



Arkitektur- og designhøgskolen i Oslo
The Oslo School of Architecture and Design

DIPLOMA PROGRAM SPRING 2017

Diploma candidate: Jenny Rognli Mohn

Institute: Form, theory and history (FTH)

Main supervisor: Beate Marie Manthey Hølmebakk

Second supervisor:

External supervisor:

Company cooperation:

Title of project: Arne Nordheim Center

DIPLOMA SPRING 2017

/ introduction

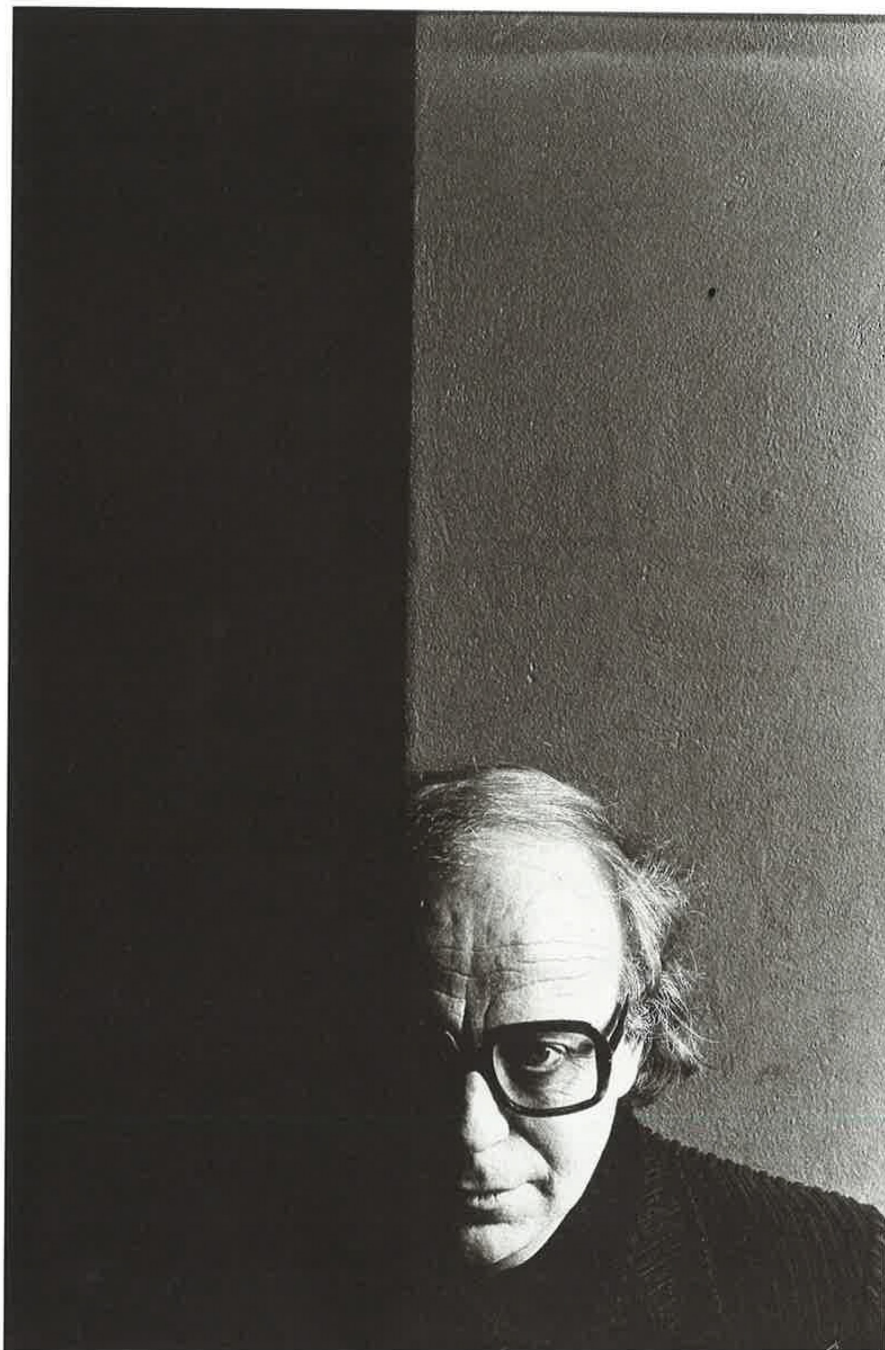
Candidate Jenny Rognli Mohn

Supervisor Beate Marie Manthey Hølmekjakk

Institute Form, theory and history (FTH)

Title Arne Nordheim Center

Summary Spaces for sound –
Exploring the relationship between
music and architecture.



