

Architecture as a vehicle for composing and improvising

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Preface

When architecture is closer to music than painting and sculpture, it is because we, in our relation to both artforms, are “inside” what is happening. We are never standing in front of a piece of music, and we are always surrounded by the architectural totality, even when standing “in front of” a façade. “Totality” is the keyword, and it implies that both music and architecture performs a whole world that we are “inside of”.¹ – Christian Nordberg Schulz

I applied for the master studies because of my newly found interest in architecture and space. In my musical practice I have performed in a large array of rooms and spaces under different circumstances. My instrument is a microtonal tuba which I am often playing in an experimental music context. I look at myself as an improviser as well as a composer, and through this master project I will show how I have been using architecture as a vehicle for my creativity. I will use architecture in the compositional process and when improvising. I also experience that I, through this newly attained knowledge, can express thoughts about the music and evaluate what I’m doing musically through the scope of architecture. Hence, I will also include this part of my work process in my research. In my master concerts I am aiming for an architectural experience, sonically and visually. I would like to define a room where the sonic and visual world speak together. By this I don’t necessarily mean that the two elements should bring forth the same type of emotions, but by paying attention to both aspects simultaneously, I strive to make the experience stronger. In all the cases my interpretation of architecture is highly subjective.

With this background I have chosen to investigate the following research questions:

1. How can architecture be used as a vehicle for composing and improvising music?
2. How can architecture be used as a tool for understanding and evaluating music?

Could architecture be heard in music? Music and architecture are two different artforms, one dealing with sound, the other with space. This makes it impossible to take one idea from either of the artforms and replace it in the other, and still be recognizable. This is an obvious statement. Both epistemologically and ontologically, these are two different practices. Music is primarily a temporal art and architecture a spatial one, so there is an indisputable conceptual difference.

¹ English translation by Martin Tæxt: Når arkitekturen står musikken nærmere enn maleri og skulptur gjør, er det fordi vi i vårt forhold til begge kunstarter er «i» det som skjer. Vi står aldri overfor et musikkstykke, og vi er alltid omsluttet av den arkitektoniske helhet, selv når vi står «foran» en fasade. «Helhet» er nøkkelordet, og det innebærer at musikk og arkitektur formidler en hel verden som vi altså er «i».

Yet, in spite of their difference, I am interested in investigating the potential cross-fertilization between the two artforms.

This is not the first time someone uses architecture as creative input in music or studies similarities between the two art forms. Renaissance architect Alberti recognized the beauty of musical proportions when deploying the same proportions in his buildings in Venice (Weissmuller, 2006). In 20th century contemporary music the composers Iannis Xenakis and Edgar Varese are often associated with architecture. On the experimental music scene today I see a growing awareness for space and environment, although the scientific approach to music, including an architectural one has been present since at least the 1950s. I am also interested in the phenomenological connection between architecture and music and have especially found Hans Georg Gadamer's thoughts on the concept of play to be relevant here.

What are my methods?

I am using my own musical practice as a point of departure for this thesis. My instrument is a microtonal tuba. It is a custom-made instrument, which can play every conceivable pitch throughout the whole register of the tuba. This feature is very convenient in much contemporary music, where musicians are often asked to play both tempered and non-tempered tunings. I want to challenge my musical practice by using experimentation as a method. Between October 2018 and October 2019, I have been working with three different concerts. For all of these projects, architecture has been used as a vehicle in different stages of the process, from idea and execution to evaluation. These three concerts, in addition to my final presentation are my case studies.

How have I collected knowledge on architecture in the past months? One, I have read books about architecture written by architects. Two, I have seen lectures and interviews with architects online. Three, I have subscribed to architecture and design newsletters such as Archdaily, Dezeen and Pinterest to have daily input with the latest news from these fields. In addition, as a way to process and understand this new knowledge, I have taken many photos of buildings and spaces and been using pencil and paper to make sketches of geometrical structures and other architectural phenomena that I subsequently can use in my musical output.

When it comes to the musical aspect of my methods, I have chosen to collaborate with people I haven't worked much with before. Some of the other projects are developments of already

existing projects. The compositional approach has been different in all cases. Case 1 is using personal interpretations of buildings as graphic scores. In case 2 much of the work has been done with recording and editing in Ableton Live. Case 3 appeared through a process of drawing exercises that resulted in a graphic score.

As an active musician in the contemporary music scene the past decade I have worked closely with improvisers and composers. The borders between the roles are often blurry. I have experienced that musicians are contributing to a great extent with musical content in composers' new works. Technical staff in a production can with their special competence in i.e. computer programming be an essential part of artistic teamwork. We also see in today's art scene that curators often have a lot of power in how commissioned pieces are developed. In my project I have many different roles. I am a composer, performer, improviser and researcher. The different roles are not always separate. As a creating performer I am combining the composer, performer and improviser in one person.

In this thesis I will give a thorough reflection of each of the cases. Following the section with the three case studies, I will present my ideas for my final presentation. Examples and references from architecture are used in all three case studies, to show how the different architectural ideas have fed my artistic input.

1. Introduction

1.1 What is improvisation and composition to me?

As long as I can remember I have been drawn towards improvisation. In marching bands in my childhood, I found it unsatisfactory to stick to the written parts, so I often created my own bass lines. Still it was not until high school that I discovered jazz music and tried more systematically to learn the art of jazz improvisation. My instrument, the tuba, does not have an important role in modern jazz. Its importance faded quickly after the introduction of the double bass in jazz. Learning jazz improvisation is very much about copying your heroes before developing your own language. Saxophone players, guitarists and pianists all have plenty of great instrumentalists to choose from, but as a tuba player I felt that I didn't have that many idols to

choose among. I spent many years trying to play like a soloist, at the same time I was also transcribing bass lines and figuring out how a tuba could fit in a modern jazz context.

