1968.
Photo: Henrik Lauvik.

⁴⁵⁰ Liner notes to AN.RC1 VA: *Musique Électronique Norvégienne*.

⁴⁵¹ I have found no documents on the ring modulators in the SINTEF or NTNU archives. Nordheim talks about them in the 2005 radio-program *Elektronisk Tidligmusikk* (part of *Musikk i brennpunktet*), *NRK Radio P2*, December 14th 2005. In the program Nordheim claims that the ring modulators are on display at NTNU, but I have not found them, even during my investigation of historical artefacts at NTNU (documented in Roland Wittje and Ola Nordal: *Universitetshistoriske samlinger ved NTNU* (Trondheim: Tapir akademisk forlag, 2005).)

I have not been able to find out much about these devices. Official documents show that in 1969, Nordheim was granted NOK 12000 from the Norwegian Arts Fund for two “sound transformation units.” It is possible that this grant was given to cover the cost of the ring modulators, which at this point were already delivered and in frequent use. The condition of the grant was that the devices were to be placed at Henie Onstad Kunstsenter and be made available for use by Norwegian composers.⁴⁵² However, their later whereabouts are unknown.

The Hammond X66

Another technical device that was important for Nordheim during the composition of *Colorazione* was Hammond’s new X66 organ. It seems that Nordheim’s idea for the work actually originated in a desire to try out this new model. Initially, Nordheim regarded the sweet and vibrating sound of the Hammond organ in religious and “light” music as an aesthetic monstrosity. In 1963, he publicly denounced the Hammond organ as being an “anti-musical instrument” with a “sickening character.”⁴⁵³ But at the same time, he was experimenting with electric organs for his own means. He had previously used Hammond organ in one of his radio dramas (AN.17 *Isøya Radio Kaller*), and he would later use the similar Baldwin organ for several of his NRK commissions, including AN.23 *Her bor vi så gjerne* (November 1963), AN.29 *Favola* (1965) and AN.30 *Stoppstedet* (1965). As mentioned in Chapter three, the innovative use of the Hammond organ in Stockhausen’s *Momente* and *Mikrofonie II* from 1964-65 might also have been an ear-opener. The commonality between all of these works was that instead of using the standard “sweet” sound of the instruments, they were exploring the possibilities of the instrument as an electronic sound-generating unit, fitting with the contemporary music aesthetic.

The Hammond Company had introduced the X66 in early 1967 as an attempt to replace the more famous B3 as their flagship model. The X66 was a highly sophisticated “home theatre organ” that was partly based on the old tone wheel technology and partly based on new transistor components. The sales representative of Hammond in Norway, Hakon Blandehoel, recalled how Nordheim one day came to his shop to check out the new instrument, which he had read about in a newspaper feature a few days before.⁴⁵⁴ At this time, there still existed only one organ of this model with a European power supply, and this instrument toured the European outlets as a demonstration instrument. At the time, the organ was in Norway and Blandehoel gave Nordheim a demonstration.

⁴⁵² St.mld. 53: 1969-70: Norsk kulturfond – Årsrapport 1969, reprinted in Stortingsforhandling 1969-70 3b.

⁴⁵³ “Gutten med linhåret” in *Arbeiderbladet*, February 2nd 1963, quoted after Herresthal (2015): *Fra hjertedypet stiger tonens strøm*, p. 152.

⁴⁵⁴ Telephone conversation with Hakon Blandehoel, November 26th 2014.

According to Blandehoel, Nordheim was so interested that he there and then decided to use the organ in a composition. In a later interview, Nordheim stated enthusiastically that the X66 “could do most of what we want to do in electronic music.”⁴⁵⁵ It could generate all sorts of sounds, and it had an intricate sound recall-function. Nordheim was particularly fascinated by a feature called the “arpeggiator” that was a novelty on this model. Nordheim later described the arpeggiator as a “search panel” placed between the manuals of the organ (figure 6.9).⁴⁵⁶ By sliding a finger over the panel, the performer could cycle through a chord held down on the lower manual.

Since the price of the organ was extremely high (the list price in the US was almost \$10 000), buying an organ was out of the question. Nordheim instead arranged to borrow the demonstration model, and with Blandehoel as technical consultant, the organ was shipped to Bergen and used for the concert.



Figure 6.9 The Hammond X66 depicted in a Hammond Company sales brochure. The arpeggiator can be seen between the manuals.

Because of the price tag, only two X66 organs were sold in Norway.⁴⁵⁷ One went to a private customer, the second was bought by the Filadelfia Church in Oslo. Nordheim would later borrow the organ of the Filadelfia Church for subsequent performances of *Colorazione*, and for the music to

⁴⁵⁵ Arne Nordheim interviewed by Tilman Hartenstein in the program *Elektronisk Tidligmusikk* (part of *Musikk i brennpunktet*), NRK Radio P2, December 14th 2005.

⁴⁵⁶ Although Nordheim does not recall the name of the feature, he talks about it as important in *Elektronisk tidligmusikk*. Blandehoel confirmed Nordheim’s fascination for the arpeggiator.

⁴⁵⁷ Telephone conversation with Hakon Blandehoel, November 26th 2014.

Dagen vender (February 1969), his only other work to feature the X66 (AN.54 *Eco* also features a Hammond organ, but is not limited to the use of the model X66). Since the X66 was the only model to feature the arpeggiator, performances of *Colorazione* were actually limited by the availability of the organ at the Filadelfia Church.

Composition

Even though Nordheim seems to have had the outline of the work ready by time he went to Warsaw in September 1967, it is likely that much of the composition and mapping out of details for the live technical realization were done under the influence of the studio equipment in Poland and Eugeniusz Rudnik. Even though the studio did not have an X66, Nordheim had access to a ring modulator, filters and other equipment that was harder to get in Norway. It is possible that the principle of the time delay was also worked out in Warsaw.

The technical solution for making tone clusters too seems to have been solved in Poland. In some parts of *Colorazione*, several keys should be pressed down for a long time in order to make a static sound mass. This technique had been in use for some time in the international avant-garde, for instance in Ligeti's *Volumina* (1962), a work that might actually have been a direct model for Nordheim's organ-writing in *Colorazione*.⁴⁵⁸ In *Volumina*, Ligeti instructs the organ player to press down all the keys with his underarms. Nordheim seems to have wanted a similar effect, but he also wanted to free up the hands of the musician so that s/he could play on the arpeggiator and the pre-set manual at the same time.

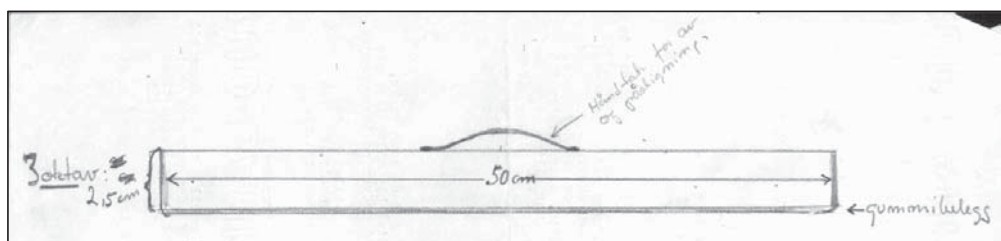


Figure 6.10: Nordheim's design for one of the weights used in *Colorazione*

In a letter that Nordheim sent to NRK from Warsaw in April 1968, he asked if the woodworks workshop could construct two specially designed weights for him that could be used to hold down

⁴⁵⁸ Nordheim knew *Volumina* through a concert in the Trinity Church in Oslo in 1963, where also met the composer. Alf van der Hagen: "Et helvetes leven," *Morgenbladet*, September 22nd 2006.

the keys (figure 6.10).⁴⁵⁹ Figure 6.11 shows the weights in use in the TV broadcast of *Colorazione*. In this particular segment (section E2, cf. table 6.3), the performer Kåre Kolberg is playing random configurations on the preset-manual, while the cluster is being held in place by the weights.

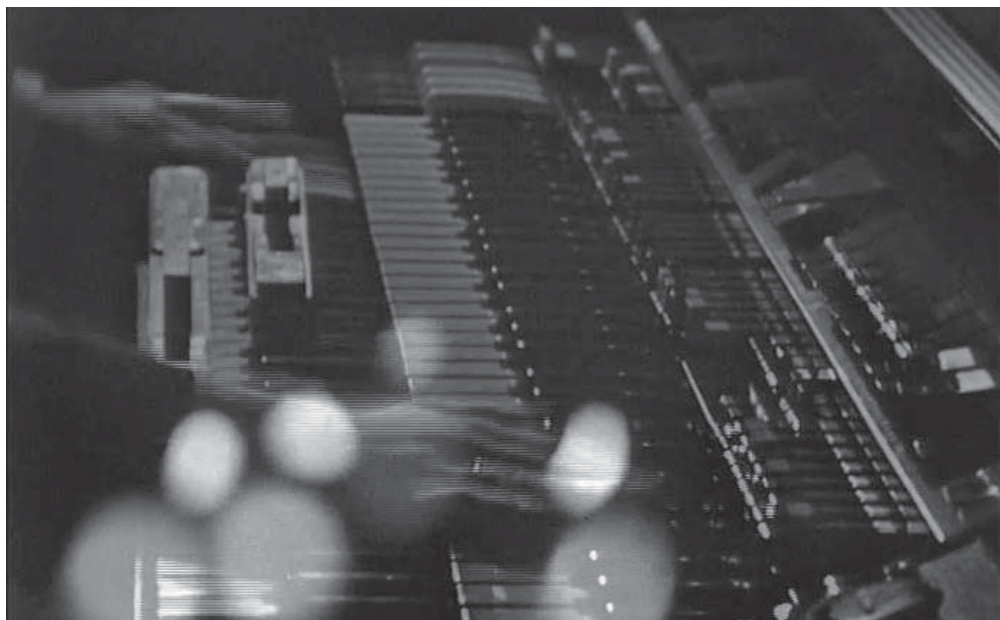


Figure 6.11: From TV broadcast of *Colorazione*.

The score of *Colorazione*

The performance score of *Colorazione* consists of fourteen size A3 pages. For the analysis, I have used the published version of the performance score from Edition Wilhelm Hansen from 1969, as well as an incomplete revised version, probably dating to the 1980s, found among Nordheim's papers from *Grotten*. Most of the examples used in the figures are taken from this revised score, in part since the visual clarity is much better than in the published version. Even though the musical content of the two versions seems to be the same, there are a few elements in the revised score that are not included in the published version. In figure 6.12 (page 210) for instance, we can observe how instructions for setting sounds on the X66 are indicated in the top bar. These instructions were not included in the published version.

On the bottom of page one, there are two open sections marked MI and MII. These fields are used to notate settings for the ring modulators and filters. In both the published score and in the fragment at the Arne Nordheim centre, these fields are left blank (exceptions in the published score being pages 3 and 6). In a copy of the score held by the Schøyen collection, specific settings for the

⁴⁵⁹ Nordheim to Arild Berggren at the NRK Television department, dated Warsaw, April 18th 1968. NRK Archive: Fjernsynet. Folder: Response I. 437, date 28/5/1968.

ring modulator and filter are added by hand.⁴⁶⁰ None of these instructions are included in the published version. The reasons for this lack of precise notation might be that Nordheim either wanted to leave open to the performers the decision of choosing filter and ring modulator settings, or that he assumed that he himself would be involved in all future performances of the work. Whatever the reason, this lack of clear notation raises challenges for future performances of the work. It is probable that the version in the Schøyen collection was Nordheim's personal performance copy, and this version of the score will therefore be more usable in a performance situation than the published version.

Form in *Colorazione*

In the score, *Colorazione* is divided into six numbered sections, and I have interpreted each numbered part as a form field. In my analysis I will use the capital letters ABCDEF to indicate the parts. In the published score the parts are indicated with roman numerals; I have however chosen to use letters in order to harmonize with the other analyses in this dissertation. In addition to Nordheim's segmentation, I have divided A into four sentence fields and E into two sentence fields. The form scheme of the work is described in table 6.2. In table 6.3, I provide listening notes for each part.

Table 6.2: Segmentation of *Colorazione*

	A				B	C*	D**	E		F
Dur	6'30				3'42	1'18	2'58	2'01		2'06
Sent. field	A1	A2	A3	A4				E1	E2	
Dur	2'53	1'20	1'	1'15				1'	1'	
Page	1-3	3-4	5	6	7-9	10	11	12	13	14

* = Cadenza 1: percussion. ** = Cadenza 2: Organ

Table 6.3: The most important musical events in *Colorazione*, based on recording on AN.RC9 *Electric*

Section #	Cumul. time	Notes
A	[00.00]	
A1		Slow fade in of organ cluster and tremolo on tam-tam. Three rolling movements – the last with <i>ff</i> climax.
A2		Note in organ, gradually swelling. Accumulated percussion sounds in gesture time.
A3		Tremolo on one tone in xyl, then tremolo on tam-tam
A4		Four "free" eruptions in percussion and organ <i>fff</i> > <i>pp</i>
B	[06.30]	Quiet section with melodic motifs. "Call - response" with overlaps. Organ with ring modulator - little effect on percussion. Then two minutes with crotali, xyl and organ simultaneously. "Minimalistic" and "pointillistic" - short impulse sounds in alternating registers/timbres.
Silence	[10.12]	Fades to silence. Abrupt cut of fade just before end of fade (cutting mistake?)
C: Cadenza 1 percussion	[10.18]	Violent <i>fff</i> eruption in all percussion. Fades quickly to <i>ppp</i> . Delay repeats treated with ring modulation and filter. Some careful playing on tam-tam etc. when repeats come in. Reverse dynamic at end of part <i>ppp</i> < <i>fff</i> . Short organ arpeggiator transition to Cadenza II.

⁴⁶⁰ Manuscript 7: Music, 7.30 Graphic Notation, MS-5491, Arne Nordheim: *Colorazione*. <http://www.schoyencollection.com/music-notation/graphic-notation/ms-5491>, visited April 12th 2014.

D: Cadenza II organ	[11.36]	Reverse dynamic from Cadenza I (<i>pp</i> < <i>ff</i> > <i>pp</i>). Free “improvisation”, only intensity and dynamics is indicated in score. Fades to silence
E	[14.34]	
E1		Small rhythmic cells in organ and percussion. This gradually evolves into...
E2		...a more intense “freely improvised” section. High degree of electronic manipulation. Builds up to <i>ff</i> climax before abrupt demarcation to next form field.
F	[16.35]	Continues rapid playing on organ, vibr. crot. and xyl. Texture thins out into nothing. Fade to silence
	[18.41]	END

Sentence field A1: Organ clusters

Colorazione starts with a *ppp* tremolo on tam-tam and the gradual fade-in of a tone cluster in the organ. The cluster and the tremolo swell to *p* and then fade out again. This rolling, wavelike movement is repeated twice, each time with increased intensity. The notation that Nordheim uses for this segment is very similar to what Penderecki uses for his block-clusters in *Threnody* – a thick black line. Figure 6.12 shows the first of these rolling movements.

The figure shows a musical score for the first rolling movement of Sentence field A1. The score is for a Hammond organ and includes staves for 3 Tr., 3 Ft., CROT., VBR., XYLR., 3 Bo., 3 To., and Gc. The organ part is marked with dynamics *ppp*, *p*, and *ppp*. A thick black line represents the organ cluster. A 30-second time interval is marked at the top and bottom of the organ staff. A circled 1 is at the bottom center.

Figure 6.12: Page 1 of *Colorazione*, revised version

In this example, the organ cluster covers all the notes at the lower part of the manual, using the weights described above. In the third rolling movement of A1 (figure 6.13), the cluster is thinned out from the lowest note to the highest by gradually sliding the weights off the keys. A new cluster with sharp attack is heard when the weights are dropped on the higher register keys at rehearsal B. In this section, Nordheim has treated the Hammond organ as a noise generator, and the notation is

very similar to the cuts that he would have made on an electronic tape. This is also similar to the sound-field construction in *Epitaffio*, as shown on page 95.

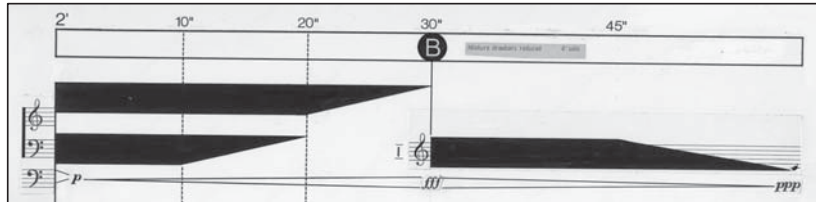


Figure 6.13. Detail of *Colorazione* page 3, revised version.

Sentence field A4 and form field B: free and rigid sections

Colorazione varies between relatively free sections with graphical notation and more tightly structured sections written out in notes. Sentence field A4 is an example of the first.

The section consists of four loud eruptions in the organ and percussion, notated as semi-filled triangles (figure 6.14. Note that the fourth eruption is marked only as a “reiteration” at 6’). There is no instruction in the score as to how these filled triangles should be executed. In this case, the score functions more as a loose “script” suggesting the gestures, rather than as a precise “text” determining exactly what should be played. Still, a relatively consensual way of interpreting the instructions has been established. On the available recordings, the performers start out with explosive gestures, playing as quickly as possible over all their available sound producing devices. Then they gradually limit their movements until finally falling down on a single tone or beat (the tips of the triangles are connected to a specific note).

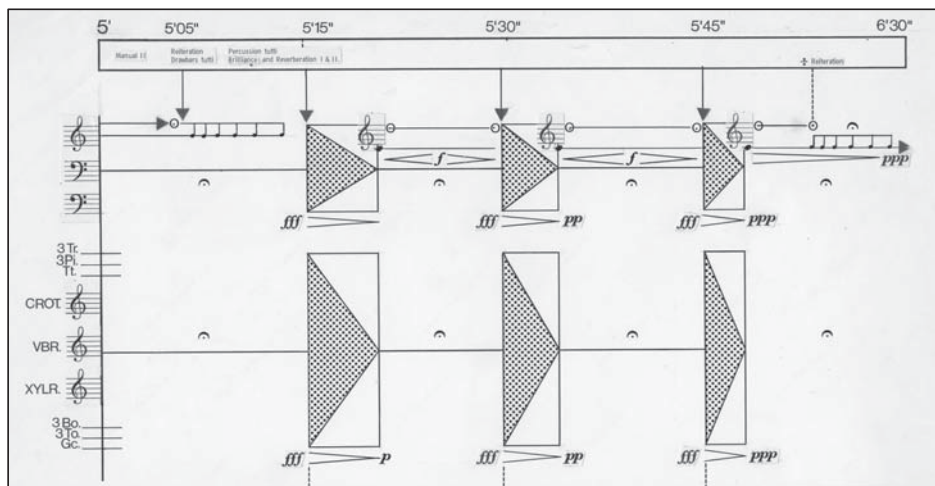


Figure 6.14: Detail of *Colorazione* page 6, revised version.

Colorazione is one of the few compositions where Nordheim has used this kind of notation. In a few instances, most notably in *Epitaffio*, he composed semi-improvisational passages where the

performers are asked to play random notes in a given register at a very fast pace. The “improvisation” in *Colorazione* is similar but more gestural. It provides instructions for the movements of the performers, and not just the speed and register of the execution.

It should be noted that these passages in *Colorazione* and *Epitaffio* are not improvisation in the commonly held definition of the term. The goal is to provide cascades of sound, and not to perform personally crafted lines over a given melody, scale or chord pattern. Rather, the notation instructs the performer to play randomized gestures, structurally rigid in time and dynamics but with a high degree of freedom in the pitch-domain.

This contrasts with form field B, which is built around precisely notated melodic patterns in the organ and melodic percussion. The overall dynamics of form field B are very quiet, and the melodic lines with their frequent large jumps and rests take the form of a sort of pointillistic game. In this section, the repeats from the time delay become very dramatic. The part consists of five segments, each lasting 30 seconds: 1) organ, 2) xylophone, 3) organ, 4) vibraphone and 5) organ and vibraphone together. The delay makes the last 15 seconds of each line overlap with the next, and there is thus a smooth transition between segments.

Form field C and D: The cadenzas

The percussion cadenza is based around two “free” segments (figure 6.15). The first follows the exact same pattern as in A4, with the only difference being that the vibraphone lands on the note C5 instead of F4. The second “free” segment is a mirroring of the first. In between these two sound fields, the percussionist plays small rhythmic motifs on the tam-tam. On the recording [10.18-11.30], the delay repetitions are characterized by prominent use of filtering and ring modulations. The settings for the manipulations are not indicated in the score, but for some reason, the delayed repetition of the first percussion sound field has been copied down to the MI and MII fields.

The image shows a musical score for a percussion cadenza. At the top, there are staves for various instruments: 3 Tr, 3 Pl, CROT, VBR, XYLR, 3 Bo, 3 To, and 3 C. The score includes dynamic markings such as ppp, p, and f. A red square in the top right corner contains a graphical symbol for intensity and dexterity. Below the main score, there are two staves labeled MI and MII, with a red triangle and a red square indicating specific performance elements.

Figure 6.15: *Colorazione*, percussion cadenza, revised version

Leading into the organ cadenza, the organ plays an upward sweep on the arpeggiator. This is indicated in the top right corner of figure 6.15 (inside the red square), and occurs at [11.16] on the recording. The organ cadenza (figure 6.16, [11.16-14.31]) is played in its entirety on the arpeggiator, with the keys of the lower manual again being pressed down by the weights. The score indicates the pedal dynamics, and a graphical symbol indicates intensity and dexterity of the “improvisation.”

The image shows a musical score for an organ cadenza. The score includes parts for Arpeggiator, Celesta, Chime, Arpeggiator + Glockenspiel, Silb, and Harp. The score is marked with pp and ppp. A graphical symbol indicates intensity and dexterity. The score is divided into sections with time markers: 1', 1'07", 15", 30", 45", 2', 15", 30", 45", 3', 15", 30", 45", and 4'.

Figure 6.16: Organ cadenza, revised version

In the top field we can note how different voices are added and removed from the sound mass. Initially the arpeggiator is set only with celesta. Chimes are added at 2', and glockenspiel at 2'30. In the decrescendo, glockenspiel is removed at 3'15 and at 3'45 celesta is removed and 'harp' is added. The difference in dynamic profile between the sounds is quite marked, with the result being that instead of displaying the smooth dynamic profile indicated in the graphical symbol, the dynamic jumps with the introduction and removal of sounds. This can be observed in the dynamic representation of the part in figure 6.17, in particular when the chimes are added at [12.19].

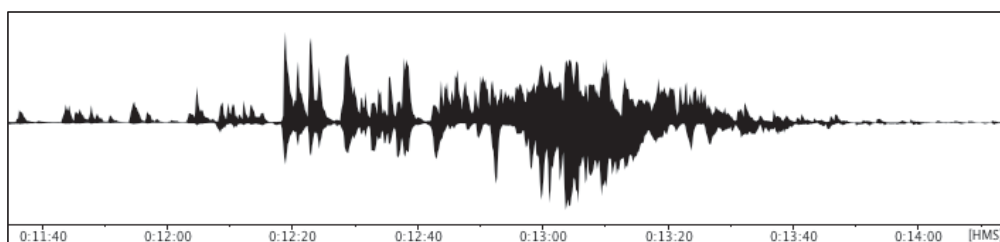


Figure 6.17: Dynamic development of the organ cadenza

Form field E and F: After the cadenzas

The last two parts of *Colorazione* combine all the elements that have been exposed earlier in the piece. The overall intensity of the work has increased, and in particular sections E1 and E2 are very intense, both dynamically and in terms of performance. Here, both performers play rapidly over all of their soundmaking devices.

In part E the ring modulator and filter are used with great intensity, but between E2 and F there is a marked shift in character. The performers continue to play at the same rapid speed, but the effects from delay, ring modulator and filter are abruptly cut off ([16.36] on the recording). The performers continue without delay and effect manipulation until the end of the work. Again, this is not indicated in the score.

6.4 Chapter summary

In this chapter, I have discussed various performative aspects of *Warszawa* and *Colorazione*. I have traced their context as originating in a concert at the Bergen International Festival, and argued that while *Warszawa* can be understood as an electronic tone poem thematizing the city where the work was composed, *Colorazione* can be seen as a more abstract work focused on internal compositional techniques and technological explorations. Both works were part of a larger scale exploration of live electronic techniques that Nordheim undertook in the mid to late 1960s, but *Colorazione* was the only work where he continued to use these techniques, even though he had equipment specifically constructed for live electronic use.

I have no documentation on what Nordheim actually thought about these matters, so my conclusion will have to include some educated guesswork. There is a possibility that the expectation Nordheim put on real-time electronic manipulation was too high. Since Nordheim was relying on non-commercial technical products that were basically only prototypes, the reliability of the equipment might have been a real challenge. At least two concert reviews report problems with the

technical equipment that affected the performances.⁴⁶¹ The task of assembling personnel and equipment could also seem daunting. A performance of *Colorazione* demanded not only the Hammond X66, but also a large quantity of technical equipment, and the presence of Nordheim and Meny Bloch. A second factor, which is also linked to technology, is that few performers were experienced with live electronic performance.

In a letter to Gunnar Sønstevoid, Nordheim stated that the work AN.79 *Dinosauros* for accordion and continuous fixed media tape should be seen as a “continuation of the ideas of COLORAZIONE.”⁴⁶² In this work, the performer is also confronted with musical lines that are taken from the performed part. But for one reason or another (possibly practical, possibly aesthetic), Nordheim chose *not* to perform the delay and manipulation in real-time. They are instead fixed in the taped part. This makes *Dinosauros* a much easier work to perform. The only elements required are two microphones (in order to blend the sound of the accordion with the sound of the tape on a mixing desk, so that discrepancy in sound character and level can be smoothed out), a mixer and stereo playback equipment. This can be handled on-site by a sound engineer who has not been involved in the rehearsal of the piece. In other words, the use of continuous fixed media playback is much simpler, which may have influenced Nordheim’s favouring of this mode of expression.

Throughout this dissertation I have argued that Nordheim saw his compositions as flexible entities that could be adapted to the needs of an upcoming performance. But I have also emphasized that this flexibility had limits. The fact that Nordheim did not fully embrace live electronics can be seen as a reflection of how he was rooted in a traditional work concept and in the tape-music studio. The most crucial reason might therefore have been that he wanted to retain sonic control.

⁴⁶¹ During the performance of *Response 3* in 1967: a fuse broke and the performance had to start over (Peter Rammo: "Musikalsk show i ABC-teateret," *Aftenposten*, February 19th 1968). During a performance of *Colorazione* on Henie Onstad Kunstsenter in 1968: the ring modulator was not functioning, and the performance had to be “revised” for the occasion (Øystein Sommerfeldt: “Ringmodulert og nymusikalsk skuffelse,” *Verdens Gang*, September 9th 1968).

⁴⁶² Letter from Nordheim to Gunnar Sønstevoid, dated Seattle, February 2nd 1970. NRK Archive: Fjernsynet. Folder: Response I. 437, date 28/5/1968.

Chapter 6: The fixed and the live

7 TEXT, SOUND AND MEANING IN *SOLITAIRE* AND *PACE*

In this chapter, I will discuss the relationship between text, sound and meaning in the acousmatic compositions AN.52 *Solitaire* and AN.74 *Pace*. While the text used in AN.49 *Warszawa* (the folk song *Trudno, U-cha-cha*) seems to have been more or less arbitrarily chosen, Baudelaire's poem "Les Bijoux" and The United Nations' Declaration of Human Rights are at the very core of (respectively) *Solitaire* and *Pace*. They are both conceptual keys to the works and used as concrete source material. Nordheim and Eugeniusz Rudnik resorted to a wide range of voice manipulation techniques on recordings of the texts. Most important was a particular form of cross-processing that I wish to call *Nordheim's gate technique*.⁴⁶³ In the gate technique a sound source (a "carrier") is controlled by another sound (a "modulator") through the side chain input of a noise gate (figure 7.1). In this way, the dynamic profile of the modulator, in these cases the rhythm of the voice, is imposed on the carrier signal.

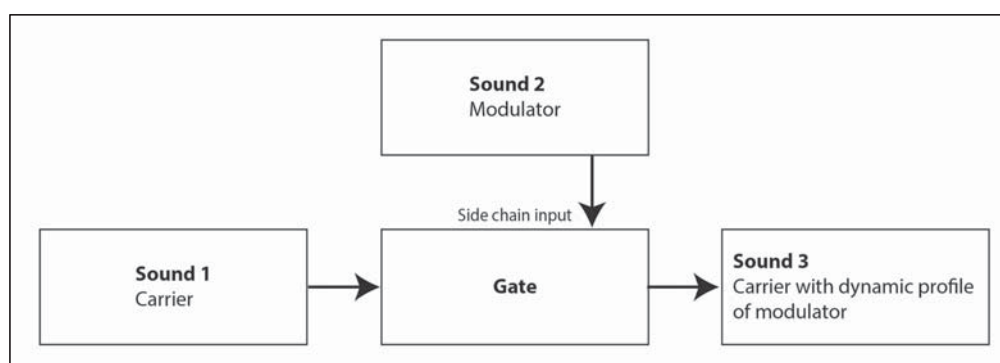


Figure 7.1: Nordheim's gate technique

The key to understanding the meaning of *Solitaire* and *Pace* is that even though all semantic information is lost in this manipulation process, Nordheim claimed that the two carried what he called their "deeper meaning" or "fundamental message" ["selve ur-meningen"].⁴⁶⁴

⁴⁶³ The principle was first described in Flø (2012): "Memorabler. Om Arne Nordheims elektroniske musikk."

⁴⁶⁴ Nordheim lecturing for the students at the Department of Music at the University of Trondheim (later NTNU), September 20th 1989. Cassette recorded by Kjell Oversand. In the collection of the author.

Center and absence

In his celebrated lecture “Poetry – Centre and Absence,” Pierre Boulez explains how a poetic message can be at the centre of meaning in music, even when its semantic content is not present in the composition.⁴⁶⁵ Text-music relationship can vary from the “direct statement” in syllabic song to the “diffuse commentary” in, for instance, a chorale variation. The latter is interesting in the case of Nordheim’s compositions. Boulez notes that in a chorale variation, the original religious texts are at the very core of understanding, even when no word is sounded. They “heighten the implicit significance of each verse, thus forming the classical example of the complex esoteric.”⁴⁶⁶

In Alban Berg’s violin concerto, to use an example that Nordheim knew well, Berg builds the last part of the concerto over the choral *Es ist genug*. By doing so, Berg codes the poetic and religious message of the ancient Lutheran hymn into the concerto, even though the text, sonically speaking, is absent. It is of course possible to listen to and enjoy the Berg concerto without being aware of the connection, but the use of the Bach choral is more than just a casual reference, providing an *added* layer of meaning. It is deeply woven into the structure of the composition, and the poetic and religious message are at the very core of meaning production.

With the advent of electronic music, composers had at their disposal several new means to use voice and text as compositional building blocks. Maybe the most extraordinary example in the early repertoire is Stockhausen’s *Gesang der Jünglinge* (1955); a work that might even have been the starting point for Nordheim’s fascination for the electronically manipulated voice. The textural fundament of *Gesang* is taken from an apocryphal section (verses 52-90) in chapter three of *The Book of Daniel*, where three young Jewish boys jubilantly sing God’s praise after having been thrown into Nebuchadnezzar’s burning fiery furnace (because of their devotion, they all survive). Stockhausen’s composition has received the most attention due to its innovative electroacoustic techniques and its investigation of the borders between electronic sound and text.⁴⁶⁷ However, the Biblical story, with all its attached religious and symbolic significance, is crucial to any exegesis of the work.

In principle, Nordheim saw knowledge about source texts in *Solitaire* and *Pace* as being mainly of importance to him as a creator, and not necessarily something that needed to be communicated to the audience. However, it also seems that he did not completely trust his audience

⁴⁶⁵ “Poetry – Centre and Absence” in Pierre Boulez: *Orientations. Collected writings* (Cambridge, Mass: Harvard University Press, 1986), pp. 183-98.

⁴⁶⁶ Pierre Boulez: *Orientations. Collected writings* (Cambridge, Mass: Harvard University Press, 1986), p. 185.

⁴⁶⁷ Robin Maconie: *Other Planets. The Music of Karlheinz Stockhausen* (Lanham, Md: Scarecrow Press, 2005), pp. 166-71.

to work things out by themselves. He therefore provided plenty of what can be called *paratexts* for the two works, pointing out the connection. The literary theorist Gérard Genette defined paratexts as textural elements outside of the work that function as a sort of springboard to the actual text: “[the paratexts] surround [the actual text] and prolong it, precisely in order to *present* it, in the usual sense of this verb, but also in its strongest meaning: to *make it present*.”⁴⁶⁸ In other words, the paratext guides interpretation by preparing the reader/listener with a repository of information existing in the zone between the inside and the outside of the work. These texts can be in the “close perimeter” of the work, like for instance the title, the front matter and the preface, or more “distant” from the work, in the surrounding discourse, for instance interviews, conversations, correspondence, personal notes and so on.

Nordheim’s insistence in providing paratexts for *Solitaire* and *Pace* has made the historical source material connected these works to unique: they are the only electronic works where Nordheim has provided elaborated technical descriptions of his working methods. This has made it possible for me to give more detailed poetic descriptions of these compositions, than for the other works that I discuss in this dissertation.

7.1 *Solitaire*

Solitaire was commissioned for the opening of Henie Onstad Kunstsenter, an arts centre located at Høvikodden, just outside of Oslo. The work is strongly tied to the history of the centre. It premiered during the opening festivities on August 22nd 1968, and over the following seven months it ran several times a day in a concert hall called *Studio*. The work has been performed at Henie Onstad in its original four-channel version on three occasions: the original run in 1968-69, in a new series of performances in 1981 (with visuals by a young Magne Furuholmen, who later climbed to international fame with the pop group A-ha), and finally for the retrospective Nordheim exhibition in 2013-14. This alone would make *Solitaire* the most-performed electroacoustic work in Norway. But the work has also transcended its Høvikodden origin, and a two-channel mixdown of the work ranks as Nordheim’s most frequently released and most widely disseminated electroacoustic work.

The Henie Onstad Arts Center is based around the private art collection and a fund from the ice-skating diva and Hollywood star Sonja Henie and her husband, the shipping magnate Niels Onstad. As art historian and curator Lars Mørch Finborud has shown, the centre became an important outlet for experimental and interdisciplinary expressions in the late 1960s and 1970s, in the visual

⁴⁶⁸ Gérard Genette: "Introduction to the Paratext," *New Literary History*, vol. 22, no. 2 (1991).

arts, music, dance, theatre, poetry and literature.⁴⁶⁹ From the start, Nordheim was part of the core group of artists associated with the centre. This was in part due to his close personal relationship with Ole Henrik Moe (1920–2013) – the centre’s first director. Moe was an important figure in the small group of contemporary musicians, composers and artists in Oslo. He was a high-profile pianist who focused on the contemporary repertoire, and was frequently used as host on the television program *Epoke*, where he featured several works by Nordheim, including AN.28 *Epitaffio*, AN.29 *Favola* and AN.40 *Evolution*. Moe also served on the board of Ny musikk together with Nordheim. When Moe was appointed director of the centre in 1966, he involved Nordheim as technical consultant in several music-related matters, including the planning of Studio. In this process, Karlheinz Stockhausen and Eugeniusz Rudnik also contributed as consultants.

Studio was the first hall in Norway specifically designed for electronic music concerts. It was equipped with 20 Swedish Stig Carlsson Sonab OA-6 speakers and a custom-made mixing desk with four outputs, made by the weapons manufacturer Kongsberg Våpenfabrikk.⁴⁷⁰ *Studio* became a vital stage for electronic music concerts in Norway, especially through the concert series *Elektrofoni*, which not only featured many works by Nordheim, but also provided possibilities for the coming generation of electronic music composers.⁴⁷¹

Due to Nordheim’s central role in the planning phase, as well as his status as the face of electronic music in Norway, it is no surprise that he was also asked to compose the opening work for the centre. Nordheim outlined the plans for his work in a series of letters to Moe from May 1967, around the time that he was preparing for his first sessions in Warsaw.

In the guidelines for the commission it was made clear that the Henie Onstad centre wanted a time-based work produced by a Norwegian artist, which could demonstrate both the technical capabilities of Studio and the artistic aspirations of the museum. In his letters, Nordheim suggested a multi-modal composition that was to be a ”play of sound, light and movements.”⁴⁷² Taking cues from the synaesthetic ideas behind the famous colour organ in Alexander Scriabin’s *Prometheus* – an idea that was floating around in connection with light and projection shows at the time – Nordheim envisioned a work of “unspecified art”, where electronic sound would be combined with light projections on kinetic sculptures. He also wanted to include dance and film. “Auditory and visual

⁴⁶⁹ Lars Mørch Finborud: *Mot det totale museum. Henie Onstad kunstsenter og tidsbasert kunst 1961-2011* (Oslo: Press, 2012). Pages 33 and 113–119.

⁴⁷⁰ *Ibid.*, p. 131.

⁴⁷¹ Caroline Ugelstad and Hild Borchgrevink, eds., *Høvikodden live 1968-2007: Henie Onstad kunstsenter som tverrkunstnerisk arena* (Oslo: Henie Onstad kunstsenter, 2007).

⁴⁷² Arne Nordheim to Ole Henrik Moe, letter postmarked May 31st 1967. Høvikodden: Henie Onstad Kunstsenter archive.

impressions will be ‘shuffled’ in each other’s field of function,” Nordheim wrote to Moe.⁴⁷³ He also emphasised that the “meeting of materials” was an important concept in the work. This meant both the meeting of electronic and concrete sound, and that of various sound sources: stone, metal, glass and wood.

Even though Nordheim underlined that did not want his work to be regarded just as a “technological exposé,” the technical aspects of the commission were given much attention, as evident from the following quote:

Sounds recorded on a four-track tape can, in every speed, be rotated in the hall, and together with changes in the quality, form and position of the light, one can create new and exciting situations. [...] The principle of the four-track tape will make it possible to spread and split the sound to speaker groups placed around the audience, and everybody will have the feeling of being in the middle of the work.⁴⁷⁴

The formulation that the sounds could be “rotated in the hall” again points to inspiration from Stockhausen, who had used the movement of sounds in four-channel space as an important aspect already in *Gesang der Jünglinge* from 1955-56. The placement of speaker groups around the audience was an important aspect of *Solitaire*. From having experienced the four-channel version of the work in Studio, I can attest to Nordheim successfully achieving the idea of giving the audience the feeling of being in the middle of an overwhelming aesthetic experience.

As with most of Nordheim’s projects, the initial plans had to be adjusted, and the use of dancers and film projection was abandoned. At the opening *Solitaire* was a four-channel acousmatic work with light projections on small reflecting sculptures rotating in the roof grid. The resulting “dancing” patterns on the walls have been described as both striking and powerful.

Baudelaire’s “Les bijoux”

The most important sonic element in *Solitaire* is a heavily manipulated voice reading the following three lines from the poem “Les bijoux” by Charles Baudelaire:

Ce monde rayonnant de metal et de pierre me ravit en extase, et j’aime avec fureur les choses où le son se mêle à la lumière	This radiating world of metal and of stones delights me in ecstasy, and I love furiously all things in which sound mingles with light ⁴⁷⁵
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“Les bijoux” is taken from Baudelaire’s collection *Les fleurs du mal* (1857) – one of the infamous forbidden books of the 19th century. The damping eroticism and decadence of the collection gave

⁴⁷³ Unmarked 3-page document, found next to Arne Nordheim to Ole Henrik Moe, May 31st 1967.

⁴⁷⁴ Arne Nordheim to Ole Henrik Moe, May 31st 1967.

⁴⁷⁵ Charles Baudelaire: *Les fleurs du mal* [1857], Édition établie par Jacques Dupont ed. (Paris: Flammarion, 1991). My translation.

Baudelaire a high standing among the 20th century avant-garde. According to Lars Mørch Finborud, Ole Henrik Moe had given Nordheim a copy of the book with the intent of providing some inspiration for the composer.⁴⁷⁶ After a bit of reading, Nordheim got taken by “Les Bijoux” and wanted to use it in the work that Moe had commissioned. Nordheim felt that the three lines encompass all the ideas he wanted to put into the work: ecstasy, passion and the meetings of materials from different sound worlds.⁴⁷⁷

The title *Solitaire* is taken from another line in the same poem: / *Où, calme et solitaire, elle s'était assise* / (Where, quiet and lonely, she sat). In a 2014 radio interview, Eugeniusz Rudnik claimed that it was he who came up with the suggestion for the title.⁴⁷⁸ However, Nordheim's letters to Moe indicates that the title was being circulated already in May 1967, several months before Nordheim met Rudnik in Warsaw, so it is unlikely that this is the case.

The word “solitaire” has several meanings. It can mean “alone”, as in this passage, it can mean a one-person game of cards, or it can mean a piece of jewellery, particularly a ring, that holds a single diamond. In other words, there is plenty of room for hypothesizing around the meaning of the title. In his letters to Moe, Nordheim explained that the title reflected the uniqueness of the existence of the centre – a solitary diamond in the otherwise poor cultural landscape of Norway.⁴⁷⁹ Later, Nordheim indicated that it also played on Sonja Henie's fondness for diamonds and jewellery.⁴⁸⁰ It might also, as the line where it is taken from hints at, be about the aura of melancholy and loneliness surrounding Henie, who during the height of her fame had led an ill-reputed life. Nordheim was probably also aware of, although it was not openly known at the time, that Henie was ill from leukaemia. Within a year after the opening of the centre, she had passed away.

Form in *Solitaire*

Solitaire is the most commented on and analysed work in Nordheim's catalogue. In addition to Finborud's detailed account of the origin and performance context, both Asbjørn Blokkum Flø and Lasse Thoresen have provided musical analyses.⁴⁸¹ Since Thoresen has included a detailed

⁴⁷⁶ Finborud (2012): *Mot det totale museum*, p. 113.

⁴⁷⁷ Arne Nordheim to Ole Henrik Moe, May 31st 1967.

⁴⁷⁸ Zofia Paszkiewicz: “Den glemte teknikeren,” *NRK P2*, October 2nd 2014.

⁴⁷⁹ Arne Nordheim to Ole Henrik Moe, May 31st 1967..

⁴⁸⁰ This point has been made by Nordheim in several interviews, among others Borchgrevink: “Diamanter i en rød Volvo - Samtale med Arne Nordheim,” in ed. Ugelstad and Borchgrevink (2007).

⁴⁸¹ “Chapter 15: Analysis of *Solitaire* by Arne Nordheim” in Thoresen (2015): *Emergent Musical Forms*, pp. 593-608. Flø (2012): “Memorabler. Om Arne Nordheims elektroniske musikk.”

spectromorphological transcription in his book *Emergent Musical Forms*, I will not provide my own transcriptions for this piece. In the following I will build upon their pioneering work.