Tom Sandberg
Portrett av Arne Nordheim
Foto
30x46 cm
1991

/ thesis

What is the relation between music and architecture?

Music, in all its complexity, contains the practice of theory, skill, creativity, discipline and performance.

These are all to be found in the practice of architecture.

You can experience music over time and you can experience music in a moment. The same way you can experience architecture.

An instrument is constructed in various ways according to its musical sound. But in common; a consideration for the materials, construction technique and decoration is important to get a balanced instrument, that is both functional and aesthetically pleasing. These considerations are also to be found in the making of buildings.

In my diploma project I want to study spaces for music.

With the elements of the musician, the instrument, the space and the sound as point of departure.

Further, I will define the project by choosing a specific program based on my findings in the first phase.

Text

The sound

Sound is air in motion;
pushed, pulled, beaten, blown, plucked, talked or sung into motion.
Sound is the term to describe what is heard when sound waves pass
through a medium to the ear.

Sound is both a physical phenomenon that are measurable,
and a psychological phenomenon that can not be measured, and deals
with the senses, interpretations, perception and experience.

Acoustics is the interdisciplinary science that deals with the study of
mechanical waves and how it travels through a medium.

Room acoustics describes how sound behaves in an enclosed space.
In my project, acoustics deals with sound waves, the air as medium
and the built space as a response to this.

The properties and qualities of a space determines how the sound is
transmitted in it. How the sound behave in a space is important for the
quality for it's intended use.

Sound can be understood through some basic elements of sound
perception. These are six experimentally separable ways in which sound
waves are analysed.

These are *pitch, duration, loudness, timbre, sound texture* and *sound location*.

In acoustics *reverberation, sound absorption* and *sound reflection* is
elements that determines how the sound perform in a space.

These elements of sound and acoustics has to be handled differently
according to the intention of the space.

The space

The acoustic considerations are important in making spaces for music. Equally important is considerations concerning daylight, relation to the outside, atmosphere and structure.

The interplay between the space and the instrument determines the quality of the space for music.

The space and its acoustic quality is essential in the interplay between the space and the instrument.

When the acoustic feedback in a space work well with the instrument, good conditions for practice is obtained.

There is coherence between the purpose, type of instrument, number of instruments and the space.

It is not possible to get satisfying acoustic conditions for all musical instruments and music forms in the same space, as the requirements vary. It is necessary to divide the spaces according to their function and number of intended musicians playing, because there are different needs when it comes to room volume, timbre, room height and room geometry.

The musician

The musician's ability to play an instrument is a result of many hours of practice. This requires concentration, skill, endurance, creativity and inspiration. A musician relies on his/her instrument to perform.

The instrument

A musical instrument is an instrument created to make musical sounds. Any object that makes sound can be classified as one, and it is through purpose that the object becomes a musical instrument. In this project I have chosen to focus on acoustic instruments that can be a part of an ensemble or orchestra, but have their individual properties and are complete on their own.

I have identified themes that help define the instruments, and that I find interesting in relation to architecture.

I have chosen to differentiate the instruments by; how they produce sound, the technique for playing, the size, the construction, their material, their potential, their relation to the musician and their relation to the ground.

How they produce sound

Instruments are classified by the way they make sound. They produce their sound through vibration in the instrument, and this is produced in differently according to the instrument. It is with this variation that the instruments are classified in musical families.

Construction

The sound of an instrument is a result of interactions between it's many parts. How these parts are constructed varies, and makes the characteristics of the instrument. Sound produced from an instrument's sound generator (the part of the instrument that is set to vibrate), can not provide the sufficient volume needed.