From 2000 to 2007 I composed music for different ensembles that I worked with at the time. In 2002 I attended the Norwegian Academy of Music in Oslo (NMH), where I established bands I composed music for. The music was inspired by contemporary jazz music, in particular by the New York scene with trumpeter Dave Douglas and saxophonist John Zorn, as well as Norwegian artists like Christian Wallumrød and Jon Balke. The form was often a melody with chords, followed by solos, and concluded with the melody again. This is a very common recipe in jazz composition. In 2004 – 2005 I spent 10 months at the Conservatoire National Supérieur de Musique et de Danse à Paris (CNSMDP). Discovering 20th-century classical contemporary music was of great importance. In 2006 I studied composition at NMH in Oslo, and for my final exam I wrote a 12-minute long wood quintet for Fannaråken Blåsekvintett, heavily inspired by the composers I had recently discovered. Since then I haven't composed music in the traditional sense, producing a score and presenting it for the musicians that will perform it.

Between 2002 and 2005 I started listening to composers like György Ligeti, Helmut Lachenmann, Salvatore Sciarrino, Giacinto Scelsi, Gerard Grisey and Morton Feldman. Some of these composers share a common goal to establish a distance to European classical music. Lachenmann, as a post-war German composer, wanted to deconstruct the instruments by abandoning all conventional notation and classical sound ideals. Morton Feldman was seeking a different, more “non-intellectual” approach, where the instruments played more conventionally, but the form was inspired by abstract expressionist painters of his time.

In these composers' music I found something very different from what I had heard before. Their approach to form, instrumentation, tone quality and microtonality attracted me. Around this time I also started listening to European free improvised music and understood that there is a connection between the two musical traditions. As a consequence, I began to experiment with musical form, extended instrumental techniques and microtonality. In this period (2005-2008) I found improvisation and jazz music problematic. I found it difficult to connect the music I had been writing with the music I was improvising and listening to. As a result, I reduced my musical choices to a minimum. My focus was to make my instrument sound like anything else than a tuba. Thinking back to this period I remember that my head was full of self-imposed restrictions. When I was improvising, a lot of potential material was excluded from my playing for reasons like being *too jazzy*, *too ordinary* and even *too virtuosic*. Today, I am thinking about

this period as a phase where I was recalibrating my musical compass. I had to redefine my understanding of improvisation. I used to think of improvisation as a way to navigate through harmonic changes, but now I have multiple ways to use improvisation in my musical practice. Through playing with a lot of musicians from many parts of the world, all with a different approach to improvisation, I have a more free approach to my playing.

For me, both improvisation and composition have very much to do with making restrictions. Shaping sounds, material and structure. In my musical world, compositional and improvisational processes are constantly feeding into each other. To illustrate how I am using improvisation today I will look through the scope of four previous projects. Each of the projects has its own take on improvisation and music-making. The main thing these projects have in common is me.

The recent years have mostly been divided between four projects:

1) *Toshimaru Nakamura/Martin Taxt (since 2015)*: Nakamura invented the no-input mixing board in the late 1990s. Our music is improvised.

2) *Verdensteatret (since 2012)*: Experimental theater group, established in 1986. I joined the company in 2012. Here I am creating music through improvisations. Once the piece is performed, the music stays more or less the same in each performance.

3) *Muddersten (since 2015)*: An electro-acoustic trio with tuba, guitar and percussion. Here I play electronic sounds in addition to the tuba. Of the four projects, this is the project where I have fewest restrictions, and where I feel I can easily switch from one material to another without breaking with the identity of the band.

4) *Microtub (since 2010-)*: A microtonal tuba trio working with *just intonation*. The music is composed by Robin Hayward and collectively by the members of the trio.

The **Nakamura/Taxt** duo is not rehearsing between concerts, and we rarely talk about the music before playing. The only structure we are changing from each concert is our set-up. Often my tuba is connected to his mixing board. My output is becoming his input, and he can twist and tweak the sounds I am sending from my acoustic tuba. When using this set-up, I am giving away many of my opportunities to change the music. Nakamura can control the master volume from his mixer. He can even mute the channel where I am connected. Other times I am not connected to his mixer, only amplified through the local PA-system. We also like to change our

positions on stage depending on the venue. We can sit very close, facing the audience, or facing each other. We can also sit on opposite sides of the stage, with an extreme panning in the PA, to give the audience a wide stereo effect. These choices of set-up change the way we play together. I realize that I find it important to think about all the choices we can make before an improvised concert. I like to be clear about what set-up we are using, the duration of the concert, and the position in the room. If we make deliberate choices here, I believe that the music will be better as well. Having a set of restrictions for my improvised concerts does not feel like a compromise, but rather helps my improvisation to be more creative. Based on my experience from many improvisations throughout my career, I find that the music ends up being less interesting when I am improvising without any planned restriction. What is important to me is to create a situation for myself and my bandmates where we feel inspired within a given context. Gary Peters writes in his book 'The Philosophy of Improvisation'(Peters, 2009) that it is the "crystallization" of "previous subjectivity" that transforms matter into aesthetic material.

This could be interpreted as the opposite of what I just wrote. An experienced improviser will often end up in the same path as in previous concerts. The improviser remembers what had worked before and wants to recreate a similar situation. I can very much recognize this feeling as an improviser, but when reading this quote of Peters, I rather think about the collective development of an ensemble working with improvised music. The change of set-up between each concert becomes an aesthetic choice for me and Nakamura. A set of rules we can navigate within.