My views on *Solitaire* diverge from their analyses only in a few aspects. I wish to comment briefly on Thoresen's understanding of form and Flø's analyses of the tonal elements. Thoresen claims that *Solitaire* is constructed from six form fields, being in essence of linear form, with the exception of the final field, which recalls elements from the first: A B C D E A'.⁴⁸² In my analysis, I will emphasise that the fifth field also recalls previous material from the second part, giving *Solitaire* form scheme A B C D B' A' (figure 7.2).

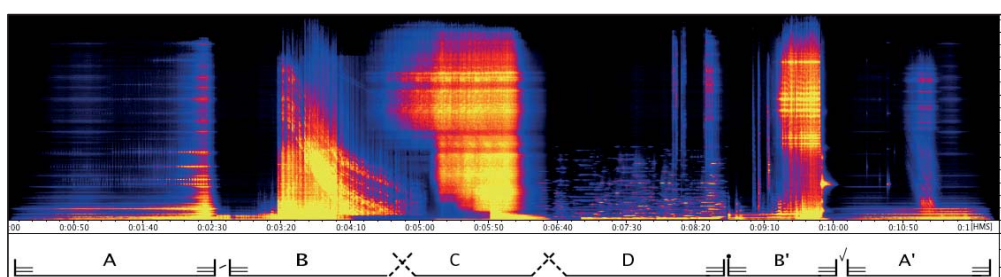


Figure 7.2: *Solitaire*: Spectrogram and form fields⁴⁸³

The outer parts A and A' have very little in common with the rest of the work, and the fields B to B' feel almost like a composition within the composition. But when A' returns, the sense of "homecoming" and closure is strong. This symmetry is seen not only in the recalling of previous material, but also in the dynamic outlay of the work. The outer form fields A and A' start and end quietly. As can be observed in the spectrogram in figure 7.2, the dynamic profile of B to B' goes from quiet to loud, having a centre point at D that is quiet, and finally goes from loud back to quiet again. This symmetry is observed by Thoresen, but has not been given weight in his analysis. I will argue that it is precisely the clear formal arch, and the arch within arch (figure 7.3), that makes *Solitaire* so easy to grasp as a piece of music.

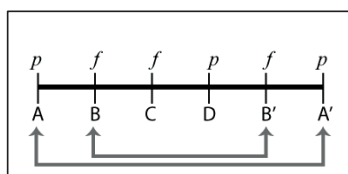


Figure 7.3: Arch-form in *Solitaire*.

⁴⁸² Thoresen (2015): *Emergent Musical Forms*, p. 593f.

⁴⁸³ Based on *Solitaire* as released on AN.RC9 *Electric*. All timings relate to this recording.

Form fields A [00.00-02.32]

Parts A and its counterpart A' are outer form-fields that contrast greatly to the rest of the work. Both are built around a slowly evolving and droning sound field that starts *ppp* in the lower register and gradually builds up to *fff* filling almost the whole spectral field. According to Krzysztof Szlifirski the field was created using the Studio Experimentalne frequency divider. Thoresen calls the sound field an “ambient-time pitched chord,” and sees it as an example of an “enlarging sound,” or “grosse note” in Schaeffer’s terminology. Thoresen defines this as “an object in slow gesture-time with a slowly and predictably evolving spectrum.”⁴⁸⁴ This sound field became sort of a signature sound for Nordheim’s electronic music, partly from the popularity of *Solitaire*, but also since it occurs in variants in *Warszawa* and *Ode til lyset*.

Partial	Actual note	Expected note
16	A5 (-10)	A5(±0)
15	Ab5 (-24)	Ab5 (-12)
14	G5 (-42)	G5 (-31)
13	F5 (+31)	F5 (+41)
12	E5 (-12)	E5 (+2)
11	D5 (+43)	Eb5 (-49)
10	C#5 (-25)	C#5 (-14)
9	B4 (-22)	B4 (+4)
8	A4 (-2)	A4 (±0)
7	G4 (-47)	G4 (-31)
6	E4 (-10)	E4 (+2)
5	C#4 (-26)	C#4 (-14)
4	A3 (-5)	A2 (±0)
3	E3 (-20)	E3 (+2)
2	A2 (-8)	A2 (±0)
1	A1 (±0)	A1(±0)

Table 7.1: The *Solitaire* sound field and its relation to the 16 first partials of harmonic series. Averaging of frequency energy between [02.15] and [02.20].

As both Flø and Thoresen note, the energy is particularly strong in frequencies close to octaves of the fundamental ~A1. Flø further notes that the other frequencies in the sound field can be related to the harmonic series. A harmonic analysis confirms that this is the case, even though the frequencies are slightly detuned from the expected partials (table 7.1). The pitches are not completely stable and the deviation fluctuates slightly over time. For instance, the fundamental drifts from 54,12 in the beginning to 55 Hz around [02.15]. I see these fluctuations in frequency as a central aspect, as they add an “organic” and “warm” quality to the sound field. I will conclude that even if Nordheim used the harmonic series as guideline, he still deviated from this guideline according to his creative wishes.

The sound field functions as a pedal point under a series of metallic impulses in the high treble register. Thoresen has called the sounds “pitched impulses with double attack.”⁴⁸⁵ Slowing down the playback to ¼ speed reveals that the tones seem to have been generated from striking a resonant metallic body (possibly a tubular bell), and then being given a slapback echo of ~750 ms. On quadruple speed this produces the double attack that Thoresen describes. The metallic character comes from its origin in a metallic body.

⁴⁸⁴ Thoresen (2015): *Emergent Musical Forms*, p. 271 and 593f.

⁴⁸⁵ Thoresen (2015): *Emergent Musical Forms*, p. 593.

The impulses “arpeggiate” in an oblique rhythmic pattern over four individual tones; ~F7, ~G7, ~C8 and ~E8. The top note ~E8 is introduced by itself at [00.27]. In the next iteration it is immediately followed by the ~C8, and in the third “round” the ~G7 is added, producing a first inversion C major chord. Even though the pattern is never repeated identically, the listener gets the feeling of hearing a “motif” based on this triad. The ~F7 is introduced a bit later at [00.49], weakening the C major feeling.⁴⁸⁶ In the four-channel version, the tones are distributed in the sonic space. ~E8 has strongest energy in left-front, ~C8 in right-front, ~G7 in left-back and ~F7 in right-back. The effect is that the sounds seem to encircle the listener. This idea relates to what Nordheim wrote to Moe in the letter quoted above, about letting sound rotate around the audience.

The pattern seems to be produced from superimposing tape loops of varying length, with an individual set of loops for each tone. The result is a complex rhythm that might at times hint at fixed meter but is actually completely uncyclical. The adding of sounds accelerates gradually, and Thoresen has notated this gradual densification of events as a transition from single sounds to composite sound at [01.13] and a further transition to accumulated sound at [01.57].⁴⁸⁷

Form field B [02.44-04.20]: Nordheim’s gate-technique

As the drone from A fades out, four regularly iterated dystonic sounds in the lower register mark the transition to form field B. These sounds might evoke associations to strikes on a gong. Nordheim often uses such percussive signals to mark the division between form segments or to signal that something significant is about to happen.

At [02.44] the gong-like sound starts following an irregular rhythm, and at [03.02] one can recognize a female voice speaking in a dry and monotonous manner in the same rhythm. The voice is heavily manipulated, barely recognizable as voice. It is not possible to recognize the words. As the segment continues it becomes obvious that the irregular rhythm of the gong-like sound is connected to the rhythm of the voice. I interpret the passage as an exposition of the technique that will come to be a dominating element in the rest of form field B: the use of the voice as sonic raw material.

According to a radio interview Nordheim gave in 1968, the voice belongs to Astrid Brekken, one of the radio presenters at NRK, who was reading in French the three lines from Baudelaire’s

⁴⁸⁶ For some reason, Thoresen notates only the E, C and G, missing out on the F. Flø notates the F, but never the less calls it a C major chord. Flø also claims that the collection of pitches can be said to derive from the harmonic series, starting at C3. However, it is only possible to come to this conclusion if one excludes several of the partials. Further, it should be noted that the tones deviate from the expected frequency of the harmonic series.

⁴⁸⁷ Thoresen (2015): *Emergent Musical Forms*, p. 593f.

poem.⁴⁸⁸ In some sources Nordheim's daughter Gro Nordheim has been credited as the person reading the poem.⁴⁸⁹ This claim probably originates from a misunderstanding. Gro is not reading the poem for *Solitaire*, but she is participating in the recording of the declaration of human rights which is used as source material in AN.74 *Pace*, AN.70/77 *Poly-Poly/Lux et Tenebrae* and An.184 *Språkfødsel*.

In the radio program, Nordheim explained and demonstrated how he had made several versions of the recording with different microphone settings (distant, close, etc.). These recordings were cut into short tape fragments, each fragment containing a word or syllable. The fragments were mixed and reassembled randomly, and this cut-and-paste version was used as basic material for the later modulations. An excerpt of Brekken reading is included on the accompanying CD as **CD track no. 09**.

Nordheim used the cut-up recording as basis for two segments. The first can be heard at [02.44-03.15], and sounds like a series of deep percussive sounds. According to Nordheim, this part was realized as a combination of ring modulation and filtering. In ring modulation, two signals, typically a source signal and a sine wave, are multiplied so that the output is both the sum and the difference of the original waveforms. Depending on the settings, one can obtain the audible effect of "splitting" the source signal into a high frequency and a low frequency part. The high frequency part will often have a "bell-like" or "metallic" character, since the resulting spectrum will be rich in densely spaced partials, similar to the inharmonic spectrum of a bell. For this particular segment, Nordheim had been using the Frequency Shifter of Studio Experymentalne (see table 4.4 on page 135), which was similar to a ring modulator, but would filter away all the higher frequencies. The effect is that of transposing the sound to a lower register without needing to slow down the source signal. Since most of the original spectral information was lost in the process, the resulting sounds were almost pure rhythm, vaguely recognizable as speech but without any semantic content. These sounds are played in the two front channels. An example of the manipulation process is included on the accompanying CD as **CD track no. 10**.

At [03.16] a second layer of loud high-pitched "metallic" sound is abruptly added in the two back channels. The sudden change is clearly visible in figure 7.2. From [03.35] the frequency spectrum of the metallic sounds gradually changes from light to dark, following a similar type of rhythm (but not the same) as the voice-based sounds in the front channels.

⁴⁸⁸ "Arne Nordheim om sin komposisjon Solitaire," *NRK Radio*, March 12th 1968.

⁴⁸⁹ An example of this error can be found in the Norwegian recording database Rockpedia: https://www.rockipedia.no/utgivelser/arne_nordheim-17020/, visited March 15th 2014.

This segment is constructed using the Nordheim *gate technique* described at the beginning of the chapter. In the 1968 radio program, Nordheim explains how the carrier sound (“Sound 1” cf. figure 7.1) was constructed from several loops of ringing triangles (**CD track no. 11**). Close listening to the original source (which Nordheim used in the broadcast as an example), reveals the triangle sound to have been sped up to 4x speed. A spectrogram of the event (figure 7.4) shows that Nordheim realized the source in two rounds; first he kept the loops running at 4x speed, and then he mixed this signal with the same signal gradually being slowed down.

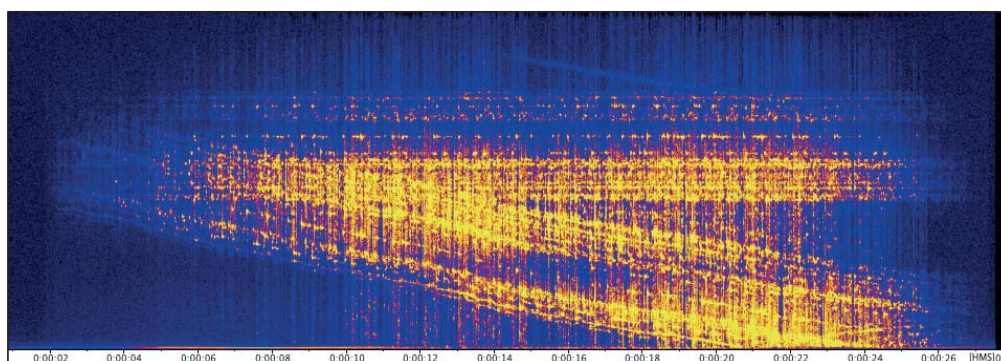


Figure 7.4: Carrier signal (“Sound 1”)⁴⁹⁰

The modulator signal (“Sound 2”) was the same recording of Brekken’s voice used in the segment at [02.44]. The resulting sound can be observed in figure 7.5 (also on **CD track no. 12**). Note that at the beginning of the figure, one can still see the gated recording of Brekken’s voice in the lower register. This is due to Nordheim gradually fading away Brekken’s voice in order to exemplify his technique.

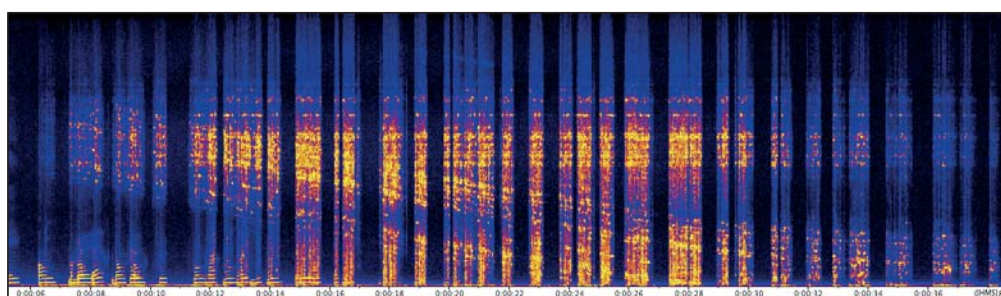


Figure 7.5: Sound 3 = Carrier signal (“Sound 1”) with rhythm of modulator signal (“Sound 2”)⁴⁹¹

There are certain parts of the manipulation process that Nordheim did not mention in the radio program. For instance, he added further levels of complexity to the segment by superimposing two

⁴⁹⁰ “Ame Nordheim om sin komposisjon Solitaire,” *NRK Radio*, March 12th 1968.

⁴⁹¹ *Ibid.*

layers of the resulting “Sound 3.” They were superimposed five seconds apart and divided between channels three and four. In addition he treated the sound with generous amounts of reverb. The resulting field, which can be observed in figure 7.6 (CD track no. 13), is a complex and dense accumulation with gradually decreasing pitch. There is no audible reference back to Brekken’s voice, and any connection to this recording or to the Baudelaire poem can only be divined through exogenous information.

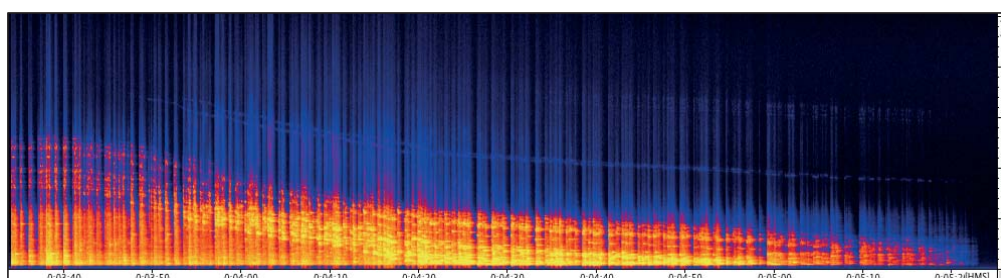


Figure 7.6: The same segment in the final composition (channels 3 and 4 only)⁴⁹²

Form fields C [04.20-06.25], D [06.25-08.43] B’ [08.43-10.00] and A’ [10.00-12.24]

Form field C consists of two events. First, in the two front channels, a sound field with high intensity gradually moves from the higher register to fill the whole spectrum. The field is similar to the “carrier” sound in B, and is also realized from several layers of looped sounds. The source seems to be stones or pieces of wood banging together, and my associations go to abstract concepts like “raining stones” or “intense rattling of several wind chimes.” Even though there is no clear set of references to sources, it is possible that this part represents the stones mentioned in Baudelaire’s poem. Second, at [06.07] in channels three and four, a loud sound of similar character is abruptly cut in. The effect is that of a sudden boom in the back of the room, or to bring up another meteorological association, a “crack of thunder.” This adds a feeling of drama to the section.

Form field D contrasts greatly with C. While C continues the intensity of B, D is a moment of calm in the work. The field consists of “waves” of pitched gesture-time sounds with long onset and termination. In his analysis, Thoresen uses this as an example of a “sound web.” Like in an accumulation, a sound web consists of collections of sounds of similar character. But unlike the “uncountable” events in an accumulation, the events in a sound web stand out as individual and distinct entities. Again, the sounds are abstract, having no clear reference to a concrete source material. However, the dynamic profiles of the sounds are similar to sounds produced by playing on crystal glasses, and it is possible that this segment refers to the material glass. Glass is not referred

⁴⁹² Spectrogram generated from channel 3 and 4 in *Solitaire*, 4-channel version, Arne Nordheim Centre.

in the poem, but it is mentioned in Nordheim's letter to Moe as one of the elements he wanted to use in the "meeting of materials."

Starting at [06.27], a layer of booming sounds is introduced in the profound register (possibly a reference back to the transition between form fields A and B). Listening back on ¼ speed these booming sounds are revealed to be muffled strikes on a church bell. Occasionally (at [08.02] and [08.26]), the calmness is interrupted by "metallic rattling", possibly cut-in fragments of the triangle loops from B.

Solitaire has a strong sense of unity, and much of this unity comes from the recollection of earlier elements. Each recollected event is varied, and might be seen more as a memory of a past event than an actual re-statement. Brekken's voice comes back in B', but in a higher register and together with a "flickering" high-pitched sound (possibly made with the gate-technique from B used on the sound field from C). B' ends on a loud pitched note at [09.50], which actually feels like the "climatic" end of the work, but is only a "false" ending. The sound field and impulses from A follow, as well as an unmanipulated version of the looped triangles from B. The part gives a strong feeling of completeness and homecoming.

Final remarks on *Solitaire*

Even though *Solitaire* is more ambiguous in its references than for instance *Warszawa*, it is also a work that invites the listener to cinematic or narrativic readings. In the opening minutes, there is a marked contrast between the emerging dark sound field in the profound register and the harsh and pointed impulses in the bright register. On one hand, this segment points to Nordheim's long-held fascination with the contrast between light and shadow. On the other, it is also possible to interpret it as a musical sunrise in the tradition of the famous opening of Strauss' *Also sprach Zarathustra*. The sunrise metaphor was also present in the light projection: it started with a single spot of red light, which over the first minutes grew to a large sun-like image.⁴⁹³ The bright impulses might trigger associations to glimmers of reflecting light. Thus we don't just encounter a "sunrise", but also "light reflected in sound" as in *Ode til lyset*.

In relation to the Baudelaire poem, it is reasonable to think this in relation to "all things in which sound mingles with light." If we continue along this path of exegesis and bring up again Nordheim's list of materials (stone, metal, glass and wood), we can see stone and wood as present in sound field C, glass in the sound web of D, and metal in the impulses of A and the manipulated bells in D. To this list, we can add the electronic sounds from A and the human voice from B.

⁴⁹³ I discussed this with the artist Wenche Øyen, who had participated in running the light projection in 1968. I met her at Henie Onstad Kunstsenter on August 22nd 2013. A similar image was used in the reconstructed light projection.

It is important though, to note that the presence of these elements is based on my own interpretation of the listening experience. *Solitaire* has no clear sonic references. The different elements *sound like* many things, but they are rarely *the sound of* specific things (although close listening can detect certain sound sources). The associative nature of *Solitaire* has led to several diverging interpretations of the work. One of the royal attendants at the premiere described her experience as being “run over by a freight train.”⁴⁹⁴ I see *Solitaire* as a work that shows Nordheim at his most sensual and decadent, a view obviously coloured by my knowledge of the Baudelaire poem. Lasse Thoresen has come up with a completely different interpretation, and links the work to a struggle between good and evil, humanism and war. He writes that “the work, composed in Warsaw 1968, may present a personal and emotional impression of the suffering in the aftermath of the Second World War,” a view similar to my interpretation of *Warszawa* in the previous chapter.⁴⁹⁵ There seems to be no reason to hold one reading as more correct than the other. On the contrary, I see this openness in interpretative potential as one of the strengths of the work.

7.2 Pace

Pace was commissioned by the Polish national radio and is dedicated to the director of Studio Experymentalne, Józef Patkowski. It premiered on Polish radio on September 21st 1970, and was performed during the Warsaw Autumn festival later the same year. I have found no documents that shed light on the details of the commission, but according to Bolesław Błaszyk, the radio had wanted a work thematising moral responsibility.⁴⁹⁶ Even though “pace” means “speed” or “tempo” in both English and Polish, Nordheim has emphasised the Italian meaning of the word: “peace.” Nowhere in Nordheim’s oeuvre are his humanistic ideals presented stronger than in this work. If the thematic key to *Warszawa* was the portrayal of war, then for *Pace* it is a hope for peace, freedom and equality.

In the liner notes for AN.R7 *Electronic music of Arne Nordheim*, Nordheim confirms that the principles in *Pace* were an extension of the techniques that he and Rudnik had developed for *Solitaire*.⁴⁹⁷ As in *Solitaire*, Nordheim used a source recording containing spoken text as a basic building block, with the words of the source material rendered unintelligible in the manipulation process. But unlike *Solitaire*, where the text is used only in parts of the composition, this single

⁴⁹⁴ Finborud (2012): *Mot det totale museum*, p. 118.

⁴⁹⁵ Thoresen (2015): *Emergent Musical Forms*, p. 607.

⁴⁹⁶ Liner notes for AN.R80 *Solitaire*.

⁴⁹⁷ Liner notes to AN.R7 *The Electronic Music of Arne Nordheim*.

recording provides material for the entire work. I therefore interpret the meaning of the source recording as being even more fundamental to the understanding of *Pace* than Baudelaire's poem is for the understanding of *Solitaire*.

The recording in question is a reading of the second paragraph of the United Nation's Declaration of Human Rights, read in Norwegian by three people: a man, a woman and a child. The child is Nordheim's daughter Gro Nordheim. In its English original, the text reads:

Everyone is entitled to all the rights and freedoms set forth in this Declaration, without distinction of any kind, such as race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status. Furthermore, no distinction shall be made on the basis of the political, jurisdictional or international status of the country or territory to which a person belongs, whether it be independent, trust, non-self-governing or under any other limitation of sovereignty.⁴⁹⁸

When the declaration of human rights was adopted in 1948, Poland was among a group of eight countries that abstained from voting.⁴⁹⁹ I wish to suggest that *Pace* can be interpreted in light of the particular Eastern European tradition of what is sometimes called "secret poetry" – the covert insertion of political protest in art.⁵⁰⁰ By broadcasting the declaration on Polish national radio, albeit in coded form, Nordheim gave his little contribution to the resistance against the brutal politics of the Soviet Union. In a later interview, Nordheim commented on the work with the following words: "Those were hard times in Poland in the 1960s and 1970s and that text [the UN Declaration] belonged there."⁵⁰¹

Pace also invites referential readings from a purely sonic perspective. Several of the sounds have a bell-like quality that might be sonic allusions to churches and religious sermons. As a symbol, a bell can represent the cycle of life (they chime for baptism, confirmation, marriage and death) and the spiritual – that which is greater than man. One should also keep in mind Nordheim's personal relationship with the bell, from his childhood experience of tolling church bells to signal the end of the Second World War, to the frequent use of bell-timbres in both his electronic and acoustic music. Furthermore, in Poland the church had taken a leading role in the opposition against the communist regime, and therefore, both the church and its bells were symbols of freedom and peace. In the liner notes for the LP-release of *Pace*, Nordheim writes:

⁴⁹⁸ <http://www.un.org/en/universal-declaration-human-rights/>, visited June 12th 2013.

⁴⁹⁹ The abstaining countries were USSR, Ukraine, Belarus, Yugoslavia, Poland, South Africa, Czechoslovakia and Saudi Arabia. https://en.wikipedia.org/wiki/Universal_Declaration_of_Human_Rights, visited June 13th 2013.

⁵⁰⁰ The term "secret poems" for this kind of action was used by the Polish art collective KEW in the early 1970s, see Knittel/Sikora/Michniewski: "Secret Poems," Bólt, 2012.

⁵⁰¹ Beyer: "On Articulating the Existential Scream," (2001), p. 141.

The three voices have been transposed into the spectral realm of the chimes, while formally the piece unrolls itself according to a very simple plan. Flanked by two dynamic movements of decreasing and increasing intensity, respectively, a chiming silence occupies the middle section, the sonorities of which might easily, if not correctly, lead the listener's mind towards unnamed sites in the Far East. Bali?⁵⁰²

In other words, even though there might exist a “correct” interpretation of *Pace*, Nordheim invites listener's associations to stray far from the content and meaning that guided the compositional process. *Pace* might be the work in Nordheim's catalogue where this dislocation is most pronounced. On one hand, it is his most explicitly political work, having one of the core texts of contemporary western humanism as its material. On the other hand, this political statement is completely masked in the finished product. But as Boulez noted in relation to his idea on centre and absence, the symbolism is still in there, it is even at the core of the work.

Form

Sonically speaking, *Pace* is characterized by slow evolving sound fields that glide into each other. The work flows along as one single stream of sound, and it is difficult to find clear demarcations between sections. The only abrupt moments in the work are the sudden beginning and end. Dynamically the piece is symmetrical; *loud to silent, silent, silent to loud*. This indicates three form fields. The symmetry can be observed both in the spectrogram and in the waveform display (figure 7.7). Despite the almost palindromic dynamic profile, I have not interpreted the work as A B A'. The last part does not recall any material from A, and I see the work instead as having linear form, with the segmentation A B C.

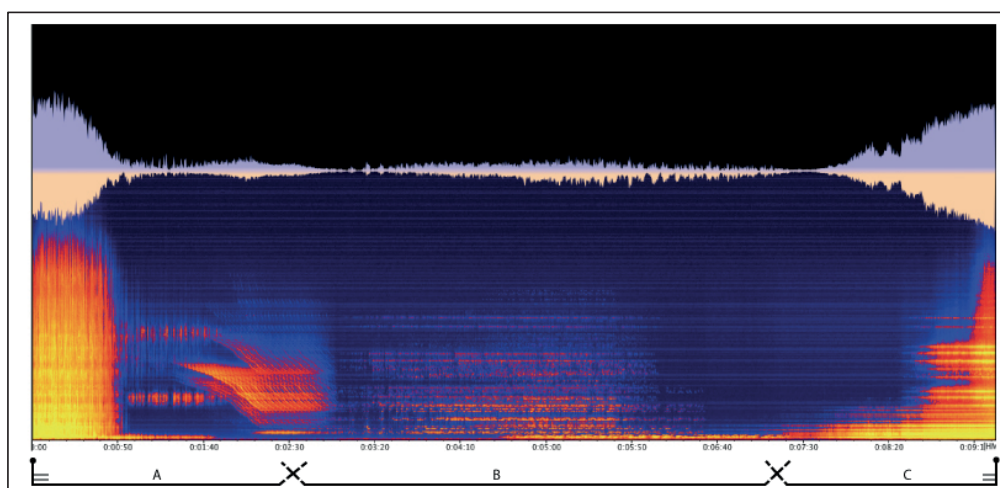


Figure 7.7: Form in *Pace*

⁵⁰² Liner notes for AN.R7 *The Electronic Music of Arne Nordheim*.

Since every section in *Pace* overlaps with the next, I have not notated any subdivisions into sentence fields. Still, the dynamic development indicates that each form field can to some extent be subdivided into three parts. A contains three relatively marked sections with the dynamic *fff* – *p* – *mf*. The dynamic development in B is the opposite: *pp* – *mp* – *pp*. C has the dynamic development *pp* – *f* – *fff*.

Construction-wise, *Pace* is a rather simple work. It contains only a few musical ideas. My analysis indicates that A consists of five events, B is built up from one single four-layer texture, and C contains only one event. The result is that each element in the work is crystallized and has large space in the sonic texture.

Over the following pages I will first describe each part in detail, based on *Pace* as released on AN.RC7 *Electric*. I will then give special emphasis to what I will call the *Pace* sound web in form field B, and discuss the construction of this segment in light of a lecture Nordheim gave on the techniques used in this part.

Form field A [00.00-02.56]

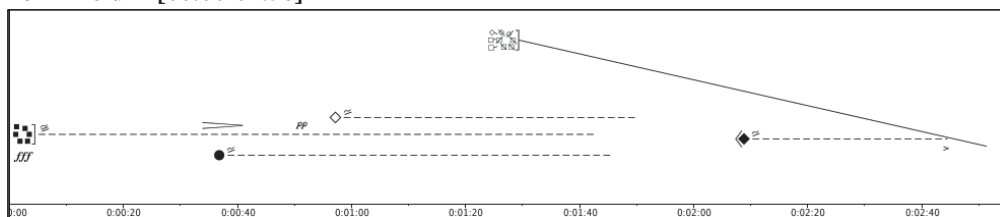


Figure 7.8: Transcription of Form field A, *Pace*

- [0.00] *Pace* starts abruptly with a complex accumulated sound with high intensity (*fff*). The character of the sound is hard and “screechy.” The event consists of several loops superimposed on one another, and each loop has its own irregular rhythm. I have notated the event as an accumulation of complex sounds, with oblique rhythm in flutter time. Around [00.30] the intensity begins to fade, and at [00.50] the level is *pp*.
- [00.30] A pitched sound in the lower register, iterated with irregular rhythm, grows out of the opening sound field. As the opening field decreases in intensity, this layer comes to the foreground.
- [00.56] A similar sound appears in the higher register. These three sound layers now make up one single texture.
- [01.24] A high-pitched “whistling sound” – an accumulation of sound loops on high speed – gradually moves into the foreground. As the sound intensifies, the speeds of the loops decrease and the pitch falls. It can seem from a spectrogram of the event (figure 7.9)

that Nordheim has attempted to create a Sheperd tone-like “never-ending” falling movement of sound.⁵⁰³

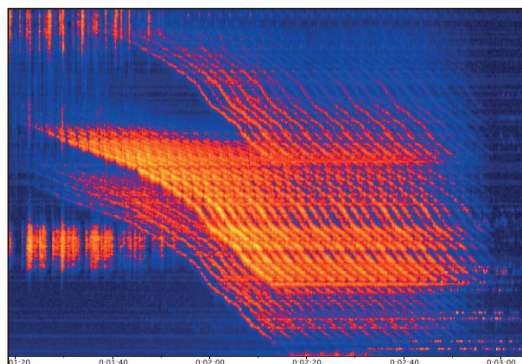


Figure 7.9: Falling Sheperd scale in Form field A

[02.02] A vacillating iterated dystonic sound appears in the background. This is a transitional event that leads toward the “sound-web” in form field B.

Form field B [02.33-07.22]: The *Pace* sound-web

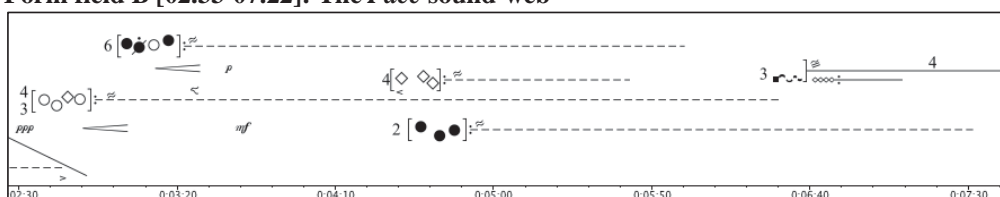


Figure 7.10: Transcription of Form field B, *Pace*

The entire form field B consists of a texture of short sound fragments with generous amounts of reverb. I wish to call this segment the *Pace* sound-web. Thoresen defines a sound-web as “an object in ambient-time with a constantly changing spectrum.”⁵⁰⁴ Even though the texture in *Pace* consists of iterated and not stratified sounds, I will use the term, since the sounds in the texture are clearly organized in stable strata. The texture will be discussed in depth in the section “Constructing the *Pace* sound-web.”

The texture is constructed from four layers. Each layer fades in gradually, so the sound web seems to grow organically. The layers each have a slightly different character and register.

⁵⁰³ Flø has noted that the effect resembles that of “a falling Shepherd scale.” Flø (2012): “Memorabler. Om Arne Nordheims elektroniske musikk.”

⁵⁰⁴ Thoresen (2015): *Emergent Musical Forms*, p. 271.

Layer 1 The first layer starts at [02.33] and consists mostly of pitched sounds in the middle register (register = 3 and 4). Around [03.20] the number of iterations increase gradually, and the texture thickens.

Layer 2 A second layer comes in at [03.01] in the high treble register (register = 6). It also consists of clearly pitched sounds, but with slightly rougher character. Some of the sounds are gliding. This layers stays on *p* dynamic throughout the part.

Layer 3 At [04.25] a new layer of more dystonic sounds is introduced in the high medium register (register = 4). While the other sounds in the texture have sharp attack, the onset of the sounds in this register is slightly more rounded off (marked in the transcription as ‘gradual onset’).

Layer 4 At [04.32] a layer of pitched sounds come in in the lower register (register = 2).

The texture continues with these four elements and with the same intensity until it gradually thins out from [05.42] and onward. From [06.32] only the deep-pitched sounds remain.

Form field C [06.55-09.21]

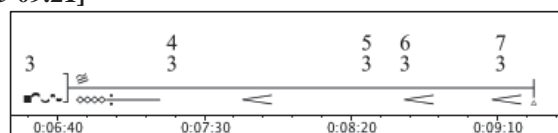


Figure 7.11: Transcription of Form field C, *Pace*

Form field C comprises a single event; a sound field consisting of loops of “bubbly sounds.” The event evolves from *pp* in the middle register (register = 3) until it fills the whole sound spectrum on very high intensity. I have notated the sound as a stratified complex sound with pitch in vacillating oblique ripple time, and with a fast small tremolo (also oblique time). The adding of new registers happens incrementally. The high middle register (register = 4) is added around [07.15], treble (register = 5) at [08.23], high treble (register = 6) at [08.34], and finally extreme (register = 7) at [09.12]. At [09.21] the composition ends as abruptly as it started when the sound field is suddenly cut off. Unlike in *Solitaire*, where the end gives a relaxed feeling of closure, *Pace* feels like it is cut off in the middle. It does not end. It just stops.

Constructing the *Pace* sound web

In the following, I will describe the construction of the *Pace* sound web, basing myself in a lecture Nordheim gave at the University of Trondheim in 1989.⁵⁰⁵ All quotes in this section are taken from this lecture. It seems that Nordheim used this particular segment as one of his standard examples when commenting on his music. Among Nordheim’s material from *Grotten*, I found a CD with the

⁵⁰⁵ Nordheim lecturing for the students at the Department of Music at the University of Trondheim (later NTNU), September 20th 1989. Cassette recorded by Kjell Oversand. In the collection of the author.

same sound examples used in the lecture (included on the accompanying CD as **CD track nos. 14 and 15**).⁵⁰⁶ Further, in a folder marked “Foredrag” [“lectures”] I found what seem to have been the slides that he used for the lecture.⁵⁰⁷ The spectrograms in this section are based on the sound examples from the CD. The figures are based on Nordheim’s lecture slides. In his talk, Nordheim focused on one of the four segments making up the texture in form field B; what I called “Layer 2” in the above description. A spectrogram of the segment shows several superimposed layers of single sounds coming in seemingly random order (figure 7.12).

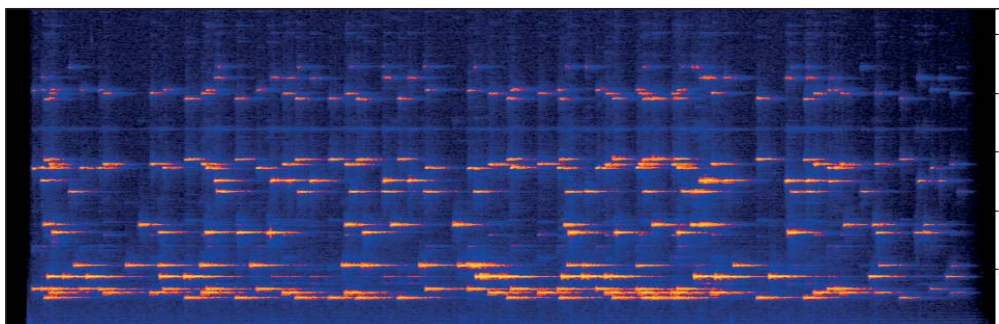


Figure 7.12: Spectrogram of Layer 2 from the *Pace* sound web

Nordheim constructed this event in several phases. As mentioned, he had recorded three people reading from the declaration of human rights: a man, a woman and a child. It is likely that Nordheim either made these recordings at his home on a portable recording unit, or that he recorded at NRK. In the first modulation step, the three recordings were superimposed on each other, producing a mass of voices. Already in this early step, most of the semantic meaning has been lost due to the words clattering into each other. In Nordheim’s lecture, the following image (figure 7.13) was used to illustrate the sound mass:

⁵⁰⁶ This is the same CD where I found the tape cues from *Katharsis*, as mentioned on page 81. CD marked “Lydeksempler Arne Nordheim 24/7 1998.” The CD is at the time of writing in the process of being catalogued at the Norwegian National Library.

⁵⁰⁷ The same images are included in a slide tray with lecture Dias given to me by Rannveig Getz Nordheim before she moved out of *Grotten*. In the collection of the author.

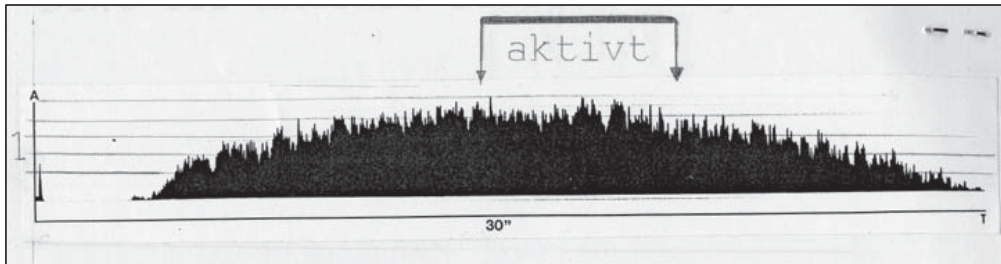


Figure 7.13: Nordheim's illustrations for sound manipulation in *Pace*, step 1: original signal

The next part of the process was, according to Nordheim, to “isolate” the “particles” or “outer limits of language.” It seems that Nordheim and Rudnik did this by sending the source recording through a gate with the input threshold set very high. In this way, they would isolate the peaks of the sound mass (what is marked as “aktivt” [active] in the above figure). This would leave a sound akin to the following illustration (also from Nordheim’s lecture):

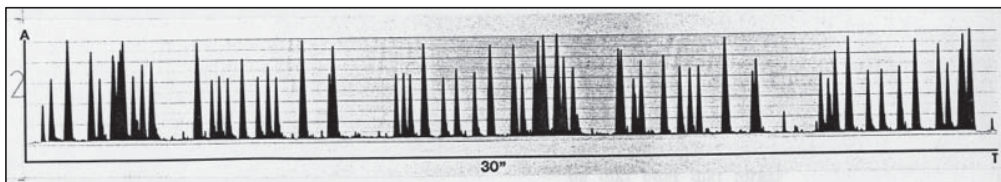


Figure 7.14: Step 2: First round of gated signal

In the next round of manipulation, this gated signal was cleaned up. Precisely how it was done was not indicated in the lecture, but it is likely that the gating process had been repeated. The result is illustrated in the next two images (also from Nordheim’s lecture):

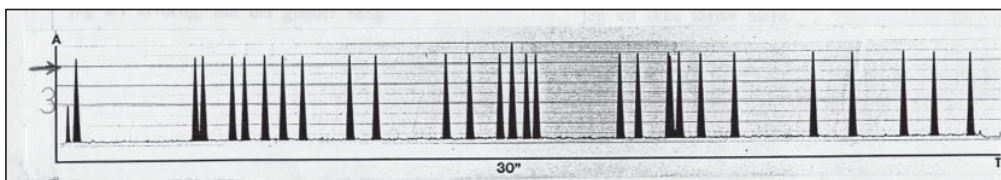


Figure 7.15: Step 3: Second round of gated signal

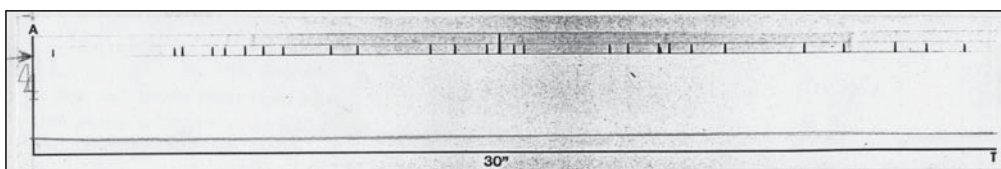


Figure 7.16: Step 4: Third round of gated signal

This signal would then be used as modulator signal (“Sound 2”) in the same gate-technique that had been developed for *Solitaire* (see figure 7.1, at the beginning of this chapter). As carrier (“Sound 1”)

Nordheim and Rudnik would use almost pure electronic tones on a constant volume. Thus, the rhythm of the modulator-signal, the “outer limits of language”, would determine the rhythm of this synthetic signal. The resulting “Sound 3” is shown in (figure 7.17), also taken from Nordheim’s sound examples. Note that the rhythm is completely different from what Nordheim presented in the above illustrations.

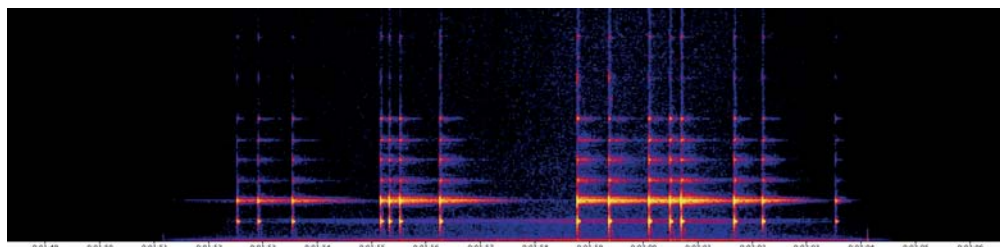


Figure 7.17: “Sound 3” – centre frequency: 2663 Hz.

This process would be repeated several times on different frequencies, producing a series of tapes, each with a different tone. In the lecture, Nordheim presented five tape examples, with the frequencies listed below in table 7.2 (the example in figure 7.17 is iteration # 2):

These tapes would then be looped and superimposed on each other, but with different sync points. Nordheim claimed in the lecture that the result would be the glimmering seemingly random sounds shown above in figure 7.12.

From listening to *Pace*, it is clear that the compositional process was more elaborated than what Nordheim described. A first and rather obvious observation, something that Nordheim did *not* comment on, is that the sounds had been drenched in reverb. By this point, this was an established characteristic of Nordheim’s aesthetic, not just in *Pace*, but in most of his electronic works. Furthermore, while Nordheim presented five layers of sound in his lecture, I actually counted seventeen layers of frequencies in the final segment. A frequency analysis of Layer 2 (table 7.3) also shows that the frequency distribution of the segment is completely different than what Nordheim presented: there is only one overlap between the frequencies listed in table 7.2 and table 7.3 (iteration # 3 and layer # 5 are only a few hertz apart). I see this as another example of how Nordheim would sometimes mystify his compositions at the same time as he was providing descriptions of them (cf. the discussion of “shamanism” in Chapter 1).