Therefore, a sound amplification system is needed to complement the sound generating system. This system is the body of the instrument, and together the parts work to produce the sound we know from the instruments.

For example the strings of the violin produces a sound that is transferred through a sound bridge and over to an open chamber in the body of the violin, and together they produce the sound characteristic to the violin. In a trumpet, the sound is produced from a lip and air vibration and is transferred into the air column of the instrument and bounces and echoes through it, and together they produce the characteristic sound of the trumpet.

Size

Within the different instrumental categories, size determines the sound it produces and variety in pitch. This, you can recognize as higher or lower tones. The smaller the instrument; the higher the pitch and the bigger the instrument is, the lower the pitch.

Technique

How the instrument produces the tones, volume and other nuances vary from instrument to instrument, and makes each instrument unique in it's technique of how it's played.

Potential

Each instrument has a potential in which it can perform, and in this, a variation from minimum- to maximum capacity. This becomes relevant in the interplay between the musician and the instrument.

Relation to the musician

It is in the meeting between the musician and the instrument that the sound is produced.

And it is in the meeting between the musician, his or her skills and the instrument that music is produced.

The instruments relate to the body in different ways, but mutual for all instruments is that during the performance, they become dependent of each other and one could say that they become one.

The instrument becomes an extension of the musician and vice versa. What differentiate the instruments relation is the ways they relate to the body, what part of the body is activated while playing and how intimate it is.

Relation to the ground

Instruments relate to the ground in different ways as a consequence of their size, and how the musician interact with it.

Some instruments can not be moved, and acts as an inventory, such as a piano. Other instruments are more convenient in size and becomes an object you can move. This way the instruments relation to the ground when played vary from instrument to instrument.

Musical elements

rhythm

a sequence in time, repeated

harmony

simultaneous combination of tones

melody

a sequence of single notes, a tune

timbre

character of instrumental sounds

duration

time

musical form

structure

/ approach

First phase

I will start the semester with three studies, each with the duration of two weeks. Each phase will be completed with a review.

They will focus on three different instrumental groups; that are part of the same theory but are different in its structure, material, sound and technique. These themes can all, directly or transferred, relate to architecture and architectural themes.

The instrumental groups are:

strings

woodwind and brasswind

percussion

I will develop them mainly through models, with the supplement of drawings. The model studies will be based on the four components; the instrument, the musician, the space and the sound.

Research on the four themes is a natural part of this process, and will be done parallel to model and drawing.

The material and model technique is important to get a focused study and needs to be considered.

Project phase

The studies in the first phase led me to an interest in the sound.

Where ideas about both the physical and emotional aspect of the sound meets built space.

The program chosen for my project is a center for Arne Nordheim, a Norwegian composer who lived and worked in Oslo.

Throughout his career he was occupied with the interest of the sound. He was interested in the instruments capacity to create different sounds and to explore this in different ways.

He was an interdisciplinary composer and highly experimental.

The project will be explored through thoughts and ideas about sound and built space, through the introductory studies and the work of Arne Nordheim.

/ Arne Nordheim (1931-2010)

Arne Nordheim was a highly acknowledged Norwegian composer, musical explorer and a leading figure in European music.

He was known, admired, and sometimes criticized within and outside Norway through nearly half a century.

He received numerous awards for his compositions, and from 1982 lived in the Norwegian government's honorary residence, Grotten, next to the Royal Palace in Oslo.

He was elected an honorary member of the International Society for Contemporary Music in 1997. On 18 August 2006, he received a doctor honoris causa degree at the Norwegian Academy of Music.

He died at the age of 78 and was given a state funeral.

His production embraces nearly all genres: purely instrumental works – symphonic pieces, chamber music, choral works, as well as electronic music, film scores, and music for ballet, theater and radio plays.

Nordheim's open approach to creativity, curiousness, experimentitive attitude, high risk and tirelessly interest for the new and unknown, are values renowned to his work.

“Musical composition does not consist merely of writing down notes.

Living a creative life involves expressing the restlessness in one's soul.

Composing is not only making sound.