I often use improvisation as a tool for composing. I've been working with the art collective **Verdensteatret** since 2012 and have contributed in three productions. For each of these productions we have had more than 12 months of production time. The time frame directs the way we develop new material. When I make music with Verdensteatret I often begin with improvisation. Based on the feedback from my colleagues in the company, as well as my own opinions, I try to repeat the parts of the improvisation that worked well. In the working process we sometimes record the improvisations to make it easier to remember what it was like. But most of the time I am recalling the music from my memory. Because of this method, the music I perform in these performances is never exactly the same. Due to the long production time a lot of material is discarded, and some of it is forgotten. Another natural attribute of improvisation is that the material is in constant flux. It is not one constant mass, but a continuously developing one. This is also why an idea can sound silly in the first place, but being repeated enough times, it can find its natural place in the piece. This argument points

back to the Gary Peters quote above, in the sense that aesthetic material is developed through collective experimentation over time. In the beginning, working with Verdensteatret, I found it hard to present new material because I was afraid that the material was not good enough. Today, I think that I have a more shameless approach to throwing in material.

This approach to improvisation has also influenced my playing in **Muddersten**. The difference here is that all the ideas I bring to the table, are presented publicly in real-time. In Muddersten my instruments are tuba, laptop and no-input mixing board, and I can quickly move between instruments or even operate several instruments simultaneously. Experimenting is a keyword for Muddersten's way of improvising. All three members bring new adaptations of their set-up each time we meet. We often talk about the band as a shared playground where we can try out new ideas. Bands like Muddersten are not unique in an improvised music context. In Norway, the band Supersilent² has been an important representative for this way of improvising. Although their main instrumentation has been trumpet, keys, electronics and drums, all members bring in various effects, synthesizers and other devices.

Microtub is a microtonal tuba trio founded in 2010. We started as an improvising ensemble but now we perform more composed material. The first time we met in 2010 we were rehearsing for our first concert. Through improvisation we discovered that the interference between three closely tuned tubas became particularly strong in a certain register (197Hz). Because of this discovery, the concerts the next year and our first album³ circulated around this idea. In 2014 Robin Hayward released his software application The Hayward Tuning Vine⁴. It is an application for exploring *just intonation tuning*. Just intonation is a certain way of organizing pitch relations based on whole-number ratios, i.e. 2/1 represents the octave, 3/2 represents the perfect fifth. Since 2014 much of our work has been based on compositions made with this application. I have been using the application in other projects too. It has also widened my repertoire as an improviser. Sometimes in my improvising practice, I can visualize the grid system which the Tuning Vine is based upon in my head while performing. As jazz musicians often have internalized chromatic or diatonic patterns on their instruments, I can use just

² Norwegian band founded in 1997. Consisting today of Arve Henriksen, Ståle Storløkken and Helge Sten. Drummer Jarle Vespestad left the group in 2009.

³ Microtub, Hayward/Taxt/Lo, SOFA 536 (2011)

⁴ <http://www.tuningvine.com>

intonation patterns. For me, this is a good example of how compositional work and improvising are constantly influencing each other.

As described above I have initiated several new ensembles that play improvised music, and through long and thorough work with these groups we developed a unique language and method for creating music for each ensemble. This is also composing and a way to develop new music with its own identity. My views on improvisation are highly relevant for how I think about composition today.

1.2 Thinking architecture

Is there such a thing as a universal architecture? What is good architecture? It could be a space we like to be in, where we feel comfortable and safe, but it could also be a space or a building that is provoking our curiosity. One often talks about functionality within architecture. That is of course important, but should good architecture only be functional? I think it is important that humans get exposed to things we can't understand. Being confronted with the unknown and something that is not immediate should make us reflect. Thinking architecture is very much about *awareness*. Awareness for space, awareness for material, awareness for light and shadows. To give an even broader view I would like to share some perspectives on architecture. These perspectives are chosen because they have proved to be particularly important for my research project.

Architecture and space

Speaking from a musician's point of view, we could say that the architect is the composer of design in space. Elisabeth Martin uses the definition 'art of design in space' on architecture in her pamphlet 'Architecture as a translation of music' (Martin, 1994). Architecture is related to space and how humans occupy and organize space. We make borders, we make nests, we design ways to move from one place to another. Architects are the masters of this human ability.

Ma and *oku* are two Japanese terms related to spatial design. *Ma* is the temporal interval between two different phenomena, between two contradictory elements or between dimensions of varying nature. I discovered this word by reading architect Tor Olav Austigard's master's thesis 'Interior Spatial Dynamics in Detached Houses in Tokyo' (Austigard, 2006), where he is referring to the book *Rediscovering Japanese Space* by Kisho Kurokawa. *Oku* has more to do with *movement space*. In architecture one can use various design elements in the space that will

initiate movement to get the full understanding of a room. Curtains, half walls or planes could function as a way to block the view and create a path between different spaces in a room.

Architecture and restrictions

In the previous chapter I was writing about how restrictions are crucial for me in many musical settings. Starting an artistic process with a set of restrictions is essential in architecture as well. The restrictions could be of many different kinds like the size of the property, challenges in the landscape, concerns from the customer and budget limitations. Architect Jan Olav Jensen says in the program “Arkitektenes hjem”(Duckert/Thiis-Evensen, 2016) that applying restrictions is a very important technique he is using in his practice. *Because sometimes the choices seem to be eternal times eternal. The options are so many, so it is crucial to set some restrictions for each project.*⁵

In relation to restrictions we could also mention Christopher Alexander’s influential books *A Pattern Language* (1977) and *A Timeless Way of Building* (1979). The pattern language is structured as a network. Starting from large global patterns like *Country Towns* and *Web of Public Transportation* to more and more local patterns like *Main entrance*, *A room of one’s own* and *Child caves*. Each of the 253 patterns are followed by a section explaining, investigating and seeking to solve each problem.