Table 7.2: Iterations used in the lecture

Iteration #	Fundamental (Hz)	Note (discrepancy)
1	321	E4 (-45 cents)
2	718	F5 (+50 cents)

Table 7.3: Freq. distribution in Layer 2

Layer #	Fundamental (Hz)	Note (discrepancy)
1	518	C5 (-17 cents)
2	603	D5 (+47 cents)
3	663	E5 (+9 cents)

3	1067	C6 (+34 cents)
4	2663	E7 (+17 cents)
5	2980	C7 (-11 cents)

4	875	A5 (-10 cents)
5	1064	C6 (+29 cents)
6	1621	G#6 (-42 cents)
7	1760	A6 (-1 cents)
8	2317	D7 (-24 cents)
9	2506	D#7 (+12 cents)
10	2719	F7 (-47 cents)
11	2783	F7 (-7 cents)
12	2873	F7 (+48 cents)
13	3377	G#7 (+29 cents)
14	3900	B7 (-22 cents)
15	3988	B7 (+16 cents)
16	4255	C8 (+28 cents)
17	4357	C#8 (+4 cents)

Final remarks on *Pace*

The *Pace* sound web gradually took on an identity as a memorable in Nordheim's music. The first appearance of the sound segment actually came a full year before the premiere of *Pace*, in "The Buckride" – the opening cue for Nordheim's music to AN.65 *Peer Gynt*. Later it would pop up in AN.94 *Stein får liv* and AN.100 *Forbindelser*. Since 1977 it has been used as intermission signal for Oslo Concert House. It is also possible that it was the basis for the sound segments that bear the labels "Drypping" and "Sildring" in Nordheim's later sound installations AN.55 *Ode til lyset* (1995-revision) and AN.182 *Gilde på Gløshaugen*, and their derivative works (see Chapter 9). If the underlying message of the *Pace* sound web is that of peace and human rights, these ideals can be said to permeate the rest of Nordheim's electronic output.

7.3 Chapter summary

In this chapter, I have discussed how Nordheim used recordings of texts as source material in two of his most central works from the Warsaw period. Through a plethora of tape manipulation techniques, where Nordheim's gate technique was the most prominent, Nordheim and Rudnik "coded" these texts into the sounds of the compositions. Even though this code was not meant to be deciphered by the listeners, the source texts were still central to the construction of meaning in the works. As Nordheim joked in his lecture to the students in Trondheim: it was essential that the source recordings were precisely what they were, and not "just the phone book of Southern Trøndelag."⁵⁰⁸ A different text would have rendered the aura of the works very different, even though soundwise they might have been similar. The frequent use of explanatory paratexts to these works indicates that Nordheim

⁵⁰⁸ Nordheim lecturing for the students at the Department of Music at the University of Trondheim (later NTNU), September 20th 1989. Cassette recorded by Kjell Oversand. In the collection of the author. Nordheim used variants of this joke in several other lectures and interviews.

saw these “hidden messages” as particularly important. He seems to have been eager to make his listeners aware of the connection between the works and the source texts, even though the works could be in principle interpreted freely.

8 NORDHEIM'S THIRD ELECTROACOUSTIC PERIOD (1975–1983)

In this chapter and the next, I will cover Arne Nordheim's two last electroacoustic periods: what I have respectively called *The Intermediate Period* (1975–1983) and *The Late Period* (1984–2006). In the two ensuing chapters, I will provide less detail for the actual compositions than I have done with his previous work. This does not mean that I see his later periods as being in any way inferior to the others. On the contrary, in my personal opinion the mixed ballet AN.109 *The Tempest* (1979), the “radiophonic” AN.111 *Nedstigningen* (1980), and the sound installation AN.182 *Gilde på Gløshaugen* (2001) rank among the finest music that Nordheim ever composed. But since Nordheim's later works refine techniques and aesthetic principles that I have already discussed, rather than inventing distinctly new practices, I will place less emphasis on analysis. Instead I will map out more general characteristics of the periods and discuss how the previous practices have continued in, or contrast with, the later works.

The reception of Nordheim's music varied over the years. During the third and fourth period, Nordheim became less of an *enfant terrible* of contemporary music, although he was still a controversial figure. In particular following the success of *The Tempest* in 1979 he was celebrated outright as Norway's most prominent living composer. The apogee of this recognition came in 1982 when Nordheim was invited by the Norwegian state to live in the honorary residence *Grotten* for the rest of his life.⁵⁰⁹ This is the highest accolade that can be given to a Norwegian artist. The house is prominently situated at the edge of the Royal Gardens, just next to the Royal Castle in the middle of Oslo. As residents of *Grotten*, Arne and his second wife Rannveig Getz Nordheim were among the highest esteemed cultural celebrities in Norway.

This does not mean that there were no critical voices. In everyday language, Nordheim's name was still more or less synonymous with strange or ugly sounds. There was also some critique from the academic side. In 1995 the composer Henrik Hellstenius and the musicologist Erling Gulbrandsen hosted a three-part radio program where they presented an extensive critique of

⁵⁰⁹ *Grotten* was built by the poet and intellectual Henrik Wergeland in 1841, who spent the last years of his life there. Since 1924 it has been used as honorary residence, first for the composer Christian Sinding (from 1924 to his death in 1941) and then for the writer Arnulf Øverland (from 1946 to 1968).

Nordheim's music.⁵¹⁰ Since the critique is mainly focused on the orchestral music, I have chosen not to comment on it in detail. I will just point out that among the issues raised was Nordheim's extensive use of self-quotations. According to Guldbrandsen, Nordheim's tendency to repeat himself was breaking with one of the important criteria of a modernist aesthetic. While I don't necessarily see the reuse of material as a negative, I mention this perspective, since Nordheim's use of internal references and reuse of material increased dramatically during his two last periods. In particular for the electronic works of the fourth period, the reuse of material and use of memorables is at the core of Nordheim's aesthetic. But instead of seeing it as a betrayal of modernist principles, I see this as one of the central ways Nordheim developed his own distinct electronic sound. I will come back to this point throughout my discussions.

The third period: demarcation

I see Nordheim's third electroacoustic period as being comprised of the following compositions:

Table 8.1: Nordheim's third electroacoustic period (1975–1983)

	AN.#	Name	Type	Instrumentation	Comment
1975	94	<i>Stein får liv</i>	TV ballet	Perc./hpc./acc./church organ, analogue synthesizer, taped cues	Some old sounds from Warsaw + new synth.
1975	100	<i>Forbindelser</i>	Singers and musicians in five cities, simultaneously broadcast on TV	Orch./choir etc., incl. analogue synthesizer, taped cues and morse code transmitter	Some old sounds from Warsaw. Some new cues from NSEM
1976	102	<i>H20</i>	Sound installation	Continuous tape	Lost
1977		[No title]	Intermission music for Oslo concert house		Taken from the AN.74 <i>Pace</i> sessions
1977	104	<i>Response IV</i>	Soloist + fixed media	4 perc., continuous tape	Tape part revised with material from AN.105.
1977	105	<i>Ariadne/Tempora Noctis</i>	Ballet/ Concert work	Orchestra, singers with microphone, taped cues	Cues from Warsaw (with Mazurek?)/cues from NSEM/revision of AN.29 <i>Favola</i>
1977	106	<i>Be Not Afeard</i>	Concert work	Orchestra, singers with microphone, taped cues	Cues from Warsaw (with Mazurek?)/cues from NSEM.
1979	109	<i>The Tempest</i>	Ballet	Orchestra, singers with microphone, taped cues	Cues from Warsaw with Mazurek/cues from NSEM.
1980	111	<i>Nedstigningen</i>	Radiophonic work	Orchestra, recitation, taped cues	Unknown studio, possibly NRK
1983	118	<i>Aurora</i>	"Electronic cantata"	Four singers, percussion, continuous electronic tape	EMS, Stockholm with Rolf Enström

I have not been able to confirm whether the following incidental works contain electronic elements: AN.95 *Mio, min Mio* (NRK Radio theatre 1975) and AN.108 *Følgesvennen* (Oslo nye teater/Chat noir 1978). It is possible that they should be added to the list.

⁵¹⁰ Erling Guldbrandsen and Henrik Hellstenius: "Hva er det med Arne Nordheim?" *NRK P2*, October 23rd, October 30th, and November 6th 1995. For a detailed review of the critique, see Larsen (2003): *Rabulist eller ikon?*, pp. 23-25.

Important characteristics of the third period

The most central characteristic of The Intermediate Period is that the electronic sound was no longer at the centre of Nordheim's attention. Nor did it take centre stage in his compositions. If one does not take into consideration the lost sound installation AN.102 *H20*, Nordheim did not produce a single new acousmatic work during the third period. Instead he focused mainly on mixed orchestral music, where he occasionally inserted electronic cues into the otherwise orchestral texture. I use the term *cue* to designate a short segment of electronic sound that either adds to or contrasts with the sound of the acoustic instruments. This is similar to what Nordheim had previously done in AN.16 *Katharsis* and AN.28 *Epitaffio*, except that in *Epitaffio* the tape segment was running continuously through the second half of the work, and in *Katharsis* the electronic segments were used as "interpolations" – contrasting electronic segments inserted between the orchestral sections. In the mixed works of the third period, the electronic elements are rarely self-contained parts, like the almost miniature compositions of *Katharsis*. Instead they are single-idea elements used to expand the sonic potential of the orchestra. It is one element out of the many making up the totality of the work. The most striking usage of such of cues is found in AN.100 *Forbindelser*, AN.105 *Ariadne/Tempora Noctis* and in AN.109 *The Tempest*.

During the 1970s, Nordheim experimented with analogue synthesizers, but he did not fully embrace this new technology. The synthesized bells in *Forbindelser* and *Aurora*, and the all-electronic score for the science fiction television drama AN.83 *Kodémus* are the most striking examples of analogue synthesizers in Nordheim's catalogue. Nordheim's relationship with the synthesizer harks back to the early 1970s, when NRK had obtained two small synthesizers from the British company Electronic Music Studios (EMS); first a VCS3 ("Putney") and a bit later, a Synthi AKS. According to "studio legend" at NRK, Nordheim had been a keen user of these instruments.⁵¹¹ When Nordheim later initiated the Norwegian Studio of Electronic Music (NSEM) at Henie Onstad Arts Center, he insisted that it was to be built around an advanced analogue synthesizer (a Buchla 500). But although Nordheim was the driving force behind the establishment of the studio, he did not actually use this synthesizer a lot. Instead he went back to work in more classic tape music studios. First, he returned to Warsaw in the late 1970s for a stint with Bohdan Mazurek on the electronic elements for *The Tempest* (possibly also for *Ariadne/Tempora Noctis* and AN.106 *Be Not Afeard*). Later, he travelled to Sweden for his only sessions at EMS in Stockholm, where he realized

⁵¹¹ In 2014, Ina Pillat interviewed several of the technicians at NRK in connection with her research for a forthcoming documentary on a proto-synthesizer called the Subharchord. Nordheim's use of the two EMS synths was discussed in these interviews, but the technicians could not remember exactly which projects they were used for. Most likely they were used in AN.83 *Kodémus* (1971) and AN.94 *Stein får liv* (1975).

the tape material for *Aurora* together with the Swedish composer Rolf Enström. Even though there are parts for synthesizer in all these works, the analogue synthesizer did not revolutionize Nordheim's sound in The Intermediate Period.

It is characteristic of Nordheim's third period that he did not settle into a stable relationship with a studio or a sound engineer. Instead, he led a more nomadic existence, and I will argue that this has resulted in a homogeneous sound for the works that he produced. This point is even clearer when the third period is compared with the relatively uniform sound of the fourth period, which I will do in the next chapter.

8.1 Why did Nordheim stop composing electronic music after Warsaw?

The years in Warsaw had been a creative peak for Nordheim with regard to electroacoustic music, and it is striking that he did not follow up on this success in the 1970s. The first observation that can be read out of table 8.1 is the relatively low number of compositions with electronic components: only nine works, which means an average of less than one per year.

In part, this is in keeping with a decrease in the total number of new compositions from Nordheim's hand. Nordheim had premiered fifteen new compositions in 1968, ten in 1969, and twelve in 1970. In 1971, 1972 and 1973 the number was suddenly down to five per year. In 1974, Nordheim premiered no new compositions, although he oversaw two ballets set to his music: AN.B2 *Strender* and AN.B3 *Stoolgame*. This does not mean that Nordheim was idle. The decrease in the number of premieres reflects a change of focus from smaller scale works to large orchestral compositions, where Los Angeles Symphony Orchestra's commission of AN.89 *Greening* from 1973 was the most important. Between 1969 and 1973, Nordheim had spent a lot of time in the USA, where he got in touch with Zubin Mehta, who arranged the commission. In the USA, Nordheim also met Frank Zappa, who he kept in contact with for some years.⁵¹² Another important project during these years was the gigantic AN.100 *Forbindelser* (1975) for five orchestras in five cities, several

⁵¹² There are a lot of myths surrounding Nordheim's friendship with Zappa. It seems that Nordheim and Zappa enjoyed each other's company and met whenever they had the chance. But one should be careful not to overplay the relationship. It was not the same kind of deep and personal friendship that Nordheim had for instance with Inger Sitter or Ferdinand Finne. In an interview from 1980 with a Norwegian Frank Zappa fanzine, Nordheim confirmed that he had met Zappa during a concert with the LA Philharmonic in 1970 and been invited to his home in Laurel Canyon. They had later seen each other "several times." In the same interview, Nordheim stated that he had been following Zappa's music "until *Hot Rats*" (1969), but also that he was not listening much to his music any more (Frank Zappa Society: "Et kort møte med komponisten" in *Society Pages*, no. 2, December 1980, p. 11-13). Zappa played nine concerts in Norway during the 1970s and early 1980s, and Nordheim's son Mads confirmed that Zappa occasionally visited Nordheim's home while touring in Scandinavia (Mads Nordheim, interviewed by Ola Nordal, March 28th 2014). In 1976 the two "old friends" were captured having a drink together by an *Aftenposten* photographer (*Aftenposten*, February 25th 1976). The photograph has been frequently reprinted, for instance in the book Erlend Bekkelund et al.: *Zappa i Norge* (Oslo: Hot Club Records 2014).

choruses and soloists, and a plethora of electronic elements. According to Rannveig Getz Nordheim, this project took up a lot of Nordheim's energy and enthusiasm for a long time.⁵¹³ To this list we can also add AN.86 *Floating* (commissioned by the Danish Radio Orchestra, 1970), AN.96 *Doria* (commissioned by Peter Pears, 1975) and the accordion concerto AN.98 *Spur* (commissioned by Südwestdeutsche Rundfunk, 1975).

All the lucrative orchestral contracts made sure that Nordheim could finally make a full-time living as a composer. In 1969 he quit his job as music reviewer for *Dagbladet*, and as the 1970s progressed he took on fewer and fewer commissions from the theatre stage and from NRK. Nordheim's last regular music for radio drama was AN.92 *Aftenen er stille* in 1973. Although he would continue to take on occasional commissions for NRK, these would henceforth be more high-profile projects, such as *Forbindelser*, AN.111 *Nedstigningen* or AN.130 *Kong Lear*.

Since Nordheim had so many orchestral commissions at hand, it is possible that he simply did not have enough time to continue composing electronic music. Knowing Nordheim's restless nature as composer – he rarely wrote for the exact same instrumental combination twice – the time pressure might have concurred with an inclination to move on to something different. In an interview with *Verdens Gang* in 1973, Nordheim stated that “after several combined and pure electronic compositions, I like to write just for instruments.”⁵¹⁴ In a 2006 interview, Nordheim went even further. When asked why he stopped composing electroacoustic music after Warsaw, he answered: “I got, as they say in England, ‘fed up’.”⁵¹⁵ Nordheim did not elaborate on whether he was fed up because of the audience reactions (or the lack of it), if he was tired of the tedious process of working with tape, or simply, as Rannveig Getz Nordheim indicated to me, just tired of the exhausting travels to Poland.

An aesthetic change

Nordheim feeling “fed up” might also reflect what Agostino di Scipio has observed as a general aesthetic shift of the period. The traditional tape studio was going out of fashion, and influences from computer music and analogue synthesizers prompted a different kind of aesthetic.⁵¹⁶ This technological shift on the production side was also a generational shift. Only a few of the pioneers

⁵¹³ Personal communication with Rannveig Getz Nordheim. Several of the issues discussed in this section have been pointed out to me by Getz Nordheim.

⁵¹⁴ (Unsigned): “Arne Nordheim komponerer for eksport,” in *Verdens Gang*, July 28th 1973.

⁵¹⁵ Arne Nordheim, interviewed by Jøran Rudi and Tilman Hartenstein on September 20th 2005. Video at NoTAM – Norwegian Center for Technology in Music and the Arts.

⁵¹⁶ Agostino di Scipio, “A Story of Emergence and Dissolution: Analytical Sketches of Jean-Claude Risset's *Contours*,” in *Electroacoustic Music: Analytical Perspectives*, ed. Thomas Licata (Westport, Conn.: Greenwood Press, 2002).

from the tape studio era followed suit with computers or synthesizers. On the listener side, electronic music was becoming more of a niche genre. In 1970, Carl Dahlhaus observed that *elektronische Musik* and its adjacent genres had “left the centre stage of contemporary music” and were not inflaming the fierce debates they used to.⁵¹⁷ Electronic music had become a marginal phenomenon with a dwindling audience, divided, as Dahlhaus saw it, in two categories: the initiated and the uninterested.

There is a certain irony in the fact that Dahlhaus’ remark came just at a time when the number of electronic compositions was increasing dramatically. As analogue synthesizers were coming into studios everywhere, composing electronic music became less laborious and therefore also more frequent. Electronic expressions were also gaining a footing in jazz and popular music. However, this domestication of electronic sound might attest to why the traditional avant-garde who first had embraced the medium turned its focus back to acoustic music. The simultaneous rise of the *sinfonietta* format also played a role in this development. While many of the composers in the avant-garde had experienced problems with having their music performed by regular orchestras in the 1950s and 1960s, a new generation of small-scale ensembles (examples include London Sinfonietta from 1968 and Ensemble InterContemporain from 1976), often with young and highly skilled musicians straight out of the many new conservatories of the education-boom years, provided a new market for their works. As with the early music movement, these ensembles played a role in establishing a separate sphere for contemporary music outside of the traditional institutions. For various reasons, maybe because of the rising association with popular music, electronic expressions did not gain a strong footing in this sphere prior to what can be called the *electronic revival* of the 1990s. The marginalization of electronic music did not correspond well with Nordheim’s desire to be at the centre of high culture. The large-scale orchestral commissions, on the other hand, gave him the status and cultural position that he longed for.

8.2 Influence from the tape studio on Nordheim’s orchestral music

It is interesting to note that in his 1970s orchestral works, Nordheim brought inspiration from the electronic music studio into the orchestral writing. A difference between composing for tape and composing for musical instruments is that in a studio one treats each “voice” as a layer of sound – a channel input strip on a mixing console – rather than as a pattern of notes. I have noted such inspiration previously in Nordheim’s music. In AN.28 *Epitaffio* for instance, the sound fields glide in and out of each other in a similar way to how layers are faded in and out in electronic music. In a

⁵¹⁷ Dahlhaus: “Ästhetische Probleme der Elektronischen Musik [1970],” in ed. Dahlhaus (1978).

radio program from 1992, Nordheim recounted that he had learned how to “change the sound from the inside” from his long hours at the console.⁵¹⁸

A technique that can be attributed to inspiration from the studio is Nordheim’s frequent use of “looping” of instrumental voices in his 1970s orchestral works (the first example appears already in *Epitaffio*, but the technique is markedly more prominent in compositions from *Floating* and onwards).⁵¹⁹ Figure 8.1 shows an excerpt from *Greening* where different instruments repeat short phrases of varying length. The phrases are “looped” until they are stopped by the conductor. Each repetition brings the phrases more and more out of synchronization with each other, but the note-to-note relationship between the voices is unimportant. In the resulting chaotic texture, the individual pitch and rhythm of the notes are secondary to the textural effect they produce. While this principle might point to inspiration from the “limited aleatoric counterpoint” of Witold Lutosławski’s *Venetian Games* (1961), it is also the *exact* same loop technique that Nordheim used in order to achieve indefinite duration in AN.55 *Ode til lyset* and AN.70 *Poly-Poly* (see Chapter 5). Nordheim used this technique in most of his orchestral music.

The image shows a musical score for an orchestral work. It features several staves for different instruments, including trumpets (tn.) and cornets (cr.). The score is marked with a circled '3' and a tempo indication of 'ca. 96'. The music consists of short, repeating phrases that are looped and eventually stopped by the conductor, creating a chaotic texture. The notation includes various rhythmic values, accidentals, and dynamic markings.

Figure 8.1 *Senza misura I*, cue 3, *Greening*, p. 16

A second type of such “instrumental looping” is what I’d like to call *theme-based textural development*. In figure 8.2 (also from *Greening*), Nordheim used longer themes laid out *divisi*, with different starting point in the theme for each instrument. In this particular excerpt, Nordheim laid

⁵¹⁸ Otto Haug: “Lunsgjæst: Arne Nordheim,” *NRK P2*, March 25th 1992.

⁵¹⁹ Hallgjerd Aksnes has called this technique “mobiles” or “mobile patterns.” Hallgjerd Aksnes, “Arne Nordheim – en ordets komponist. En sammenlikning av *Eco*, *Doria* og *Tempora Noctis* med hovedvekt på forholdet mellom tekst og musikk,” in *Nordheim: en ordets komponist*, ed. Harald Herresthal and Elef Nesheim (Oslo: Akademika (e-book only), 2013).

four individual themes out over fourteen voices in the contrabass and cello (I have marked each of them with a different colour). Each theme is played by three or four instruments. In the most complex part of *Greening* (bars 31-38), Nordheim created a web of 48 individual lines, playing a total of twelve themes. The result is a dense sound mass that can either function as a structural element or as textural backdrop to other more gestural events, for instance a foreground melody. In the previous technique, Nordheim would occasionally instruct the voices to play in different tempi, as if they were tape loops played on different speeds. With theme-based textural development, it is important that the individual performers keep their pace and place within the texture, as if they were tape-loops played on constant speed.

Theme-based textural development can be found to a lesser or stronger degree in virtually every major orchestral work that Nordheim wrote from AN.54 *Eco* and onwards. Again, influence might be traced from trends in the international avant-garde (Ligeti's micropolyphony comes to mind), but as with the looping pattern mentioned above, inspiration might just as well have originated from the electronic music studio.

The image shows a musical score for the piece *Greening*, specifically bars 16 through 20. The score is presented in two systems of six staves each. The first system (staves 1-6) is highlighted in yellow and green, and the second system (staves 7-12) is highlighted in blue and pink. The staves are numbered 1-6 on the left and 16-20 on the bottom. The notation includes various rhythmic values, accidentals, and dynamic markings.

Figure 8.2: Theme-based textural development in *Greening*, bars 16-20

8.3 Nordheim and the Norwegian Studio of Electronic Music (NSEM)

In the 1970s, Nordheim took on several leading roles in Norwegian culture politics, and served on numerous boards and committees (for an overview, see Appendix 3). One of the most important of these with regard to electroacoustic music was Arts Council Norway's *Working Group for the Establishment of a Norwegian Sound Studio*. This initiative, where Nordheim was the driving force, eventually led to the founding of the *Norwegian Studio of Electronic Music* (NSEM) at Henie Onstad Arts Centre in 1975. Even though Nordheim played an important role in the establishment of NSEM, he did not produce much music there. He only created the opening and a few other cues for *Forbindelser* (some of which would show up in later compositions). In other words, the impact on Nordheim's music was limited. Nevertheless, I have included an extensive section on the establishment of the studio over the following pages. In part, I have done this because of Nordheim's crucial role in the initiative. In addition, despite the fact that during its short time of operation the studio was an important institution in the Norwegian context, it has received little attention in the literature.

Financing

Every year since its opening in 1968, the Henie Onstad Arts Centre applied for funding from Arts Council Norway in order to establish a production studio for electronic music. As described in Chapter 7, the centre already had quite elaborated playback equipment in the multi-media exhibition hall *Studio*, and it saw a production studio as a natural extension of its activity. The initiative was mainly led by Kjell Skjellstad, the chairman of Ny musikk.

At the time, the small ad-hoc studio at NRK that Nordheim had used since 1961 was still the only relatively well-equipped production facility in Norway. This studio could be used for non-NRK projects outside of regular working-hours or during the weekends, but it was gradually falling behind in terms of equipment. In 1973 Nordheim wrote that the electronic music produced at NRK was of "no interest in professional contexts."⁵²⁰

Nordheim had at various times tried to pull in support for the plans of the Henie Onstad centre. For instance, the ring modulators that he had built for AN.50 *Colorazione* (see Chapter 6) had been financed by the Norwegian Cultural Fund under the condition that they were to be "placed at Høvikodden and made available for Norwegian composers."⁵²¹ The documents do not indicate

⁵²⁰ Arne Nordheim: "Studio for elektronisk musikk i Norge." Report for the Norwegian Arts Council, dated January 3rd 1973. NRK Archive: Correspondence with Norwegian Arts Council; Folder 23-8-28: Om norsk studio for lydopptak.

⁵²¹ St.mld. nr. 53 1969-1970: "Norsk kulturfond – årsmelding 1969."

why this condition was established, or what later happened to the ring modulators, but it is likely that this was seen as a step in the process of equipping a future studio.⁵²²

Things did not move quickly. In part, the applications from Høvikodden were put on hold due to a competing initiative to fund a general recording studio for symphonic and popular music (no such studio existed at the time outside of NRK).⁵²³ This competing initiative seems to only have lost priority when a private studio, Fagerborg Studio (later known as Rosenborg Studio and MajorStudio), was established by Phonogram and Polydor/Norsk Philips in 1970. In early 1972, Høvikodden's application was given priority in the Arts Council. The first thing the council did was to ask Nordheim to quickly conduct a "one-man investigation" into the matters. Nordheim filed a "one-man report" on January 3rd 1973, giving a preliminary outline of a studio costing 750 000 NOK.⁵²⁴ This was a modest proposal, in particular when comparing to the Swedish Elektronmusikstudion that had cost more than 4,25 million SEK in investments, and that, according to Nordheim's report, had annual running costs higher than the entire investment plan that Nordheim proposed. Still, this was more than what the Arts Council was willing to provide.

Nordheim therefore had to pull in support from other institutions. In addition to Henie Onstad Arts Centre, there were four establishments that were interested in creating an electronic music studio: NRK, The Norwegian Composers Association, The Department of Music at the University of Oslo and the composition class at the newly established Norwegian Academy of Music that welcomed its first students in 1973. Nordheim discussed the proposal with all these institutions, and filed a revised report in December 1973. The key suggestion was that the Arts Council should provide the bulk of the investments costs, 750 000 NOK over three years, whereas NRK and the Norwegian Composers Association would each provide 50 000 NOK for the next two years. After a trial period of three years, the budget would be transferred to the Norwegian Academy of Music, thus giving the studio state financing.⁵²⁵ This was more acceptable for the Council, but it created

⁵²² In a list of equipment at Henie Onstad Kunstsenter from 1973, the ring modulators were not mentioned. "Utredning fra en arbeidsgruppe oppnevnt av Norsk kulturråd 1973: Studio for elektronisk musikk." NRK Archive: Correspondence with Norwegian Arts Council; Folder 23-8-28: Om norsk studio for lydopptak.

⁵²³ The Arts Council established a committee to advise on the matter in 1968, but the discussions seem to have led to nothing. Copies of documents from the committee are kept in the NRK Archive: NRK Saksarkiv, mappe 23-8 28 (Norsk kulturråd), 1969-1969 and 1971-1976. A folder for the years 1969 to 1971 is missing.

⁵²⁴ Arne Nordheim: "Studio for elektronisk musikk i Norge." Report for the Norwegian Arts Council, dated January 3rd 1973. NRK Archive: Correspondence with Norwegian Arts Council; Folder 23-8-28: Om norsk studio for lydopptak.

⁵²⁵ St.mld. nr. 72 1974-1975: "Norsk kulturfond – årsmelding 1974." Vedlegg 9: "Rapport om utbygging og organisering av Norsk studio for elektronisk musikk. Utarbeidet av Arne Nordheim, i funksjon av å være NSEMs interimstyres formann." The financing model is commented on in a letter from the Arts Council to NRK, signed by Ingebor Lyche, dated Oslo, January 9th 1974. NRK Archive: Correspondence with Norwegian Arts Council; Folder 23-8-28: Om norsk studio for lydopptak.

discontent on the placement of the studio. All the institutions wanted to have it situated in their vicinity, or at least in central Oslo. But the final result, in particular due to Nordheim's insistence, was that the choice fell on Høvikodden, where the studio officially opened on November 11th 1975.⁵²⁶

NSEM remained open at Høvikodden until 1978 when it was moved to the Norwegian Academy of Music, who, following the initial agreement, was taking over the budget responsibility and also wanted the studio placed on their campus. Sadly, the academy lacked the technical personnel and means to get the studio running again, so the move actually meant a de-facto closedown of NSEM. This did not happen without bitterness from the Henie Onstad centre.⁵²⁷

The Buchla Box

An important principle in Nordheim's report was that NSEM should be equipped with a Buchla Electronic Music Box series 500 Digitally Controlled System. The Buchla 500 was a so-called hybrid system, with a digital computer controlling the input parameters, but the sound production being done with traditional electronic circuits. Although it is not mentioned in the report, it seems that Nordheim had considered other options. According to Lars Mørch Finborud, Nordheim had been in contact with Peter Zinovieff from Electronic Music Studios in the UK, who produced the VCS3 and the Synthi, Joel Chadabe in New York who had contacts with Moog, and Knut Wiggen at EMS in Sweden, who had recently created their own large-scale hybrid system.⁵²⁸ The details around the quite unorthodox choice of a Buchla synthesizer are not clear. It is possible, as Ole Henrik Moe suggests in an interview from 1996, that contact with Don Buchla had been facilitated by the famed Buchla user Morton Subotnick, who visited Høvikodden around the time Nordheim filed his first report.⁵²⁹ But it is also possible that Nordheim knew about the instrument from his travels to the United States' West Coast. As Trevor Pinch notes in his studies on the social shaping of the synthesizer, Moog's instruments were performer-oriented, and had achieved success mainly among keyboard-players. Buchla's instruments, on the other hand, were tailor-made for experimental music and were admired by avant-garde composers on the West Coast.⁵³⁰ Pinch and Bijsterveld quote Moog employee Jon Weiss, who explained the difference in philosophy between the two

⁵²⁶ Some authors have claimed that NSEM opened in 1968 due to confusing the production studio with the concert hall called *Studio*. See for instance Nesheim (2012): *De heftige årene*.

⁵²⁷ This is commented on by Ole Henrik Moe in interviewed by Mona Levin, "Ultralyd," *NRK TV*, May 7th 1996

⁵²⁸ Lars Mørch Finborud, *Mot Det Totale Museum. Henie Onstad Kunstsenter Og Tidsbasert Kunst 1961-2011* (Oslo: Press, 2012), pp. 133.

⁵²⁹ Ole Henrik Moe in "Ultralyd," *NRK TV*, May 7th 1996. Subotnick performed at the arts centre about two weeks after Nordheim filed his first report.

⁵³⁰ Finborud (2012): *Mot det totale museum*, p. 133.

competitors: [“Buchla’s] designs were wild and wonderful. Moog’s were conservative, rigorous and well-controlled.”⁵³¹

Although this dichotomy between the two manufacturers became less pronounced as the 1970s progressed, the choice of the Buchla was a clear signal of what Nordheim intended the studio to be. Even though it was equipped with a keyboard, the Buchla was not the electronic organ of the prog-rockers. It was a computer-controlled single-unit experimental music studio, and a serious tool for making contemporary experimental music.



Figure 2.3: The Buchla synthesizer at NSEM. Photo from Hal Clark’s private collection.

The role of Harold “Hal” Clark

Although it is not mentioned in the report, an important argument for placing the studio at Høvikodden and not at one of the competing institutions was that the arts centre in September 1972 had employed the American recording engineer Harold “Hal” Clark in the position of “sound master” [“lydmester”].⁵³² Høvikodden thus had the technical know-how to take on the studio – something that the other institutions lacked.

⁵³¹ Trevor Pinch and Frank Trocco: *Analog Days: The Invention and Impact of the Moog Synthesizer* (Cambridge, Mass.: Harvard University Press, 2002); Trevor Pinch and Karin Bijsterveld: ““Should One Applaud?” Breaches and Boundaries in the Reception of New Technology in Music,” *Technology and Culture*, vol. 44(2003).

⁵³² Finborud (2012): *Mot det totale museum*, p. 133.

Nordheim had a direct hand in Clark's appointment. In early 1969, Nordheim had been composer in residence at Long Beach State University in California, where Clark was a student.⁵³³ Clark played double bass in the student orchestra, and since he also was technically competent, he was given the responsibility for handling the tape part for a performance of *Epitaffio*. During the rehearsals, he became good friends with Nordheim, and they kept in contact after the performance. According to Clark, Nordheim had tapped right into the Californian alternative music and art scene of the late 1960s (something the friendship with Frank Zappa also is a testimony to). Clark had given Nordheim a copy of Charles Reich's revolutionary counterculture manifesto *The Greening of America* (New York: Random House, 1970), and Nordheim read the book with great interest. According to Clark, the title of AN.89 *Greening* is a reference to the book.⁵³⁴

Because of a personal interest in Scandinavia, Clark had intended to go to Denmark to continue his studies, but after meeting Nordheim he changed his plans for Norway. In 1971, Clark moved to Oslo where he received tuition from Finn Mortensen and quickly became a part of the Norwegian community of contemporary music. To earn a living, he worked at Rosenborg Studios on recording sessions for the *Classics from Norway* and *Contemporary music from Norway* series. During one of these sessions, Clark re-established contact with Nordheim, who introduced him to Ole Henrik Moe at Høvikodden. Moe asked Clark to take responsibility for the electronic music concerts at the centre, and to take care of the audio equipment. Clark went to the task with youthful enthusiasm, and in early 1973 he had an operational tape studio going with the equipment that was already available.⁵³⁵ After NSEM was formally established in 1975, Clark became the leader of the studio, and technical support person for Nordheim on *Forbindelser*. It is also possible that they made the sound installation *H20* together, which premiered at Henie Onstad Kunstsenter on September 21st 1976.⁵³⁶ In 1977, Clark moved to London for a year, and it was during his absence that the Buchla was moved to the Norwegian Academy of Music, and the studio was closed.

⁵³³ Nordheim's visit to Long Beach State University had been arranged by professor Edward Applebaum, the leader of the ISCM section in Los Angeles. Nordheim's trip is mentioned in a series of letter between Nordheim, Applebaum and the Norwegian Composers Association, January to March 1969. RA/PA-1446/Da: 1960-1969.

⁵³⁴ Telephone interview with Harold Clark, November 29th 2014.

⁵³⁵ An example of a work from this preliminary studio is the track *The Breath, Nerve and the Pulse of Life* on Clark's *Electro-Acoustic Works 1974-1975* (Prisma Records, 2013).

⁵³⁶ Time and occasion indicates that *H20* was produced at NSEM. However, the work is lost, and Clark is not able to remember whether he worked on it. I have not been able to find any documents on the installation.

The Buchla in *Forbindelser*

Nordheim's most prominent use of NSEM was for some of the cues in *Forbindelser* ("Connections", 1975), a gigantic work bringing together more than 1000 musicians and singers. The occasion was the 75th anniversary of NRK, and the work was a technological show-off of an unprecedented scale in Norway. *Forbindelser* was a precursor of real-time networked music performance, broadcasting five orchestras and musicians from five different cities simultaneously. It also includes recitation, mixed chorus, children's choruses, medieval plainchant, Sami joik, Hardanger fiddle, various quotations from AN.74 *Pace*, and a Morse telegraphist tapping out the same excerpt from the declaration of human rights that was used in *Pace*. According to Lorenz Reitan, the idea for *Forbindelser* had originated in a discussion between Nordheim and John Cage about a "world concert" via satellite, where musicians from all continents would play the same music at the same time.⁵³⁷ This grand vision never led to anything, but *Forbindelser* was at least a part-realization on a national scale.

The work opens with a synthesized bell, generated on the Buchla. It is interesting to note that the first thing Nordheim did when getting access to a computer-based interface was, as so many other composers (the most famous example being Jonathan Harvey in *Mortuos Plango, Vivos Voco* from 1980), to emulate a bell. The bell is a harmonically complex sound, and it has a rich set of associations and connotations. In *Forbindelser* it resembles a church bell calling a congregation to service. But since it is an "artificial" bell, we also understand that it is going to be a "modern" kind of service. After some rings, the decay of the bell is prolonged in order to provide a textural backdrop to the recitation of a poem. This is a technique that is difficult to realize smoothly in the old tape music studio, but is relatively easy to produce on the synthesizer. Even though the segment is short, it is placed in a moment of heightened focus (the beginning) and thus becomes an important element in the work.

Another part in *Forbindelser* that can be attributed to the Buchla occurs at approximately [19.20]. Here the orchestra plays several "instrumental loops" at a very fast pace (cf. the section from *Greening* discussed above, see Figure 8.1). A cue with "bubbling" and noisy sounds is added to the orchestral part.⁵³⁸ The electronic element is added to the chaos as an augmentation of the orchestral palette.

⁵³⁷ Lorenz Reitan: "Grenseoverskridelser - i media," *Ballade*, vol. 5, no. 2/3 (1981).

⁵³⁸ In the Arne Nordheim tape collection at the National Library, there is a tape with source sounds called *Bubbles* ["Bobler"] from the Buchla. The tape contains 1) Bubbles w/echo, 2', 2) Bubbles without echo, 2', 3) Bubbles w/echo, twice as fast, 2' x2/1-3/2-4 and 4) Bubbles without echo, twice as fast, 2'. The tape is in the process of being catalogued, and I have not heard it.

Even though most of *Forbindelser* is without such taped cues, it seems to be the work that reconnected Nordheim with electronic music.⁵³⁹ It is the first in Nordheim's new line of mixed works, and it clearly points forwards to his later compositions in that it starts building up a network of meaningful units, *memorables*, that will be inserted in other compositions. The bubbling cue used at [19.20] was used again in similar chaotic passages in *Ariadne/Tempora Noctis*, *Be Not Afeard*, *The Tempest* and *Kong Lear*. It clearly represents chaos and unrest. Another section starting around [04.30] contains voices singing stratified notes on the syllable / a /, similar to sections that were previously used in the taped parts of *Epitaffio* and AN.29 *Favola*. This seems to be an early version (or the origin) of a memorable that I will call the "Angelic choir" memorable (more of which later). Finally, the quotations from *Pace* we now know after the exegesis in Chapter 7 to represent equality, human rights and a hope for peace. This way of composing by combining already established meaningful units became a hallmark of Nordheim's later compositional style.

8.4 The *Favola-Ariadne-Tempest* family of works

At the apex of Nordheim's production in the 1970s stands the music to the two ballets *Ariadne* (Jiří Kylián, 1977) and *The Tempest* (Glen Tetley, 1979). I see the two works as parts of a cycle of ballets that began with *Favola* in 1965. All three use the sea as a metaphor for longing, and take place on "magic" islands from world literature. *Favola* depicts Odysseus' travails at sea and his longing for Penelope while being stranded on Circe's island. *Ariadne* depicts the laments of Ariadne after having been left on the shores of Naxos by her lover Theseus. *The Tempest* tells about the conflict and reconciliation between Miranda and Prospero and their Neapolitan enemies on their remote island outside Italy. The ballets are part of a family of compositions that also includes *Be Not Afeard* (an early version of the movement "Caliban's Warning" in *The Tempest*), and *Magic Island* (a later reworking of *Be Not Afeard*). It should be noted that strictly speaking, *Ariadne* is the name of Kylián's ballet, set to Nordheim's music, which after 1979 was known by the name *Tempora Noctis* (see details in the catalogue of works). In this chapter I therefore write about the work as *Ariadne/Tempora Noctis*.

All the works in the *Favola-Ariadne-Tempest*-family are scored for two solo singers and orchestra augmented with electronic tape-cues. The singers are amplified with microphone, and their sound is fed into the same soundsystem that plays back the taped parts. It is opportune to bring back the three analytical categories that I used to discuss the relationship between electronic and acoustic

⁵³⁹ A case could also be made for including the "television fantasy" AN.94 *Stein för liv* from earlier in 1975 in this picture. The work is more or less a companion work to *Forbindelser* in that it was commissioned from NRK TV, and that it uses extensive passages for synthesizer (not the Buchla) and quotations from *Pace*.

sound in Chapter 3. The electronic cues in the *Favola-Ariadne-Tempest*-family are sometimes used in *conversational interplay* with the acoustic elements, other times they blend together and have only a supporting textural function (*contact*), and in other parts yet they deliberately *contrast*.

The amount of electronic sound in the compositions is considerable. In total, *Ariadne/Tempora Noctis* contains 25 cues that add up to 32 minutes. *The Tempest* contains 23 cues, lasting a total of 48 minutes (including a 20-minute ambience introduction to be played before the curtain rises). According to the liner notes to *The Tempest* LP (AN.R13), the electronic material for the ballet had been realized in Warsaw with aid from Bohdan Mazurek, the second regular sound engineer in Studio Experimentalne. Rannveig Getz Nordheim recalls that Nordheim was visiting Poland in late 1978 or early 1979, and this was probably when *The Tempest* sessions took place.⁵⁴⁰ Since the sound material is quite similar, it is reasonable to think that Mazurek was also involved in producing material for *Ariadne* and *Be Not Afeard*, although Getz Nordheim does not recall any trip to Poland in 1976 or 1977. It is therefore also possible that Nordheim produced this material in Oslo.

The electronic material is strikingly similar for all the works. All ballets start with electronic emulations of the sea and birds, made with filtered white noise and sinus generators. The introductions also include “electronic choruses” singing tonal chords on the syllable / a /, with the voices artificially prolonged by electronic processing. These introductions are abstractions of a mythical sea-landscape: The voices are not real voices. The birds and waves are not real birds and waves. They are not made from field recordings, but resemble platonic shadows of these entities made with electronic equipment. Nordheim is not trying to recreate the sounds of an actual place, but is evoking mental images of a fictional universe – the hyper-reality where the story takes place.

Some of the electronic material for *Ariadne/Tempora Noctis* and *The Tempest* originated in *Favola*. A document in the NRK archives indicates that NRK had released the tapes for *Favola* to Nordheim in January 1977 on the grounds that he was going to revise the work.⁵⁴¹ But instead of revising, Nordheim cannibalized *Favola* into his upcoming ballet – including several of the electronic cues.

Some sections also point back to *Forbindelser*. This includes the already mentioned bubbling sounds made at NSEM and the “Angelic choir” memorable. The latter sounds strikingly similar to passages used previously in *Epitaffio* and *Favola*, but seems to have been made from a new

⁵⁴⁰ Personal communication with Rannveig Getz Nordheim.