It is philosophy, silence, speed, rhythm, everything”

– Arne Nordheim



Nordheim working in the NRK sound studio in 1974

Music for stage productions

Katharsis (ballett), orchestra and tape (1962)
Favola (music drama for TV), 2 singers, 10 dancers, orchestra and tape (1963)
Ariadne (ballet based on cantata *Tempora Noctis*), (1977)
Stormen (ballet), 2 singers, orchestra, tape, (1979)
Kong Lear (theatre music), (1985)
Antigone (theatre music), (1991)
Draumkvedet (music drama), vocal soloists, dancers, choir, orchestra, tape, (1994)

Orchestral works and concertos

Canzona, orchestra, (1960)
Epitaffio, orchestra and tape, (1963)
Eco (tekst: S. Quasimodo), soprano, children's choir, mixed choir and orchestra, (1968)
Floating, orchestra, (1970)
Greening, orchestra, (1973)
Doria (tekst: E. Pound), tenor and orchestra, (1975)
Nachruf for Strings, (1975)
Spur, accordion and orchestra, (1975)
Tempora Noctis (tekst: Ovid), soprano, mezzo-soprano, orchestra and tape, (1979)
The Tempest Suite (tekst: W. Shakespeare), soprano, barython, orchestra and tape, (1979)
Tenebrae, cello and orchestra, (1982)
Wirklicher Wald (text: R. M. Rilke), soprano, cello, mixed choir and (1983)
Boomerang, obo and chamber orchestra, (1985)
Recall and Signals, symphonic wind ensemble, percussion and emulator, (1986)
Rendezvous for strings, (1987)
Magma, orchestra, (1988)
Monolith, orchestra, (1991)
Adieu, string orchestra and bell instruments, (1994)
Cada Cancion (text: F. García Lorca), children's choir, mixed choir and orchestra, (1994)
Non Gridate (text: G. Ungaretti), soprano, mixed choir and orchestra, (1995)
Confutatis, soprano, mixed choir and orchestra (1995)
Nedstigningen, recitation, soprano, girl's choir, orchestra and electronics, (1996)
Violin Concerto, (1996)
Nidaros (1997)

Choir

Aurora 4 solo voices, mixed choir, 2 percussion groups and tape, (1983)
Music to Two Fragments to Music by Shelley (text: P. B. Shelley), female choir, (1985)
Tres Lamentationes (Secundum Hieremiam Prophetam), mixed choir, (1985)

Electro-acoustic music and mixed media

Ode til lyset, (1968)
Solitaire, (1968)
Warszawa, (1968)
Pace, (1970)
Forbindelser for fem byer (1975)
Poly-Poly, based on Lux et tenebrae (1970), electro-acoustic music for the Scandinavian pavilion at the Expo 70 in Osaka, Japan, (1979)
Nedstigningen, (1996)

Chamber music

Essay, string quartet, (1954)
Epigram, string quartet, (1955)
Strykekvartett, (1956)
Aftonland (text: P. Lagerkvist), soprano and chamber ensemble, (1957)
Partita, viola, cembalo and percussion, (1963)
Response I, 2 percussionists and tape, (1966)
Signaler, accordion, el-guitar and percussion, (1967)
Response II, 1 percussionists and tape, (1968)
Colorazione, Organ, percussion, electronic delay, ring-modulator filters, (1968/1982)
Partita II, el-guitar, (1969)
Dinosaurus, accordion and tape, (1971)
Listen, piano, (1971)
OHM, (1971)
The Hunting of the Snark, trombone solo, (1975)
To One Singing (tekst: P. B. Shelley), tenor and harpe, (1975)
Be Not Afeard (tekst: W. Shakespeare), soprano, baryton, chamber ensemble and tape, (1977)
Response, organ, 4 percussionists and tape, (1977)
Response IV, 4 percussionists and tape, (1977)
Clamavi, cello solo, (1980)
Partita for Six Double Bases, (1982)
Aurora (tekst: Salme 139, Dante), 4 singers, crotali and tape, (1983)
Flashing, accordion solo, (1985)
Partita für Paul, violin with electronic delay, (1985)
Acantus Firmus, jazz vocalist, Hardanger Fiddle and tape, (1987)
The Return of the Snark, trombone and tape, (1987)
Tractatus, solo flute and chamber ensemble, (1987)
Tre Voci (text: F. Petrarca, G. Bruno, G. Ungaretti), soprano and chamber ensemble, (1988)
Duplex, violin and viola, (1991)
Magic Island (text: W. Shakespeare), soprano, baryton, chamber orchestra and tape, (1992)
Suite per violoncello solo, (1996)
Three Stanzas, double bass solo, (1998)
Strykekvartett, (2001)
Solar Plexus (tekst: G. Johannessen (2002)
Partita per carillon, (2002)