We believe, and have explained in The Timeless Way of Building, that the languages which people have today are so brutal, and so fragmented, that most people no longer have any language to speak of at all - and what they do have is not based on human, or natural considerations. We have spent years trying to formulate this language, in the hope that when a person uses it, he will be so impressed by its power, and so joyful in its use, that he will understand again, what it means to have a living language of this kind. If we only succeed in that, it is possible that each person may once again embark on the construction and development of his own language. Perhaps taking the language printed in this book, as a point of departure. (Alexander, 1977)

Architecture and construction

The architect can be involved in the construction process to different degrees. Some architects need a close relation to the engineers who are putting the technical drawings to life, so to speak. Peter Zumthor, son of a furniture carpenter, sums it up nicely:

Construction is the art of making a meaningful whole out of many parts. Buildings are witnesses to the human ability to construct concrete things. I believe that the real core of all architectural work lies in the act of construction

⁵ Translation from Norwegian by Martin Taxt

(...) I feel respect for the art of joining, the ability of craftsmen and engineers. I am impressed by the knowledge of how to make things, which lies at the bottom of human skill. I try to design buildings that are worthy of this knowledge and merit the challenge to this skill. (Zumthor, 2010)

One of the first books I read on architecture was Steen Eiler Rasmussen's *Experiencing Architecture*. In his book we can see another approach to the engineer in relation to the architect. He writes about the importance of accuracy in architecture. He is concerned about the possible epistemological distance between the architect and the craftsmen.

All the tiny nuances in plastic and visual art, that cannot be measured, one has simply to give up in architecture. In the other artforms, all kinds of transitions in form and color, the undecided and blurry, as well as the precise and pregnant, are important ways of expression. In architecture, the only thing that exists, is what can be realized by masons, carpenters, glaziers and painters. And because of that, everything has to be precisely thought through. So exact, that one can be sure that the craftsmen can make it (Rasmussen, 1957).

In a musical context, this approach can be linked to the classic relation between a composer and performer, an approach that is regarded as conservative today, where the relation between the roles often are more flexible.

Architecture as a game

Steen-Eiler Rasmussen's texts on architecture describe the practice of an architect as one quite similar to a traditional composer-musician relation. The architect has to be precise in all the tiny details in order to achieve what he wants. Today, many architects try to think differently. Postmodernist and structuralist thinking have influenced architects just as it has influenced other art forms. Bernard Tschumi is writing about the value of disjunction and unpredictability in architecture.

Architectural theory is informed by what exists – space, the body, movement, history – but cannot, under any circumstances, be reduced to such factors alone. First 'The Manhattan Transcripts' and then the 'Folies' aimed at developing a related theory that would take into account both the unexpected and the aleatory, the pragmatic and the passionate, and would turn into reason what was formerly excluded from the realm of architecture because it seemed to belong to the realm of the irrational (Tschumi, 1996).

In an interview with *The Architectural Review* at the Venice Biennale of Architecture in 2014 Tschumi says:

The architect establishes the game-board. A few pieces, a few rules. A dynamic process, rather than a frozen image (Tschumi, 2014).

Bernard Tschumi is often mentioned as one of the deconstructivist architects that established their practice during the 1980s. Peter Eisenman and Zaha Hadid are other representatives of this movement worth mentioning here.

Architecture and material

Peter Zumthor is writing about the beauty of materials, and the importance of a certain respect for each material and how it is presented. Different materials are playing different roles depending on how they are put together, and how each material is presented.

The sense that I try to instill into materials is beyond all rules of composition, and their tangibility, smell, and acoustic qualities are merely elements of the language that we are obliged to use. Sense emerges when I succeed in bringing out the specific meanings of certain materials in my buildings, meanings that can only be perceived in just this way in this one building. If we work towards this goal, we must constantly ask ourselves what the use of a particular material could mean in a specific architectural context. Good answers to these questions can throw new light on both the way in which the material is generally used and its own inherent sensuous qualities. If we succeed in this, materials in architecture can be made to shine and vibrate (Zumthor, 2010).

When we take a closer look at the material we are using, it can create a new set of questions as to why and how we are using our material. By taking a similar perspective with music, new insight and creative impulses to musical material can be developed.

1.3 Research questions

With this master I want to develop a language that in a more accurate way could express my musical ideas. Through reading books and listening to architects I get new and better ideas about how I could shape my new projects. I get ideas both when it comes to the performative aspect of the concerts, how to play with space, scenographic choices and also how to structure the music using methods from the science of architecture. I will use architecture as a constant point of reference. Visual and performative aspects will be important in the performances during my master project. However, my main focus will be on creating new music based on my knowledge from architecture, and to use architecture as a tool for evaluating the music. This leads me to the following research questions:

How can architecture be used as a vehicle for composing and improvising music?

How can architecture be used as a tool for understanding and evaluating music?

These two questions are serving two different purposes. Research question 1 is more active, while question 2 is more descriptive. That being said, both questions are dependent on each other in my research. One clear example is that the ideas I am currently working on in case 4, are partly a consequence of the evaluation of the three previous cases.

1.4 Theory

The theory I am leaning on is divided into three categories:

- 1) Literature, lectures, and documentaries about architecture
- 2) Literature about improvised music, experimental music, and sound art
- 3) Literature about the intersection of the two art forms

My selection of texts on architecture is quite broad. From Steen Eiler Rasmussen's classic examination of experiencing architecture to more specific texts on material, modules and space. I have read parts of Le Corbusier's *Le Modulor* and have used ideas on form in a similar manner as those Iannis Xenakis developed by reading the same book. I have looked at how Japanese traditional architecture has determined the size of the rooms by the combination of tatami mats. From Japan, I have also read about the different spatial concepts called *Oku* and *Ma*. Additionally, I have been reading books by architects and watched lectures published on YouTube and Vimeo. The architectural references I have used have been collected in a rather intuitive way. Some books have been recommended to me by architects, some by artist colleagues. Other books and sources I have discovered myself while confronting new questions along the road.