⁵⁴¹ The tapes and MS for *Favola* were NRK's property, due to the nature of the commission. Letter from Bjørg Kragem in the juridical department of NRK to Nordheim, dated Oslo January 31st 1977, marked “Kopi av de elektroniske avsnittene i komposisjonen ‘Favola’ – Arne Nordheim.” NRK Archives, Fjemsynet, production archive, folder: “Favola.”

recording. This is a rare instance in Nordheim's catalogue where he recreated a segment from another electronic composition. It is possible that Nordheim was unhappy with the sound quality of the original version, but that he wanted to keep the segment. The "Angelic choir" was used a lot in the late 1970s as an ending segment. It can be heard towards the end of *Ariadne/Tempora Noctis* and "Caliban's Warning," and it was also added to the end of the tape of *Response*. Since the three ballets all thematize longing and use sea as a metaphor for longing, it is possible to interpret this memorable as representing longing. But there are other possibilities. The singing might represent angels, which would draw interpretation towards the realm of spiritual purity. Alternatively, the singing could be that of odyssean sirens, and the segment would thus represent temptation. This is one of the memorables in Nordheim's music where interpretation is ambiguous.

Nordheim and Mazurek also produced some of the new material. In *The Tempest* there is at least one passage that can be directly attributed to Mazurek. During the 20 minute prologue, which plays over the loudspeakers as the audience comes into the room, one can occasionally hear an electronically generated "bird" that cries in the distance (possibly the emulation of a nightingale, a much-loved bird in music and fariytales). The "bird" is actually a sound that had been used in a previous composition by Mazurek: *Daisy Story*, from 1977. Using a spectrogram, one can clearly see how the two sounds relate.

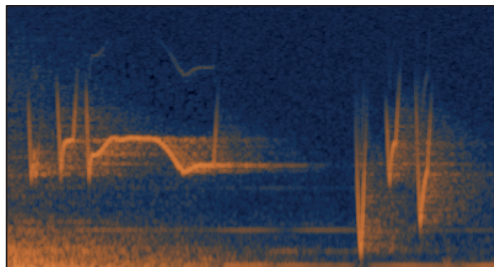


Figure 8.4: The "electronic bird" in the introduction to Nordheim's *The Tempest*⁵⁴²

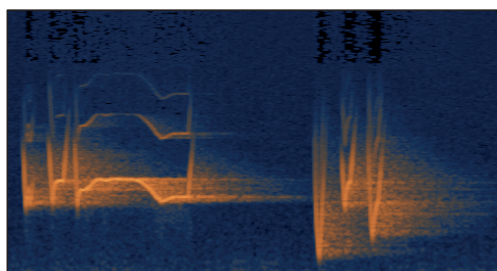


Figure 8.5: The same "bird" in Mazurek's *Daisy Story*⁵⁴³

⁵⁴² The spectrogram is generated from the opening track of AN.R13 *The Tempest, Suite From the Ballet*.

⁵⁴³ Spectrogram generated from [16.23-16.27] of *Daisy Story* on Bohdan Mazurek: *Sentinel Hypothesis* (Bölt, 2010).

Mazurek's bird is the only occurrence of direct "sampling" from other composers which I have come across in Nordheim's catalogue. Again, this shows how Nordheim could let material from his co-workers influence his sound. However, by doing this Nordheim would also make the sound "his." Through its prominent use in the *Tempest*, Mazurek's bird is now associated with Nordheim. It should be noted that it is not known whether Nordheim had heard *Daisy Story* and wanted to use one of the sounds, or if Nordheim "ordered" a bird-sound while working with Mazurek, and decided on one that Mazurek presented to him. *Daisy Story* is a veritable *Catalogue d'oiseaux* of electronic bird sounds, so he would have had plenty to choose from (the bird in question appears in a brief passage at [16.23]).

8.5 *Nedstigningen* and *Aurora*

After the classical literature of *Ariadne* and *The Tempest*, Nordheim turned to more spiritual sources for his next works. The three compositions AN.111 *Nedstigningen*, AN.118 *Aurora* and AN.120 *Wirklicher Wald* are all meditation on the mysteries of life and death, and they draw on a wide range of religiously-inspired texts, all sung in their original language.⁵⁴⁴ I will in the following section discuss how the electronic elements in *Nedstigningen* and *Aurora* relate to the spiritual content of the text sources.

Nedstigningen ["The Descent"] is a "radiophonic" work, based around a declamation of the prose poem "British Museum" by the Norwegian poet Stein Mehren (1935–2017). In this setting "radiophonic" meant that the work was originally created for radio, not concert performance. A recording schedule for *Nedstigningen*, found among Nordheim's papers from Grotten, indicates that the recording of the orchestral and vocal elements was done in short segments, and then work was assembled later in a mixing process – a similar working method to what Nordheim had previously done on *Favola*.⁵⁴⁵ The work includes a few electronically generated cues, mostly bell-like sounds (possibly manipulated crotali) where the termination of the sound has been prolonged and is slowly pitched down.

⁵⁴⁴ *Nedstigningen* has been thoroughly studied by Hallgjerd Aksnes. See Hallgjerd Aksnes, "Nedstigningen og det moderne samtidsmuseet," in *Klingende ord. Samtaler med Arne Nordheim*, ed. Yisrael Daliot (Oslo: Aschehoug, 1991); Aksnes (1994): *Musikk, tekst og analyse*. Aksnes has also written on *Wirklicher Wald* in Aksnes: "Arne Nordheim – en ordets komponist," in ed. Herresthal and Nesheim (2013). However, she has not pointed out what I see as an obvious connection between the works. The group of compositions should possibly also include AN.126 *Tres Lamentationes* that uses the lamentations of Jeremiah as text and AN.112 *Clamavi* for solo cello, which Nordheim has called a prayer for cello.

⁵⁴⁵ The recording schedule is currently part of the Nordheim collection at NB.

This technique, which I will call *The Descent Termination*, originated in this work, and is used in several of Nordheim's later compositions. I do not see *The Descent Termination* as a memorable, since it is not a stable sound segment that is moved around between compositions. Instead, it is a gesture that is created through different methods in different compositions. The meaning however, seems to be relatively stable: it clearly symbolizes a descent or downwards movement, both in a physical and in a metaphorical sense. In *Nedstigningen* it symbolizes the descent through the layers of time (a theme featured in Mehren's poem). The use of text excerpts from the second song of *Inferno* in Dante's *Divine Comedy* also suggests a descent into hell.

In the follow-up work to *Nedstigningen*, 1983's *Aurora*, Nordheim frequently uses *The Descent Termination*, but this time the attached meaning seems to be different. While *Nedstigningen* looks downwards, *Aurora* gazes upwards. This work also features text from the *Divine Comedy*, but this time from the 33rd song of *Paradise*. The title is a reference to the aurora borealis, and the work starts out with the singers crying out / *Domine* /. In other words, *The Descent Termination* can suggest descent from the heavens just as much as a descent into the abyss.

I have not been able to document where the electronic material for *Nedstigningen* was produced. Parts of *Aurora* were made in Elektronmusikstudion in Stockholm (EMS), together with the composer and sound engineer Rolf Enström. Enström is chiefly known for his work *Directions* (1979), which was created using the very elaborated FM-synthesis equipment of the studio.

Aurora was written for the British experimental vocal quartet Electric Phoenix, who had specialized in contemporary music sung with microphones. Most of the fixed media material of *Aurora* is based on the recordings that Nordheim did with the group in London, and the work is a continuation of Nordheim's tradition of using fixed media material based in the same classes of sounds as the performers. In his extended interview with Yisrael Daliot, Nordheim described how he had instructed the singers to listen to a chord, and then go into separate rooms in a recording studio and independently try to recreate the sound that they heard.⁵⁴⁶ The voice material was then manipulated with traditional tape-studio techniques such as cutting and splicing, ring modulation, filtering and reverb, and a new technological device in Nordheim's toolbox: a vocoder. The vocoder-effect can be heard at [06.41-07.40] and [11.20-12.50] on the fixed media material (**CD track no. 16**).

EMS was at the time divided into two studios; a main studio built around a PDP-15 computer that was used to control 24 digital FM oscillators, and a smaller analog studio built around tape machines and a Buchla 200 analogue synthesizer, a device quite similar to the Buchla Nordheim

⁵⁴⁶ Daliot (2001): *Klingende ord*, pp. 135-36.

knew from NSEM.⁵⁴⁷ According to Asbjørn Blokkum Flø, the Buchla had a built-in vocoder-effect that was used frequently on compositions made in the studio in the 1980s.⁵⁴⁸ It is therefore probable that Nordheim used the smaller analogue studio for the vocoder passages. The Descent Termination used in *Aurora* sounds like FM-generated simulations of crotali, so these passages were probably created in the main studio. A demonstration video of EMS from 1980 features a sound example that is quite similar to The Descent Termination that Nordheim used in *Aurora* and *Nedstigningen*.⁵⁴⁹ I have not been able to document whether or not the effect in both works was created at EMS. It is at least clear that the studio was capable of producing this sound, and it is probable that Nordheim knew about this from having watched the demonstration video (which I assume he was familiar with).

8.6 Chapter summary

Nordheim's third electroacoustic period is characterized by a reduced emphasis on electroacoustic composition and increased focus on larger orchestral works. Still, the period represents continuity, rather than a distinct break with the past. Nordheim's preferred working methods continued to be rooted in the practices of the tape music studio, which is also seen in his use of new tools and instruments like the analogue synthesizer. One can see this most clearly in the relationship with the sound engineers. Most young composers of this era liked to "get their hands dirty" playing around with the knobs and cables. Nordheim however, seems to still have preferred to let the engineer do the job of creating the sounds. As previously quoted in Chapter 1, Clark recalled the following about Nordheim's working methods:

Nordheim would say: "Show me some sounds. Give me a palette of sounds of what this Buchla thing can do." And I would set up some different things. I would create some loops, I would create something that would change the timbre over time of a particular tone, and he would say "That's it, that's it! Now, can you adjust it just a little bit higher, and let's record that." So it was always a process of using the ears, and then combining tones together. He was composing with the technology of the mixing table, probably more than anything else.⁵⁵⁰

⁵⁴⁷ The various devices of the studio are explained by Lars-Gunnar Borin in this video: Elektronmusikstudions kanal: "Lars-Gunnar Bodin @ EMS, Stockholm, 1980" <https://www.youtube.com/watch?v=Your8ICLnvM>, visited September 1st 2016.

⁵⁴⁸ Personal communication with Asbjørn Blokkum Flø, September 1st 2016. Flø has used EMS frequently, and knows the studio well.

⁵⁴⁹ Elektronmusikstudions kanal: "Michael Hinton @ EMS, Stockholm, 1980" https://www.youtube.com/watch?v=o_pHu6-jNIA, visited September 1st 2016. The segment starts at [00.50].

⁵⁵⁰ Harold Clark, interviewed by Ola Nordal, November 29th 2014. English in original.

Chapter 8: The third electroacoustic period

The great variation in sound between the works of the third period is partly due to technology and partly due to personnel. Nordheim worked with different people on almost every work. The works related to *Favola* (*Ariadne/Tempora Noctis*, *Be Not Afraid* and *The Tempest*) clearly hark back to the Warsaw years through the use of Studio Experimentalne, even though Nordheim now worked with Bohdan Mazurek and not Eugeniusz Rudnik. *Forbindelser* starts out with a crisp synthesized bell that Nordheim made with Clark on the Buchla synthesizer, but this work also harks back to Warsaw through the quotations from *Pace*. The starkest contrast to the other works is the glass-clear, almost clinical synthetic sounds of *Aurora*, made at EMS in Sweden.

In other words, the effects of locality play out differently in the third period compared to the Warsaw years. On the sonic side, there are the differences in sound and compositional practice between the studios. On the political-cultural side, by not being associated with a particular studio, Nordheim participated less in the cultural exchange of electroacoustic music. He continued to be the face of electronic music in the Norwegian context, but did this more because of his stature as the foremost contemporary composer in the country, rather than as part of a milieu of electronic music composers. In the third period Nordheim did not participate on any compilation recordings like the *Electronic Panorama* LP box from 1970, which had showcased composers from Studio Experimentalne. On the other hand, his music seemed to be everywhere anyway. The high-profile orchestral commissions, and in particular the success of *The Tempest*, made Nordheim a household name in European contemporary music. It is evident that this meant much more to Nordheim than to continue within an expression that was becoming more and more a niche genre.

Chapter 8: The third electroacoustic period

9 REVIVAL. THE LATE PERIOD (1984–2006)

After the relatively low number of electronic works of the third period, Nordheim re-emerged in the late 1980s and 1990s as one of Norway's most prolific electronic composers. In general, this was a productive time for Nordheim. He oversaw premieres of some of his largest compositions, including the full-evening music drama AN.163 *Draumkvedet* (1994), the closest Nordheim ever came to writing an opera, the oratorio AN.176 *Nidaros* (1997) and the violin concerto (AN.175, 1997). At the opening ceremony of the XVII Winter Olympics at Lillehammer in 1994 (AN.164), Nordheim's music was featured in eight of an overall fourteen musical numbers. In this period, Nordheim was, for good or for bad, the "flagship" (as he occasionally would introduce himself on the phone) or grand old man of Norwegian contemporary music.⁵⁵¹ Simultaneously he emerged as a sort of spiritual grandfather figure for a new generation of electronic musicians. In 1998, the remix-album *Nordheim Transformed* by the electronica artists Helge "Deathprod" Sten and Geir "Biosphere" Jensen was released jointly with Nordheim's CD AN.RC9 *Electric*, a re-release of his old Warsaw works. The two CDs were among the first releases on the label Rune Grammofon, a record company dedicated to a new style of electronic and experimental music.⁵⁵² In 2003 Nordheim released the album AN.R57 *Dodeka* on the same label, a derivative work from the sound installation AN.182 *Gilde på Gløshaugen*. Both albums sold well. They granted Nordheim renewed exposure in the international community of experimental music, and laid the foundation for what I wish to call *Nordheim's electronic revival*.

On one hand, this period is a revival due to the sheer number of compositions that Nordheim produced. While I included only nine electronic works in The Intermediate Period, the number in The Late Period is 40, including some revisions of earlier works. On the other hand, Nordheim became the face of electronic music in Norway once again – but this time in a new context. It is characteristic of the period that in one moment, Nordheim could be seen on NRK TV's sentimental sing along-program *Da Capo!*, reading poetry of Hermann Wildenvey and Henrik Wergeland and presenting a performance of AN.116 *Den første sommerfugl* for harp and soprano – his perhaps most accessible composition. In the next, he would he would appear in the youth-program *U*, sitting beside

⁵⁵¹ See liner notes to AN.R66 *Cikada Duo: Nordheim* for then anecdote on how he introduced himself as the "flagship".

⁵⁵² *Electric* has number RCD 2002, indicating that it is release nr 2 on the label (RCD2001 being Supersilent's *I-3*). *Nordheim Transformed* has number RCD 2005. The two albums were also released as a limited double CD with the number RCD 2006.

the electronica act Sternklang, a band aptly named after a composition by Karlheinz Stockhausen who at the time was experiencing a similar revival in Germany.⁵⁵³ In this setting, Nordheim was the old radical again. "I am death and catastrophe," he proclaimed to *Dagbladet* after having noted how the new generation were much softer than what he had been. He concluded: "You can call me hardcore."⁵⁵⁴

9.1 The Late Period: demarcation

The following table sums up what I consider to be Nordheim's fourth electroacoustic period.

Table 9.1: Nordheim's fourth electroacoustic period

	AN.#	Title	Type/instr.	Technology	Comment	
	1985	127	<i>Partita für Paul</i>	Violin solo	Delay unit	MC
	1985	128	<i>Zwischen mit donner</i>	Exhibition work	Fixed media (continuous)	Lost
	1986	130	<i>Kong Lear</i>	NRK TV theatre, mixed, orchestra ++	Fixed media, digital synthesizer	Includes some cues from NSEM
	1986	132	<i>Recall and Signals</i>	Wind orchestra	Emulator II	
	1986	133	<i>Varder</i>	Signal band	Emulator II	
	1987	136	<i>Acantus Firmus</i> (series of works)	Hardanger fiddle + various combos.	Fixed media (continuous)	
	1987	137	<i>Stille, Kepler tenker</i>	Exhibition work	Two tape loops	MC
	1987	140	<i>The Return of the Snark</i>	Trombone solo	Fixed media (continuous)	Tape revised in 1995, MC
	1987	147	<i>Johannesgangaren</i>	Hardanger fiddle + various	Emulator II	
	1991	151	<i>Antigone</i>	Theatre, mixed chamber	MIDI sampler	MC
	1991	154	<i>Sagvisa</i>	Four singers	Fixed media	Lost?
	1992	157	<i>Magic Island</i> (revision of <i>Be not Afeard</i>)	Mixed, chamber orchestra	Fixed media cues	Tape material = Caliban's Warning
	1992	159	<i>Ad fontes</i>	"Symphonic poem" for TV, mixed, orch.	Fixed media cues	MC
	1993	160	<i>Stella Polaris</i>	Film music, mixed, orchestra & solo violin	Fixed media cue ["Solklokker"]	NMH, MC
	1993	161	<i>Link</i> (Revision of <i>Response III</i>)	Percussion, organ	Fixed media (continuous)	MC
	1993	162	<i>Vevnad</i>	Cello, trombone	MIDI-piano	
	1994	163	<i>Draumkvedet</i>	Music theatre, mixed, orchestra, singers	MIDI sampler, synthesizer	
	1994	164	[No title]	Electronic element for 1994 Olympics	Fixed media	Short cues + parts of old works, MC
	1994	166	<i>Aqua – Terra</i>	Exhibition work, countertenor	Fixed media	HOK, MC

⁵⁵³ *Da Capo!* NRK TV, February 8th 1994. *U Musikk*, NRK TV, February 4th 1998. For a humorous look at the reverence for the pioneers of the 1950s and 60s (or lack thereof) from the new generation of electronica artists, see Dick Witts and Rob Young: "Advice to Clever Children. Stockhausen vs. the Technocrats," *The Wire*, vol. 67, no. 141 (1995).

⁵⁵⁴ Siv Eide: "-Kall meg gjeme hardcore," *Dagbladet*, November 14th 1998.

1995	168	Lerka Jeanne d'Arc	Theatre, mixed, orchestra	Synthesizer, fixed media	NMH, MC
1995	55	Ode til lyset (revised)	Sound installation	Fixed media, computer system	Acoustical Lab. NTNU. Saue, MC
1995	81	OHM 95 (revision of <i>OHM</i>)	Lure solo	Fixed media (continuous)	MC
1995	111	Nedstigningen (revised)	Mixed, orchestra	Fixed media cues	Adaptation for live perf. NMH, MC
1995	169	Partita Electroencephalosonica	Interactive electronic performance	Fixed media, computer system	SS. Derived from <i>Ode til lyset</i> (rev.)
1996	172	Bleikeplassen	Theatre	Fixed media	MC
1997	176	Nidaros	Oratorio	MIDI sampler	
2000	180	Fonofonier	1 CD track		Derived from <i>Ode til lyset</i> (rev.)
2000	182	Gilde på Gløshaugen	Sound installation	Fixed media, computer system	SS, MC
2000	184	Språkfødsel	Sound installation	Fixed media, computer system	SS, MC
2001	R52	REALart	3 CD tracks		Derived from <i>Gilde på Gløshaugen</i> , MC
2001	188	Dråpen	Sound installation	Fixed media, computer system	SS, MC
2002	189	Partita for four Jew's Harps	4 Jew's harps	Electronic processing unit	
2003	190/R57	Dodeka	12 CD tracks		Derived from <i>Gilde på Gløshaugen</i> , MC
2003	191	5 kryptofonier	Soprano, percussion	Synthesizer, Sampler	NoTAM (?), MC
2006	193	Nordklang	Percussion, lure	Fixed media	NMH, MC
2006	82	Listen inside-Outside	Piano solo	Fixed media	Steen-Nøkleberg, MC
2006	195	Bjøllo i Fjelle	Mixed, chamber orchestra, lure solo	Fixed media	NMH, MC
2006	196	Dodega	Sound installation		Derived from <i>Dråpen</i> , SS
2007	197	Gong do	Timpani solo	Fixed media	

HOK = Henie Onstad Kunstsenter. MC = Mats Claesson. NSEM = Norwegian Studio of Electronic Music. NMH = Norwegian Academy of Music (Norges MusikkHøgskole). SS = Soundscape Studios

I have not been able to verify whether the following works have electroacoustic components: AN.124 *Ja, Virkelig* (NRK Radio Theatre, 1984), AN.134 *Spillet om perlen* (Oslo New Theatre, 1986), AN.148 *Kong Ødipus* (NRK Radio Theatre, 1989), AN.179 *Dagskilje* (Det norske teater, 1998) and AN.192 *Jeg kunne gråte blod* (Riksteateret, 2004). They should possibly be added to the list. Note that I do not include AN.123 *Response III* (1984) in neither this period or the previous. This is because there seems to have been no alteration of the tape material in this version of the work.

Nordheim and Mats Claesson

I have placed the starting point of Nordheim's late period at when he started working with the sound engineer Mats Claesson (b. 1955). According to Claesson, the Norwegian composer Synne Skouen had introduced him to Nordheim during a performance of *Colorazione* on Henie Onstad Kunstsenter in 1982.⁵⁵⁵ The following year, Claesson started working at Høvikodden as "sound master," the same

⁵⁵⁵ Mats Claesson, interviewed by Ola Nordal, October 21st 2011.

position that Harold Clark had occupied some years earlier. At Høvikodden, Claesson built up a new digital working studio for electronic music. The first project that he did together with Nordheim was a performance of *Response* in 1984, and I see this as the beginning of Nordheim's fourth period, even though Claesson did not revise the tape material at this point. The first newly produced material was the delay and reverb set-up for the live electronic work AN.127 *Partita für Paul* (1985), and the fixed media material for AN.149 *The return of the Snark* and AN.136 *Acantus Firmus* (both 1987).⁵⁵⁶

In 1990, Claesson left Henie Onstad Kunstsenter for a position at The Norwegian Academy of Music where he set up a new studio. He also built up the first production studio at NoTAM, a state-financed centre for "technology and music in the arts" that opened in 1992 in association with the University of Oslo (today it is an independent institution). In the late electroacoustic period, Nordheim would not be linked to a specific studio. He would rather work wherever Claesson was employed at the time. To some extent one can therefore call Nordheim's late period the "Claesson-period."

Claesson had a great influence on Nordheim's sound in the 1980s and 1990s. While Nordheim never fully adopted the aesthetics of the synthesizer and computer music of the 1970s, we can now see him embracing digital sound synthesis and sampling. Nordheim's sound from this period is characterized by crisp and clear high-pitched bell-like sounds, often in combination with dark boomy sounds, most of the time drenched in digital reverb and echo. This sound can be first heard fully developed in AN.137 *Stille, Kepler tenker* from 1987. A document at the Arne Nordheim centre indicates that the equipment used for this work was a Prophet 2002, one of the earliest digital hardware samplers, and a Macintosh computer running Laurie Spiegel's *Music Mouse*, and an early Digidesign-program called *SoftSynth* – one of the very first software synthesizers.⁵⁵⁷ Nordheim would also embrace instruments like the famous FM-synthesizer *Yamaha DX7* (according to Claesson, Nordheim was particularly fond of the tubular bell preset), the keyboard-based digital sampler *E-Mu Emulator II*, and digital software like Digidesign's *Turbosynth*. *Stille, Kepler tenker* seems to have been an important work for Nordheim, and sounds from this work would come back in several of Nordheim's later sound installations.

Nordheim also incorporated Claesson's digital tools in his orchestral music. In *Draumkvedet* for instance, a digital synthesizer was added to the orchestra as a more or less conventional

⁵⁵⁶ See Claesson's CV at <http://matsc.net/norsk%20cv.html>, visited, October 30th 2013.

⁵⁵⁷ "Arne Nordheim: Kepler tenker." Undated information sheet. Box marked "Arne" at NB. The sheet explains in brief the working principle of the installation, indicates the names of the sounds, and lists the equipment that was used.

instrument. In addition, a MIDI-controlled sampler was used to play for instance bell sounds and other effects that were part of the dramatic narrative. The sampler could also be used to play back longer cues of electronic sound. In other words, in the fourth period Nordheim used samplers and synthesizers in more or less the same way as he had used tape cues in his earlier mixed orchestral works. One of the great differences was that the electronic elements could now be operated entirely by musicians sitting within the orchestra.

Revival of older electronic works

During the late period we also see performers starting to revive some of Nordheim's older electroacoustic compositions. In the early 1990s, the ensemble Cikada Duo revived AN.50 *Colorazione* and AN.123 *Response III*, which they renamed to AN.161 *Link*. They also commissioned a new work, AN.191 *Fem kryptofonier* (2002-3). The pianist Einar-Steen Nøkleberg revived Nordheim's only solo piano piece AN.82 *Listen* from 1971 and made a version of this piece for added live electronics called *Listen Inside-Outside* (2006). The revision was done in cooperation with Nordheim and Claesson. The trombone player Gaute Vikdal took up Nordheim's work for lure and trombone and premiered new versions of AN.81 *OHM* (now called *OHM 95*) and AN.140 *The Return of the Snark*. Nordheim also composed new works for Vikdal, most notably AN.193 *Nordklang* (2005) and AN.195 *Bjøllo i Fjelle* (2006). The latter work combines orchestral passages taken from AN.109 *The Tempest* with the electronic material and lure part from *OHM 95*. It also features extensive use of a movable carillon from Nauen Klokkestøperi. With this carillon, Nordheim could finally bring his much-beloved bell-sound out into nature – without needing to use samplers or tape. *Bjøllo i Fjelle* premiered in an outdoor concert at the Peer Gynt festival at Rondane Høyfjellscene in 2006. With the possible exception of AN.197 *Gong Do*, a work I have not been able to find any documentation on, this was the last work that Nordheim composed.

9.2 Module-based composition in Nordheim's fourth period

The sound installations that Nordheim made between 1995 and 2001 stand out with particular importance in the late period. The first project was the restoration of the sound sculpture AN.55 *Ode til lyset* for the 25th anniversary of the Stordal-park in 1995. The audio elements of the sculpture were completely rebuilt with new speakers, digital playback system and completely new sound material. In this particular project, Nordheim did not work with Claesson in Oslo, but with Sigurd Saue, then a student at the Acoustical Laboratory in Trondheim. Saue not only helped to produce new sound material, but he also developed complex custom-built computer software for the

installation. This software allowed for a more complex decision-making algorithm for the sonic material in the sculpture.

Instead of the two continuous loops of the original version (see Chapter 5), Nordheim now divided his material into 86 individual sound files that were loaded into a MIDI-controlled sampler. In the following discussion, I wish to call these files “modules.” As in the original sculpture, Saue’s software took the amount of sunlight as environmental input. The program would use this data to decide on which modules to use from the bank of sound files, determine which channel they should be routed to, and how loud they should be played back. The program would also decide whether a module could be combined with another module. Thus, Nordheim now had much more control on how the installation would behave. The “moments,” to recall the term I used in connection with the original sculpture, no longer had to come in a specific order. Nordheim now had complete control on how sound patterns should blend together, which patterns that could and could not be combined, and how dense the sound of the sculpture should be at any given moment.

After the revision of *Ode til lyset*, Nordheim continued to work with Saue and the Trondheim-based company Soundscape Studios (consisting of Saue, Øyvind Brantsegg and Robin Støckert) on three striking interactive public sound installations for KORO/Public Art Norway – a governmental body commissioning state-sponsored public art. The installations were all placed in officially financed buildings erected by the Norwegian Directorate of Public Construction and Property (Statsbygg): the science building at NTNU (AN.182 *Gilde på Gløshaugen*, 2000), the Ivar Aasen Centre (AN.184 *Språkfødsel*, 2000), and Bekkelaget wastewater treatment plant in Oslo (AN.188 *Dråpen*, 2001). All the installations used the same module-based principle as the new version of *Ode til lyset*, and they were all site-responsive, cf. the discussion on the different types of site specificness in Chapter 5. Although Saue would occasionally be involved in producing some of the sounds, Soundscape Studio’s main roles were providing the technical solutions and set-up of the installations.

Sound material in the late sound installations

As presented in table 9.2, the sound material in these installations came from different places. Nordheim had collaborated with Saue on the material for the revised version of *Ode til lyset*, and had created some new material in the Acoustical Laboratory of the Norwegian Institute of Technology/SINTEF (today NTNU). The material for *Gilde på Gløshaugen* had mainly been realized together with Claesson. *Dråpen* and *Språkfødsel* mainly reused previous material.⁵⁵⁸ The

⁵⁵⁸ I wish to thank Sigurd Saue for providing me with the complete sound material for these installations.

table also shows which kind of environmental input was used for the different installations. For more details including a list of derivative works, see table 5.1 on page 148.

Table 9.2: The four sound installations of the late period

Name	Environmental input	Sound material
<i>Ode til lyset</i> (revised)	Sunlight	Newly composed, realized in collaboration with Sigurd Saue
<i>Gilde på Gløshaugen</i>	Weather station on the building	Newly composed, realized in collaboration with Mats Claesson. Some re-use of material from <i>Stille</i> , <i>Kepler tenker</i> and <i>Ode til lyset</i> (revised)
<i>Dråpen</i>	Amount of human waste treated in the plant	Re-use of material from <i>Poly-Poly</i> , <i>Stille</i> , <i>Kepler tenker</i> and <i>Solitaire</i>
<i>Språkfødsel</i>	Movement of people inside the exhibition	New language sounds. Re-use of elements from <i>Aurora</i> and the tape material from <i>The Tempest</i> . Also uses raw-material that was used for creating the <i>Pace</i> sound web, cf. Chapter 7.

The material for the installations is formed by collections of self-standing modules. Each module typically lasts somewhere between 30 seconds and three minutes, and is constructed from a limited set of sound classes. Some (not all) of the modules are similar to the memorables discussed earlier in this dissertation, and seem to carry meaning in a similar manner to the *Pace* sound web or the “O Lord” motif. Some of them would be used in several works.

The identities of the modules are quite stable. When they had found their form, Nordheim would give them a name that was used for the sound file and in Nordheim’s discussion with his collaborators. For the most part, these names were meant for internal use. Some of them came up as jokes rather than from serious aesthetic considerations. Sigurd Saue told me how sometimes a title might come up as a “joint play on titles” between Nordheim and him.⁵⁵⁹ Still, I wish to take the titles seriously. When naming something, one is assigning an identity to the object, and in the case of Nordheim’s modules, this identity seems to have been important.

In table 9.3, I list the most important of these modules, and trace their use in Nordheim’s catalogue. As can be noted in the table, several of the modules originated in *Stille*, *Kepler tenker*, which to some extent can be seen as the beginning of this cycle of works.

Table 9.3: Some memorables used in the module-based compositions

Name	Appearance	Comment
Lokkerop	<i>Stille</i> , <i>Kepler tenker</i> , <i>Gilde på Gløshaugen</i> , <i>Dråpen</i>	Name variant: <i>Kjøtt 1</i> [(in <i>Stille</i> , <i>Kepler tenker</i>)
SintKort	<i>Stille</i> , <i>Kepler tenker</i> , <i>Gilde på Gløshaugen</i>	Name variant: <i>Kjøtt 2</i> (in <i>Stille</i> , <i>Kepler tenker</i>)
Solklokker	<i>Ad fontes</i> , <i>Stella Polaris</i> , <i>Aqua – Terra</i> , [Olympic music], <i>The Return of the Snark</i> (revised), <i>Gilde på Gløshaugen</i> , <i>Nordklang</i>	Name variant: <i>Solstråle</i> (in <i>Gilde på Gløshaugen</i>)
Drypping	<i>Stille</i> , <i>Kepler tenker</i> , <i>Ode til lyset</i> (revised)	Comes in a slightly different variant in <i>Gilde på Gløshaugen</i> . Might originate in <i>Pace</i>
Sildring	<i>Stille</i> , <i>Kepler tenker</i> , <i>Ode til lyset</i> (revised)	Comes in a slightly different variant in <i>Gilde på Gløshaugen</i> . Might originate in <i>Pace</i>

⁵⁵⁹ Personal communication with Sigurd Saue, September 2016.

Klokker	<i>Stille, Kepler tenker, Ode til lyset</i> (revised)	Comes in a slightly different variant in <i>Gilde på Gløshaugen</i> .
Jegerpling	<i>Ode til lyset</i> (revised), <i>Gilde på Gløshaugen</i>	Same sequence of notes, but slightly different sound in <i>Gilde på Gløshaugen</i> . This name is used for another sound in <i>Dråpen</i>
Smalbånd	<i>Stille, Kepler tenker, Ode til lyset</i> (revised), <i>Gilde på Gløshaugen</i>	In <i>Gilde på Gløshaugen</i> the 12-note sequence is divided into two individual sound files, one with the three lowest notes and one with the remaining nine notes.

As in the original *Ode til Lyset*, there was no real-time processing of the modules. All of the sound files had been completed within the controlled environment of the studio. Modulation of the sounds, typically adjustments on the amount of reverb or various forms of pitch-alteration, would be stored in separate files. Table 9.4 shows how different variants are used in *Gilde på Gløshaugen*. The installation consists of 15 modules, but with modulations the total number of files comes up to 27.

Table 9.4: The 27 sound files used in *Gilde på Gløshaugen*⁵⁶⁰

Filename (before .wav)	Type of modulation	English title (trans. ON)
• Bellnoise		Bell
• Bellbend	Pitch bend	
• Drypping1		Dripping 1
• Drypping2		Dripping 2
• Drypping2k120	Extra reverb	
• Drypping2k145	Even more reverb	
• Dryppbend	Pitch glides	
• HardKort00		Hard Short
• HardKort05	Extra reverb	
• Hardkort25	Even more reverb	
• Jegerpling15		'I am pling'
• Jegerpling30	Extra reverb	
• Klokker		Bells
• Lokkerop		Luring Call
• Kortlokk	Excerpt	
• Orerens10		Ear Cleansing
• Orerens30	Extra reverb	
• Sildring1		Trickling 1
• Sildring2		Trickling 2
• Sildring2k115	Extra reverb	
• Sildring2k130	Even more reverb	
• Sildrebend	Pitch glides	
• Sintkort		Angry Bird
• Smaafugl		Small Bird
• Smalband1		Narrowband 1
• Smalband2		Narrowband 2
• Solstraale		Sun Beam

A note on *Dodeka*

As before, Nordheim would produce derivative works from the sound installations. The best known of these is the CD *Dodeka* from 2003, which was derived from *Gilde på Gløshaugen*. In order to

⁵⁶⁰ In addition there are three special pre-composed combinations for the birthdays of Beethoven (filename: SildreRegnBeethoven), Schoenberg (SmalSchoenbergSol) and Sigurd Saue (filenames: Juni2Stereo, Juni2MonoR, Juni2MonoL).

produce the CD, mastering engineer Audun Strype received a "simulation" of the sound installation, with instructions on how he should cut this longer sound stretch into different tracks.⁵⁶¹ This is probably similar to how *Five Osaka Fragments* had been constructed from AN.70 *Poly-Poly* back in 1974. Table 9.5 lists the modules used in the tracks of *Dodeka*. The table is compiled from my own listening of the CD and the modules from *Gilde på Gløshaugen*.

Table 9.5: Sound files from *Gilde på Gløshaugen* used in *Dodeka*

Track	Files (in order of appearance)
1 Searching	<ul style="list-style-type: none"> • Jegerpling15 • Smalband1 • Klokker • Sintkort
2 Hovering	<ul style="list-style-type: none"> • Solstraale • Jegerpling15 • Drypping1 • Sildring1 • Smaafugl
3 Awaiting	<ul style="list-style-type: none"> • Kortlokk • Orerens10 • Klokke • Sildrebend • Sildring2 • Sildring1
4 Meeting	<ul style="list-style-type: none"> • Hardkort • Sildring2 • Bellnoise • Jegerpling
5 Return	<ul style="list-style-type: none"> • Harkort • Smalband1 • Drypping1 • Bellbend • Jegerpling • Solstraale • Lokkerop
6 Distance	<ul style="list-style-type: none"> • Solklokker • Smalband2 • Drypping1 • Ørerens
7 Crossroads	<ul style="list-style-type: none"> • Bellnoise • Sintkort • Smalband2 • Dryppbend • Klokker
8 Near	<ul style="list-style-type: none"> • Ørerens • Smalband1 • Solstraale • Smalband2 • Dryppbend • Kortlokk
9 Bits	<ul style="list-style-type: none"> • Smalband2 • Dryppbend • Smalband1 • Kortlokk
10 Calm	<ul style="list-style-type: none"> • Klokker • Kortlokk • Sildring2 • Solstraale
11 Sliding	<ul style="list-style-type: none"> • Lokkerop • Sintkort • Bellbend • Sildring1 • Sildrebend
12 Summa	All the above sounds

It is interesting to note how Nordheim presented this CD. In the liner notes, he credits "assistance" from Eugeniusz Rudnik, Bohdan Mazurek, Sigurd Saue and Mats Claesson in "the technical implementation of this project." He further writes:

These twelve pieces are among my favourites, and each of them has been assigned a title that describes their distinctive nature. The sounds in the first eleven pieces were developed independently and maintain separate identities, while the twelfth is a summary of the preceding material.⁵⁶²

⁵⁶¹ Personal communication with Audun Strype, November 4th 2015.

⁵⁶² Liner notes to AN.R57 Arne Nordheim: *Dodeka*.

In the liner notes, Nordheim neither gives reference to *Gilde på Gløshaugen* nor to Audun Strype's role in the project. In other words, *Dodeka* is another example of how little concern Nordheim put on getting the facts straight. It has been claimed that *Dodeka* contains sounds that go back to the Warsaw period – possibly because of what Nordheim wrote in these liner notes.⁵⁶³ But in fact, I have not been able to recognize any Warsaw sounds on the album. If there are any (which could be possible), they are so heavily processed that their origin is impossible to detect.

Three important modules: Solklokker, Smalbånd and Jegerpling

Among the central modules from these works is a sound segment that Nordheim called Solklokker (English: “Sun Bells”) or Solstråle [“Sun Ray”] (**CD track no. 18**). This 57-second module is an accumulated texture of bright crotali-like sounds with generous amounts of reverb, played in a seemingly random pattern. It was created for *Ad fontes* in 1992, and is used in a total of eight compositions. In some instances, Nordheim would use the segment in full. In others, he would maybe start in the middle, fade it in, or only use parts of it. The segment also exists in a varied form, with a slight pitch bend on the continuation of each sound-event (used in AN.159 *Ad Fontes* and AN.160 *Stella Polaris*). These various strategies make the segment flexible and durable. It can be used in many settings, without necessarily being recognized as the same module.

Solklokker is one of Nordheim's most used modules, and it is one of the sound segments from this period that most clearly functions as a memorable. It is therefore striking that it seems Nordheim had no direct hand in creating it. As with Mazurek's bird in AN.109 *The Tempest* (see Chapter 8), Solklokker is another example of how Nordheim would occasionally incorporate sounds into his aesthetical universe that he had not been involved in producing. Mats Claesson told me the following about how the module was made:

One day Arne had to leave the studio early, and I thought “I'm going to do something: I'll make an Arne Nordheim-pastiche on bells.” It was basically only one synthesizer that he liked, and that was the [Yamaha] DX7. I put up a sound bank. I had a bunch of DX7s, and I took some factory pre-sets, modified some things, and then I had a bunch of bell-sounds. I played the keyboard a bit, put it into a sequencer, added some random stuff, and used two-three hours on that. As a kind of pastiche. Not a parody, but just to have a bit of fun. I decided to play it for him the next day, and put it on before he entered the studio. When he came into the room he froze [demonstrates how Nordheim suddenly came to halt in the middle of a movement]. And then he said: “this is what I've been looking for all my life!” This was a sound he had heard inside his head, and from then on, he used it in all his pieces. It is added everywhere, also in his older pieces. He never got tired of it.⁵⁶⁴

⁵⁶³ See for instance Jøran Rudi's liner notes to AN.R80 *Solitaire*.

⁵⁶⁴ Mats Claesson, interviewed by Ola Nordal, October 21st 2011.

In most instances, however, Nordheim's gave precise instructions for what he wanted to create. For instance, the module Smalbånd ["Narrowband"] was created on a synthesizer by Sigurd Saue from a 12-tone row that Nordheim had written for him (figure 9.1). The same row was also used for the modules Bredbånd ["Broadband"] and Bell-rekke ["bell row"].

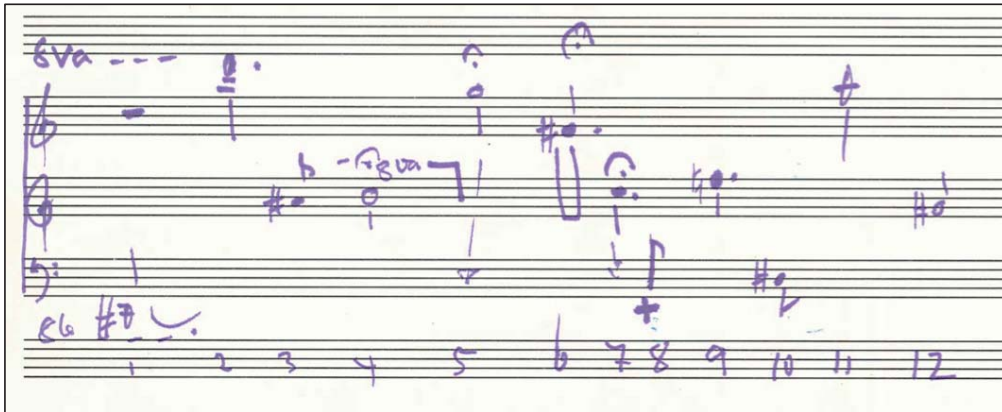


Figure 9.1: Nordheim's handwritten 12-tone row used in Bredbånd, Smalbånd and Bell-rekke. From Sigurd Saue's *Ode til lyset*-folder. These titles are more descriptive than evocative.

In the sonogram in figure 9.2 we can clearly see how the narrowband filter alluded to in the title has been used in the production of the actual sound (included on the CD as **track no. 17**).