Music for film and TV

Læraren (TV) (1963)
Klimaks (1965)
Stoppstedet (TV) (1966)
En dag i Ivan Denisovitsj' liv (1970)
Dagny (1977)
I solkorsets tegn (TV) (1981)
Forfølgelsen (1981)
Ja, vi elsker (1983)
Kong Lear (TV) (1985)
Stella Polaris (1993)

Discography – selected releases

Epitaffio (2011)
Einar Steen-Nøkleberg, Nordheim - Beethoven – Nordheim (2007)
Draumkvedet (2006)
Dodeka (2003)
Listen - the Art of Arne Nordheim (2002)
Peter Herresthal, Arne Nordheim - Complete Violin Music (2001)
The Norwegian String Quartet, Terje Tønnesen, Nordheim ; Hallgrímsson (1990)
The Norwegian String Quartet, Arne Nordheim - Antonio Bibalo - String Quartets (1987)
The Tempest: Suite From The Ballet (1980)

/ *program*

Reception	15m ²
Office	10m ²
Toilets	20m ²
Café	50m ²
Archive	30m ²
Exhibition	100m ²
Sound spaces	225m ²
	450m²

Description

The program can be broadly described in two parts, that together seek both to maintain and to develop Nordheim's musical legacy. One part intends to communicate and maintain Arne Nordheim's life and work through exhibition and archive.

The other part will include spaces for concerts, musical experimentation and musical practice.

The spaces are intended to be accessible to both musicians and visitors. I imagine the center to be connected to The Norwegian Academy of Music and the institute of Norart / Arne Nordheim center for artistic research.

My project seeks to be a contribution to their aim to

“Advance research and scholarship in experimental music, and to initiate and support projects that build on Arne Nordheim's music and materials.”

Archive

The archive material will consist of:

- music manuscripts
- sheet music
- sound tapes
- film
- photographies
- notes
- books

The material will be assembled from The National Library in Oslo, NRK (Norwegian Broadcasting Corporation) and other relevant sources. The archive space has to be secured considering fire, theft and ensure satisfying environmental condition.

In the archive space there is a need for a table for display of physical material, and equipment for sound and picture.

Sound spaces

Spaces to accommodate different use as for example concerts, music practice and experimentation. The number of spaces, how they are connected to each other and the rest of the center is to be considered during the development of the project.

It is plausible to imagine spaces with open use that allows for- and mirrors Nordheim's artistic interdisciplinary experimentation.

This gives room to challenge the classic stage and audience situation.

Exhibition space

The exhibition is thought as a permanent exhibition that communicate Nordheim's life through his work.

The exhibited content will consist of text, sound and image.