The books I've chosen about music are dealing with sound art, experimental music, and improvised music. Most of what I am doing in my musical practice could be categorized within these genres. I find it important to be aware of what composers and artists in this environment have thought and practiced before me. I am particularly interested in reading about the composers and performers that have shown a great interest in space and architecture. To have a scientific approach to music-making is very common in experimental music. Looking at music through the scope of architecture is one of many possible approaches. Jennie Gottschalk has written the book *Experimental Music since 1970* (Gottschalk, 2016). In my opinion, three

of the six chapters in this book are dealing with music that has something to do with architecture. With headlines like *Resonant spaces*, *Objects as instruments*, *From shape to sound*, *The position of the listener*, *Site-specific works* and *The history of a place* it is clear to me that there are many artists before me who have shown an awareness for the relation between music and architecture.

In the third category, the one trying to connect the two art forms music and architecture, I've chosen two texts. One article presenting an educational model, or a 'leap vehicle' to use the author's own expression, where musicians can draw inspiration from architecture and architects from music (Gregory Young, 1993). The other book is a selection of essays on the intersection of music and architecture, with topics spanning from Xenakis work as an architect and composer to the musical design in 18th-century architecture in imperial Beijing (Zach, 2007). I read both these texts early in the process but have found it more important to seek knowledge specifically about architecture while developing my music throughout the master program.

Play and performativity in architecture and music

One aspect that is essential to me in this project is the constant movement between architectural theory and musical practice. I experience myself that I can get concrete musical ideas while reading about architecture, and also, I can recognize elements from architecture while being in a certain musical situation. To support these experiences, I am introducing the term *Play* from the German philosopher Hans Georg Gadamer. Gadamer, discusses the concept of *Play*, in German *Spiel*, in his book *Truth and Method*. According to Gadamer, *Play*, is essential in understanding art, aesthetics and aesthetic experience (Ehrfarung).

Reading the word *Play*, one might get associations to something easy, light and simple, on the contrary Gadamer claims that seriousness is very important if one wants to make the play a real play, and if one doesn't take it seriously, one is sabotaging the nature of the play, or in Gadamer's words being a spoilsport. It is true that the meaning of *Play* contains an element of non-seriousness. The word playful could even be a dichotomy to being serious. However, the seriousness Gadamer is writing about is the intrinsic seriousness in the *Play* itself. "*Play fulfills its purpose only if the player loses himself in play*", he writes. Having this idea in mind is a good starting point when exploring the term, and its importance to art.

Before starting his examination, Gadamer is explaining why he wants to free the concept of play from the subjective meaning it has been given from thinkers like Kant and Schiller, which has dominated our modern aesthetics and philosophy. Aesthetic consciousness as something

that is confronting a work of art is not a precise description of how to understand art, and that is why Gadamer wants to discuss the concept of play.

In the English language, Play is used in many ways to explain some kind of movement, like in play of light, play of the waves and the interplay of limbs. Gadamer writes:

In each case what is intended is a to and fro movement that is not tied to any goal that would bring it to an end(...)The movement backward and forward is obviously so central to the definition of play that it makes no difference who or what performs this movement.(...)The play is the occurrence of the movement as such (Gadamer, 2006).

How does Play and Performativity appear in architecture, and in the relation between music and architecture? The architects I have been studying are talking about play in a manner that could remind of Gadamer. A façade with windows and panes of different sizes and shapes create a sense of rhythm or intrinsic play in the architecture, the use of colors and materials can create a feeling of play as well. The play of light when the sun beams are falling through the windows, and how humans are moving in and out of and consuming the architectural structures around them are other examples of play in architecture. Where music always has a temporal dimension (e.g. rhythm), the play in architecture is often on a more abstract level. It is the relation between the architectural components that create the feel of play, not the components themselves. This is also the case with music, where one component doesn't necessarily create rhythm, but the temporal distance between the components. Rasmussen writes

What is appreciated in this kind of "musical architecture" is not the concrete, not the stones, the timber, the glass, but the abstract, the relation between the size of the elements and their character. Just as with music, architecture is dealing with something immaterial.(Rasmussen, 1957)⁶

Architecture can be playful. Just imagine a child wandering through a space, running up and down the stairs, touching the walls and whatever obstacles that might appear in front of them. Their natural instinct when exploring a space is a very physical one. Experiencing through playing.

I am also thinking about the deconstructivist architects and how they twisted and turned on existing standards. With strong influences from Russian avant-garde art (Zaha Hadid-

⁶ Det, man værdsetter ved en sådan «musikalsk» arkitektur, er ikke det konkrete, ikke selve stenene, tømmeret, glasset, men det abstrakte, nemlig forholdene mellem elementernes størrelser og karakter. Ligesom musikken arbejder arkitekturen med noget immaterielt. (English translation by Martin Taxt)

Malevich) or French philosophy (Peter Eisenman-Derrida), there is no doubt that their epistemological acrobatics also helped develop the art of architecture and its affiliated engineering work.

I also want to touch the field of performativity before I move on to my methods. Both architecture and music have the quality of surrounding us. We cannot fully grasp a musical or architectural experience from one point of view. I would like to stress the importance of live music and the potential focused intensity that can appear in a defined space such as a performance or concert. The German Marxist essayist and intellectual Walter Benjamin was thematizing the fact that artworks in the second half of 20th century was easy to reproduce hence to the technological evolution of photography, and mechanical reproduction in general (Benjamin, 2005). He wrote that if there was no “original” the “aura” connected to the artwork would also disappear. While the demystification of art was happening in the 20th century, there was simultaneously a similar process in other arenas too. All over Europe society was moving in a more secular direction.