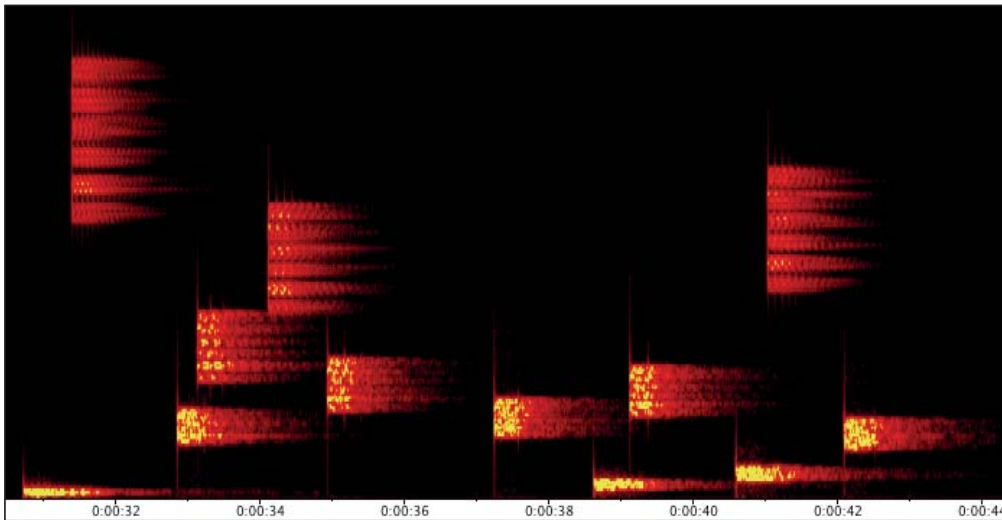


Figure 9.2: The 12-tone row used in "Smalbånd" from *Ode til lyset* (revised version). According to Sigurd Saue the segment was played on a Yamaha SY99 Synthesizer

Nordheim's titles always hold specific meanings. In this regard, the module "Jegerpling" is particularly interesting (**CD track no. 19**). This segment is another of Nordheim's signature sounds

from the period. It has clear *pregnanz*: it is played with distinct pitched sound in the treble register, and has a remarkably tonal character. It is actually one of the few electronic sound segments Nordheim made that can easily be transcribed into written notation (figure 9.3).



Figure 9.3: My transcription of "Jegerpling"

Two factors underpin its importance. First, "Jegerpling" is the only module from the sound installations that was realized twice. Nordheim realized it first with Sigurd Saue for *Ode til lyset*. It was re-used in *Gilde på Gløshaugen*, but then played by a different sound generator (but possibly based on the same MIDI-file). Second, it can be heard played by itself in the opening seconds of *Dodeka*, which attests to its importance.

The name opens up several possible interpretations. If we read it as "jeger pling" it means "hunters ding" (as in ding-dong), indicating that it is a kind of electronic hunter horn-call. This interpretation has some support in the actual sound: it sounds somewhat like a horn-call. But "Jegerpling" can also be read as "jeg er pling," meaning "I am pling". In this case, it could be a self-ironic reference to his music as "pling-plong" – a somewhat dismissive label often used in Norway for contemporary music. However, and this alternative is more likely, "pling" is also a notion that can be used for "mad," as in "jeg er pling" (i bollen), or "I am nuts" (in the head). This interpretation is supported by the wide and quirky jumping intervals in the module. Thus the final, and unanswered, question upon which I will end this section, is therefore: did Arne Nordheim intend to signal with this segment that he actually saw himself as "pling" – a wee bit nuts?

9.3 Chapter summary

In this chapter, I have shown how in the last two decades of his career Nordheim had a very productive period with regard to electronic music. I have focused on how he extended his thinking on memorables to devise a form of module-based composition, where entire works were composed as mosaics of pre-prepared sound segments. I will therefore conclude that in the late period, the memorable thinking was at the very core of Nordheim's compositional technique.

By the mid 2000s, it became evident that Nordheim was struggling with his health. His eyesight worsened, making the task of composing a pain-staking affair. His last works, *Bjøllø i Fjelle* and *Nordklang*, were mostly reworkings of earlier material and had to be completed with the aid of

an assistant.⁵⁶⁵ Nordheim also started showing signs of dementia – a cruel irony for a composer who throughout his life had been so focused on the significance of memory. In 2006 or 2007, Nordheim was in contact with the Bergen International Festival about a possible commission of a work for organ and trombone. The work was to be called *Rufende Stimme*. Nordheim told the festival director Per Boye Hansen that the title was a fitting characteristic of his entire production.⁵⁶⁶

Rufende Stimme was never finished, and Nordheim lived out his last years in a nursing home. Arne Nordheim died on June 5^h 2010. He was survived by his wife Rannveig, his son Mads and his daughter Gro.

⁵⁶⁵ Liner notes for AN.R82 Gaute Vikdal: *Gaute Vikdal plays Nordheim*.

⁵⁶⁶ Transcription of Per Boye Hansen's speech after Nordheim's death in 2010. Sound file downloaded from <http://www.fib.no/no/Tettere-pa/C-Diagas>, visited January 23rd 2013 (currently unavailable). The title *Rufende Stimme* is probably a reference to Heinrich Schütz choral *Ich bin eine rufende Stimme* (SWV 383).

10 FINAL REMARKS

Arne Nordheim was the most prominent composer in Norway during the second half of the 20th century. He introduced electronic music to a whole generation of Norwegians, being more or less the face of such expressions in the country in the 1960s and 1970s. Even though Nordheim did not create a compositional school (he did not take on many students), he opened up the composition of electronic music to several others. In 1970, Nordheim brought Kåre Kolberg with him to Warsaw, and helped him establish his career as an electroacoustic composer. Later that decade, the Norwegian Studio for Electronic Music (NSEM) provided an important starting ground for student composers to learn about the medium. Some years later, in the 1990s, Nordheim once again became an inspirational figure for a new generation of electronica and experimental artists, such as Helge Sten, Maja S.K. Ratkje and Ole-Henrik Moe (the son of Nordheim's long-time collaborator Ole Henrik Moe at Henie Onstad Kunstsenter).

In the international context, Nordheim belonged to the second generation of European electronic music composers – the composers who had their debut a decade or so after the pioneering works of Pierre Schaeffer and Karlheinz Stockhausen. As many of the other second-generation composers, Nordheim tried to distance himself from the split between the German and the French approaches to electronic music that had marked the pioneering decade. Nordheim seems to have made a point out of working with *both* electronic and concrete sound. This can be seen for instance in the sub-titles of some of his compositions; the sub-title of AN.70 *Lux et Tenebrae* for instance, is “*Concrete and electronic sounds for Osaka, EXPO '70*”. It can also be seen in his choice of Studio Experimentalne over the studios of Paris and Cologne. And finally, it is revealed by his compositional choices. In works like AN.13 *Den lille prinsen* and AN.28 *Epitaffio*, Nordheim seems to deliberately have combined techniques from both camps.

Being associated with an international avant-garde movement, Nordheim was part of a small and relatively tight-knit group, and he often adapted trends that were floating around in this community. Several of the ideas that Nordheim presented might have seemed new in the Norwegian context, but as I have shown throughout my study, they often had parallels in the international repertoire. It has not always been possible to trace the paths of influence and inspiration. It is only in a very few cases that Nordheim seems to have directly mimicked other composers. More often, a particular technique or sound originated from working with a particular type of equipment. In this sense, Nordheim wrote idiomatically for the electronic music studio in the same way that he wrote

idiomatically for the trombone, the cello or the orchestra. Although always reflecting his aesthetic preferences and interests, such as creating bell-sounds, performing harmonic row explorations, working with text in various ways, or experimenting with layering of sound, Nordheim's technical choices were often functions of the interface of the equipment.

In electronic music, composing the sound and choosing the technical solution is an integrated part of the creative process. Nordheim was largely an intuitive and investigative composer, and worked mainly with his ear. He would sometimes work from pre-defined sketches, like the one presented for AN.55 *Ode til lyset*, but he would just as often let the material and the studio situation shape the outcome. The intuitive approach left him open to influence from the people he was working with, and the other factors of *geographic-cultural locality*, which again points to the importance of the four periods that I have presented. Nordheim was open to influence from his co-workers, and to some extent we can talk about a Sandal-period, a Rudnik-period, and a Claesson-period. In a few cases, such as "Mazurek's bird" in the opening of *The Tempest* or the memorable "Solklokker" in his later electronic compositions, Nordheim would even adopt into his own aesthetic universe sounds that he had no direct hand in creating.

There is never any doubt, however, that Nordheim's compositions are anything else but his own. Even in the cases where inspiration or influence is easy to trace, there is always a "something" that is unmistakably Nordheimsk. His aesthetic core seeped through everything that he did. In Chapter 2, I pointed out how Nordheim's aesthetic positions, his sensitivity to poetry, art and music, and his fascination for death, the divine, the human and the beautiful, were all visible from his very first work. That Nordheim was *eine rufende Stimme* pondering over The Great Questions of Existence is the one constant in his career – whichever medium he was working in.

My study has shown how Nordheim put varying degree of emphasis on the electronic medium throughout his life. During what I called the First Period (1960–1967), almost all of his compositions included some form of electronic component. But with the exception of AN.40 *Evolution*, the electronic sounds in these compositions were always paired off with acoustic instruments. In other words, Nordheim's first emphasis was on what we today call mixed music. In some compositions, the two sound worlds blend together (I used the word *contact* to describe this phenomenon), in others they *contrasted* or were engaged in some form of *conversational interplay*. These three analytical concepts, *contact*, *contrast*, and *conversation*, can be used to highlight aspects of on his later electroacoustic compositions, but they are not equally suited to each period. During the Warsaw

Period (1967–1974), when Nordheim’s emphasis on electroacoustic composition was strongest, the three concepts cannot be used as analytical categories, since the electronic sounds were the only, or at least the completely dominating, element. In the Third Period (1975–1983), Nordheim focused less on electronic music, and returned to mixed compositions. Here, the three categories are once again more usable, but there is another concept that is just as prominent. Nordheim started to cultivate a style of composition where electronic cues were treated more as self-standing units with a distinct identity. I have used Nordheim’s own term *memorable* in order to describe them. As mentioned in the introduction, Nordheim sometimes referred to a belief in a universal memory – a sort of Jungian collective consciousness that is part of every human being. He claimed that the memorables touched on this universal memory; when encountering them, the listener would remember sounds that he or she had *never* heard. Some of the memorables would travel from composition to composition, and some of them became poignant symbols – or signatures – associated with Nordheim’s persona. In the Fourth Period (1984–2006), Nordheim once again increased his emphasis on electronic music, and he extended the use of memorables. Entire compositions, such as the late sound installations, could be assembled from mosaics of memorables, using what I called a *module-based composition technique*.

However, it is vital for the understanding of Nordheim that his sense of identity was not primarily linked to electronic music. Nordheim was part of the larger post-serialist reaction against the strict formalism of the Darmstadt School, and he borrowed just as often from Mahler as he did from Stockhausen. Nordheim emphasized throughout his career that electroacoustic music was a natural part of this culture, and not just a niche genre that somehow existed on its own. He was always a composer *first*, and an electronic music composer *second*.

10.1 Future work

The suggestions for interpretations that I have presented throughout this dissertation point to the existence of conceptual keys to almost all of Nordheim’s works. It has, however, not been my intention to unravel *all* the hidden messages and deconstruct *all* the underlying patterns in his compositions. Nor do I claim to have proffered the final word on his electroacoustic music. My exegeses have mainly been based on my own listening. Listening is always open to interpretation, and it is inevitable that my interpretations might differ from those of other listeners. Further, the highly associative nature of Nordheim’s work *invites* many possible readings. I hope that my PhD dissertation will inspire or provoke further contemplation and hearing of his music.

Although my dissertation has presented the first comprehensive look at Nordheim’s electroacoustic oeuvre, I have not covered all the works he wrote in equal measures. Nor have I given

similar emphasis to all the different periods. Several important compositions, like AN.29 *Favola*, AN.111 *Nedstigningen*, AN.118 *Aurora*, AN.136 *Acantus Firmus*, AN.163 *Draumkvedet* and AN.176 *Nidaros*, have been mentioned only in passing. Further work on these compositions would strengthen our understanding of Nordheim's music. The same is the case for the incidental music from the Warsaw period, like AN.65 *Peer Gynt* and AN.85 *Macbeth*. The music that Nordheim wrote for NRK also deserves closer scrutiny.

As mentioned in the introduction, Nordheim's manuscripts and tapes are currently in the process of getting catalogued and preserved. This raises the possibility of preparing critical editions of Nordheim's works. Currently, Nordheim is listed as being part of the Norwegian Musical Heritage project – a national initiative to prepare and publish critical editions of the music of Norwegian composers.⁵⁶⁷ However, not much has been done much on Nordheim's compositions as of yet.

My PhD dissertation suggests that in a future critical edition project, audio material must be given high priority, especially with regard to Nordheim's mixed compositions. I have shown how Nordheim's mixed works cover several generations of fixed media material, each reflecting a period in his aesthetic development. In my view, performers wanting to play, for instance, AN.34 *Response* should be able to choose between "going authentic" with the fixed media material from the 1966-version, "going standard" with the material from the 1977-version, or "going modern" with Cicada Duo's new version from the 1990s. Today, the choice of version is to large extent *a practical consideration* determined by the availability of the performance material. My hope is that in the future, choosing material will be a *historically informed aesthetic choice*, made by the performer. This PhD dissertation provides the first steps in making such choices possible.

⁵⁶⁷ <http://www.musikkarven.no/komponister/nordheim/>, visited April 1st 2015.

APPENDIX 1: CATALOGUE OF ARNE NORDHEIM'S WORKS

This appendix contains the first complete list of compositions by Arne Nordheim. I have given all works an AN_n catalogue-number, listed chronologically from date of first performance (when known). After the main catalogue, I have included lists of fragments and smaller scale works that were composed for various private occasions, such as birthdays and weddings. A few such works, for example, AN.116 *Den første somrefugl*, which was originally written for a social event at Nordheim's home, have been included in the main list because of their later numerous performances and recordings. For film music and ballets, I have only included works that were newly composed specifically for the film or ballet in the main catalogue. Other uses of Nordheim's music in film and ballet are specified in a separate list.

Nordheim never gave opus-numbers to his compositions. Although he kept a "List of Works" on his official website, he was never careful with detailing the origin and history of a composition.⁵⁶⁸ My main source for the early works has therefore been the comprehensive catalogue prepared by Ole-Henrik Moe, jr. for the book *Arne Nordheim ...og alt skal synge!*⁵⁶⁹ Moe's list contains detailed information on each composition, including first performances with performers, instrumentation, publication details and so forth. I have not footnoted information from Moe, jr., but if nothing else is indicated, the details on the early works are either based on his list, the manuscript, or the published score. A few errors have been identified and corrected (these are listed in the footnotes). I have sought to be as comprehensive as possible, listing all facts I have been able to uncover. If new errors have been introduced, they are solely my responsibility.

The last work to be covered by Moe, jr. is AN.154 *Sagvisa* from 1991. For the works after 1991, my catalogue has been pieced together from newspaper reports, recordings, written accounts, manuscripts, published scores and documents in the Arne Nordheim collection.

The catalogue is cross-referenced with the list of recordings in Appendix 2.

⁵⁶⁸ <http://www.arnenordheim.com/list.htm>, visited March 4th 2013. The website was taken down in 2014, but can be found using the Internet Archive's Wayback Machine.
<https://web.archive.org/web/20140822060606/http://arnenordheim.com/list.htm>, visited December 5th 2016.

⁵⁶⁹ Moe-jr: "Verklister," in ed. Mehren, et al. (1991).

The catalogue follows the following format:

[Catalogue-number] _____ **[Title]** _____ **[Duration][Category][Year]**

Official subtitle (in italics) – taken from score, MS or recording. No italics in subtitle indicate that I have contributed the title.

Title variants, translation of titles to English, parts or movements, first performance or broadcast, recordings, commission details, relevant literature, text material, languages, *et cetera*.

A star (*) behind instrumentation means that it is identified from my own listening to the work.

In cases where there are several versions of a title for a work, the title most frequently used by Nordheim will be used. Titles used on published scores will be given preference over other versions. I will use the version given in the language most frequently used by Nordheim, in concert programs, or by Nordheim's publisher Edition Wilhelm Hansen. Where English titles are lacking, I have provided translations, indicated by the label "(trans. ON)".

For works containing electronic elements, I have used the term "fixed media" rather than "tape" or "nastro magnetico" which were the designations most commonly used by Nordheim. The reason for this is that the sound media has changed a lot over time, and I wanted to use a term that is neutral to these changes.

I have assigned a category to each work:

Main category: concert hall music

B: Ballet

C: Chamber, solo performer

O: Orchestra, concerto

Main category: incidental

F: Film music

RD: Radio drama

TV: Television drama, television production, documentary

S: Stage/theatre

Main category: electroacoustic

EA: Electroacoustic, Acousmatic

PSI: Permanent sound installation

TSI: Temporary sound installation, electroacoustic performance

V: Sung parts

Most works will have several categories strung together, f.i. O+V indicates an orchestral work with sung parts, C+EA indicates a chamber-work with electroacoustic elements.

For manuscripts and scores, I use the following abbreviations:

MS= Manuscript

EWH = Edition Wilhelm Hansen (followed by year for publicized score if known)

NB = The Arne Nordheim collection at the Norwegian National Library

If no score or MS is indicated, it is possible the work has been lost.

Early compositions

All of the following early compositions are lost, and are only known through secondary sources. I have seen no evidence that any of these works were performed outside of their original context. It is probable that Nordheim wrote more during his adolescent years.

Eventyr til Ellen

English title: *Fairy Tale for Ellen* (trans. ON)

Possibly composed in 1944⁵⁷⁰

For voice (S), piano, trombone (or possibly bassoon or valve trombone)

According to later interviews, this was the first piece of music Nordheim ever wrote.⁵⁷¹

The work was inspired by Herman Wildenvey's poem "Eventyr til Ellen."

Sørgemarsj for orkester

English title: *Funeral March for Orchestra* (trans. ON).

The work is mentioned in a newspaper interview from 1955, and is supposedly lost.⁵⁷²

Trio for blåsere

English title: *Trio for winds* (trans. ON).

Nordheim mentions the work as one of his first compositions in a 2006 interview.⁵⁷³

Main catalogue

AN.1 *Essay* **C **1954****

For strykekvartett

Title variants: *Essay nr. 2*.⁵⁷⁴

English title: *Essay – for string quartet* (trans. ON)

First performance: March 1954, Ung Nordisk Musikk, Stockholm.

Vln. Johan Akeson and Björn Sjögren, vla: Lars Brolin, vlc: Ingela Brandin.

MS: NB Mus.ms.7996:624 Essay nr. 2

⁵⁷⁰ Mona Levin claims that Nordheim was 13 when he wrote the piece, and that the piece is written for "basun." This might be a misunderstanding of the word *trekkbasun* – a popular term for *trombone* in Norwegian. Mona Levin, "Skaper av den gode uro," *ibid.* Nordheim played valve trombone in the local marching band in Larvik, so it might have been composed for this instrument.

⁵⁷¹ Arco: "Ung alvorsmann ler av egen sørgemarsj," *Verdens Gang*, October 15th 1955. "Mitt liv," *NRK2*, December 26th 2012.

⁵⁷² Arco: "Ung alvorsmann ler av egen sørgemarsj," *Verdens Gang*, October 15th 1955.

⁵⁷³ Arne Nordheim, interviewed by Jøran Rudi and Tilman Hartenstein on September 20th 2005. Video at NoTAM – Norwegian Center for Technology in Music and the Arts.

⁵⁷⁴ A.F: "Ung komponist vil ut," *Aftenposten*, march 26th 1954.

According to Ole-Henrik Moe, jr. the music for this film was originally composed in 1955 for a commercial or information film about Den norske Creditbank called *Pengetreet*.⁵⁷⁸

AN.5 *Strykekvartett 1956* 18' C 1956

Name variants: *Strykekvartett nr. 1*; *Strykekvartett*; *Portulakk-kvartetten*⁵⁷⁹

English title: *String Quartet 1956*

Related works: 3rd movement orchestrated as AN.97 *Nachruf* (1956/1975). The whole composition was revised for orchestra as AN.139 *Rendezvous* in 1987.

Movements

I *Lento quasi una improvisazione*

II *Intermezzo*

III *Epitaffio*

First performance: Oslo: Ung Nordisk Musikk, Frogner Kirke, October 9th 1956

Den norske strykekvartett: vln1: Alf Sjøen, vln2: Aage Wallin, vla: Arne Sletsjøe, vlc: Arne Norvang.

Recordings: AN.21, AN.R40, AN.R77

Score: EWH 1972

Dedication: "Til Wenche" [Wenche Nordheim]

Nordheim started writing the work when studying with Vagn Holmboe in Denmark during Easter 1956. Nordheim continued the work in Ferdinand Finne's summerhouse in Lillesand during the summer. It was completed in Larvik in August 1956.⁵⁸⁰ The work was renamed from *Strykekvartett nr. 1* to *Strykekvartett 1956* when it was published by EWH in 1972.

AN.6 *Det hemmelige regnskap* S 1957

Music to a play by Solveig Christov.

English title: *The Secret Accounts* (trans. ON)

Premiere: Norwegian National Theatre, February 21st 1957.

Directed by Olafr Havrevold. Scenography by Ferdinand Finne.

AN.7 *Aftonland* 14' C 1959

Sangsyklus til dikt av Pär Lagerkvist

Name variants, main title: *Evening Land*; *Abenland*.

English subtitle: *Song cycle for poems by Pär Lagerkvist* (trans. ON).

Movements:

I. *Min längtan er inte min* (slow)

⁵⁷⁸ Borchgrevink: "Klokkeklang og minnemekanismer," in ed. Neset, Buene, and Vinger (2016).

⁵⁷⁹ Ferdinand Finne, "Portulakk-kvartetten," in *Arne Nordheim ...og alt skal synge!*, ed. Stein Mehren, et al. (Oslo: Dreyer, 1991).

⁵⁸⁰ Letter from Arne Nordheim to unknown recipient, dated Larvik August 2nd 1983. Arne Nordheim's papers, Norwegian Academy of Music.

II: *Som molnen* (fast)
 III: *Allting finns* (slow, attacca)
 IV: *Det är om aftonen man bryter upp* (slow)

Instrumentation:
 Mezzo-soprano (or tenor) solo
 Chamber ensemble: perc./ar./cel./archi
 Expanded version 1959 for mezzo-soprano (or tenor) and orchestra.

Composition: Possible early version 1956.⁵⁸¹ Date according to score: 1957.
 World premiere (?): June 10th 1959, Danish Radio.
 Sop: Karen Heerup, timp: Børge R. Andersen, perc: Poul Lerhøj, ar.: Birte Espensen, cel.:
 Ib Jarlkov, Musica vitalis strykekvartett, cb.: Helge Ploug.
 Norwegian premiere: October 26th 1959, Oslo.
 Sop: Erna Skoug, cond.: Sverre Bruland⁵⁸²

Score: EWH 1988. Libretto provided in three languages: Swedish, English and German.
 Recordings: AN.R1, AN.R8, AN.R40
 Dedication: "In loving memory of my father Erling Nordheim who died July 1957."
 Accolade: Bergenfestspillenes pris 1961 (5000 NOK)⁵⁸³

There are some uncertainties regarding what should be seen as the premiere of the work. Documents in the archives of Norsk komponistforening mention a performance at the Ung Nordisk Musikkfest in Stockholm in 1958, but I have found no further mention of such an event.⁵⁸⁴ Most sources point to the performance on Danish Radio as the premiere of the work.

AN.8 *Damasktrommen* R 1960

Music to a radio drama by Yukio Mishima. Directed by Knut Johansen.
 English title: *The Damask Drum*.

Instrumentation: Vibraphone, flute*

First broadcast: NRK Radio Theatre, February 23rd 1960.
 Flute: Alf Andersen.

MS: NB Mus.ms. 9739:764: Musikk til hørespillet Damasktrommen.

⁵⁸¹ In his application for membership in Ny musikk, Nordheim states that he has "just finished some songs for mezzo-soprano and chamber orchestra." Arne Nordheim til Ny musikk, 13.11.1956. RA/PA-1445/Da/L0002

⁵⁸² Gunnar Rugstad: "Ny musikk," *Aftenposten*, October 27th 1959.

⁵⁸³ Announced in *Aftenposten*, January 18th 1961.

⁵⁸⁴ In a letter from Arne Nordheim to Norsk Komponistforening, dated February 15th 1958, Nordheim applies for a refund of 252,50 SKR for his expenses for providing copies of the score for the Swedish musicians. No date for the concert was indicated, other than it was supposed to take place "next week." RA/PA-1446/Da: 1950-59

AN.9 *Sigurd Stembe* S+EA 1960

Music to a play by Bjørnstjerne Bjørnson. Directed by Jørn Ording.⁵⁸⁵

EA technology: Manipulation of orchestra recording, fixed media playback (continuous).

Instrumentation: 3 trp./horn/perc./timp./vib./xyl./cel./hpc.⁵⁸⁶

Musicians: Karl Josef Barreng, Sverre Bruland, Knut Fjeldhøi, Sverre Hartmann, Odd Ivar Ingberg, Rolf Karlsen, Fritz Maltun, Leif Nagel and Per Nyhaug.

Recorded at the University Aula, Oslo.

Studio and technical assistance: Roger Arnhoff, Oslo.

Premiere: Oslo: The National Theatre, April 26th 1960

MS: NB

AN.10 *Don Juan* S+EA 1960

Music to a play by Molière. Directed by Arne Thomas Olsen, scenography by Carl Nesjar, costumes by Inger Sitter.

EA technology: Manipulation of instrument recording. Fixed media playback.⁵⁸⁷

Musicians: Fl.: Alf Andersen, hpc.: Rolf Karlsen, perc.: Karl Josef Barreng⁵⁸⁸

Studio and technical assistance: Roger Arnhoff, Oslo⁵⁸⁹

Premiere: Oslo: The National Theatre, August 30th 1960

AN.11 *Vildanden* R 1960

Music to a radio adaptation of Henrik Ibsen's drama. Directed by Gerhard Knoop.

English title: *The Wild Duck*

Scored for: String quartet*

Premiere: NRK Radio Theatre, November 1st 1960

AN.12 *Medea* S 1960

Overture to a monologue based on Euripides' play. Adapted by William Zavis for Anne Brown, based on the translation by Rex Warnes and Fredric Prokorsch. Decorations and costumes by Inger Sitter and Carl Nesjar.⁵⁹⁰

Premiere: Oslo: Oslo New Theatre, October 20th 1960.

⁵⁸⁵ <http://forest.nationaltheatret.no/Productions/Details/70632801-321a-4b0d-9a48-37f00025f59f>, visited June 20th 2015.

⁵⁸⁶ Hans Jørgen Hurum: "Moderne lydbåndmusikk i nationaltheateret i aften," *Aftenposten*, April 26th 1960.

⁵⁸⁷ T.N.: "Molière: Don Juan," *Friheten*, August 31st 1960.

⁵⁸⁸ Herresthal (2015): *Fra hjertedypet stiger tonens strøm*, p. 163.

⁵⁸⁹ http://forest.nationaltheatret.no/Productions/EventSeries/70632801-321a-4b0d-9a48-37f00025f59f?event_id=89312dc1-994e-4fcf-b186-eeb306f4edda, visited June 20th 2015.

⁵⁹⁰ Olavia: "Anne Brown-afte med ny Medea-versjon," *Aftenposten*, October 18th 1960.

AN.13 *Den lille prinsen* **R+EA** **1961**

Music to a radio adaptation of Antoine de Saint-Exupéry's novel. Directed by Gerhard Knoop.

Title variants: *The Little Prince*, *Le petit prince*.

EA technology: electronic and concrete. Mixed acoustic and fixed media.

Instrumentation: Vib./fl./trb./perc./ar./pf./cel.*

Studio: NRK Radio theatre

First broadcast: NRK Radio Theatre, March 7th 1961

MS: NB

Recording: AN.R68

Analysis: Bergsland 2011.

AN.14 *Canzona* **13'** **O** **1961**

Per Orchestra

Versions for symphonic wind orchestra, 2005

Instrumentation

Winds: 3+1d. picc.3+1d.ca.3+1d.bcl.3+1d.cf.

Brass: 4.3.3.1

Timp./4perc./ar./cel./pno.

Archi.

Composition: 1960/1961⁵⁹¹

World premiere: Bergen: Bergen International Festival, June 11th 1961

Musikskapet Harmoniens orkester, cond.: Arvid Fladmoe

Score: EWH 1962

Recordings: AN.R2, AN.R72

Analysis: Wollnick 1971

AN.15 *Intermezzo* **R+EA** **1962**

Music to a radio drama by Jean Giraudoux

EA technology: mixed acoustic and fixed media

Instrumentation: FL./vib.

MS: NB Mus.ms. 9738:764: Musikk til Intermezzo

First broadcast: NRK Radio Theatre, January 6th 1962

Recording: AN.R68

⁵⁹¹ Most likely the composition was underway when Nordheim won the commission in 1960, and was completed some time before the first performance.

AN.16 Katharsis **50'** **B+V+EA** **1962***Ballett i syv scener*English subtitle: *Ballet in seven parts* (trans. ON)Subtitle variant: *Ballet for large ensemble, based on the legend of St. Antonius* (trans. ON).Related to: AN.18 *Katharsis* (Suite)

Commissioned by: The Norwegian Opera Ballet.

Choreography: Ivo Cramér. Scenography and costume: Guy Krogh.

Parts [trans. by ON]

I. Sodoma

II. Korsveien ["The Crossroads"]

III: Ørkenbusken ["The Desert Bush"]

IV: Hulen ["The Cave"]

V: Sort messe ["Black Mass"]

VI: Demonene ["The Demons"]

VII: Katharsis

Instrumentation:

Winds: 2+1d.picc.2+1d.ca.2.2+1d.cf.

Brass: 2.3.3.0.

Timp./3perc./pf./

Archi.

EA technology: Interpolated fixed media cues

Studio: NRK. Technical assistance: Viktor Sandal

Composition: December 1961 – April 1962⁵⁹²World premiere: Bergen: Bergen International Festival, May 28th 1962

The Norwegian Opera Ballet and Orchestra, under Arvid Fladmoe

Oslo premiere: The Norwegian Opera, September 27th 1962,Danish premiere: Copenhagen: The Royal Theatre, March 25th 1964⁵⁹³

Score: EWH, NB

Note on the fixed media material: The score asks for nine tape cues. I have recognized four of the cues on a CD marked "Lydeksempler 1998" at NB. See Chapter 3.

AN.17 Isøya radio kaller **R** **1962**

Music to radio drama by Kaare Zakariassen and Paul Skoe. Directed by Paul Skoe.

English title: *Isøya Radio Calling* (trans. ON).Instrumentation: vib./hpc./tam tam/Hammond organ⁵⁹⁴⁵⁹² E.A.: "Arne Nordheims ballettmusikk 'Katharsis,'" *Programbladet* no. 36 (1962).⁵⁹³ Harald Engberg: "En sand ørken," *Politiken*, March 26th 1964.⁵⁹⁴ "Statistikkoppgave: Isøya Radio kaller." NRK TV, Production archive.

Composed 1963. Revised 2001.
 First performance: Stockholm: Fylkingen, March 1963
 Perc: Knut Fjeldhøi, hpc.; Ole Henrik Moe, vla: Ernst Glaser

Score: EWH 2001
 Recording: AN.R40

Commissioned by Ny musikk.⁵⁹⁶

AN.21 ***Hjemkomsten*** **R+EA** **1963**

Music to a radio drama by Muriel Spark. Directed by Toralv Maurstad.
 Original title: *Homecoming*

EA technology: Sine wave generator.

First broadcast: NRK Radio Theatre, March 9th 1963
 Recording: AN.R68

AN.22 ***Kimære*** **15'** **TV+B+EA** **1963**

En lyrisk ballett

Television ballet in five parts to the poem "Kimærer" by Per Bronken.
 Choreographed by Henny Mürer, directed by Per Bronken.
 English title: *Chimera. A lyrical ballet* (trans. ON).

EA technology. Excerpt from AN.13 *Den lille prinsen* (only a short segment)
 Instrumentation: fl./horn/perc./vib./xyl./ar./pno./2vln./vla./vlc.

First broadcast: NRK TV, October 17th 1963.
 Available online at <http://nrk.no>.

The music is in part based on earlier works, including AN.2 *Epigram*, AN.13 *Den lille prinsen* and AN.19 *Krangel ved bymuren*.

AN.23 ***Her bor vi så gjerne*** **R** **1963**

Music to a radio drama by Harald Sverdrup. Directed by Paul Skoe.
 English title: *Here we like to live* (trans. ON).

Instrumentation: Vibraphone, electric guitar, electric organ (Hammond?)*

First broadcast: NRK Radio Theatre, November 5th 1963
 Recording: AN.R68

⁵⁹⁶ According to a presentation folder about Nordheim from 1964, "Nordheim and three other Norwegian composers were invited to write chamber music for the 'Ny musikk' Scandinavian tour in 1963." "Arne Nordheim". Presentation folder in RA/PA-1445.

- AN.24** *Læraren* **TV+EA** **1963**
 Music to a television adaptation of Arne Garborg's play. Directed by Tore Breda Thoresen.
 English title: *The Teacher* (trans. ON)
 EA technology: Fixed media cue (only short segments)
 Instrumentation: Orchestra*
 First broadcast: NRK TV, November 21st 1963
 Available online at <http://nrk.no>.
- AN.25** *Edvard Munch* **TV+EA** **1963**
 Music to a TV documentary on Edvard Munch. Directed by Per Simonæs.
 Instrumentation: fl./vib./perc./ar.*
 EA technology: electronic organ
 First broadcast: NRK TV, December 11th 1963
 Available online at <http://nrk.no>.
- AN.26** *På sporet* **10'** **F+EA** **1963**
 Music to an information film on railway track maintenance. Directed by Sølve Kern.
 Produced by ABC-film and Norwegian State Railways (NSB).
 English title: *On the Tracks* (trans. ON).
 EA technology: acoustic instruments, concrete manipulation and electronic sounds
 Instrumentation: vib./xyl./perc.
 Studio: Roger Arnhoff Lydstudio, Oslo.⁵⁹⁷
 Premiere: 1963⁵⁹⁸
 MS: NB
- AN.27** *Fangen i det blå tårn* **TV+EA** **1964**
 Music to a radio drama by Finn Carling. Directed by Per Bronken.
 English title: *The Prisoner in the Blue Tower* (trans. ON).
 EA technology: Sine wave generator. Concrete manipulation of instrument sounds.
 First broadcast: NRK TV, January 2nd 1964
 Available online at <http://nrk.no>.
- AN.28** *Epitaffio* **11'** **O+EA** **1964**
Per orchestra e nastro magnetico

⁵⁹⁷ According to the end credits.

⁵⁹⁸ Moe, jr erroneously dates the movie to 1956 (p. 51). Gunnar Iversen dates the movie to 1963, based on archival evidence at ABC-film. Gunnar Iversen: *Framtidsdrøm og filmlek: Erik Løchens filmproduksjon og filmestetikk*, PhD Dissertation (Stockholm: Stockholms universitet, Institutionen för teater- och filmproduktion, 1992), p. 170.

EA technology: Fixed media, two channels, continuous from halfway into the work.
 Original fixed media (mono): NRK radio theatre studio. Technical assistance: Viktor Sandal.
 1969 revision: Added elements produced in Warsaw, possibly expanded to stereo with aid of Eugeniusz Rudnik.
 According to the 1980 score there exists a four-channel version of the tape material.
 2010 revision: remaster of original tape, digitally generated elements added. Technical responsible: Mats Claesson.

Instrumentation

Winds: 1d.picc.+ picc.d.fl.alto.1+ca.1 + cl.basso.0+cf.,sxf. alto

Brass: 1.1.1.1

4perc./ar./cel./pf./

Archi: 12.12.8.8.4

Electric guitar, electric bass

Composed 1963 according to score. Score revised 1977.
 First performance: Swedish Radio, Stockholm, March 20th 1964.
 Radiotjänst symfoniorkester, cond.: Francis Travis.
 Norwegian premiere: January 7th 1965, Oslo Philharmonic Orchestra.

Commissioned by the Swedish Radio Orchestra. Dedication: "Alf Andersen in memoriam." The Norwegian flutist Alf Andersen (1928–1962) had played many of Nordheim's early pieces.

Score: EWH 1964 and EWH 1980

Recordings: AN.R2, AN.R72

Analysis: Wollnick 1971 and Larsen 2003.

AN.29 Favola 34' TV+B+V+EA 1965

For to sangere og ti dansere / For to sangere, ti dansere, orkester og lydbånd

Directed and choreographed by Ivo Cramér, scenography and costume by Guy Krogh, libretto by Per Bronken.

English subtitle: *For two singers, ten dancers, orchestra and tape* (trans. ON).

EA technology: concrete manipulation of chorus and instruments, filtered noise; cues.
 Studio: NRK, technical assistance: Viktor Sandal.

Instrumentation:

Soprano and tenor solo, mixed chorus

Winds: 2d.picc+d.fl.alto.2d.ci.2d.clb+d.cl.Mi bemolle+d.sxf.alto.0+cf.

Brass: 1.1.1.0

4perc./ar./cel./pf./hpc.

Archi: 6.6.4.4.2

Baldwin organ, electric bass, electric guitar, accordion

First broadcast: NRK TV, September 7th 1965.

Available online at <http://tv.nrk.no>

MS: NB
 Fixed media: Unknown.
 Analysis: Thommesen 1979.

Accolades: Work of the year, Norwegian Composers Association, 1965. Nominated for Prix Italia, 1965.⁵⁹⁹

AN.30 *Stoppested* TV+EA 1965

Music to a television adaptation of a short story by Torborg Nedreaas. Directed by Tora Breda Thoresen
 English title: *Stopover* (trans. ON).

Instrumentation: harp, accordion, church organ, electric organ (Hammond?)*

First broadcast: NRK TV, October 12th 1965
 Available online at <http://nrk.no>

AN.31 *Klimaks* F+EA 1965

Music to a film by Rolf Clemens. Produced by AS Norsk Film.
 English title: *Climax*.

Instrumentation: Church organ⁶⁰⁰
 Electroacoustic technology: unknown

Premiere: Oslo: October 14th 1965

AN.32 *Når vi døde vågner* R+EA 1966

Music to a radio adaptation of Henrik Ibsen's *When We Dead Awaken*. Directed by Hans Heiberg.

First broadcast: NRK Radio, May 20th 1966.
 Electroacoustic technology: electronic sound, electronic organ*

Recording: AN.R68

AN.33 *Othello* S 1966

Incidental music to William Shakespeare's play. Directed by Tormod Skagestad.

Premiere: The Norwegian Theatre, Oslo, October 17th 1966.

AN.34 *Response I* 19' C+EA 1966

For Two Percussion Groups and Magnetic Tape

⁵⁹⁹ (Unsigned): "Norges Favola nådde ikke opp i Prix Italia," *Aftenposten*, September 28th 1965.

⁶⁰⁰ Performed by Nordheim in Trefoldighetskirken, Oslo, according to Arne Nordheim interviewed by Tilman Hartenstein in the program *Elektronisk Tidligmusikk*, NRK Radio P2, December 14th 2005.

Originally performed without numbering in the title. The first reference to the work as *Response I* is on the recording.

Instrumentation: 2 perc.
EA technology: Fixed media playback (continuous)

First performance: Oslo, Kunsternes hus, Oslo, October 30th 1966⁶⁰¹
Perc: Per-Erik Thorsen and Per Nyhaug. "Sound direction" by Arne Nordheim

Recording: AN.R2
Score: EWH 1969.

This is the first version in the *Response*-series of works. See page 107 for details on versions and generations of the fixed media material in the Response series.

AN.35 *En gal manns dagbok* TV+EA 1967

Music to a television adaptation of the short story *Diary of a Madman* by Nikolai Gogol.
Directed by Caspar Wrede.

Instrumentation: Harpsichord, piano, harp, vibraphone, cymbals, electric organ*
EA technology: Electronic organ, sine wave generator.

First broadcast: NRK Television Theatre, January 3rd 1967.
Rerun: October 28th 1969.
Available online at <http://nrk.no>.

AN.36 *Don Carlos* TV+EA 1967

Music to a television adaptation of Schiller's play. Directed by Per Bronken, scenography by Guy Krogh.

First broadcast: NRK Television Theatre, February 7th 1967.
Available online at <http://nrk.no>.

AN.37 *Papirfuglen* R+EA 1967

Music to a radio drama by Jorge Díaz. Directed by Arne Thomas Olsen.
English title: *The Paper Bird* (trans. ON).

First broadcast: NRK Radio, March 21st 1967
Recording: AN.R68

AN.38 *De blanke knappene* R+EA 1967

Music to a television adaptation of Mathis Mathissen's novel. Directed by Lars Løfgren.
English title: *The Shiny Buttons* (trans. ON).

⁶⁰¹ Moe, jr. erroneously dates the first performance to November 30th 1966 (p. 64).

Instrumentation: Trumpet, harp, vibraphone, cymbals*
 Electroacoustic technology: Electronic and concrete sounds.

First broadcast: NRK Television Theatre, April 18th 1967

AN.39 *Hamlet* R+EA 1967

Music to a radio adaption of Shakespeare's play. Directed by Tormod Skagestad.

Instrumentation: Horns, percussion*
 Electroacoustic technology: electronic organ, electronic sound generation

The play includes three songs scored for voice (alto, bass), lute, guitar and flute: *Møy utved glaset*, *Ofelia synger I* and *Ofelia synger II*.⁶⁰²

First broadcast: NRK Radio, May 2nd 1967
 Recording: AN.R68
 MS: NB

AN.40 *Evolution* 9' TV+EA 1967

Musikk i bilder og lyd

Title variant: *Evolusjon*.
 Subtitle variants: *Et fjernsynsmaleri*; *Elektroakustisk musikk til bilder av maleren Rolf Aamot*.
 English subtitle: *Music in Images and Sound*; *Electroacoustic music to pictures by the painter Rolf Aamot* (trans. ON).

Electroacoustic technology: Concrete and electronic sounds.

First broadcast: NRK TV, May 28th 1967
 Recording: AN.DVD2
 Derived from the original fixed media of AN.34 *Response I*. See page 107.

AN.41 *Faust* R+EA 1967

Music to a radio adaptation of Goethe's drama.
 Translated by André Bjerke. Directed by Knut Johansen.

Includes two songs: *Thule (En konge i landet)* and *Mefist synger (Katrine hør)*.
 Instrumentation: Voice (S), mixed chorus (SATB), fl./perc./vib./ar.*
 Electroacoustic technology: electronic and concrete sound, birdsong

Broadcast in four episodes on NRK Radio, December 10th, 12th, 14th and 15th 1967

Recordings: AN.R64 (entire play) AN.R68 (excerpt).
 MS: NB

⁶⁰² List of manuscripts from NB, personal communication with NB.

Electroacoustic performance.
English subtitle: *An experiment with electronic sound* (trans. ON)

Electroacoustic technology: Live manipulation of electronic tape, using flashlight on interactive electronics with light sensors.

First performance: ABC-teateret, Oslo, February 17th 1968.
Performed by Arne Nordheim.

This is a “derivative performance” from the sound installation [56] *Ode to Light*, demonstrating the working principle of the “Music Machine” that would control the sound distribution in the installation and showcasing the tape material that Nordheim had composed in Warsaw. This is the first of Nordheim’s Warsaw material to be presented officially.

AN.46 *Response 3* C+EA 1968

*For slagverk og elektronisk klang*⁶⁰⁶

Instrumentation: 1 perc.
Electroacoustic technology: Live electronic manipulation of percussion and tape in first version. Fixed media playback in revised version. For a discussion of the versions in the Response-series, see page 107.