/ site

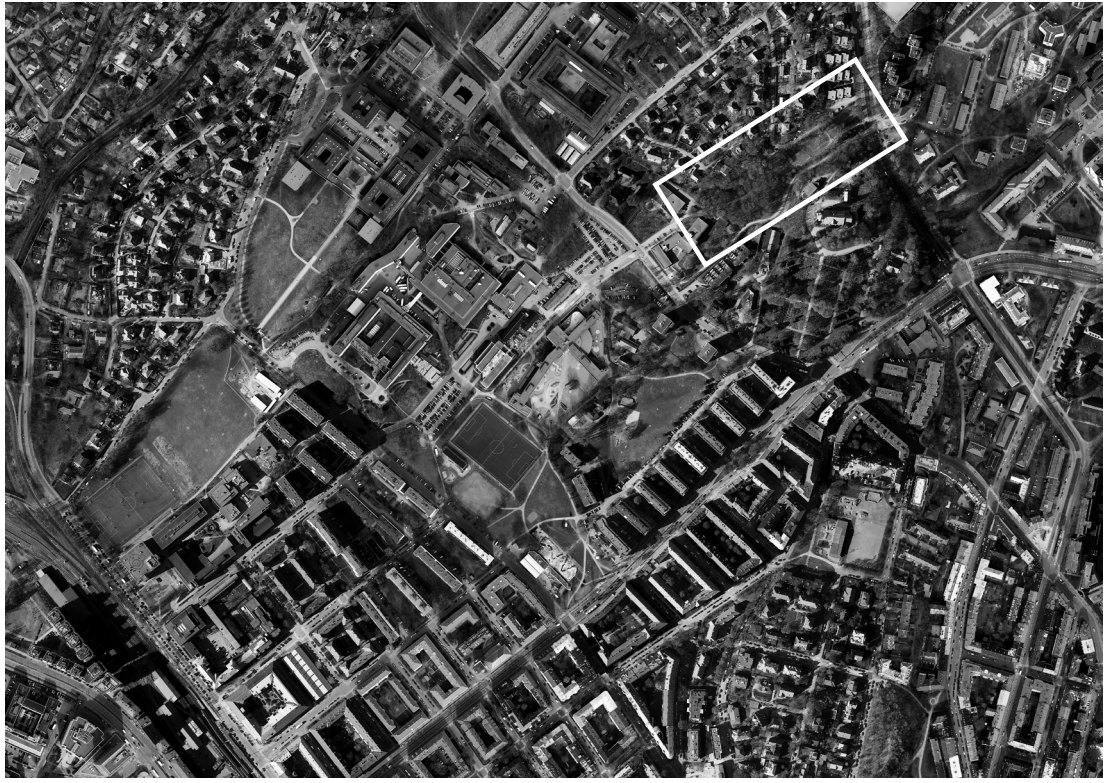
The site chosen is in Oslo.
Located in the inner part of the city, west of the city centre.
It is close to public transport, and easy accessible.
Nordheim was connected to several places in Norway, but his professional life was strongly connected to Oslo, and therefore a natural placement for the center.

Characteristic to the site is its many trees.

The site is walking distance from The Norwegian Academy of music and NRK (Norwegian Broadcasting Corporation), two institutions important in Nordheim's life and work.

It is also bordering Vestre Aker Church.
This is an interesting connection because Nordheim's musical career started in the church of his hometown.
Both through playing the organ and his fascination of the church bells and its sound.

“The longing for the chiming of the church bells has followed me my whole life”



/ submitted material

project description

process

selected models
booklets

models

1:200 project with context
1:50 spatial, tectonics

drawings

1:1000 situation city context
1:200 situation site context
1:100 plans, sections

in addition

spatial illustrations of selected parts of the project
text

/ schedule

09.01	-	17.02	/	introductory phase
20.02	-	23.04	/	project development
24.04	-	15.05	/	material for presentation

09.01 - 20.01 / space for strings

23.01 - 03.02 / space for woodwind & brass-wind

06.02 - 17.02 / space for percussion

After the final review of the three phases, I will make a plan for development of the project.

References

/ reference projects

Bjerkebæk Visitors center
Carl-Viggo Holmebakk

Louisiana Museum of Modern Art
Jørgen Bo & Vilhelm Wohlert

Aukrust center
Sverre Fehn

Ivar Aasen center
Sverre Fehn

Emanuel Vigeland Museum
Emanuel Vigeland

The Hamsun center
Steven Holl architects

/ books

On Arne Nordheim

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<https://www.youtube.com/watch?v=YKXs2X4kzIk>

NRK. *Arne Nordheim.*
<https://tv.nrk.no/program/fmus00008773/arne-nordheim>

NRK. *Mitt Liv, Episode 3. Arne Nordheim.*
<https://tv.nrk.no/serie/mitt-liv/koid75005311/sesong-1/episode-3>

Youtube. *Bärenboim, Daniel. Music&conversation: Music deconstructed.*
<https://www.youtube.com/playlist?list=PLErHuBsy75wyPByzRgzI4d-53McsTeypWg>