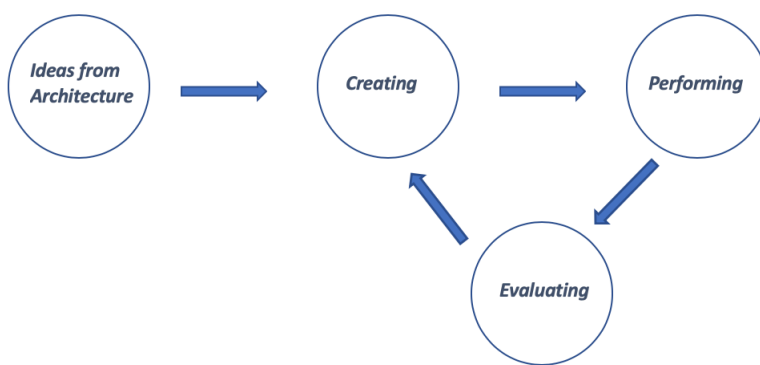
As a consequence of the technological development it is easy to presume that performance art in all its different shapes developed partly because of these newborn problems with authenticity in art. Before the 20th century there was a significant difference between the original artwork and the copy or replication. As Benjamin is mentioning, this gets more complex with the new medias, and in our highly digitalized time the borders between original and replica gets very blurred, if not erased. In performance art the work exists only in the time and space where it is performed. Hans Ulrich Gumbrecht writes about the importance of physical presence in order to experience art. His sublime art experiences categorized as an oscillation between presence effects and meaning effects demands a *situation of insularity*. Implied as part of the presence effect is what Gumbrecht describes as *moments of intensity* (Gumbrecht, 2004). Related to Gumbrecht’s presence effects, we could further claim that any kind of documentation would never grasp the full experience of the artwork. One has to be present in the space where the artwork takes place. This is also transferable to music of course. A live concert is a very different experience than listening to an album, or seeing the same concert streamed on the web.

1.5 Method

My project can to a large extent be placed in the category *research in the arts*. I will use a *practice as research* approach. Henk Borgdorff is writing about three distinctions that he finds

important in artistic research. *The object, the process and the context.* The four public presentations (case studies) are my *objects*, whereas everything that is leading up to these presentations is identified as *the process*. Getting ideas from architecture, merging them with my musical ideas, rehearsing with musicians and preparing the concerts are all important parts of *the process*. After the presentations, the audience reception of the work and my own and my fellow musicians' evaluation of the projects is part of *the context*.

The following model tries to visualize this process.



After evaluating, the process starts over again. Implicit in this working process is *experimentation*. Hans-Jörg Rheinberger has developed a theory of *experimental systems*, originally for molecular biology. Rheinberger opened up this theory for other uses, for example in relation to writing. Later, researchers have also applied his theories in artistic research. In short Rheinberger is writing about *technical objects* and *epistemic things/scientific objects*, and how these two kinds of objects interact. Where the *epistemic things* represent the unknown parameters in the experiment and the *technical objects* represent the fixed material, or in Rheinberger's own words: *Objects that embody the knowledge of a given research field at a given time, they might be instruments, apparatus, and devices which bound and confine the assessment of the epistemic things.* (Rheinberger, 2004).

In my project many of the elements from architecture could be regarded as *epistemic things*, or my *scientific objects*, whereas my instrument and the tools I am using to adapt the architectural ideas could be regarded as my *technical objects*.

Ideas from Architecture

This part of the model is the one defining my thesis, and the one I am paying most attention to. My background studies include reading books about architecture, having conversations with architects, musicians and artists from other art fields and simply experiencing architecture. It is important for me to have an *architecture in music*-approach, rather than a *music in architecture*-approach. The way I use this architectural knowledge to create new music is highly tentative.

Referring to the model above, I will have different ways of getting from Circle 1 (Ideas from Architecture) to Circle 2 (Creating).

a) By simply transferring my sensation and aesthetic knowledge from observing a building or a space into music. I choose to call this the *sensuous approach*.

b) Looking at an architectural detail or method, like Le Corbusier's *Le Modular* where he is explaining his ideas about measurements and relations. By using the same mathematical principles, I can create for example rhythmic or harmonic structures. I will refer to this as the *theoretical approach*.

c) Some of the ideas I get from architecture could not be directly linked to the music I am developing, but still important for the total performance experience I am seeking to create. Both scenographic and choreographic choices I have made in the following cases might origin from architecture. I will call this the *spatial approach*.

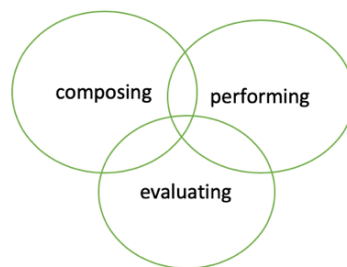
What do I mean with *sensuous approach*? Alexander Baumgarten (18th century) introduced the idea of developing *aesthetics* as a theory on sensuous knowledge. He wanted to establish this theory as a counterpoint to rationalism. Here one should pay more attention to the instincts or the more fundamental parts of the knowledge faculty, meaning the faculties that doesn't produce a distinct knowledge. He also states that sensuous knowledge should serve as a basis for rational knowledge. The German philosopher Gernot Böhme (Böhme, 2008) writes that aesthetics as a field was soon after Baumgarten divided between art theory and art critique on one side and sensuous knowledge on the other. According to Böhme it is of great importance to be aware of the sensuous knowledge as a basis for aesthetic thinking and experience. All art forms developed tremendously after second world war and it was time to change the conceptual thinking in aesthetics as well.