First performance: ABC-teateret, Oslo, February 17th 1968.
Perc: Bent Lylloff. “Electronic recording and equipment” by Arne Nordheim and Meny Bloch.

Premiere of version with revised fixed media tape material: November 22nd 1970, Henie Onstad Kunstsenter.⁶⁰⁷
Perc: Per Erik Thorsen.

AN.47 *Fruen fra havet* S+EA 1968

Incidental music to Henrik Ibsen’s play *The Lady from the Sea*. Directed by Per Bronken.

Premiere: Oslo: Nationaltheateret, February 3rd 1968. Part of the Bergen International Festival program in May 1968, On tour to Helsinki, Finland, December 1968.

I have found no tapes or MS. The reviews indicate that the music was electroacoustic.⁶⁰⁸

AN.48 *Lille Eyolf* R 1968

Incidental music to a radio adaptation of Henrik Ibsen’s play *Little Eyolf*. Directed by Hans Heiberg.

⁶⁰⁶ Ibid.

⁶⁰⁷ (Unsigned): “Høvikmatiné imorgen viet tre Nordheim-verk,” *Aftenposten*, November 21st 1970.

⁶⁰⁸ (Unsigned): “Ung frue fra havet på National,” *Verdens Gang*, February 3rd 1968.

First broadcast: May 9th 1968, NRK Radio.

AN.49 Warszawa 11'35 EA 1968

Electroacoustic technology: Two-channel fixed media, acousmatic

Realized in Studio Experymentalne, Warsaw, September 1967-April 1968 by Arne Nordheim and Eugeniusz Rudnik. Completed in Oslo April-May 1968 by Arne Nordheim, possibly in cooperation with Meny Bloch.

First performance: Bergen: Håkonshallen, Bergen International Festival, May 28th 1968.

Sound diffusion (and possible live manipulation): Meny Bloch and Arne Nordheim.

Recording AN.R7.

The ballet AN.B1 *Stages* uses excerpts from *Warszawa* and AN.50 *Colorazione*.

Dedication: "I dedicate Warszawa to my friends at the Studio Experymentalne, to Gienio and Bogdan, to Ania and Krzysztof, to Jozef and Wojtek."⁶⁰⁹

The initial subtitle for this work was "For electronic effects, filters and ring modulators."⁶¹⁰
This subtitle seems to have been dropped as the work has lived on as a fixed media work.

Analysis: Flø 2012.

AN.50 Colorazione 20' C+EA 1968

For Hammondorgel X66, slagverk, tidsforsinker, ringmodulator og filtere

English subtitle: *For Hammond Organ X66, Percussion, Time Delay, Ring Modulators and Filters* (trans. ON).

Electroacoustic technology: 15 second time delay, filters, ring modulators.

Instrumentation: Hammond Organ X66, percussion.

Revised 1993 for Synthesizer, percussion and digital effects.⁶¹¹

Composed in Oslo and Warsaw 1967-1968.

First performance: Bergen: Håkonshallen, Bergen International Festival, May 28th 1968.

Hammond Organ: Kåre Kolberg, perc.: Per Erik Thorsen, "filters, delay and ring modulation" by Meny Bloch and Arne Nordheim.⁶¹²

MS: NB (incomplete), The Schøyen Collection MS 5491.

Score: EWH 1969

⁶⁰⁹ Liner notes to AN.R7 Arne Nordheim: *Electronic music of Arne Nordheim*.

⁶¹⁰ Program for the Bergen International Festival, 1968, p. 67. English in original.

⁶¹¹ Liner notes to AN.R66 *Cikada Duo*: Nordheim.

⁶¹² Moe-jr claims that it was Per Nyhaug that played percussion on the premiere (p. 67). However, the stage plot reproduced in Chapter 6 indicates that it was Per Erik Thorsen that played on the premiere, and that Per Nyhaug only participated on AN.34 *Response I* that was played later during the same concert.

Recordings: AN.R4, AN.R17. Revised version: AN.R66.

The ballet AN.B1 *Stages* uses excerpts from AN.49 *Warszawa* and *Colorazione*.

Some sources indicate that *Colorazione* was revised in 1982. I have not been able to verify this claim. For the 1982 recording (AN.R17) the filtering and ring modulation seems to have been revised, still based on the original recording of Kolberg and Thorsen. In other words, the 1982 version seems to be a revision of the recording, and not the work per se.

AN.51 *Mot bristepunktet* R+EA 1968

Music to Charles Parr's radio adaptation of Arthur C. Clarke's short story *Breaking Strain*. Produced by Viktor Sandal.

First broadcast: NRK Radio, August 1st 1968

Recording: AN.R68

AN.52 *Solitaire* 12' EA 1968

Electroacoustic technology: Four-channel fixed media, acousmatic

Commissioned for the opening of Henie Onstad Kunstsenter.

Realized in Studio Experymentalne, Warsaw, September 1967-August 1968 by Arne Nordheim and Eugeniusz Rudnik.

Premiere: Høvikodden (Oslo): Henie Onstad Kunstsenter, August 23rd 1968

Sound diffusion: Arne Nordheim. Light projection: Terje Moe.

Solitaire initially ran 27 performances throughout the autumn of 1968 until January 1969.⁶¹³

The work is inspired by the poem "Les Bijoux" from Baudelaire's *Les fleurs du mal* (1857). Some sections are manipulated recordings of the journalist Astrid Brekken reading excerpts from the poem in French.

A stereo mixdown was first released on AN.R4.

Notable written accounts: Finborud 2012 and 2013. Analysis: Thoresen and Hedman 2016.

Solitaire has been used in AN.B2 *Strender*, AN.B3 *Stoolgame* and Sølve Skagen's movie *Ja, vi elsker* (1987).

AN.53 *Lille bror – lille søster* R+EA 1968

Music to a radio drama by David Crompton, produced and directed by Carl Frederik Prydz.

Original title: *Little Brother – Little Sister*.

First broadcast: NRK Radio Theatre, September 12th 1968.

AN.54 *Eco* 20' O 1968

For blandet kor, barnekor, sopransolo og orkester, til to dikt av Salvatore Quasimodo

⁶¹³ Finborud (2012): *Mot det totale museum*, p. 118.

English subtitle: *For mixed chorus, children chorus, soprano solo and orchestra, to two poems by Salvatore Quasimodo* (trans. ON).

Movements

I: I morti

II: Alle fronde dei salei

Dur.: 20'

Instrumentation:

Soprano solo, mixed chorus (SATB), children chorus (SA),

Winds: 4(4d.picc.).4(d.ci.).4(2d.clar. Mi bemolle, 2d.clar bassi).4.(2d.cf)

Brass: 4.4.4.2

6perc./ar./ 2pf. (1d. Hammond organ)

Archi: 0.0.12.10.8

Electric bass guitar

First performance: Stockholm, September 24th 1968, Nutida Musik concert series

Sop: Tarju Valjakka, Swedish Radio Chorus (Radiokören), Adolf Fredrik School Children Chorus, Swedish Radio Symphony Orchestra, cond.: Herbert Blomstedt.

Recordings: AN.R3

Score: EWH 1972.

Commissioned by the Swedish Radio Symphony Orchestra. Dedication: "Karl-Birger Blomdahl in memoriam." Accolade: Nordic Council Music Prize of 1972.

Analyses: Reitan 1975, Aksnes 2013.

AN.55 *Ode til lyset* EA+PSI 1968

Electronic music to a sculpture by Arnold Haukeland.

Electroacoustic technology: Fixed media playback (2 simultaneous loops), interactive unit with intensity of sunlight as environmental input.

First performance: October 1st 1968, Skjeberg, Norway.

Official opening: August 12th 1970.

Opening of revised version: August 12th 1995.

Sound material realized in Studio Experymentalne, 1967-68, by Arne Nordheim and Eugeniusz Rudnik.

Interactive elements (the "Music Machine") developed by The Acoustical Laboratory at NTH/SINTEF, Trondheim, 1967-68. Technical director: Asbjørn Krokstad.

Commissioned by Erling Stordahl. Financed by the Norwegian Arts Council.

Revised 1995, updated with new sound material and interactivity unit.

Recordings: The two loops have been released as "Ode to Light – Stereo mix 1" and "Ode to Light – Stereo mix 2" on AN.R78. A stereo mixdown of both loops has been released as "Ode to Light" on AN.R80.

Derivative works: The live-electronic performance AN.45 *Machina* used the original sound material and the prototype of the interactivity unit. The CD-track AN.180 *Fonofonier* (originally released on AN.R47) uses sound material from the revised version of the installation (1995). The live-electronic performance AN.169 *Partita Electroencephalasonica* also used sound material from the revised version of the work.

Relevant literature: Aamold 1992, Nordal 2013b.

AN.56 *Brand* S+EA 1968

Incidental music to a play by Henrik Ibsen, directed by Knut Thomassen.

Electroacoustic technology: Fixed media playback⁶¹⁴

Parts: Prologue and entr'actes⁶¹⁵

Opening: Bergen: Den nationale scene, October 12th 1968

A total of 33 performances during the season 1968-1969⁶¹⁶

AN.57 *Hvisomatte* R 1969

Music to a radio drama by Ciril Kosmač. Directed by Jack Fjelstad.

Original title: *Hasômatte*.

First performance: NRK Radio Theatre, January 23rd 1969.

AN.58 *Dagen vender* R+EA 1969

Music to a radio adaptation of Paul Claudel's play *Partage de Midi* (English: *Break of Noon*). Produced and directed by Nicole Marcé.

Electroacoustic technology: Concrete and electronic sound.

Instrudmentation: Hammond X66, mixed chorus.⁶¹⁷

First broadcast: NRK Radio Theatre, February 13th 1969.

Excerpt released on AN.R68

Nordheim also wrote music for a staging of this play in 1998, see AN.179 *Dagskilje*.

AN.59 *Solar Plexus* 8'30 (TV+)C+EA 1969

For jazz voice, recitation & jazz quartet

There are several titles for this work. The title reported by the TV presenter on the first official broadcast was *Her og nå* (English: *Here and Now*). A later live version was called *Tillitspolka* (English: *Confidence Polka*). Finally, the work was released on record as *Solar*

⁶¹⁴ Confirmed in G.Tj: "Brand på Den Nationale Scene," *Bergens Tidende*, October 12th 1968.

⁶¹⁵ Thorstein Hoff: "Brand som provo," *Verdens Gang*, October 25th 1968.

⁶¹⁶ Knut Nygaard and Eiliv Eide: *Den nationale scene 1931-1976* (Oslo: Gyldendal, 1977), p. 382.

⁶¹⁷ Confirmed by Arne Nordheim in interview with Tilman Hartenstein. "Elektronisk Tidligmusikk." *NRK Radio P2*, December 14th 2005.

Plexus, which is now the title most commonly used. In his catalogue, Ole-Henrik Moe jr. claims the title to be *Fri, fri, fri* [English: *Free, Free, Free*].⁶¹⁸

Electroacoustic technology: Voice and sound manipulation, concrete material (collage).

First performance as *Her og nå*: NRK TV, March 15th 1969.

Voice: Karin Krog, recitation: Ola B. Johannesen. Jan Garbarek's Quartet: sax.: Jan Garbarek, pno.: Terje Bjørklund, cb.: Arild Andersen, dr.: Svein Christiansen.⁶¹⁹

First performance as *Tillitspolka*: Henie Onstad Kunstsenter, April 9th 1970.

First appearance as *Solar Plexus* on AN.R6.

The text is based on a poem by Georg Johannesen.

Recordings: AN.R6, AN.DVD2.

The original broadcast of *Her og Nå* available online at <http://tv.nrk.no>

AN.60 *Ansiktene* TV+EA 1969

Music to a TV drama by Helge Hagerup, directed by Jon Heggedal.

English title: *The Faces* (trans. ON).

First broadcast: NRK Television Theatre, March 18th 1969.

The program has been deleted from the NRK archive and is probably lost. A document in the NRK archive indicates that the short segment of music (3'37) was electronic.⁶²⁰

AN.61 *Mandagsbilen* R+EA 1969

Music to a radio drama by Olle Mattson. Directed by Arne Nordheim.

English title: *The Monday Car* (meaning "the bad quality car", trans. ON).

Electroacoustic technology: Electronic sounds and concrete manipulations.

First broadcast: NRK radio, April 10th 1969

Recording: AN.R68 (excerpt)

Mandagsbilen was Nordheim's only work as director for the radio theatre.

AN.62 *Ingen himmel for Gunga Din* R 1969

Music to a radio adaptation of Ali Mirdrekvandi's fable *No Heaven for Gunga Din*, directed by Arne Thomas Olsen, translated by Inger Hagerup.

First broadcast: May 29th 1969, NRK Radio Theatre.

⁶¹⁸ Moe-jr: "Verklister," in ed. Mehren, et al. (1991), p. 71.

⁶¹⁹ Moe, jr. claims that the first performance was with Kjell Halvorsen's Orchestra but it is Jan Garbarek's quartet who is featured in the TV program (ibid.).

⁶²⁰ "Statistikkoppgave: *Ansiktene*." NRK Television production archive: Musikkproduksjoner.

AN.68 *En benk i parken* **R** **1970**

Music to a radio drama by Finn Havrevold, directed by Paul Skoe.
English title: *A Bench in the Park* (trans. ON).

Instrumentation: Harp, flute, clarinet, cymbals, drums, tubular bells, vibraphone*

First broadcast: NRK Radio, January 22nd 1970.
Re-runs in 1970, 1980 and 1983.

Accolades: *Best radio drama*, Prix Italia, 1970. *First price*, Nordic Radio Theatre Competition, 1970.⁶²¹

AN.69 *Vidnene* **R** **1970**

Music to a radio drama by Milan Uhde, directed by Wilfred Breistrand.
English title: *The Witnesses* (trans. ON).

First broadcast: NRK Radio February 26th 1970.

AN.70 *Poly-Poly* **EA+TSI** **1970**

*Music for Expo '70*⁶²²

Electroacoustic technology: Six continuous tape loops of uneven length.
Title variants: *Polypoly*; *Poly Poly*; *Plus ou moins*⁶²³

Realized by Arne Nordheim and Eugeniusz Rudnik in Studio Experymentalne, Warsaw.

Original run: March 15th and September 13th 1970, Osaka: Scandinavian Pavilion at Japan Expo '70.

Re-created by Helge Steen for the exhibition *Arne Nordheim i kunsten. "–Ingen -ismer for meg, takk!"* Oslo: Henie Onstad Kunstsenter, August 22nd 2013 to January 12th 2014.

Derived works: Stereo concert version, as AN.77 *Lux et Tenebrae* (1970). Released on AN.R7, and renamed to *Polypoly* for AN.RC9. Five stereo excerpts released as *5 Osaka Fragments* on AN.R5 (1974). Seven channel concert version as *Das alte Luft*, 2007.⁶²⁴

An earlier 10-minute excerpt called *Osaka Music* was broadcast on KPFK Radio, Los Angeles, April 19th 1969.

Accolade: The Norwegian Arts Council awarded Nordheim the *Music Prize* of 1970 for his four works AN.70 *Poly-Poly*, AN.74 *Pace*, AN.76 *Floating* and AN.79 *Dinosauros*.

Relevant literature: Sunde 1970 and 2013.

⁶²¹ Hartenstein (2001): *Det usynlige teatret*, p. 215.

⁶²² TONO-declaration for Poly-Poly from TONO to JASRAC, dated August 17th 1979, Nordheim's papers, NB.

⁶²³ Title *Plus ou moins* used by Rudnik in http://monoskop.org/Eugeniusz_Rudnik, visited October 7th 2014

⁶²⁴ Title inspired by "O alte Luft" from *Pierrot Lunaire*. <http://matsc.net/norsk%20cv.html>, October 7th 2014

AN.71 [No title] («Pausesignal») 32" EA 1970

Intermission signal for NRK Radio.

First broadcast: March 20th 1970.

Realized by Arne Nordheim in Studio Experymentalne, Warsaw.⁶²⁵

AN.72 Vi på Alfabulator R+EA 1970

Reportasje fra bokmessen 2033

Music to a radio drama by Thomas Warburton, directed by Victor Sandal. Translated by Hans Heiberg.

Sub-title variant: *En reportasje foran boksesongen 2033*.

English title: *Us on Alfabulator. A Report From the Book Fair 2033* (trans. ON).

Electroacoustic technology: Manipulated concrete sounds.

First performance: NRK Radio, May 14th 1970⁶²⁶

Recording: AN.R68 (excerpt)

AN.73 A Forum for the Arts F+EA 1970

Electro acoustic music to a documentary about Henie Onstad Arts Centre in Høvikodden, Oslo, Norway

Music to a documentary directed by Paal-Bang Hansen and Ole Henrik Moe.

Electroacoustic technology: Electronic and concrete sounds

Realized by Arne Nordheim and Eugeniusz Rudnik in Studio Experymentalne, Warsaw.

Premiere: Henie Onstad Arts Centre, June 11th 1970

Commissioned by the Niels Onstad and Sonja Henie foundation.

Available on AN.DVD1

Derived work: In 2012 Helge Steen edited the audio track of the movie to a composition he called *A forum for the arts*. This composition has been released on AN.R76.

AN.74 Pace 9'30 EA 1970

Electroacoustic technology: Electronic and concrete sounds.

Realized by Arne Nordheim and Eugeniusz Rudnik in Studio Experymentalne, Warsaw.

⁶²⁵ (Unsigned): "Vond tann ga pausesignal," *nrk.no*, published March 15th 2005, visited March 21th 2014.

⁶²⁶ Moe, jr. erroneously dates the broadcast to May 14th 1971 (p. 76).

Composed 1969 or 1970⁶²⁷

First performance: Polish radio, Warsaw, September 21st 1970

Norwegian premiere: Henie Onstad Kunstsenter, November 22nd 1970⁶²⁸

Commissioned by Polish radio, dedicated to Józef Patkowski.

Recording: AN.R7

Derivative work: The intermission signal in Oslo Concert House which opened in 1977 is an excerpt from *Pace*.

Accolade: The Norwegian Arts Council awarded Nordheim the *Music Prize* of 1970 for his four works AN.70 *Poly-Poly*, AN.74 *Pace*, AN.76 *Floating* and AN.79 *Dinosauros*.

AN.75 *Lydbar* EA+TSI 1970

Title variant: *Telefonbar*.

English title: *Sound Bar; Telephone Bar* (trans. ON).

Sound installation with electronic sounds played back through twelve standard Electric Bureau telephones. Part of the exhibition *Our world of things* at Henie Onstad Arts Center, curated by Harald Szeeman and Ole Henrik Moe.

I have not been able to confirm where the sound material was realized.

Exhibition opening: September 12th 1970

The installation was reconstructed by Helge Steen for the exhibition *Arne Nordheim i kunsten. "–Ingen ismer for meg, takk!"* at Henie Onstad Kunstsenter, August 22nd 2013 to January 12th 2014. The reconstruction used sound material from the film music to AN.73 *A Forum for the Arts*.

AN.76 *Floating* 12' O 1970

Per orchestra

Instrumentation:

Winds: 0+4picc./2+2ci./2+2clb./2+2 cf.

Brass: 4.4.4.0

Timp./4perc./ar./cel./pf.

Archi: 12.12.10.8.6

First performance: Graz, Austria, October 20nd 1970

Danish Radio Orchestra, cond.: Miltiades Caridis

Commissioned by the Danish Radio Orchestra. Dedicated to Per Nørgård.

⁶²⁷ In a report from the ISCM festival of 1969 Nordheim claimed that the work was completed. Hans Jørgen Hurum: "Retningsviser i samtidsmusikken," *Aftenposten*, June 23rd 1969.

⁶²⁸ (Unsigned): "Høvikmatiné imorgen viet tre Nordheim-verk," *Aftenposten*, November 21st 1970.

According to Mogens Ellegaard the source sounds for the electronic material were recorded by Ellegaard in "a studio in Malmø" for later processing by Nordheim in Warsaw.⁶³²

Composed 1970.

First performance: Reykjavik, Iceland, Nordens Hus, 1971.

Accordion: Mogens Ellegaard.

Recordings: AN.R9, AN.R12, AN.R56, AN.R75

Score: EWH 1977

Dedicated to Mogens Ellegaard

Accolade: The Norwegian Arts Council awarded Nordheim the *Music Prize* of 1970 for his four works AN.70 *Poly-Poly*, AN.74 *Pace*, AN.76 *Floating* and AN.79 *Dinosauros*.

AN.80 *Dødsdansen* R 1971

Music to a radio adaptation of Augst Strindberg's play *The Dance of Death*. Directed by Hans Heiberg.

First broadcast: NRK Radio, January 14th and 21st 1971

Re-run: November 1987

AN.81 *OHM* 8' C+EA 1971

For lur og lydbånd

English subtitle: *For lure and tape* (trans. ON).

Electroacoustic technology: Manipulation of lure recording, fixed media (continuous)

Instrumentation: Birch trumpet ["neverlur"]

Versions:

- *OHM* (Original version): Two short birch trumpets in A and C#.
- *OHM 1994*: One-minute version for the opening ceremony of the XVII Olympic Winter Games in Lillehammer. Lure part played in a different key. Several elements added to the electronic part.
- *OHM '95*: Tape material revised by Mats Claesson at Norges Musikkhøgskole. Lure part revised by Gaute Vikdal to two long birch trumpets in C and E.⁶³³

Derived works: The deleted work *Venit* and AN.195 *Bjøllø i Fjelle* uses the lure and tape parts from *OHM '95*.

First performance, original version: Oslo, Henie Onstad Kunstsenter, September 16th 1971

Lure: Odd Ulleberg. Sound: Arne Nordheim.⁶³⁴

⁶³² Mogens Ellegaard: "Med kimono, sort kaffe og en passende dose Black Label," *Ballade*, vol. 5, no. 2/3 (1981).

⁶³³ Liner notes to AN.R82 Gaute Vikdal: *Gaute Vikdal Plays Nordheim*.

⁶³⁴ The work was supposedly written for Moe's 50-year birthday. However, since Moe was born on January 11th 1920, this would indicate that the premiere took place before the date indicated by Moe, jr (p. 77).

First performance as *OHM '95*: Harstad: Opening of Festsspillene i Nord-Norge, 1995
Lure: Gaute Vikdal⁶³⁵

MS original version: NB.

Recordings: Original version: AN.R15. OHM '95: AN.R43.

Dedicated to Ole Henrik Moe. The title is the acronym of Moe's name.

AN.82 ***Listen!*** **11'30** **C** **1971**

For piano solo

Versions

- I: Original (1971)
- II: Abridged with added electronics (1994): Used at the opening ceremony of the XVII Olympic Winter Games in Lillehammer.
- III: Listen: Inside – Outside (2006): Version with added electronic components, created by Einar Steen-Nøkleberg and Mats Claesson following Nordheim's instructions.

First performance, version I: NRK TV, November 7th 1971

Pf.: Elisabeth Klein

First performance, version III: Oslo Concert House, 2006

Pf.: Einar Steen-Nøkleberg. Electronic sound by Mats Claesson.

Recordings version I: AN.R17, AN.R22, AN.R27, AN.R39, AN.R45, AN.R49, AN.R65

Recording version III: AN.R65

Score: EWH 1973

Commissioned by NRK. Dedicated to Elisabeth Klein.

In 2012, the sound artist Gordon Monahan used *Listen!* as source material for his sound installation *A Piano Listening to Itself*. The installation was originally performed at the Warsaw Autumn Festival of 2010, but for that occasion used music by Chopin as source material.⁶³⁶

AN.83 ***Kodémus*** **TV+EA** **1971**

Et fjernsynsspill av Tor Åge Bringsværd

Music to a television drama by Tor Åge Bringsværd, directed by Morten Kolstad.

The full title of Bringsværd's play is *Kodémus: Eller, datamaskinen som tenkte "hva faen"* (English: *Kodémus: Or, the Computer who Thought "What the Fuck"* (trans. ON)).⁶³⁷ The full title was not used in the broadcast.

⁶³⁵ Liner notes to AN.R82 Gaute Vikdal: *Gaute Vikdal Plays Nordheim*.

⁶³⁶ http://www.gordonmonahan.com/pages/A_Piano_Listening.html, visited May 20th 2014

⁶³⁷ Tor Åge Bringsværd: *SF: Samlede fortellinger* (Oslo: Gyldendal, 1999).

According to Harold Clark, the title was inspired by Charles A. Reich's *The Greening of America* – a book Clark offered to Nordheim in 1970.⁶⁴¹

AN.90 *En havefest* R 1973

Music to a radio drama by Marie Luise Kaschnitz, directed by Gerhard Knoop.
Original title: *Ein Gartenfest*.

First broadcast: NRK Radio Theatre, August 16th 1973

AN.91 *Amaryllis* R+EA 1973

Music to a radio drama by Solveig von Schoultz, directed by A. Myskova.

Electroacoustic technology: Electric organ (Subharchord?).

First broadcast: NRK Radio Theatre, August 30th 1973

Re-run: NRK Radio, May 5th 1974

Recording: AN.R68 (excerpt)

AN.92 *Aftenen er stille* R 1973

Music to a radio theatre adaptation of poems by Paal Brekke. Directed by Gerhard Knoop.
English title: *The Evening is Calm* (trans. ON)

First broadcast: NRK Radio Theatre, November 8th 1973

AN.93 *Morgenraga* 9' C+EA 1973

English title: *Moring Raga* (trans. ON).

Instrumentation: Jazz voice, el.git., cb, dr., willows flute [seljefløyte], ring modulator.

Created for the album AN.R6 Various artists: *Popofoni* (1973)

Voice: Karin Krogh, el.git.: Terje Rypdal, cb: Arild Andersen, dr.: Jon Christensen,
willows flute and ring modulator: Arne Nordheim.

Morgenraga is also used in the ballet AN.B4 *Til [dikt av] Karin Boye*. An adaptation called *Raga Variations* is included on Karin Krogh's album *Folkways* (see appendix 2, section 12).

AN.94 *Stein får liv* TV+EA 1975

En filmfantasi fra Postojna Grotte

English title: *Stone Gets Alive*⁶⁴²

English subtitle: *A Filmatic Fantasy from the Postojna Cave* (trans. ON)

⁶⁴¹ Harold Clark, interviewed by Ola Nordal, November 11th 2014.

⁶⁴² English title given during opening credits. Moe, jr. also gives the title *Raja*, however this name does not occur in the broadcast. He also lists the wrong broadcast date (p. 82).

Electroacoustic technology: concrete and electronic sounds, analogue synthesizer
Other instruments: perc./hpc./acc./church organ

First broadcast: NRK TV, March 28th 1975⁶⁴³

Collaboration between NRK and the Yugoslavian Broadcasting Corporation. Directed by Istvan Korda Kovacs. Ballet dancer: Tatjana Püsek.

The works include a traditional waltz played on accordion. I am unsure whether the waltz was written by Nordheim (unlikely), or if it was a found object from the sound archives that were inserted into the work (more probable).

Parts of the electroacoustic material are taken from AN.34 *Response*, AN.50 *Colorazione* and AN.74 *Pace*.

AN.95 *Mio, min Mio* **R** **1975**

Music to a radio adaptation of Astrid Lindgren's book *Mio, My Mio*. Directed by Kari Sundby.

First broadcast: NRK Radio Theatre, April 12th 1975

In the program announcement, the music was credited to Sture Rogne. In the program report at NRK Radio archive however, Arne Nordheim is credited as having composed the music together with Rogne. Possibly, Nordheim only composed music for some of the (more spooky?) scenes.

AN.96 *Doria* **13'** **O+V** **1975**

For tenor and orchestra

Instrumentation:

Tenor solo

Winds: 1+picc.1+ci.1+clb.1+cf.

Brass: 0.0.0.0

2perc/ar. /cel./pf./

Set to Ezra Pound's poem "Δόρια" (*Doria*) first published in 1912, and then included in the collection *Ripostes*. According to the score, the poem was taken from the collection *Personae – Collected Shorter Poems*, 1926.

First performance: Opening concert of Bergen International Festival, May 21st 1975

Ten.: Peter Pears, Musikselskapet Harmoniens Orkester, cond.: Karsten Andersen

UK Premiere: Aldeburgh Festival, Maltings, Snape, June 16th 1976

(Broadcast on BBC Radio 3 same evening)⁶⁴⁴

Ten.: Peter Pears, English Chamber Orchestra, cond.: Stuart Bedford

⁶⁴³ "Radio/TV," *Aftenposten* March 21st 1975.

⁶⁴⁴ Christopher Landon Swanson: *The Voice of the New Renaissance: The Premiere Performances of Peter Pears*, PhD Dissertation (Tallahassee: Florida State University, 2004), p. 161.v

Electroacoustic technology: amplified voices, tape cues.

The work exists in two versions with different instrumentation:

I: Original instrumentation: Soprano solo, baritone solo. 2perc./ar./pf./cel. ⁶⁴⁷

II: Revised instrumentation, 1989⁶⁴⁸

Soprano solo, baritone solo

Winds: 2.2.2.2

Horns: 1.1.1.0

timp./3perc/hpc/cel/epf

Archi

This work is an early version of the movement *Caliban's Warning* in AN.109 *The Tempest*. In 1994 it was revised again, and presented as a new work called AN.157 *Magic Island*.

Premiere original version: Stockholm: Anniversary of the Royal Music Academy of Sweden, December 5th 1977

Sop.: Ilona Maros, bar.: Staffan Sandlund, Maros Ensemble, cond.: Miklós Maros, "Electronic projection" by Arne Nordheim.

Premiere revised version: Larvik: Thor Heyerdahl's 75th birthday, October 5th 1989

Sop.: Anne Nyborg, bar.: Terje Stensvold, ad-hoc orchestra, cond.: Odd Terje Lysebo

Commissioned by the Royal Music Academy of Sweden

Revised version dedicated to Thor Heyerdahl

1989 score: EWH, 1989.

AN.107 Canto **C 1978**

For cello, organ and tubular bells

Instrumentation: vlc./org./tub.bells

First performance: Oslo, May 1978

Vlc.: Aage Kvalbein, org.: Thomas Salvesen, tub.bells: Kjell Samkopf

MS: NB

Written for the funeral of the artist Olav Strømme who died on May 15th 1978. Dedication: "Olav Strømme in memoriam"

AN.108 Følgesvennen **T 1978**

Music to a children's play based on fairy tales by Per Christian Asbjørnsen and Jørgen Moe. Adapted by Terje Eriksen, directed by Wenche Midbøe.⁶⁴⁹

⁶⁴⁷ According to Moe-jr: "Verklister," in ed. Mehren, et al. (1991), p. 89.

⁶⁴⁸ <http://www.musicsalesclassical.com/composer/work/1139/22427>, visited March 5th 2015.

⁶⁴⁹ <http://sceneweb.no/nb/production/23332/Følgesvennen-1978-10-9>, visited December 17th 2014

AN.114 *Forfølgelsen* F 1981

Music to a film by Anja Breien, produced by AS Norsk Film and Svenska filminstitutet.
English title: *The Chase* (trans. ON).

Instrumentation: Orchestra, with some concrete manipulation (according to MS).

Premiere: Oslo, August 23rd 1981

MS: NB.

AN.115 *Partita for Six Double Basses* 15' C 1982

Title variant: *Partita for Six Basses*

Movements

I: Passinato

II: Morgana

III: Avanti

First performance: Oslo, University Aula, February 9th 1982

Db.: Bjørn F. Holmevik, Svein Haugen, Einar Schøyen, Rolf Windingstad, Odd Hansen and Johnny Folde

Score: EWH

Recording: AN.R40

Commissioned by the double bass group of the Oslo Philharmonic Orchestra.
Dedicated to Finn Mortensen on his 60th birthday.

AN.116 *Den første sommerfugl* 4'30 C 1982

For soprano and harp

English title: *The First Butterfly* (trans. ON).

First performance: Oslo: Grotten, May 17th 1982.

Sop.: Guri Egge, ar.: Elisabeth Sønstevoid.

MS: NB

Recordings: AN.R23, AN.R66 (version for soprano and synthesizer)

Set to a poem by Henrik Wergeland. Written for the first 17th of May (Norwegian national day) party in Nordheim's new home Grotten, a house built by Wergeland in 1841. "Den første sommerfugl" is Nordheim's wife Rannveig's favourite poem.⁶⁵² The MS is marked "Til Rannveig" [Getz Nordheim].

Related work: The harp part and melody are used in AN.142 *Roser i ørkenen* (1988).

⁶⁵² Rannveig Getz Nordheim, interviewed by Ola Nordal, September 13th 2012.

First performance V2: Oslo: Gamle Aker Kirke, June 6th 1984
 Randi E. Bjerger (S), Kristin Kjølberg (A), Folke Bengtsson (T) Njål Sparbo (B), perc.:
 Gunnar Berg Nilsen and Einar Fjærvoll, Grex Vocalis, cond.: Carl Høgset

Score (V2): EWH 1984
 Recordings: Version I: AN.R18, Version II: AN.R19

AN.119 Venit Rex 3' O+V 1983

Title variants: *Kongen kommer* (English: *The King Arrives, trans. ON*)

Instrumentation:
 Mixed chorus (SATB)
 Signal band: 8 sign tr./4 trb
 Winds: 0+picc.1.1+clb.2+cf
 Brass: 4.3.3.1.
 Timp./3perc./org.
 Archi

First performance: Oslo, July 2nd 1983
 His Majesty The King's Guard, Oslo Philharmonic Orchestra and Chorus, cond.: Mariss
 Jansons

Commissioned for HRH King Olav V's 80th birthday. Dedicated to: "His Majesty Olav V."

MS: NB
 Recording: AN.R16

AN.120 Wirklicher Wald 28' O+V 1983

For soprano and cello solo, chorus and orchestra

Instrumentation:
 Soprano solo
 Violoncello solo
 Mixed chorus (SATB)
 Winds: 0+2picc.1+ci.1(d.cl.Mi bemolle)+clb.1+cf.
 Brass: 2.2.1.1.
 Timp./3perc./ar./cel./pf. electrico ["Fender with foot-controlled swell"]
 Archi

Texts:
 • Rainer Maria Rilke's poem "Todeserfahrung," in German
 • Book of Job, 14:1-2, in Hebrew

First performance: Oslo: University Aula, September 26th 1983
 Sop.: Dorothy Dorow, vlc.: Aage Kvalbein, Orchestra and Choir of the Norwegian
 Academy of Music, cond.: Arvid Fladmoe

Score: EWH 1984
 Recordings: AN.R18

Commissioned for the 100-year anniversary of the Norwegian Academy of Music.

AN.121 *Utposter* 3' C 1984

For 24 trumpets, brass band and carillon de tour

English title: *Outposts* (trans. ON)

Instrumentation:

Brass band

24 trumpets

The carillon of Oslo Town Hall

First performance: Oslo, May 25th 1984.

Musicians stationed at various locations in central Oslo.

Commissioned for the 75th anniversary of The Norwegian State Academy of Art.

AN.122 *Klokkesong* 15' C+V 1984

For contratenor, renaissance instruments, chorus and church bells

Alternative title: *Bell Song* (trans. ON)

Set to a poem by Wibeke Knagenhjelm.

Instrumentation:

Countertenor solo

Mixed Chorus (SATB)

Soprano recorder, alto recorder

Lute

Viola de gamba tenore

2 church bells

First performance: Sogndal: Kaupanger Stave Church, June 15th 1984

Ten.: Carl Høgset, recorders: Hans Olav Gorset, lute, Erik Stenstadvold, gamba: Betteke Groot, church bells: Dagfinn Bach, Chorus of Sogndal Commune.

Commissioned for the 800th anniversary commemoration of the Battle of Fimreite of 1184.

MS: NB

Recording: AN.R16

AN.123 *Response III* 20' C+EA 1984

For four percussion groups, organ and magnetic tape

EA technology: Fixed media playback (continuous)

Instrumentation:

Church organ

4 perc

First performance Oslo Concert House, October 10th 1984
 Percussion: Kroumata percussion ensemble, org.: Kjell Johansen, sound: Arne Nordheim

MS: EWH
 Recordings: AN.R40

See page 107 for details on the versions in the *Response* series.

AN.124 *Ja, virkelig* R 1985

Music to a radio drama by Sivar Arnèr. Directed by Gerhard Knoop.
 Swedish original title: *Ja, verkligen*. English title: *Yes, Really* (trans. ON)
 First broadcast: NRK Radio, January 20th 1985

AN.125 *Flashing* 10' S 1985

For accordion solo

The work is based on the solo cadenza of AN.98 *Spur*

First performance: Oslo, NRK Radio, May 24th 1985,
 Acc.: Mogens Ellegaard

Score: EWH 1988
 Recordings: AN.R28, AN.R32, AN.R38, AN.R71, AN.R81

AN.126 *Tres lamentationes* 11' V 1985

For mixed chorus a cappella

Movements
 I: Quomondo Sedit Sola
 II: Clamavit cor eorum
 III: Converte nos (Norwegian title: "Våkenetter")

Dedicated to Carl Høgset.

First performance: Bergen International Festival, May 26th 1985
 Grex Vocalis, cond.: Carl Høgset

Score: EWH 1987
 Recordings: AN.R16, AN.67 (only movement III: "Converte nos").

Based on the lamentations of Jeremiah: *Quomondo Sedit Sola*, Lam 1:1, *Clamavit cor eorum*, Lam 2:18, *Converte Nos*, Lam 5:21-22.

AN.127 *Partita für Paul* 16' C+EA 1985

Für Violine solo mit Versogerungsgerate

Full title according to score: *Partita for Paul* and *Partita after five pictures by Paul Klee for violin solo and digital delay unit*.

First performance: Oslo Concert House, October 21st 1985.
 Oboe: Erik Niord Larsen, The Norwegian Chamber Orchestra, cond.: Iona Brown

Commissioned by The Norwegian Chamber Orchestra.

Score: EWH 1986
 Recordings: AN.R25, AN.R42

AN.130 *Kong Lear* TV+EA 1985

Music to a television adaptation of William Shakespeare's *King Lear*. Directed by Per Bronken.

Electroacoustic technology: Concrete and electronic sounds, synthesizer

Instrumentation:

Tenor

Mixed chorus (SATB)

Orchestra

Classical guitar, lute

First broadcast: NRK TV, November 5th and 12th 1985

Available online at <http://nrk.no/tv>

MS: NB

Accolade: Amanda Prize for best original score, Norwegian International Film Festival, 1986.

AN.131 *Music to Two Fragments to Music by Shelley* 7' V 1985

For equal voices (SSAA)

Music to two poems from Percy Bysshe Shelley's *Poetical Works*, 1839.

Dedicated to Sverre Lind.

Title variant: *Two Fragments to Music*.

Movements

I: Silver Key

II: No, Music

First performance: NRK Radio, December 10th 1985.

NRK's Studio Chorus, cond.: Ingunn Bjorland

MS: NB

Recordings: AN.R41 (Only "No, music"), AN.R51

AN.132 *Recall and Signals* 7' O+EA 1986

For Wind Symphony Orchestra, Percussion and Emulator II

Electroacoustic technology: Emulator II sampler

Instrumentation:

Winds: 0+4picc.4ob.2+2cl.Mi bemolle.2+2cf.

Brass: 5.3+2trp in Re.5.0

Timp./4perc./canone (!)

Emulator II

First performance: Lockpart, N.Y. State, May 21st 1986

American Wind Symphony Orchestra, cond.: Robert Austin Boudreau

Commissioned by the American Wind Symphony Orchestra for the 100-year anniversary for the Statue of Liberty. Dedicated to Robert Austin Boudreau.

A revised version of this work, using portable carillon, but without the cannon, premiered as *Jubel* (English title: *Rejoicing*, trans. ON) in 1995.

Score: Edition Peters.

Score *Jubel*: Mic.no/Music Norway.**AN.133** ***Varder*** **2'40** **O+EA** **1986***For Signal Band and Orchestra*

Electroacoustic technology: Emulator II sampler

English title: *Cairns* (trans. ON).Version: With added mixed chorus (SATB), new title: *Ave*.

Instrumentation:

Signal band with 8 or more trumpets

Winds: 0+3picc.3.1+2cl. Mi bemolle.1+cf.

Brass: 4.2+2trp in Re.3.1

Timp/4perc/org./canone (!)

Archi

Emulator II

First performance: Oslo Concert House, September 3rd 1986

The Norwegian Broadcasting Corporation Orchestra, cond.: Sverre Bruland.

Commissioned for 100th anniversary of the Berne Convention. Dedicated to Knut Tvedt.

MS: NB (version with chorus)

AN.134 ***Spillet om perlen*** **S+EA** **1986***Et eventyrspill for barn*

Music to a play by Terje Eriksen. Directed by Wenche Medbøe.

English title: *The Game of the Pearl. A Fairy-tale Play for Children* (trans. ON)

Electroacoustic technology: 4-channel fixed media playback. Possibly conventional music recorded for playback over the theatre hall speakers.

Instrumentation:
fl./cl./sax./trp./git. /bass git./perc./pf.⁶⁵⁵

Original run: Oslo: Oslo New Theatre, September 25th to December 19th 1986.
MS: NB

AN.135 ***Ore, fermate il volo*** **7'30** **C+V** **1986**

For countertenor and theorbo, to a poem by Torquato Tasso

Norwegian title: *Tid, stans din flukt.*
English title: *Time, Stop your Flight* (trans. ON)

First performance: Bergen kunstforening, October 12th 1986.
Theorbo: Erik Stenstadvold, countertenor: Carl Høgset.
MS: NB

Dedicated to Ferdinand Finne. The song was written for the opening of an exhibition featuring works by Ferdinand Finne, at Bergen kunstforening. Finne produced a print named after Nordheim's composition for the exhibition. The song was later re-orchestrated and included in the collection AN.155 *Three Unexpected Songs*. Since the two versions are slightly different, I have given them two separate entries in the catalogue.

AN.136 ***Acantus firmus (series)*** **11'** **C+EA** **1987**

For Hardanger fiddle, electronic tape and various instruments.

Electroacoustic technology: Fixed media playback (continuous)

Each version in the *Acantus firmus* series was flexible according to the available set of musicians. The fixed elements were the tape part and the part for Hardanger fiddle (played by Knut Buen). Unlike in the *Response* series, the different versions of *Acantus Firmus* have not taken on a life separate from their initial performance context. I have therefore treated it as one work with different versions, rather than separate works.

Known versions:

- I: *Acantus firmus*. Hardanger vln., jazz singer, tape (1987)
- II: *Acantus firmus Osloensis*. Hardanger vln., el.git, tape (1989)
- II: *Acantus firmus*, Nicaragua version (1988)
- IV: *Acantus firmus Olympiadis*. Hardanger vln., trp., chamber orchestra, tape (1992)
- V: *Acantus firmus*, Korea version. Hardanger vln., hageum, tape

Version I: First performance: Bergen: Vestlandske Kunstindustrimuseum, February 4th 1987. Jazz singer: Karin Krog, Hardanger vln.: Knut Buen, sound: Arne Nordheim. Commissioned for the 100-year anniversary for Vestlandske Kunstindustrimuseum.

Version II: First performance: Oslo Town Hall, May 9th 1989.
El.git: Terje Rypdal, Hardanger vln.: Knut Buen, Oslo City Orchestra, cond.: Sigmund

⁶⁵⁵ According to list of Manuscripts, Norwegian National Library.