When working with the *sensuous approach* I find it inspiring to read the Danish architect professor Steen Eiler Rasmussen's texts. The process of observing architecture is a skill that

can be trained. When reading Rasmussen's 'Experiencing Architecture' I am thinking that the way you can gaze at a building for a long time, and continuously discover new details is similar to the way one can listen to a piece of music several times and go deeper and deeper into the material. Rasmussen writes:

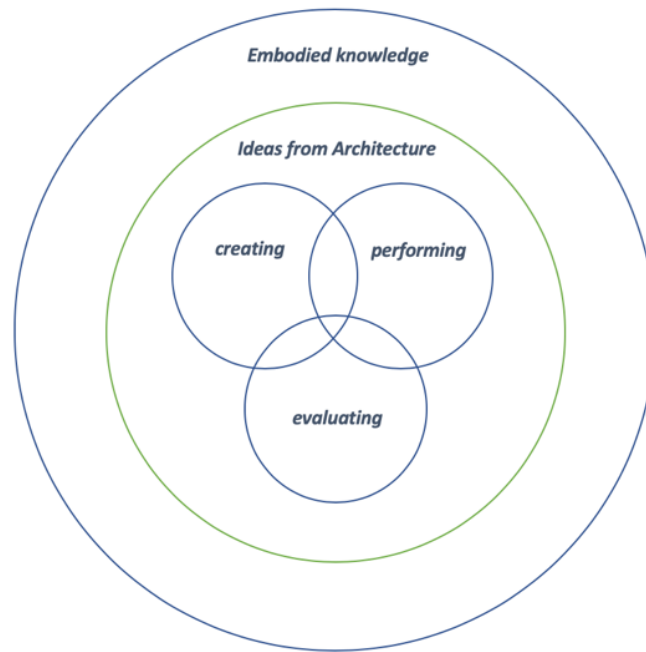
Seeing demands a certain activity on the part of the spectator. It is not enough passively to let a picture form itself on the retina of the eye. The retina is like a movie screen on which a continuously changing stream of pictures appears but the mind behind the eye is conscious of only very few of them. On the other hand, only a very faint visual impression is necessary for us to think that we have seen a thing; a tiny detail is enough.(Rasmussen, 1959)

In my practice composing, performing and evaluating is often happening simultaneously. It could be illustrated like this, where the three fields are interwoven.



I ask myself how I can incorporate architecture in such a model. When improvising, especially with other musicians, it gets complicated to separate the processes. My wish to incorporate ideas about architecture in the music is not necessarily important for my musical partners. Even more important is it that I have a history of 15 years as an improvising musician without the knowledge on architecture. The improvising language I have developed over the years is of course still a big part of my musicianship. This language, in addition to all other knowledge I have gained through my practice is what we call the *embodied knowledge*. To make the model even more precise I suggest adding another circle outside.

Henk Borgdorff is writing about *research in the arts*, in the context of Donald Schön's *reflection in action*. In this kind of artistic research there is no clear separation between subject and object, or the researcher and the art practice. In my case, theory and concepts from architecture are mixed up with previous experience and embodied knowledge as a creating performer. For that reason, the inner and outer circles could just as well have been swapped.



A Gadamerian way of thinking is also in action here. His *concept of play* implies a to-and-fro movement. I am experiencing that my embodied knowledge and my ideas from architecture are in constant flux. Sometimes the architectural inspiration is in front. Then, suddenly, I would leave the architectural references, and focus on my musical experience.

About my compositional toolbox

The microtonal tuba is central in all three cases as well as in my final concert. In case 2 ‘Le Modular’ I have used Ableton Live as my main tool for composing, recording short events before assembling them together in a certain order (i.e. Fibonacci, Golden Section). In Case 3 I used the floor plan of the Japanese tearoom as a graphic score and made up some rules about how to read the room musically. This method can also be transferred to other floor plans and project drawings and will be useful for composing in the future. I will also use a similar method in my final presentation in May 2020. Another composing tool I’ve been using is the Hayward Tuning Vine. A software generating sine waves in just-intonation relationship presented visually as a color-coded grid.

2. Case studies

The documentation for all cases can be downloaded here:

<http://tiny.cc/architectureasavehicle>

Case 1 - February 5th, 2019, Taxt/Nakamura/Akiyama

A trio concert at the record shop Ftarri in Tokyo, with long time partners Toshimaru Nakamura on no-input mixing board and Tetuzi Akiyama on guitar. In the first set we use photos of buildings as graphic scores. In the second set we improvise without the score.

Case 2 - February 13th, 2019 Taxt/Marhaug

A multi-channel piece composed by me and recorded by me and Lasse Marhaug. Performed by me and Lasse Marhaug. As musical framework I have used ideas inspired by Le Corbusier and Iannis Xenakis. Dealing with issues like proportions, rhythm and multidimensionality.

Case 3 - October 9th, 2019 Taxt/Aas/Bjørgeengen

In this particular project I have been using modular architecture, and in particular, the Japanese tatami mat as a fundament for my composition. The sides of the tatami mat have a 2:1 relation, which is the same relation as the octave.

All three concerts are recorded. Time codes in the case studies are referring to either the audio recording (case 1 and 3) or the video (case 2).

Case 4 – Final artistic presentation (preliminary phase only)

With the three finished projects in mind I am starting to shape my final master concert. I will continue to use some of the ideas I started on in my cases. I have asked two musicians to contribute: Peder Simonsen on microtonal tuba and Laura Marie Rueslåtten on bells and organ. I have also invited a group of students to take part in this concert. My sketches so far are developments of the modular ideas in *case 3*. In addition, I am working with different *spatial dynamics* and themes as randomness, games and chaos.

2.1 Case 1 - Concert at Ftarri on Feb 5th, 2019

In February 2019 I did a live performance with the Japanese musicians Toshimaru Nakamura and Tetuzi Akiyama at Ftarri Shop in Tokyo. I have played in an improvised context with both of them since 2006. This time I wanted to do something related to my thesis on music and architecture. I brought them some photos of buildings I found interesting and suggested that we played our personal interpretations of the photos. Deliberately, I didn't tell them which photos to choose, and also, I didn't talk about my personal interpretations of the photos. For me, one of my goals with this experiment was to see if they interpreted the images in a similar way as I did, and to see if there is any common ground in the way we are transferring impressions from architecture to music. The element of experimentation in case 1 was by comparing the two sets.