Instrumentation:
 Mezzosoprano solo
 Baritone solo
 2pf.
 Archi: 1.1.1.0.0.

First performance: Oslo, October 20th 1988
 Sop.: Edith Thallaug, bar.: Knut Skram, pno.: Oddvar S. Kvam and Reidun Berg, vln.: Ole Bøhn and Stephan Barratt-Due jr., vla.: Soon-Mi Chung

Score: EWH

Written for the 50th wedding anniversary for Solveig and Robert Levin.

AN.145 *Tre voci* **16'** **C+V** **1988**

For soprano and chamber ensemble

Alternate subtitle: *Music to poems by three Italian poets.*

Movements:

- I: "Canzone, io t'ammonisco..." (Francesco Petrarca, 1304-74)
 II: "Amor, per cui tant'alto il ver discerno..." (Giordano Bruno, 1548-1600)
 III: Non Gridate Più (Giuseppe Ungaretti, 1888-1970)

Vocal part of movement I is identical to AN.141 *La Mia Canzone*.

Movement III arranged for choir and orchestra and published as *Non Gridate* in 1995.

Instrumentation:
 Soprano solo
 Winds: fl.(d.picc).clb.(d.cl.Mi bemolle)
 perc./pf.
 Archi: 1.0.0.1.0

First performance: Askim, October 24th 1988 (Part of Rikskonsertene school tour)
 Soprano: Anne Lise Berntsen

Score: EWH 1996

Score *Non Gridate*: EWH 1995

Recordings. AN.R40

Commissioned by Rikskonsertene Norge.

AN.146 *Magma* **25'** **O** **1988**

For orchestra

Instrumentation:
 Winds: 0+4picc.4.1+cl.Mi bemolle + 2clb.2+2cf.
 Brass: 4.4.4.1
 2timp/6perc/ar./cel./pf./org.
 Archi

First performance: Amsterdam, Concertgebouw, December 8th 1988
Amsterdam Concertgebouworkest, cond.: Neeme Järvi

Score: EWH 1989
Recordings: AN.R26

Commissioned for the 100-year anniversary of Amsterdam Concertgebouworkest.

AN.147 *Johannesgangaren* 4' C+V+EA 1989

English title: *The Gangar of Johannes* (trans. ON).
Set to a text by Nils Steensen (aka. Nicolaus Steno, 1638-1686), in Norwegian and Latin.

Electroacoustic technology: Emulator II digital sampler

Instrumentation:
Hardanger fiddle, solo
Chorus (SSAA)
3trp./2perc.
Emulator II
Carillon

First performance: Oslo, June 1st 1989.
Hardanger vln.: Knut Buen, NRK Studio Chorus, Emulator: Iver Kleive, ad-hoc ensemble,
cond.: Ingunn Bjorland

MS: NB

Composed for the official visit of Pope Johannes Paul II to Norway.

AN.148 *Kong Ødipus* R(+EA) 1989

Music to a radio adaptation of Sophocles' tragedy.
Alternate titles: *Oedipus the King*; *Oedipus Rex*.

Instrumentation: Chorus (SATB), possibly with electronic elements⁶⁶⁴

First broadcast: NRK Radio, November 26th 1989.
MS: NB (possibly incomplete).

AN.149 *La Source* 3' C 1990

For piccolo flute, 12 bottles of Farris and campanelli

Alternate title: *Kilden*.

Instrumentation:
Picc./Glockenspiel
4 bottle blowers, each with three bottles of Farris mineral water

⁶⁶⁴ Sissel Lange-Nielsen: "Lydteater som kunst," *Aftenposten*, November 27st 1989.

AN.162 Vevnad **7'30** **C** **1993***For Cello Solo, Trombone Solo and Disklavier*English title: *Weaving* (trans. ON)

Instrumentation: Vlc., trb., disklavier (MIDI-controlled piano)

Movements

I: Renning

II: Skyttel

III: Vevnad

First performance: Trondheim: Museum of Arts and Crafts, October 2nd 1993.Vlc.: Ingrid Stensland, trb.: Arne Johansen, disklavier: Sigurd Saue⁶⁷⁵

MS: NB

Written for the hundredth anniversary of Nordenfjeldske Kunstindustrimuseum (The Northern Museum for Arts and Crafts). Inspired by the woven carpets of artist Hannah Ryggen.

The cello uses material from AN.112 *Clamavi* and the solo cadenza of AN.117 *Tenebrae*. The trombone uses material from AN.99 *The Hunting of the Snark*, and the disklavier uses material from AN.82 *Listen*. The title *Vevnad* indicates that material from these three compositions is “woven together” in this new work.

AN.163 Draumkvedet **90'** **S+V+EA** **1994**

Music theatre based on the Norwegian medieval poem “The Dream Ballad.” Text adapted by Ola E. Bø and Halldis Moren Vesaas, dramatized by Bentein Baardson and Bodil Kvamme, directed by Bentein Baardson. The production was a part of the official culture programme of the Olympic Winter Games in 1994.

English title: *The Dream Ballad*

Electroacoustic technology: Synthesizer, MIDI-controlled sampler

Electroacoustic elements realized by Arne Nordheim and Mats Claesson at NoTAM.

Instrumentation:

Orchestra, without brass

Hardanger fiddle

Synthesizer, MIDI-sampler

Electric bass

Willows flute

Composed May 1st to December 1st 1993⁶⁷⁶

⁶⁷⁵ <http://www.notam02.no/web/2011/06/vevnad-by-arne-nordheim/?lang=en>, Visited March 7th 2015

⁶⁷⁶ The dates are mentioned in a letter from Nordheim to Yisrael Daliot, March 12th 1994. Daliot's private collection.

Premiere: Oslo, Det Norske Teater, January 19th 1994
 Olav Åsteson (bass baritone): Ståle Bjørnhaug
 Primeval Woman (screaming folk voice): Pernille Anker
 St. Peter/Priest (counter tenor): Carl Høgset
 Young Angel (counter tenor): Rasmus Høgset
 Old Angel (spoken part): Lasse Kolstad
 God's Holy Mother (mezzo-soprano): Tone Ringen
 Gutte Gråskjegg/St. Jacob (baritone): Paul Aage Johannesen
 Sante Såle-Mikkjel (baritone): Magne Lindholm
 Lucifer (tenor): Sigve Bøe
 A boy (boy soprano): Erik Sollid/Andreas Haugstad/Ferdinand Mohn
 Jesus (spoken part): Andreas Kolstad
 Choir: Grex Vocalis
 Hardanger fiddle: Åshild Breie Nyhus
 Orchestra: Norwegian Radio Orchestra, cond.: Ingar Bergby⁶⁷⁷

 Score: Mic.no/Music Norway
 Recording: AN.R63

AN.164 [No title] («Olympic music») S+EA 1994

Music for the for the ceremonies at the XVII Olympic Winter Games, Lillehammer, 1994

During the cultural segment “Once upon a time...” a medley of Nordheim’s works was played. Some electronic material has been included in between the excerpts. The excerpts were from AN.81 *OHM*, AN.99 *The Hunting of the Snark*, “Converte Nos” from AN.126 *Tres Lamentations* and AN.82 *Listen*. The realization of the electronic material and the production of the segment were done by Mats Claesson. In one interview, the medley was called *Celestial Mechanics*, however this title is not confirmed.⁶⁷⁸

The artistic director of the opening and closing ceremonies was Nordheim’s long-time collaborator Bentein Baardson. Nordheim provided music for several parts during the opening and closing ceremonies, as well as for the Paralympics.

Opening ceremony, February 12th 1994.

[0.22.00] At the arrival of the royal family: AN.119 *Venit Rex*.

[1.22.50] At the arrival and lighting of the Olympic flame AN.133 *Varder*.

[1.35.30] “Once upon a time...” (see above). This segment also included Rolf Wallin’s *Stonewave* and Knut Reiersrud and Iver Kleive’s *Nåde*.

Closing ceremony, February 27th 1994.

During the cultural segment “Vettene kommer”: Excerpts from AN.146 *Magma*.
 After the Olympic Hymn: “Lux Illuxit” from AN.100 *Forbindelser*.

Paralympics ceremonies

⁶⁷⁷ Program folder for the production *Draumkvedet*, Oslo: Det Norske Teater, 1994.

⁶⁷⁸ Arvid Skancke-Knutzen: “Nordheim-pris under Ultima,” *ballade.no*, July 31st 2001.

Timp./3perc./hp./cel./syn./
Archi

First performance: 1994.
Score: EWH

Set to text by Fredrico García Lorca, in Spanish.

AN.168 ***Lerka Jeanne d’Arc*** **S+EA** **1995**

Incidental music to the play *The Lark Jeanne d’Arc* by Jean Anouilh. Directed by Bentein Baardson. Translated by Halldis Moren Vesaas.
French original title: *L’Alouette*.

Instrumentation: Orchestra, percussion, synthesizer
Electroacoustic technology: Synthesizer, fixed media playback
Electronic realisation by Mats Claesson and Arne Nordheim, NMH

Premiere: Oslo, Det Norske Teater, January 21st 1995⁶⁸³
Perc.: Tomas Nilsson, ad.hoc. orchestra, cond.: Svenn Erik Kristoffersen and Trond Lindheim. Synth.: Birger Mistereggen⁶⁸⁴

AN.169 ***Partita Electroencephalosonica*** **10’** **EA** **1995**

Composition for two patients and EEG machines

Electroacoustic technology: Sampler for stereo playback, computer program for decision-making, two EEG machines for external input

Movements⁶⁸⁵
I: With eyes open, then closed
II: Hyperventilation
III: Eye blink
IV: Mastication
V: With eyes closed, then open

First performance: Oslo: Den nevrologiske klubben, Grand Hotel’s Mirror and Rococo Hall, June 1995. One of the two patients was journalist Mona Levin.

Electroacoustic performance for the opening of the conference “5th European Symposium on the history of Neurosciences” during “Hjernen’s år” [“The Year of the Brain”], 1995.⁶⁸⁶

⁶⁸³ http://sceneweb.no/nb/production/42887/Lerka_Jeanne_d’Arc-1995-1-21, visited March 8th 2015

⁶⁸⁴ Theatre programme for *Lerka Jeanne d’Arc*, Oslo: Det Norske Teater, 1995. Online version: http://urn.nb.no/URN:NBN:no-nb_digibok_2008030504026, visited March 8th 2015.

⁶⁸⁵ Program note found at Arne Nordheim centre, Norwegian Academy of Music

⁶⁸⁶ Per Stensrud, Halfdan Kierulf, and Per Dietrichson, eds., *Nevrologien i Norge 1970-1995* (Bergen: Norsk neurologisk forening, 1996), 121-25.

According to Sigurd Saue who was technically responsible for the performance, the sound material and algorithm was taken from the 1995-revision of AN.55 *Ode til lyset*.

AN.170 “Confutatis” aus *Requiem der Versöhnung* 8’ O+V 1995

For soprano solo, chorus and large orchestra

English title: “Confutatis” from the *Requiem of Reconciliation*.

Instrumentation:⁶⁸⁷

Soprano solo

Chorus (SATB)

Winds: 3.3.2+1.2+1

Brass: 4.3.3.1

Perc./pf./cel. /ar.

Archi

First performance: Stuttgart, September 16th 1995, as part of the Requiem of Reconciliation.

Gächinger Kantorei, The Krakauer Kammerchor, Israel Philharmonic Orchestra, cond.: Helmuth Rilling.

Score: EWH 1994

Recording AN.R36

Commissioned by the Internationale Bachakademie, Stuttgart and Helmuth Rilling.

The Requiem of Reconciliation was a collaborative requiem written by fourteen different composers to commemorate the 50th anniversary of the end of the Second World War. The initiative was taken by the conductor Helmuth Rilling.

AN.172 *Bleikeplassen* S 1995

Incidental music to a theatre play by Tarjei Vesaas. Directed by Otto Homlung.

Oslo: Det norske teater, September 7th to November 10th 1995.⁶⁸⁸

MS: NB

AN.173 *Partita per carillon* C 1995

Una fantasia per Carillon

Instrumentation: Carillon solo

Movements

I: Som Fantasi/Quasi Fantasia

II: Hastig

⁶⁸⁷ Rosewall (2007): *Directory of Choral-Orchestral Music*, p. 358.

⁶⁸⁸ <http://sceneweb.no/en/production/46530/Bleikeplassen-1995-9-7>, visited March 8th 2015.

III: Flater og punkter
 IV: Chime

First performance: 1995
 MS: NB
 Recordings: AN.R53

Commissioned by Kirkemusikkskolen, Løgnum Kloster (Denmark) and Peter Langberg.
 Played from the carillon of Oslo Town Hall on June 9th 2010 to commemorate Nordheim death.

According to the list of manuscripts from the Arne Nordheim centre, the work uses parts from *Jubel* (see AN.132 *Recall and Signals*).

AN.174 Suite **25'** **C** **1996**

Per violoncello solo

Alternate title: *Klingende gester for cello solo*⁶⁸⁹
 English alternate title: *Sounding Gestes for Solo Cello* (trans. ON)

Movements:
 I. Largo Ascendente
 II. Fugitivo
 III. Largo Descendente
 IV. Avante
 V. Revoca

Commissioned by the Nordlyd festival. Dedicated to Truls Mørk.
 First performance: Trondheim, Nidaros Cathedral, October 6th 1996
 Vlc.: Truls Mørk.

Score: EWH

AN.175 Violin Concerto **25'** **O** **1997**

For Violin and Orchestra

Commissioned by the Oslo Philharmonic Orchestra. Dedicated to Arve Tellefsen. Solo part edited by Arve Tellefsen in collaboration with Nordheim. Cadenza written by Tellefsen.

Instrumentation:
 Violin solo
 Winds: 3(3pic).3(ca).2(Ebcl)+bcl.3(cbn)
 Brass: 4.2.3.1/
 3perc/hp/pf/cel/
 Archi

⁶⁸⁹ Morten Stokkan: "Mørk solo i Nidarosdomen," *Dagbladet*, October 1st 1996.

Composed: 1996
 First performance: Oslo, February 12th 1997
 Vln: Arve Tellefsen, Oslo Philharmonic Orchestra, cond.: Lü Jia

Score: EWH 1999
 Recordings: AN.R52, AN.R54

AN.176 Nidaros **O+V+EA** **1997**

A Dramatic Oratory

Libretto by Paal-Helge Hougen.
 Norwegian title: *Nidaros. Et dramatisk oratorium.*

Category: O+V+EA
 Electroacoustic technology: MIDI sampler

Movements
 I: Vandresalme
 II: Jon Munk
 III: Skuggane
 IV: Engelen

Instrumentation:
 Six voices (SATBCC), boy soprano, mixed chorus (SATB), children's chorus
 Orchestra
 Church bells, church organ
 Langeleik, dreielire
 MIDI sampler

Composed at Ferdinand Finne's home in Venice, Southern France, 1996.⁶⁹⁰
 First performance: Trondheim, Nidaros Cathedral, May 30th 1997⁶⁹¹
 Sop.: Anne-Lise Berntsen, mezzo: Marianne Andersen, ten.: Pål Rullestad, countertenors:
 Carl Høgset and Rasmus Høgset, boy soprano: Pål Jensen.
 Jon Munk (recitation): Ola B. Johannesen, organ: Per Fr. Bonsaksen, langeleik/dreielire:
 Sverre Jensen⁶⁹²

MS: Nationalbiblioteket/Music Norway

Commissioned for the official cultural program of the 1000th anniversary of the city of Trondheim.

The libretto uses excerpts from "Lux illuxit laetabunda;" a 12th century sacred text from *Olavs-sekvensene (The Olav Sequences)*. It also uses excerpts from *Psalms 42 (v8) and 137 (v2)* in Latin.

⁶⁹⁰Sverre Gunnar Haga: "Nesten nynnbar," *Dagbladet*, April 13th 2000.

⁶⁹¹Paal-Helge Haugen: *Nidaros. Eit dramatisk oratorium til musikk av Arne Nordheim* (Oslo: Cappelen, 1997).
 Illustrated by Håkon Bleken.

⁶⁹²Idar Karevold: "Historisk sus og nye klanger," *Aftenposten*, June 2nd 1997.

AN.177 *To sange* C+V 1997*Til digte af Tarjei Vesaas*

English title: Two Songs to Poems by Tarjei Vesaas (trans. ON)

Movements

I: Innbying

II: Helt stille

Instrumentation

Soprano solo

Vlc. solo

First performance: Vinje i Telemark: Vinjehuset, August 20th 1997Sop.: Solveig Faringer, vlc.: Aage Kvalbein⁶⁹³

The second song “Helt stille” premiered at a ceremony in Grotten to celebrate Nordheim receiving the Order of St. Olav, August 19th 1997 – the day before the official premiere (same musicians).⁶⁹⁴

Score: EWH

AN.178 *Three Stanzas* 14' C 1998*For Double Bass Alone*Title variants: *Three paragraphs for double bass; Avsnitt for contrabass.*⁶⁹⁵

Instrumentation: Dblb. solo

Edited with fingering and bowing by Bjørn Ianke

Movements:

I. Across / Innover

II. Octophonia

III. Searching / Søkende

First performance: Oslo: Forsvarsmuseet, September 24th 1998.Dblb: Bjørn Ianke⁶⁹⁶

Score: EWH 2000

Recording: AN.R58

Commissioned by and dedicated to Bjørn Ianke.

⁶⁹³ Geir Kristian Lund: “Fire dager til ære for Vesaas,” *Aftenposten*, August 21st 1997.

⁶⁹⁴ Thorleif Andreassen: “Forfremmet til kommandør,” *Aftenposten*, August 20st 1997.

⁶⁹⁵ This title is used in Terje Johanssen’s book of poems from the exhibition *Frontavsnitt*. In the book, 4 pages of Nordheim’s autograph score is reproduced. Terje Johanssen: *Frontavsnitt 2. Klagesanger* (Oslo: Gyldendal, 1999).

⁶⁹⁶ (Unsigned): “Viser krigens ansikt,” *Aftenposten*, September 24th 1998.

Written for the opening of the exhibition “Frontavsnitt” at the Norwegian Defence Museum. The exhibition was initiated by the four artists Arne Nordheim, Ragnhild Monsen (textile artist), Arne Nilsskog (painter) and Terje Johanssen (poet).

AN.179 *Dagskilje* **T** **1998**

Incidental music to Paul Claudel’s play *Partage de Midi*. Directed by Liv Ullmann.
Premiere: Oslo, Det Norske Teater, October 10th 1998

AN.180 *Fonofonier* **3’33** **EA** **1999**

CD track derived from the sound material of the 1995-revision of AN.55 *Ode til lyset*.
First released on AN.R47 August 9th 1999.

AN.181 *Incido* **1’** **C** **1999**

For Trumpet Solo

Composed 1999
Score: EWH 1999

Dedication:

“I bunnløs takk til BIT20 nedtegner jeg denne virtuositet på en søndag i mars 1999”⁶⁹⁷

AN.182 *Gilde på Gløshaugen* **EA+PSI** **2000**

Permanent sound installation in the Natural Sciences Building, NTNU.
English title: *Feast at Gløshaugen*.

Electroacoustic technology: Computer for algorithm and sound distribution. Weather station for external input.

Opening: Trondheim, Realfagbygget, NTNU, May 31st 2000

Derivative work: AN.190 Dodeka
Recordings: AN.R52. The track “Alfa Alfa” from AN.R52 also included on AN.R80.

Commissioned by Statsbygg, KORO and Utsmykningsfondet/NTNU.

The project was a collaboration with the visual artist Carl Nesjar, whose neon light cubes were installed in the same area as Nordheim’s sound installation, and followed the same indeterminacy principle.

Sound material was produced by Mats Claesson and Sigurd Saue. Sigurd Saue, Oddvar S. Kvam and Soundscape Studio’s were responsible for the installation of the work.

The title is a reference to Henrik Ibsen’s drama *Gildet på Solhaug* (*The Feast at Solhaug*).

⁶⁹⁷ Written on MS at NB.

AN.183 *Rondo for en skugge* C 2000

Song set to a text by Paal-Helge Haugen.
English title: *Rondo for a Shadow* (trans. ON)

Instrumentation: Soprano solo, violin solo

First performance: Sogn: Olavsdalen, May 2000
Sop.: Siri Torjesen, vln.: Ole Bøhn⁶⁹⁸

MS: NB

AN.184 *Språkfødsel* EA+PSI 2000

En kryptofoni

Permanent sound installation at Ivar Aasen Tunet, Ørsta.
English title: *Birth of language: A Cryptophonie* (trans. ON).⁶⁹⁹

Electroacoustic technology: Computer for algorithm and sound distribution. According to Sigurd Saue, the installation tracks the movement of the visitors, and the sound follows them as they walk around.⁷⁰⁰

Opening: Ørsta, Ivar Aasen-tunet, June 23rd 2000.

Commissioned by Statsbygg, KORO and Utsmykningsfondet/Ivar Aasen-tunet.

The installation is a collaboration with artist Ole Lislrud. Installation realized by Sigurd Saue and Soundscape Studios. The sound material is taken from older Nordheim-works.

Sound material is divided into three categories: "Fundament" with unmanipulated source material of material to AN.118 *Aurora* and AN.74 *Pace*, "Recitativ," with sound material from AN.109 *The Tempest* and *Aurora*, and "Language sounds" with various spoken fragments from a large number of languages. The installation alternates between Fundament-mode and Recitative-mode. The "Language sounds" are played when the installation is in Recitative-mode.

AN.185 *Frostregle* C+V 2001

For Chorus (SSAA), Percussion and Synthesizer

Written for The Røros Winter Music Festival where Nordheim was composer in residence in 2001. Set to a text by Rønnaug Kleiva.

English title: *Frost verse* (trans. ON)

⁶⁹⁸ List of Manuscripts, Norwegian National Library.

⁶⁹⁹ In a list of works from TONO, Nordheim for unclear reasons translates "kryptofoni" to English as "cryptography" instead of "cryptophonie." Document at Norwegian National Library.

⁷⁰⁰ Personal communication from Sigurd Saue, July 2016.

Instrumentation
Chorus (SSAA)
Percussion, synthesizer

First performance: Røros, March 17th 2001
Det Norske Jentekor, perc.: Terje Viken,

MS: NB

AN.186 *Five Stages* **16'** **C** **2001**

For String Quartet

Commissioned by Oslo String Quartet⁷⁰¹
First performance: Oslo, August 16th 2001
Oslo Strykekvartett: vln.: Geir Inge Lotsberg, Per Kristian Skaland, vla.: Are Sandbakken,
vlc.: Øystein Sonstad⁷⁰²

Score: EWH 2001

AN.187 *Fracture* **C** **2001**

For Viola Solo

Norwegian title: *Brudd. For bratsj.*

First performance: Oslo, Akershus Slottskirke, August 22nd 2001.
Vla: Soon-Mi Chung.⁷⁰³

Written for Oslo Chamber Music Festival 2001.
Score: EWH 2002.

AN.188 *Dråpen* **EA+PSI** **2001**

Permanent sound installation in Bekkelaget Water Sanitation Plant. Commissioned by Statsbygg, KORO and Utsmykningsfondet/Bekkelaget renseanlegg.

English title: *The drop* (trans. ON).

Electroacoustic technology: Computer for algorithm and sound distribution. Amount of waste water running through the plant as external input. Technical realization by Soundscape Studios.⁷⁰⁴

Opening: Oslo: Bekkelaget Renseanlegg, November 15th 2001.

⁷⁰¹ List of works from TONO. Document at Norwegian National Library.

⁷⁰² Idar Karevold: "Oslo kammemusikkfestival: Eksotisk feståpning i Aulaen," *Aftenposten*, August 18th 2001.

⁷⁰³ Tori Skrede: "Nordheim, Plagge og Danskebåten," *Adresseavisen*, August 23rd 2001.

⁷⁰⁴ <http://www.bvas.no/index.jsp?ref=UtabData&include=utab&type=1&getTab=9791>, visited March 9th 2015.

Composed 2002

First performance: Oslo, The St. James Church of Culture, June 12th 2003

Mezzo-soprano: Hilde Torgesen, Cikada Duo: perc.: Bjørn Rabben, synth.: Kenneth Karlsson⁷⁰⁶

Score: EWH

Recording: AN.R66

Based on text fragments from Arkhilokos (ca. 600 bc), sung in Old Greek and Norwegian, translation by Svein Jarvoll.

AN.192 *Jeg kunne gråte blod* S 2004

Incidental music to a play about Kunt and Marie Hamsun by Ingar Sletten Kolloen. Directed by Bentein Baardson. Commissioned by Riksteateret for a tour in 2004-05.

Premiere: Grimstad, September 7th 2004

Last performance: Oslo Nye Teater, January 5th 2005

AN.193 *Nordklang* 10'30 C+EA 2005

For Bass Trombone, Percussion and Electronic Sounds

Electroacoustic technology: Fixed media playback (continuous)

Fixed media material realized at Norwegian Academy of Music with Mats Claesson.⁷⁰⁷

Includes excerpts from the electronic material to AN.104 *Response IV* and "Caliban's Warning" from AN.110 *The Tempest* (suite).

Instrumentation

Bass trombone solo, percussion

First performance: Harstad, during the ILIOS festival, February 3rd to 6th 2005

B.trb.: Gaute Vikdal, perc.: Odd Børge Sagland.

Score: EWH

Recording: AN.R82

Commissioned by Ny musikk Tromsø/ILIOS festival.

AN.194 *Fonos* 25' O 2005

For Trombone and Orchestra

Alternate Norwegian sub-title: *Tre memorabler for trombone og orkester.*

Alternate English sub-title: *Three Memorables for Trombone Solo and Orchestra.*

Instrumentation:

Trb. solo

⁷⁰⁶ Kjetil S. Østli: "En legende gjør come-back," *Aftenposten*, June 15th 2003.

⁷⁰⁷ Liner notes for AN.R82 Gaute Vikdal: *Gaute Vikdal Plays Nordheim.*

Winds: 3.3.1+Ebcl+bcl.2+cbn
 Brass: 4.4.3.1
 Timp./3perc/pf/cel/
 Archi

Composed 2003-2004

First performance: Bergen, Grieghallen, April 28ht 2005.

Trb.: Marius Hesby, Bergen Philharmonic Orchestra, cond.: Ingar Bergby

Score: EWH 2004

Recording: AN.R72

Commissioned by Bergen Philharmonic Orchestra. Dedications: Marius Hesby

Accolade: TONO's Edvard Award, 2006 (category: Contemporary Music).

AN.195 ***Bjello i fjelle'*** **11'30** **C+EA** **2006**

Lur – klokkespill – kammerorkester

English title: *Bells in the Mountain. For lure, campani and chamber orchestra* (trans. ON).

Electroacoustic technology: Fixed media material (continuous), synthesizer

Movements:

I. Recitativo – med strofer

II. Rondane

III. Rognarakk

IV. Norge

V. Finale

Instrumentation

Lures in C, D and E

Contrabassoon (or bass clarinet)

1 (or 2) vib./ar.

Solo campani (Nauen)

Archi: 3.3.2.2.2(1)

Synthesizer

Composed 2005-2006

First performance: Rondane Høyfjellsscene, August 6th 2006

Lure: Gaute Vikdal, campani: Laura Marie Rueslåtten, Peer Gynt Kammerorkester, cond.:

Eidar Nilsen.

Score: EWH 2006

Recording: AN.R70

Commissioned by Peer Gynt-stemnet 2006, Rondane.

This work is a further development of the withdrawn work *Venit* (2003).

AN.196 Dodega EA+TSI 2006

Temporary sound installation, part of *Installasjon Skansen* at the Oslo Architect Society 100-year anniversary festivities, Kontraskjæret, Oslo.
Installation period: October 5th to 22nd 2006⁷⁰⁸
According to Sigurd Saue, the installation uses the same sound material as *Dråpen*.⁷⁰⁹

AN.197 Gong Do 10' C+EA 2006/7

For Timpani and Electronic Sounds

Electroacoustic technology: Fixed media material (continuous)
Instrumentation: Timpani solo
Composed 2006 or 2007.
Score: EWH

Unclassified manuscripts in the Arne Nordheim MS collection at NB

- *Adieu, Olav* (1978)
- *Bryllupsmars til Rannveig* for carillon (1981). Played by the carillon of Oslo Town Hall for the wedding of Arne Nordheim and Rannveig Getz, June 20th 1981.
- *Kjellsgangaren* for carillon (1990). Played by the carillon of Oslo Town Hall for the 60th birthday of Kjell Bækkelund.
- *Forlovelsessang* (English: *Engagement song*, trans. ON). For Elisabeth "Sissy" and Halfdan Kjerulf's wedding January 19th 1994
- *Darwinkantate/Antakelser*, "En musikalsk hilsen til O.A. Thomessen på 50-årsdagen, 16.5.1996 (1 page)
- *Operafanfare*, 2003. Similar to AN.133 *Varder*. For the inauguration of construction of the new Norwegian opera house, February 2nd 2003.
- *3 ritorneller for 4 klokker*, to be played at Nanset School, composed 2005

No date

- *Et ribbens brud/If you want*, for Tori Støde
- *Canto reale nidarosensis*
- *Fanfare for kulturkanalen P2*
- Opening music for NRK P2 *Kulturnytt*
- *Tre sanger for mannsstemme*: "Kven kviskra bak ordet," "Han som ser" and "Hjarterosa"

⁷⁰⁸ <http://www.w.arkitektur.no/?nid=157718>, visited March 9th 2015.

⁷⁰⁹ Sigurd Saue, interviewed by Ola Nordal, October 10th 2011.

Other unclassified compositions

- “Jubileumsstykke for den elektroniske musikken” (1973). In a radio program on the history of electronic music, Nordheim sampled four works made in Cologne, and created his own composition from them.⁷¹⁰
- *Catiliana* (1994). Parts from various Nordheim-works arranged to be used for Agder Teater’s staging of Henrik Ibsen’s first play. Music arranged by Ole-Henrik Moe, jr. Directed by Bentein Baardson. Scenography and costumes by Ferdinand Finne.

Withdrawn/refused/unfinished

- *String Quartet no. 2* (1957). Unfinished. MS fragment at NB.
- *Zip* for children with orchestra (ca. 1972). Unfinished.
- *Zimbel* for orchestra (1973). Withdrawn. Parts reused in AN.98 *Spur*.
- *Puzon*. Alternative title: *Puznor* (ca. 1976). Unfinished. Early version of AN.99 *The Hunting of The Snark*/AN.140 *The Return of the Snark*.
- *Inward* (1991). Unperformed trumpet concerto written for Ole Edvard Antonsen, based on AN.129 *Boomerang*.
- *Looce-rop* for 12 brass instruments and electronic sounds (1994). Refused Olympic fanfare. MS at NB.
- *Vale* for trumpets and tape (1997). Written for the ceremony where Nordheim received Anders Jahre’s Culture Prize, June 12th 1997.⁷¹¹ Withdrawn.
- *Venit* (1983/2003). Withdrawn. Expanded into AN.195 *Bjøllø i Fjelle*⁷¹²

No date

- *Polygon* for orchestra. Withdrawn
- *Litt alene* for alto flute and piano. Unfinished. MS (14 bars) at NB
- *Clarinet quintet*. Unfinished. MS (1 page) at NB
- *Six Hebrew Stanzas*. Fragment, later used in *Wirklicher Wald*.
- *Suite no. 2* for violoncello solo. 12-14 minutes, 5 movements. Unfinished. MS at NB

Films using Nordheim’s music

- Sølve Skagen and Malte Wadman: *Ja vi elsker*. Filmgruppe I A/S, 1983. Includes excerpts from AN.52 *Solitaire*.
- Vibekke Løkkeberg: *Hud*. 1986. Uses excerpts from AN.112 *Clamavi* and AN.110 *The Tempest* (suite).

⁷¹⁰ Elektronisk musikk gjennom 25 år,” episode 2: “Elektronisk musikk.” *NRK Radio*, June 21st 1973. Hosted by Arne Nordheim and Sverre Lind.

⁷¹¹ (Unsigned): “Jahre-pris til Nordheim og Hølmebakk,” *NTB*, February 13th 1997.

⁷¹² Liner notes to AN.R82 Gaute Vikdal: *Gaute Vikdal Plays Nordheim*.

Ballets choreographed to Nordheim' music**AN.B1 *Stages* 1971***Ballet for 15 dancers*

Choreographed by Robert Cohan. Uses excerpts from AN.49 *Warszawa* and AN.50 *Colorazione*, as well as additional music by Bob Downes. Duration: 45'.
Premiere: London, The Place, 1971, London Contemporary Dance Theatre.

AN.B2 *Strender* 1974

Choreographed by Glen Tetley. Uses AN.52 *Solitaire* and AN.34 *Response I*.
Commissioned by the Norwegian Opera and Ballet.
Premiere: Oslo, February 13th 1974. The Norwegian Opera and Ballet.

AN.B3 *Stoolgame* 1974

Choreographed by Jiri Kylián. Uses AN.52 *Solitaire*.
Premiere: Den Haag, June 18th 1974. Nederland's Dans Theater

AN.B4 *Til [dikt av] Karin Boye* 1975

Television ballet. Dancer: Bjørg Phale. Directed by Jannike M. Falk. Dur.: 9'.
Music: AN.93 *Morgenraga*. Includes poems by Karin Boye, read by Eva Henning
First broadcast: NRK TV, October 17th 1975.

AN.B5 *Greening* 1975*Waiting for the Rain*⁷¹³

Choreographed by Glen Tetley for the Stuttgart Ballet. Scenography by Nadine Bailys.
Uses AN.28 *Epitaffio* and AN.89 *Greening* as well as an especially composed bridge
between the two works.
First performance: Württemberg Staatsoper, Stuttgart, November 1975.
MS (for the bridge): NB

AN.B6 *Clamavi* 1992

Choreography by Per Jonson. Uses AN.112 *Clamavi*.
First performance at the Bergen International Festival 1992.

⁷¹³ Hans Jørgen Hurum: "Arne Nordheim og Stuttgartballetten betok i London," *Aftenposten*, June 12th 1976.

Nordheim: *Electronic music*")

AN.49 *Warszawa*
AN.74 *Pace*
AN.77 *Lux et Tenebrae*

AN.R8 Contemporary Music From Norway: Hovland, Mortensen, Nordheim * 1975

Vinyl LP: Philips 6507.040, Norway 1975
Series: Contemporary Music from Norway

AN.7 *Aftonland* (English version: *Evening Land*)
Sop: Elisabeth Söderström, Oslo Philharmonic Orchestra, cond. Miltiades Caridis

AN.76 *Floating*
Oslo Philharmonic Orchestra, cond. Miltiades Caridis

With Hovland: *Fanfare and Choral* and Mortensen: *Concerto for Piano and Orchestra*.

AN.R9 James Nightingale: New music for electric accordion* 1977

Vinyl LP: Orion ORS 77263, USA, 1977

AN.79 *Dinosauros*
Acc.: James Nightingale

AN.R10 VA: Aurora Borealis* 1978

Vinyl 2xLP: Unicorn Records RHS 357/8 and UN2-75028, UK 1978

AN.98 *Spur*
Acc.: Mogens Ellegaard, Royal Philharmonic Orchestra, cond: Per Dreyer

AN.R11 Music of Arne Nordheim 1979

Vinyl LP: Decca Headline HEAD23, UK 1979.
CD: Aurora NCD-B 4931, Norway 1988 and 2000. (As "Epitaffio, Doria, Greening").
Each of the three versions of this album has a different cover.

AN.28 *Epitaffio*
Royal Philharmonic Orchestra, cond: Per Dreyer

AN.96 *Doria*
Ten: Peter Pears, Royal Philharmonic Orchestra, cond: Per Dreyer

AN.89 *Greening*
Royal Philharmonic Orchestra, cond: Per Dreyer

AN.R12 Trio Mobile: New Music For Accordion 1979

Vinyl LP: Philips 6578.106, Norway 1979.

AN.82 *Listen*
Pno: Geir Henning Braaten

AN.99 *The Hunting Of The Snark*
Trb.: Per A. Brevig

AN.112 *Clamavi*
Vlc: Aage Kvalbein

AN.50 *Colorazione* ("Version 1982")
Org.: Kåre Kolberg, perc.: Per Erik Thorsen, filters and ring modulators: Eugeniusz Rudnik and Arne Nordheim.

AN.R18 *Wirklicher Wald, Aurora* 1985

Vinyl LP: Norwegian Composers NC 4910, Norway 1985.
CD: Norwegian Composers NCD 4910, Norway 1986.

AN.120 *Wirklicher Wald*
Sop.: Dorothy Dorow, vlc: Aage Kvalbein, Bergen Cathedral Choir, Bergen Symphony Orchestra, cond.: Karsten Andersen

AN.118 *Aurora*
Electric Phoenix

AN.R19 *Grex Vocalis: Aurora, Klokkesong, Tres Lamentationes* 1986

Vinyl LP: Aurora AR 1902, Norway 1986.

AN.118 *Aurora*
AN.122 *Klokkesong*
AN.126 *Tres Lamentationes*
Grex Vocalis, cond.: Carl Høgset.

AN.R20 *Truls Otterbech Mørk: Nordheim, Crumb, Lidholm, Kodaly 1987**

CD: Simax PSC 1023, Norway/UK 1987.
Series: Simax Classics

AN.112 *Clamavi*
Vlc: Truls O. Mørk

AN.R21 *Norwegian String Quartet: Nordheim, Bibalo: String Quartets 1987**

CD: Norwegian Composers NCD 4915, Norway 1987

AN.5 *String Quartet*
Norwegian String Quartet, vln.: Mette Elisabeth Steen, Ørnulf Boye Hansen, vla.: Oddbjørn Bauer, vlc.: Merete Olsen.

With Bibalo: *String Quartet*.

**AN.R22 VA: The Crown Princess Sonja International Music Competition, Vol 1:
Music by Grieg and Norwegian Composers*** **1988**

CD: Simax PSC 1042, Norway 1988.
Series: Simax Classics

AN.82 *Listen!*
Pno: Serguei Schepkin

AN.R23 VA: Aurora Borealis – A Norwegian Song Recital* **1989**

CD: Aurora ARCD 1919, Norway 1989
Series: Aurora Classical

AN.116 *Den Første Sommerfugl* (as *The First Butterfly*)
Mezzosop.: Marit Osnes Aambø, pno.: Arild Aambø.

AN.R24 Stavanger Symphony Orchestra: Nordheim, Berg, Sævrud* **1990**

CD: Aurora ACD 1934, Norway 1990.
Series: Aurora Contemporary

AN.139 *Rendezvous For Strings*
Stavanger Symphony Orchestra, cond.: Gerard Oskamp

With Berg: *Concerto for Clarinet and Orchestra* and Sævrud: *Concerto for Bassoon And Orchestra Op. 44.*

AN.R25 The Norwegian Chamber Orchestra: Nordheim, Hallgrimsson*1990

CD: Victoria VCD 19014, Norway, 1990.

AN.139 *Rendezvous For Strings*
The Norwegian Chamber Orchestra, cond.: Terje Tønnesen

AN.129 *Boomerang*
Oboe: Erik Niord Larsen, The Norwegian Chamber Orchestra, cond.: Christian Eggen

With Hafliði Hallgrímson: *Poemi*. Re-released as AN.RC6 VA: *Rendezvous with Concertos* (1991), with AN.98 *Spur* from AN.R10.

AN.R26 Tenebrae, Magma **1991**

CD: Aurora ACD 4966, Norway 1991.
Series: Aurora Contemporary.

AN.117 *Tenebrae*
Vlc: Truls Mørk, Oslo Filharmoniske Orkester, cond.: Yoav Talmi

AN.146 *Magma*
Oslo Filharmoniske Orkester, cond.: Yoav Talmi

AN.R34 The Norwegian String Quartet: London Recital: Haydn, Grieg, Nordheim*
1994

CD: Vest-Norsk Plateselskap VNP 0094.0028, Norway, 1994

AN.5 *String Quartet 1956*

The Norwegian String Quartet: vln.: Harald Aadland, Mette Olsen Carr, vla.: Mette Steen,
vlc.: Oddbjørn Bauer.

Live recording from St James's Church, Piccadilly, London, June 20th 1993.

AN.R35 Carl Høgset: Songs & Airs* **1995**

CD: Quattro QCD 9304, Norway, 1995.

AN.155 *Three Unexpected Songs*

Ten.: Carl Høgset, lute: Erik Stenstadvold, vladg.: Betteke Groot

AN.R36 Helmut Rilling: Requiem der Versöhnung* **1995**

2xCD: Hänssler Classic CD 98.931, Germany 1995.

AN.170 "Confutatis" aus *Requiem der Versöhnung*

Gächinger Kantorei Stuttgart, Krakauer Kammerchor, Israel Philharmonic Orchestra,
cond.: Helmut Rilling.

Requiem der Versöhnung is a requiem with movements composed by Luciano Berio, Friedrich Cerha, Paul-Heinz Dittrich, Marek Kopelent, John Harbison, Bernard Rands, Marc-André Dalbavie, Arne Nordheim, Judith Weir, Krzysztof Penderecki, Wolfgang Rihm, Alfred Schnittke, Gennadi Roschdestwenski, Joji Yuasa and György Kurtag.

AN.R37 Trond Sævrud: Ghosts. Violin music by Hvoslef, Nordheim and Haugland*
1996

CD: Hemra HCD 2916, Norway 1996.

AN.127 *Partita für Paul*

Vln.: Trond Sævrud

AN.R38 Jostein Stalheim: Kast. Det poly- og mirkotonale akkordeon, vol 1* **1996**

CD: Hemera HCD 2918, Norway 1996.

AN.125 *Flashing*

Acc.: Jostein Stalheim.

AN.R39 Kjell Bækkelund: 20th Century Bækkelund* **1996**

CD: Tylden & Co GTACD 8057, Norway 1996.

AN.82 *Listen*

Pno.: Kjell Bækkelund

AN.R40 BIT20 Ensemble: Arne Nordheim: Magic Island 1996

2xCD: Aurora ACD 4990, Norway 1996

Series: Aurora Contemporary

AN.157 *Magic Island*

Sop.: Siri Torjesen, bar.: Njål Sparbo, BIT20 Ensemble, cond.: Ingar Bergby

AN.138 *Tractatus*

Fl.: Ingela Øien, BIT20 Ensemble, cond.: Ingar Bergby

AN.115 *Partita For 6 Basses*

Cb.: Janne Johansson, Bjørn Terje Jensen, Andrzej Woznikowski, James Mallet, Josee Deschens, Rolf Christian Erdahl

AN.7 *Aftonland*

AN.145 *Tre Voci*

Sop.: Siri Torjesen, BIT20 Ensemble, cond.: Ingar Bergby

AN.20 *Partita memora* (as *Partita For Viola, Cembalo And Percussion*)

Vla.: Espen Lilleslåten, hpc.: Jarle Potevatn, perc.: Rune Halvorsen

AN.5 *String Quartet 1956*

Vln.: Espen Lilleslåten and Renata Arado, vla.: Nora Taksdal, vlc.: Sally Guenther

AN.123 *Response III* (as *Response for Organ, Percussion and Tape*)

Org.: Harald Herresthal, perc.: Peter Kaets and Terje Viken.

AN.R41 Embla: Norsk tonekunst i kontraster* 1997

CD: EMBLACD 01, Norway, 1997

“No, music” from AN.131 *Music to ‘Two Fragments to Music’ by Shelley*

Embla, cond.: Norunn Illevold Giske

AN.R42 Bengt Rosengren: Obo Concertos* 1998

CD: Daphne NAX-DAPHNE1-002, Sweden September 24th 1998

AN.129 *Boomerang*

Oboe: Bengt Rosengren, Swedish Radio Symphony Orchestra

Contains “reflections” on their works by each composer.

AN.R43 Gaute Vikdal, Arvid Engegård, Bjørn Andor Drage: Skybrudd*1998

CD: Euridice EUCD 007, Norway 1998.

AN.81 *OHM* (as *OHM '95*)

Lure.: Gaute Vikdal

AN.R44 Peter Herresthal: *Please Accept My Ears! 1998**

CD: Hemera HCD 2931, Norway 1998

AN.127 *Partita für Paul*

Vln.: Peter Herresthal, electronics: Mats Claesson

AN.152 *Duplex*

Vln.: Peter Herresthal, vla.: Henninge Båtnes

With Olav Anton Thommessen: *Please Accept My Ears* and *Cantabile (Etyde-Cadenza)*.

AN.R45 Einar Steen-Nøkleberg: *Ferdinand Finne, Mine musikkgleder* * 1998

CD: Simax Classics PSC 1139, Norway 1998

AN.82 *Listen*

Pno.: Einar Steen-Nøkleberg

AN.R46 VA: *Mørkets musikk: Musikk i norske kinofilmer 1998**

CD Released with the book Tore Helset (ed.): *Mørkets musikk: Musikk i norske kinofilmer*, Oslo: Norsk filminstitutt, 1998.

AN.114 *Forfølgelsen* (opening credits)

AN.78 *En dag i Ivan Denisovitsj' liv* (opening credits)

AN.R47 VA: *Love Comes Shining Over The Mountains 1999**

CD: Rune Grammofon RCD 2012, Norway August 9th 1999

AN.180 *Fonofonier*

AN.R48 Odd Børge Sagland: *Response 1999**

CD: BIS BIS-CD-1118, Sweden, October 1st 1999

AN.150 *Response 1990*

Perc.: Odd Børge Sagland

AN.R48 VA: *Hommage à Lutoslawski 1999**

CD: Polskie Radio PRCD 119, Poland 1999⁷¹⁶

165 *Adieu*

Sinfonietta Cracovia, cond.: Wojciech Michniewski

⁷¹⁶ Geir J. Myrseth: *Arne Nordheim. Bibliografi + Diskografi*, Spesialarbeide i bibliotek- og informasjonsstudie (Oslo: Høgskolen i Oslo, 2002), p. 39.

AN.R49 Elisabeth Klein: *Music of the Night 1999**

CD: Classico: CLASSCD 270, Denmark, 1999
 CD (German release): Scandinavian Classics 220556-205, Germany 2002

AN.82 *Listen*
 pf.: Elisabeth Klein

AN.R50 Kristiansand Chamber Orchestra: *A Norwegian Rendezvous 2000**

CD: Intim musik 065, Norway, April 25th 2000

AN.139 *Rendezvous For Strings*
 Kristiansand Chamber Orchestra, cond.: Jan Stigmer

Featuring works by Johan Kvandal.

AN.R51 The Norwegian Girls Choir/Det norske jentekor* 2000

CD: Det norske jentekor 2000DNJ, Norway 2000.

AN.131 *Music to 'Two Fragments to Music' by Shelley*
 The Norwegian Girls Choir, cond.: Barbro Karita Grenersen

AN.R52 Arve Tellefsen: *Violin Concertos: Nordheim, Valen 2000**

CD: Sony Classical 501394.2, Norway 2000

AN.175 *Violin Concerto* (cadenza: Arve Tellefsen)
 Vln.: Arve Tellefsen, Oslo Philharmonic Orchestra, cond.: Christian Eggen

With Fartein Valen: *Concerto For Violin And Orchestra, Op. 37.*

AN.R52 REALart 2000

CD/CD-ROM: Forl. Geelmuyden-Kiese/Utsmykningsfondet, Norway 2000 (CD and book documenting art in Realfagbygget, NTNU).

Three excerpts from AN.182 *Gilde på Gløshaugen*

“Tre tilfeldige utbrudd” [“Three Random Outbursts”, trans. ON]

I: Alfa Alfa (Hver dag kl. 08.00)

II: Alfa Cantor (20. juni kl. 12.00)

III: Alfa Persono (16. desember kl. 16.00)

AN.R53 Peter Langberg: *The Voice of the City 2001**

CD: Simax Classics PPC 9043, Norway, July 26th 2001
 Series: Pro musica

AN.173 *Partita per Carillon*
 The carillon at Oslo Town Hall: Peter Langberg,

AN.R54 Peter Herresthal: Arne Nordheim: Complete Violin Music 2001

CD: BIS BIS-CD-1212, Sweden, September 2001

AN.175 *Violin Concerto* (cadenza: Peter Herresthal)
Vln.: Peter Herresthal, Stavanger Symphony Orchestra, cond.: Eivind Aadland

AN.152 *Duplex* (version for vln and vlc)
Vln.: Peter Herresthal, vlc.: Øystein Sonstad

AN.127 *Partita für Paul*
Vln.: Peter Herresthal, electronics: Mats Claesson

AN.R55 VA: Listen. The Art of Arne Nordheim 2002

7xCD Box set: Aurora ACD 5070, Norway 2002

Series: Aurora Contemporary.

Compilation with unreleased and previously released material

Previously unreleased

AN.140 *The Return of the Snark*, from the sessions of AN.R29, but previously unreleased.
Trb.: Gaute Vikdal

AN.111 *Nedstigningen*
Narrator: Stein Mehren, sop.: Toril Carlsen, NRK Studio Choir, Nordstrand Church Choir,
Norwegian Radio Orchestra, cond.: Sverre Bruland

AN.163 *Draumkvedet* (excerpts), later released on AN.R61

AN.97 *Nachruf*
Oslo Philharmonic Orchestra, cond.: Christian Eggen

Previously released

AN.28 *Epitaffio*, from AN.R11

AN.82 *Listen*, from AN.R45

AN.7 *Aftonland*, from AN.R40

AN.14 *Canzona*, from AN.R2

AN.50 *Colorazione*, from AN.R17

AN.120 *Wirklicher Wald*, from AN.R18

AN.112 *Clamavi*, from AN.R20

AN.117 *Tenebrae*, from AN.R26

AN.110 *The Tempest* (suite), from AN.R12

AN.126 *Tres Lamentationes*, from AN.R19

AN.118 *Aurora*, from AN.R19

AN.145 *Tre Voci*, from AN.R40

“Silver Key” from AN.131 *Music to ‘Two Fragments to Music’ by Shelley* from AN.R51

AN.81 *OHM ‘95*, from AN.R43

AN.173 *Partita Per Carillon* (excerpt), from AN.R53

AN.52 *Solitaire*, from AN.R4

AN.146 *Magma*, from AN.R26

AN.74 *Pace*, from AN.R7
 AN.89 *Greening*, from AN.R11
 AN.54 *Eco*, from AN.R14
 AN.59 *Solar Plexus*, from AN.R6
 AN.127 *Partita für Paul*, from AN.R44
 AN.98 *Spur*, from AN.R10

AN.R56 Stefan Hussong: *High Way for One 2002**

CD: Thorofon CTH 3449, Germany, 2002

AN.79 *Dinosauros*
 Acc.: Stefan Hussong

AN.R57 Dodeka 2003

CD: Rune Grammofon RCD 2030, Norway, March 17th 2003

- | | |
|--------------|--------------|
| 1. Searching | 7. Crossroad |
| 2. Hovering | 8. Near |
| 3. Awaiting | 9. Bits |
| 4. Meeting | 10. Calm |
| 5. Return | 11. Sliding |
| 6. Distance | 12. Summa |

See also AN.190 *Dodeka*.

AN.R58 Bjørn Ianke: *The contemporary solo double bass, Vol 3 2003**

CD: Simax PSC1154, Norway, May 22nd 2003

AN.178 *Three stanzas*
 Dbbl.: Bjørn Ianke

AN.R59 Erling Blöndal Bengtsson: *The Nordic Cello 2004**

CD: Danacord DACOCD 554, Denmark 2004

AN.112 *Clamavi*
 Vlc.: Erling Blöndal Bengtsson

AN.R60 Aage Kvalbein: *Ten Norwegian Short Stories 2005**

CD: Aurora: ACD 5040, Norway, 2005

AN.R60 *Clamavi*
 Vlc: Aage Kvalbein

AN.R61 NRK Radioteateret: *Henrik Ibsen: John Gabriel Borkman* 2006

3xCD: Lydbokforlaget, ISBN 9788242120601, Norway, March 17th 2006

AN.66 *Jan Gabriel Borkman*
Original 1969 broadcast

AN.R62 VA: 4th International Jew's Harp Festival* **2006**

2xCD+DVD: Heilo/Grappa musikkforlag HCD 7189, Norway 2006

AN.189 *Partita for munnharper*
Jew's Harp: Svein Westad, Anon Egeland, Anders Erik Røine, Niels J. Røine

AN.R63 Norwegian Radio Orchestra/Grex Vocalis: *Draumkvedet* **2006**

2xCD: Simax Classics PSC 1169, Norway, 2006

AN.163 *Draumkvedet*
Grex Vocalis, Norwegian Radio Orchestra, cond.: Ingar Bergby
Hardingfele: Åshild Breie Nyhus
Singers: Frank Havrøy, Njål Sparbo, Torunn Østrem Ossum, Benjamin Isaksen, Carl Høgset, Rasmus Høgset, Sigve Bøe, Unni Løvlid. Voices: Paul Ottar Haga, Sigmund Sæverud.

Recorded 2001.

AN.R64 NRK Radioteateret: *Goethe: Faust* **2007**

CD: Lydbokforlaget ISBN 9788242122001, Norway, May 30th 2007

AN.41 *Faust*
Original 1967 broadcast

AN.R65 Einar Steen-Nøkleberg: *Nordheim – Beethoven – Nordheim** **2007**

CD: Simax PSC1269, Norway, August 27th 2007

AN.82 *Listen*
Pf.: Einar Steen-Nøkleberg

AN.82 *Listen* (live-electronic version, as *Listen – Inside/Outside*)
Pf.: Einar Steen-Nøkleberg, electronic processing: Mats Claesson

With Ludwig van Beethoven: *Piano Sonata No. 32 in C minor, op. 111*.

AN.R66 Cikada Duo: *Nordheim* **2007**

CD/SACD: 2L 2L39-SACD, Norway, 2007

AN.50 *Colorazione*
Cikada Duo: Synth.: Kenneth Karlsson, perc.: Bjørn Rabben

AN.191 *Fem Kryptofonier*
Sop.: Elisabeth Holmertz, Cikada Duo: Synth.: Kenneth Karlsson, perc.: Bjørn Rabben

AN.161 *Link*

Cicada Duo: Synth.: Kenneth Karlsson, perc.: Bjørn Rabben, electronics: Åke Parmerud

AN.116 *Den Første Sommerfugl*

Sop.: Elisabeth Holmertz, synth.: Kenneth Karlsson

AN.R67 Uranienborg Vokalensemble: *Våkenetter 2007**

CD: Uranienborg Vokalensemble, Norway 2007

“Converte nos” from AN.126 *Tres lamentationes*

Uranienborg Vokalensemble, cond.: Elisabeth Holte

AN.R68 *The Nordheim Tapes* 2008

2xCD: Aurora ACD 5051, Norway, July 28th 2008

Subtitled: “Electronic music from the 1960s available for the first time”

CD 1 contains *Collage I-IV* by Risto Holopainen, composed from the tracks on CD2.

CD 2 Contains excerpts from Nordheim’s music for NRK Radio Theatre, 1961-1973

- | | |
|--------------------------------------|------------------------------------|
| 1. AN.15 <i>Intermezzo</i> | 9. AN.63 <i>Myrfolket</i> |
| 2. AN.13 <i>Den lille prinsen</i> | 10. AN.58 <i>Dagen vender</i> |
| 3. AN.21 <i>Hjemkomsten</i> | 11. AN.61 <i>Mandagsbilen</i> |
| 4. AN.23 <i>Her bor vi så gjerne</i> | 12. AN.72 <i>Vi på Alfabulator</i> |
| 5. AN.32 <i>Når vi døde vågner</i> | 13. AN.86 <i>Dei kjenslelause</i> |
| 6. AN.39 <i>Hamlet</i> | 14. AN.91 <i>Amaryllis</i> |
| 7. AN.41 <i>Faust</i> | 15. AN.37 <i>Papirfuglen</i> |
| 8. AN.51 <i>Mot bristepunktet</i> | |

AN.R69 Engegårdskvartetten: *String Quartets Vol. II 2010**

CD/SACD: 2L 2L71-SACD, Norway, September 6th 2010

AN.5 *String Quartet 1956*

Engegårdskvartetten

With works by Ludwig van Beethoven and Béla Bartók

AN.R70 Gaute Vikdal: *Lurendreier 2010**

CD: Euridice EUCD.54, Norway 2010

AN.195 *Bjøllo i fjelle*

Lure: Gaute Vikdal

AN.R71 Ksenija Sidorova: *Classical Accordion 2011**

CD: Champs Hill CHRCD019, UK, June 27th 2011

AN.125 *Flashing*

Acc.: Ksenija Sidorova

AN.R72 Oslo Philharmonic Orchestra: *Epitaffio* 2011

CD: Simax Classics PSC1318, Norway, 2011

AN.153 *Monolith*

AN.28 *Epitaffio*

AN.14 *Canzona*

AN.165 *Adieu*

Oslo Philharmonic Orchestra, cond.: Rolf Gupta

AN.194 *Fonos*

Trb.: Marius Hesby, Oslo Philharmonic Orchestra, cond.: Jukka-Pekka Saraste

AN.R73 Oslo Camerata: *Grieg String Quartets, Nordheim Rendezvous 2012**

CD: Naxos 8.572441, Germany, January 30th 2012

AN.139 *Rendezvous For Strings*

Oslo Camerata, cond.: Stephan Barrat Due

With Edvard Grieg's *String Quartet* arranged for string orchestra.

AN.R74 Jacob Kullberg: *Momentum 2012**

CD: Grappa/Aurora ACD 5075, March 2nd 2012

AN.117 *Tenebrae*

Vlc.: Jacob Kullberg, New Music Orchestra, cond.: Szymon Bywalec

With cello concertos by Per Nørgård and Kaija Saariaho.

AN.R75 Frode Haltli: *Arne Nordheim: Complete Accordeon Works* 2012

CD: Simax Classics PSC 1328, Norway, November 26th 2012

AN.98 *Spur*

Acc.: Frode Haltli, The Norwegian Radio Orchestra, cond.: Christian Eggen

AN.42 *Signals (as Signaler)*

Acc.: Frode Haltli, el.git.: Raoul Björkenheim, perc.: Hans-Kristian Kjos Sørensen

AN.79 *Dinosauros*

AN.125 *Flashing*

Acc.: Frode Haltli

AN.R76 VA: *I Want The Beatles To Play At My Art Centre 2012**

2xLP: Prisma P004, Norway, 2012

AN.73 *A Forum for the Arts*

Adapted from the original movie soundtrack by Helge Sten.

AN.R77 Enggårdskvartetten: *String Quartets Vol. III 2013**

CD: 2L 2L-091-SACD, Norway, February 2nd 2013

AN.152 *Duplex*
Enggårdskvartetten

With works by Joseph Haydn and Béla Bartók.

AN.R78 VA: *Sounding the body electric 2013**

2xCD: Bôlt BR ES10, Poland, June 2013

Series: Polish Radio Experimental Studio

Source material from AN.55 *Ode til lyset*, separate on two CD tracks.

2.2: "Ode To Light (Sculpture) - Studio Mix 1"

2.7: "Ode To Light (Sculpture) - Studio Mix 2"

AN.R79 Darrett Adkins, *Hypersuite 2: Music for solo cello 2013**

CD: Oberlin Music OC 1302, 2013

AN.112 *Clamavi*
Vlc.: Darrett Adkins

AN.R80 *Solitaire* 2014

2xCD: Bôlt – BR ES11, Poland, February 2014

Series: Polish Radio Experimental Studio

Previously unreleased

AN.55 *Ode til lyset* as (*Ode to Light*) (excerpt)

AN.137 *Stille, Kepler tenke*

AN.188 *Dråpen* (excerpt)

Previously released

AN.52 *Solitaire*, from AN.R4

AN.49 *Warszawa*, from AN.R7

AN.77 *Lux et Tenebrae*, from AN.R7

AN.74 *Pace*, from AN.R7

AN.86 *Dei kjenslelause*, from AN.R65

AN.72 *Vi på Alfabulator*, from AN.R65

AN.50 *Colorazione*, from AN.R4

"Distance," "Crossroads," "Awaiting" and "Summa" from AN.190/AN.R56 *Dodeka*

"Alfa Alfa" from AN.R52 *REALart*

AN.R81 Frode Haltli: *Vagabonde Blu 2014**

CD: Hubro HUBROCD 2546, Norway, October 27th 2014

AN.125 *Flashing*
Acc.: Frode Haltli

Recorded live in the mausoleum of Emanuel Vigeland, Oslo.

AN.R82 Gaute Vikdal: *Plays Nordheim* 2014

CD: Euridice EUCD83, Norway, November 17th 2014

AN.99 *The Hunting of the Snark*, from AN.R29
AN.140 *The Return of the Snark*, recorded during the same sessions as AN.R29, but only released previously on AN.R55
AN.81 *OHM '95*, from AN.R43
AN.195 *Bjøllø i Fjelle*, from AN.R67

AN.193 *Nordklang*
Btrb.: Gaute Vikdal, perc.: Odd Børge Sagland

Compilations

Compilations of Nordheim's music, or (*) compilations featuring work by Nordheim alongside those of other composers. VA = Various Artists.

AN.RC1 VA: *Musique Électronique Norvégienne 1968**

Vinyl LP released in three different countries with three different covers and titles
- *Musique Électronique Norvégienne*, Philips 836.896 DSY, France 1968
- *Norwegian Electronic Music*, Philips 4FFE8002/836.896 DSY, UK 1968
- *Response: Electronic Music from Norway*, Limelight LS 86061, USA 1970
Series: Prospective 21e Siècle

AN.28 *Epitaffio* and AN.34 *Response 1*, from AN.R2

Also includes Alfred Janson's *Canon* and Bjørn Fongaard's *Galaxy*.

AN.RC2 VA: *Electronic Panorama: Paris, Tokyo, Utrecht, Warszawa 1970**

Vinyl 4xLP Box Set: Philips, 6526 003-06, France 1970
Series: Prospective 21e Siècle

AN.52 *Solitaire*, from AN.R4

AN.RC3 VA: *Lytt til Norge 1905-1980 1980**

Vinyl 5xLP Box Set: Norges Røde Kors 66 85 100, Norway 1980

AN.42 *Signaler*, from AN.R4

AN.RC4 VA: Arne Nordheim 1981

Vinyl 3xLP Box Set: Edition Wilhelm Hansen WH 29617, Denmark 1981
 Contains the three previously released albums AN.R11, AN.R13 and AN.R14.
 Includes 88-page book with interviews, articles and photos.

AN.RC5 Evening Land, Floating, Solitaire, Colorazione 1988

CD: Aurora NCD-B 4933, Norway 1988

Re-release of works previously unavailable on CD.

AN.7 *Evening Land* and AN.76 *Floating*, from AN.R8
 AN.52 *Solitaire* from AN.R8
 AN.50 *Colorazione* ("Version 1982") from AN.R17

AN.RC6 Rendezvous With Concertos 1991

CD: Victoria VCD 19050, Norway, 1991

AN.129 *Boomerang* and AN.139 *Rendezvous*, from AN.R25
 AN.98 *Spur*, from AN.R10

AN.RC7 VA: Arkivalia Vol. 1: Music From The Henie Onstad Art Center Archives* 1996

CD: Henie Onstad Kunstsenter HOK 01, Norway 1996

AN.52 *Solitaire*, from AN.R4

AN.RC8 Grex Vocalis: Crux* 1997

CD: Quattro QCD9408, Norway, 1997

AN.126 *Tres Lamentationes*, from AN.R19

AN.RC9 Electric 1998

CD: Rune Grammofon RCD 2002, Norway, January 12th 1998.

AN.52 *Solitaire*, from AN.R4
 AN.74 *Pace*, AN.49 *Warszawa* and AN.77 *Lux et Tenebrae* (as *Polypoly*), from AN.R7
 AN.50 *Colorazione*, from AN.R17

AN.RC10 VA: The Wire Tapper 5* 2000

CD with *The Wire Magazine*, Issue 193, UK March 2000.

AN.180 *Fonofonier*, from AN.R47

AN.RC11 VA: Maiden voyage* 2002

CD: Melodisc MELOCD001, Norway, 2002

AN.59 *Solar plexus*, from AN.R6

AN.RC12 VA: *Money Will Ruin Everything **2003****

2xCD: Rune Grammofon RCD 2032, November 2003

“Hovering,” from AN.190/AN.R57 *Dodeka*

AN.RC13 VA: *TONO 75 år **2003****

CD: [NA], Norway, 2003

“A Maze Trod,” from AN.110 *The Tempest* (suite), from AN.R13

AN.RC14 Stein Mehren: *Leser egne dikt* **2005**

CD: Lydbokforlaget, ISBN 82-421-1265-7, Norway, 2005
Audio book where Stein Mehren reads his own poems.

“Hovering” and “Sildring” from AN.190/AN.R57 *Dodeka*

AN.RC15 VA: *Klassisk Norsk – Classical Norway **2006****

2xCD/3xSACD: Simax Classics PSC1262, Norway, March 24th 2006

AN.112 *Clamavi*, from AN.R60

AN.RC16 VA: *Until Human Voices Wakes Us and We Drown **2006****

5x Vinyl 10”: Rune Grammofon RLP 2050, Norway April 24th 2006

AN.74 *Pace*, from AN.R7

Commercially released DVDs

AN.DVD1 VA: *I Want Beatles to Play at my Art Center! **2012****

DVD: Henie Onstad Kunstsenter/Prisma PRISMADVD001, Norway, 2012

AN.73 *A Forum for the Arts*

Documentary film about Henie Onstad Kunstsenter, directed by Pål Bang-Hansen

AN.DVD2 Selected works for television 1967-1974 **2013**

DVD: Henie Onstad Kunstsenter/Prisma PRISMADVD002, Norway, 2013

AN.40 *Evolution* (original broadcast)

Featuring introduction by Arne Nordheim, Rolf Aamot and Ole Henrik Moe.
NRK TV, May 28th 1967

AN.89 *Greening*

Oslo Philharmonic Orchestra, cond.: Yuval Zaliouk

Recorded live at Chateau Neuf, Oslo. *NRK TV*, September 10th 1974

István Korda Kovács: "Occupation: Composer. A film portrait by István Korda Kovács."
Documentary about Arne Nordheim. *NRK TV*, September 25th 1974

Samplings, adaptations, remixes, homages

- Karin Krog: "Raga variations" on Karin Krog: *Freestyle*. Odin, 1989
Adaptation of AN.93 *Morgenraga* from AN.R6.
Arr.: John Surman, oboe.: Brynjar Hoff
- Biosphere/Deathprod: *Nordheim Transformed*. Rune Grammofon, 1998
Adaptations or "remixes" of tracks from AN.RC9
- Risto Holopainen: "Collage I-IV" (2008).
Adaptations of Nordheim's electronic music for radio theatre, from AN.R68.
- "The Hunting of the Snark"
Jazz adaptation of AN.99 *The Hunting of the Snark*, on NYNDK: *The Hunting of the Snark*, Jazzheads, Inc., 2008
- "Epitaph (for A. Nordheim)" on Sherriffs of Nothingness: *A Summer Night at the Crooked Forest*, SOFA, 2011. A "homage to Arne Nordheim."
- Kjell Tore Innervik and Mats Claesson: *Response til Response 1*. First performance: Norwegian Academy of Music, March 21st 2011. Adaptation of *Response 1*.
- "Ode to Arne Nordheim (1931–2010)" on Jono el Grande: *The Choko King*, Rune Grammofon, 2011. A homage to Arne Nordheim
- Mirt: *Solitaire*, Bôlt, 2014
Adaptation or "remix" of AN.52 *Solitaire* from AN.R4.

APPENDIX 3: APPOINTMENTS TO COMMITTEES AND BOARDS 1967-1985

Translations of Norwegian terms:

Formann: chairman

Rådsmedlem: council member

Styremedlem: board member

Utvalg: committee

Varamedlem: alternating board member

Participation in committees under the Arts Council Norway (Norges kulturråd).

Title	Position	Period
Committee for the release of Norwegian Music (later called "Committee for music")	Committee member	1967-1973, 1978-1984 (possibly more years)
Committee of the Norwegian Composer Fund	(1): Alternating board member for Klaus Egge	1965-1973
	(2): Alternating board member for Kåre Kolberg	1977-1981
Committee of the Norwegian Cultural Fund	Board member	1977-1981
Working Group for the Establishment of a Norwegian Sound Studio	Committee leader	Ca. 1972-1975
Official Committee for the revision of the Norwegian Copyright Law	Committee member	1977-1978
Norwegian Arts Council	Council member	1981-1984

Sources: *Stortingsforhandlinger* (Proceedings and documents from the Norwegian Parliament), 1967-1985.

Other associations

Name	Position	Period
Norwegian Composers Association	Alternating board member	1959-1961
Norwegian Composers Association	Board member	1961-1967
Norwegian Composers Association	Chairman	1974-1970
TONO	Board member	1960-1979
TONO	Chairman	1980- (??)
Ny musikk	1 st alternating board member	1959-1963
Ny musikk	Chairman	1963-1965
Kunstneraksjonen 1974	Member of action committee	
Rikskonsertene	Board member	1967- (??)

Sources: Bækkelund 1978, Lange 1967, Neset, et.al.red. 2016

As member of these committees and associations Nordheim often had additional duties. For instance, he served terms as jury member for the ISCM-festival as representative of Ny musikk.

APPENDIX 4: ACCOLADES

Amanda Award (The Norwegian International Film Festival in Haugesund)

For *King Lear*, 1986
For *Stella Polaris*, 1993

Bergen international festival prize

For *Aftonland*, 1961 (Nordheim was the only recipient of this award)

Nordic Council Music Prize

For *Eco*, 1972

Norwegian Composers Association, Work of the year

For *Favola*, 1965
For *Floating*, 1972
For *Doria*, 1975
For *The Tempest*, 1979
For *Tenebrae*, 1983 (“Stort verk”)
For *Antigone*, 1991 (“Store rettigheter”)
For *Draumkvedet*, 1994 (“Musikkdramatisk verk”)

Norwegian Arts Council Music Prize

For four works produced in 1970: *Floating*, *Pace*, *Poly-Poly* and *Dinosauros*, 1970

Prix Italia

For the radio drama *En benk i parken*, 1970
For *Nedstigningen*, 1980

The Royal Norwegian Order of St. Olav

Knight, 1982
Knight, 1st class, 1997
Commander, with Star, 2004

Composer in residence

Long Beach State University in California, 1969
Bergen International Festival, 1992 (“Festivalkomponist”)
Bergen International Festival, 1997 (“Festivalkomponist” with Cecilie Ore and John Persen)
Røros Winter Music Festival, 2001 (“Festivalkomponist”)

Other honours

Sven Wilhelm Hansen’s Anniversary Stipend (“Jubileumslegat”), 1968
Member of Swedish Music Academy, 1975
Honorary residence *Grotten*, from 1981 until his death

Lindeman Prize (Norwegian Academy of Music), 1981
Honorary citizen of Larvik, 1986
Norwegian Arts Council Honorary Prize (“Ærespris”), 1990
Det Treschowske Dansk-Norske Legat, 1992
Henrik-Steffens-Preis (Germany), 1993
Anders Jahre’s Culture Prize, 1997
Honorary member, ISCM, 1997
Asteroid 3458 (1985 RA3) named *Arnenordheim* by the International Astronomical Union, 2001
Vestfold fylkeskommunes Kunstnerpris, 2001
Oslo City Culture Award, 2001
Doctor Honoris Causa (Honorary doctor), Norwegian Academy of Music, 2006
Hedersrosen (Adresseavisen), date unknown

The Arne Nordheim Composers Prize

The Arne Nordheim Composers Prize was founded by the Norwegian Department of Culture in 2001, and is awarded annually to a composer living in Norway. The first recipient was to Maja S.K. Ratkje in 2001.

SOURCES

TV and radio broadcasts (chronological)

NRK Radio

- “Komponisten og hans verk: Arne Nordheim,” *NRK Radio*, March 8th 1966. Hosted by Sverre Lind.
- “Glimt fra musikklivet: Samtale med Arne Nordheim om hans komposisjon *Response*,” *NRK Radio*, November 13th 1966.
- “Arne Nordheim om sin komposisjon *Solitaire*,” *NRK Radio*, March 12th 1968.
- “Elektronisk musikk gjennom 25 år.” Series of five programs on the history of electronic music, hosted by Arne Nordheim and Sverre Lind. List of episodes:
1. Elektronisk musikk gjennom 25 år, 24.5.1973
 2. Elektronisk musikk, 21.6.1973
 3. Konkret musikk fra Paris, 5.7.1973
 4. Elektronisk musikk i Norge, 19.7.1973
 5. Computermusikk, 9.8.1973
- “Elektronisk Musikk: Arne Nordheim,” *NRK Radio*, March 23rd 1977. Hosted by Lorentz Reitan.
- “Månedens komponist: Arne Nordheim,” *NRK Radio*, November 1st 1978. Hosted by Peter Wollnick.
- “Lunsjgjest: Arne Nordheim,” *NRK Radio*, March 23rd 1992.
- “Hva er det med Arne Nordheim?” *NRK P2*. Series of three programs, October 23rd, October 30th, and November 6th 1995. Hosted by Erling Guldbrandsen and Henrik Hellstenius.
- “Elektronisk tidligmusikk” (part of *Musikk i brennpunktet*), *NRK P2*, December 14th 2005. Reserached and directed by Tilman Hartenstein.
- “Radiodokumentaren: Den glemte teknikeren. Et annerledes portrett av Arne Nordheim,” *NRK P2*, October 2nd 2014. Program by Zofia Paszkiewicz.

NRK TV

- “Norske kunstnere på 60-tallet,” *NRK TV*, 1966 (date unknown) Directed by Jan Horne.
- “Aktuell debatt,” *NRK TV*, March 1st 1968. Panel debate on contemporary music.
- “Epoke,” *NRK TV*, August 22nd 1968. On the opening of Henie Onstad Kunstsenter and the premiere of *Solitaire*.
- “Lydsulptur,” *NRK TV*, October 25th 1968. Directed by Eva Brustad.
- “Her og Nå!” *NRK TV*, March 15th 1969. Panel debate on the role of popular music, and the premiere of Nordheim’s AN.59 *Solar Plexus*.
- “Fysikk på roterommet,” *NRK TV*, April 1st 1969 <https://www.nrk.no/skole/?mediaId=12233>, visited March 27th 2014.
- “Musikk i fjernsyn? Reportasje fra et kurs for komponister / *Solitaire* av Arne Nordheim,” *NRK TV*, April 11th 1969. Program on the use of visuals in televised music, with focus on Nordheim’s composition *Solitaire*. Directed by Jan Horne.
- “Falkeklubben,” *NRK TV*, June 3rd 1969. Children’s program where Nordheim talks about *Epitaffio* and *Response*.
- “Musikk i TV – TV-musikk,” *NRK TV*, July 7th 1973. Nordheim demonstrates synthesizers and electronic music.

[Sources]

- “Tre ganger Peer Gynt” (“Three times Peer Gynt”). February 18th 1976. Program on Grieg, Sæverud and Nordheim’s music for Peer Gynt.
- “Arne Nordheim. Occupation: Composer. A Film Portrait by István Korda Kovács,” *NRK TV*, September 25th 1974. Documentary on Nordheim, directed by István Korda Kovács.
- “Ekstreme landskap: Fragmenter fra Arne Nordheims liv” (“Extreme Landscapes: Fragments From the Life of Arne Nordheim.” Trans. ON). *NRK TV*, June 20th 1991. Directed by Ivar Roger Hansen and Jan Otter Bjørkelun
- “Da Capo!” *NRK TV*, February 8th 1994. Nordheim reads poems and talks about Herman Wildenvey.
- “Norsk flimmusikk i fokus,” *NRK TV*, June 11th 1996.
- “U: Musikk,” *NRK TV*, February 4th 1998. Youth program on music, Nordheim interviewed on electronic music.
- “Mitt liv” (“My Life.” Trans. ON), *NRK2*, December 26th 2012. Høylandet Film & TV produksjon. Extended interview with Nordheim.

Nordheim’s introduces his own music on NRK TV

- *Epitaffio*, (no date, probably 1964).
- *Favola*, September 7th 1965.
- *Evolution*, May 28th 1967
- “Om klang og kling,” *NRK TV*, May 13th 1968. Nordheim on *Response* and *Signaler*.

Non-NRK video sources

- “Arne Nordheim og Sverre Fehn om komposisjon, rom og erindring.” Lecture by Sverre Fehn and Arne Nordheim at Arkitektenes hus, 1994. Available online at <https://www.youtube.com/watch?v=YKXs2X4kzIk>, visited April 23rd 2016.
- “Interview with Arne Nordheim” Jøran Rudi and Tilman Hartenstein interviews Nordheim, September 20th 2005. Video at NoTAM – Norwegian Center for Technology in Music and the Arts.

Archives

List includes archive signatures used in the footnotes. These are official Norwegian archive signatures, and can be used in searching at <http://arkivportalen.no>.

Bergen City Archives (Bergen byarkiv)

- BCA/A-4265: Festspillene i Bergen

Henie Onstad Kunstsenter

- The Museum Archive
- The Arnold Haukeland Archive

The Norwegian Broadcasting Corporation (NRK)

- The Radio and TV Archive
- The Documents Archive (“Dokumentarkivet”)

The Norwegian Department of Commerce (Handelsdepartementet)

- Osaka Expo '70

The Norwegian Department of Foreign Affairs (Utenriksdepartementet)

- Osaka Expo '70
- Kulturkontoret, Polen (“The Culture Office, Poland”)

[Sources]

The Norwegian National Archives (Riksarkivet):

- RA/PA-1446 Norsk Komponistforening, 1917-1992
- RA/PA-0939 Johansen, Otto
- RA/PA-1213 Morgenposten
- RA/PA-1445 Ny musikk
- RA/PA-1761 Musikk-konservatoriet
- RA/S-5006 Handelsdepartementet, Handelsavdelingen

The Norwegian National Library (NB)

- The Arne Nordheim Archive (Previously held at the Arne Nordheim Centre, Norwegian Academy of Music).
- The sheet music collection (“Musikksamlingen”).

Various other archives

- ILIOS Festival Archive, Harstad
- NTNU Department of electronics and telecommunication, Group for Acoustics, tape archive
- University of Utrecht, Institute of Sonology, STEM Archive (researched by Kees Tazelaar).
- Valdres Folkemuseum, The Anna and Erling Stordahl Collection
- Edition Wilhelm Hansen Archives, Copenhagen

Private documents from

- Harold Clark
- Yisrael Daliot
- Jens Vilhelm “Fuzzy” Pedersen
- Sigurd Saue
- Gerhard Steinke
- Gaute Vikdal

Official Norwegian Documents

- Annual reports from Arts Council Norway, 1965-1985
- Proceedings from the Norwegian Parliament (Stortingsforhandling)

Newspaper resources

- Aftenposten Online
- Atekst – Retriever (Aftenposten, Verdens Gang and post-1996 Norwegian dailies)
- Newspaper clippings at the Arne Nordheim Archive (box of newspaper clippings from *Grotten*)
The Norwegian National Library Newspaper Collection (*Morgenposten* and *Dagbladet*)

Sound-file archives

- Harold Clark private collection
- Edition Wilhelm Hansen
- Ulf Nilsen private collection
- Arne Nordheim Archive, Norwegian National Library (previously at the Arne Nordheim Centre, Norwegian Academy of Music)
- Mads Nordheim private collection

[Sources]

- NOTAM (Norwegian Centre for Technology and Acoustics in Music)
- NTNU Acoustics Group
- Sigurd Saue private collection

Oral history interviews and conversations

- Hakon Blandehoel, November 18th 2014 (telephone)
- Haakon Bleken, November 14th 2012*
- Mats Claesson, October 21st 2011, and several other conversations
- Harold Clark, November 29th 2014 (Facetime), and later conversations
- Yisrael Daliot, November 8th 2013 (Daliot also gave a lecture on his relationship with Nordheim at NTNU on this day)
- Ingebjørg Guslund, August 21st 2012
- Kåre Kolberg, September 22nd 2012
- Asbjørn Krokstad, October 10th 2011
- Carl Nesjar, August 20th 2012*
- Mads Nordheim, March 28th 2014, and several later conversations
- Rannveig Getz Nordheim, March 5th 2011, August 2012* and September 13th 2012
- Odd Erik Ressel, December 6th 201
- Sigurd Saue, February 7th 2011, and several other conversations
- Inger Sitter, August 21th 2012
- Gunnar Stette, December 1st 2011
- Krzysztof Szlifirski and Barbara Okoń-Makowska, December 9th 2014**
- Krzysztof Szlifirski, October 2017

* = Interview conducted together with Lars Mørch Finborud

** = Interview conducted by Ina Pillat for a documentary movie on the Subharchord.

Several conversations with Rannveig Get Nordheim, Mads Nordheim and Gro Nordheim.

I met Eugeniusz Rudnik briefly in Warsaw on December 8th 2014. We had a meeting scheduled for the next day, but the interview was cancelled due to Rudnik's health problems.

Scores

Dates refer to the copyright year of the score, not the composition of the work.

Edition Wilhelm Hansen, Copenhagen

- *Canzona per Orchestra*, 1962
- *Epitaffio*, 1964, 1980
- *Dinosaurios*, 1977
- *Greening*, 1978
- *Eco*, 1968 (?)
- *Colorazione*, 1969
- *Response (I)*, 1969
- *Partita 2 for El-guitar*, 1969
- *Strykekvartett 1956*, 1972
- *Floating*, 1972
- *Aurora*, 1984

[Sources]

- *The Tempest Suite*, 1987
- *The Tempest Ballet*, 1987 (?)
- *Aftonland*, 1988
- *Tempora Noctis*, 1989
- *Partita für Paul*, 1993
- *Magic Island*, 1999
- *Response* (“1990”), 2002
- *Response III*, (no date)
- *Response IV*, (no date)
- *The Hunting of the Snark*, (no date)
- *The Return of the Snark* (no date)

MIC (Music Norway)

- *Draumkvedet*, 1994
- *Bjøllo i fjelle*, 2006

Manuscripts, Arne Nordheim Collection (Norwegian National Library)

- *Katharsis*, 1962
- *På sporet* (no date, probably 1963)
- *Favola* (no date, probably 1965)
- *Be Not Afeard* (no date, probably 1977)
- *OHM* (no date, probably 1971)
- *Collorazione* (no date, possibly 1982)

SELECTED DISCOGRAPHY

All the entries in the list of recordings (Appendix 2) have been consulted. The most important recordings for Arne Nordheim's electronic music are the following:

- AN.R4 *Colorazione, Solitaire, Signals*
- AN.R5 Contemporary Music from Norway: *Nordheim, Berge, Fongaard*
- AN.R6 VA: *Popofoni*
- AN.R7 *Electronic music by Arne Nordheim*
- AN.R13 *The Tempest, Suite from the Ballet*
- AN.R18 *Wirklicher Wald, Aurora*
- AN.R19 Grex Vocalis: *Aurora, Klokkesong, Tres Lamentationes*
- AN.R40 BIT20 Ensemble: *Arne Nordheim: Magic Island*
- AN.R57 *Dodeka*
- AN.R66 *Cikada Duo: Nordheim*
- AN.R68 *The Nordheim Tapes*
- AN.R80 *Solitaire*
- AN.R82 Gaute Vikdal: *Gaute Vikdal Plays Nordheim*
- AN.RC9 *Electric*

Non-Nordheim recordings:

- Biosphere/Deathprod: *Nordheim Transformed*. Oslo: Rune Grammofon RCD.2006, 1998
- Berge, Sigurd: *Early Electronic Works*. Oslo: Prisma Records PRISMA CD708, 2010
- Clark, Hal: *Electro-Acoustic Works 1974-1975*. Oslo: Prisma Records PRISMA CD716, 2013
- Fongaard, Bjørn: *Elektrofoni. Works For Micro Intervallic Guitar 1965-1978*. Oslo: Prisma Records PRISMA CD711, 2010
- Knittel/Sikora/Michniewski: *Secret Poems*. Warsaw: Bôlt BR.ES04, 2012
- Kolberg, Kåre: *Nova*. Oslo: Prisma Records PRISMA CD705, 2009
- : *Omgivelser & Portando*. Oslo: Prisma Records PRISMA CD714, 2011
- : *Attitudes*. Warsaw: Bôlt BR ES14, 2014
- Mazurek, Bohdan: *Sentinel Hypothesis*. Warsaw: Bôlt BR.ES02, 2010
- Reich, Steve / Richard Maxfield / Pauline Oliveros: *New Sounds in Electronic Music*. USA: Odyssey/CBS 32.16.0160, 1967.
- Stockhausen, Karlheinz: *Elektronische Musik 1952-1960*. Kurten: Stockhausen Verlag 3, 1991
- : *Momente*. Kurten: Stockhausen Verlag 7, 1992
- : *Mixtur*. Kurten: Stockhausen Verlag 8, 1993
- : *Mikrofonie I / Mikrofonie II / Telemusik*. Kurten: Stockhausen Verlag 9, 1995
- Stordahl, Erling: "Fra mørke til lys." Original production by NRK, 1970, re-released on CD as ESCD.0101 by Stordahl Art and Culture Centre, 2001
- Varèse, Edgard: *Ionisation / Density 21.5 / Intégrales / Octandre / Hyperprism / Poème Electronique*. Netherlands: Philips A 01494 L, 1960
- Various Artists: *Acousmatrix: The History Of Electronic Music* (8 CD Box). Netherlands: BV Haast Records, BVHAAST CD.0206, 2005
- : *Memories Aux Bruxelles*. Bruxelles: Carlton Recording Company, LP 12/112, 1959.
- : *Popular Electronics: Early Dutch Electronic Music From Philips Research Laboratories (1956 – 1963)*. Netherlands: Basta 30-9141-2, 2004.

[Sources]

———: *OHM+: The Early Gurus Of Electronic Music* (3 CD+DVD). USA: Ellipsis Arts CD3690, 2000.

Aamot, Rolf: *Tonal Image Films 1968-1991*. Oslo: Prisma Records, 2011

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