Photo: Nordic Pavilion, Sverre Fehn



Photo: Monastery of La Tourette, Le Corbusier/Xenakis



Photo: Monastery of La Tourette, Le Corbusier/Xenakis

We did two sets. In the first set of 20 minutes we used the chosen photos as our graphical score, and in the second set of 23 minutes we improvised without any guidelines. As mentioned above, I did not instruct the musicians beforehand. Instead I just wanted to compare the two different sets of music.

I presented seven different photos to the musicians approximately one hour before the show. Nakamura instantly chose one of the photos of the Monastery of La Tourette, while Akiyama after some hesitation chose a photo of the interior space of Sverre Fehn's Nordic Pavilion in Venice. While Nakamura chose a photo focusing on the glass facade of one of the buildings corridors, I chose another photo of the same building, showing the front facade, shot in a distance so that you can also see the landscape in front of the monastery.

What questions do I ask myself as an improviser interpreting architecture as music?

How can I read the rhythm in this architecture?

There is a lot of rhythmic information in the photos of Monastery of La Tourette. From the top there are 2 floors of 18 evenly spaced rectangles. I'm not sure what function these rectangle shaped boxes have, but I imagine they are covered balconies for the monk's individual cells. Musically it could be represented by a steady, repetitive rhythm. [Tuba 03:20, case 1 1st set.wav]

Second and third floor is covered by glass panes designed by Xenakis. The windowpanes are placed unevenly, also the second and third floor have different spacings, resulting in a

polyrhythmic complexity between the two floors. [Tuba 06:00, Mixer 16:00] In this particular part I am relating strongly to the Fibonacci series. Because I have been studying this material prior to the concert I am in a different position than Nakamura and Akiyama here. The slightly unbalanced situation, where I as being in charge of the project have more prepared material than the others is something I am reflecting about. How does it affect the interplay in an improvised set of music? To what extent should I invite the other musicians into my interpretations? This depends on the nature of each project. In case 1 I didn't feel it was necessary for the musical outcome to further explain my thoughts on the images.

In western culture the eye often reads visual information from top left to right. Looking at a building's façade in the same way gives the architecture a temporal flow. In Japan, reading is traditionally done from top right corner, moving vertically to the bottom of the page. During the concert I was questioning myself if my Japanese colleagues were looking at images in the same way? And how that would affect the way they read the score? Writing this, I recall that I at certain point in the 1st set tried to play my part backwards, then vertically and horizontally.

How can different building materials be interpreted musically?

The main materials in the Corbusier building are concrete and glass. The concrete is presented with at least two different finishes. Mostly a smooth finish, but some of the walls have a pebbledash structure. Could that be illustrated musically by adding distortion to the timbre?

The glass façade consists of several colors, reflecting the light in different ways. Looking at the photo above one can see the cloudy sky reflected clearly in some of the windows, while other windows look all black. Glass is a transparent material and could be associated with silence. John Cage expressed his appreciation of the architecture of Mies van der Rohe and found his use of glass facades similar to his own conception of silence. Branden W. Joseph writes:

“For Cage, any silence in Miesian architecture would not negate the environment but would open the building up to an interpenetration with its surroundings along the lines of Cage's own definition of silence.”(Joseph, 1997)

The Nordic Pavillion looks like it is made of wood, but actually its main material is a very light concrete blended with Italian marble, especially made by Sverre Fehn for this commission. Akiyama might have thought that the roof structure was made of wood, and thereby connected

with the material of his guitar. Anyway, what is also very unique about this pavilion are the three tree stems raising up through the roof structure. Making the horizontal / vertical theme very clear. Although I'm not sure of Akiyama's spontaneous thoughts here, I like to imagine the three stems as strings on the guitar, and the concrete beams as fingers plucking the strings, or vice versa. Other focus points could be the contrast between the open space and the pebbled ground around the trees.

To give the reader a better idea about how I have evaluated this music I am pasting in a short transcription made a few weeks after the concert. Comments directly related to architecture are underlined.

Transcription 1st set

00.00 -

Guitar: Plucked strings, short

Mixer: Starts with a very high frequency sustained sound, then moving on to short, high pitched sounds

Tuba: Low frequency, grainy, slap tongue

02.00 -

Guitar - sustained chords, continuing

03.00 -

Tuba: White noise events (Top floor of the building) continuous, steady rhythm

05.00 -

Guitar: Harmonics, muted strings

06.00 -

Tuba: short slap tongue impulse, with different space in-between (1,2,3,5,8,13 etc.)

06.50 -

Guitar responding to the tuba

08:30 -

Tuba: plucked springs, metal

Guitar: Short pitches

More insisting on limited amount of material.

Each idea is kept longer, despite the material not sounding well together

10:50 -

Tuba: Low frequency, flutter sound (related to the field in front of the building)

13:00 -

Mixer: Inspired by the material of the building which is concrete and glass?

14:30

Tuba: playing C, G (+2) and Bb (-31) ostinato. Just intonation intervals

15:00

Tuba plays melodic material

16:30

Mixer and tuba plays busy, high frequency activity together

17:00

Guitar: hammering, same chord over and over

18:00

Tuba: Air sounds, blowing through the loose tubes

18:30

Guitar outro

Tuba pedal

What are the differences between the two sets?

Reflections from February 2019

There are more silences, and longer gaps in the first set. I feel that the musicians sticks longer to each musical idea. Another way to explain the longer silences is the fact that the improvisers would have to think more before playing because of the score in front of them. Suddenly, there is another element separating the musician and his instrument.

As an improviser one is sometimes given the task of playing with a very restricted set of rules. Especially when larger ensembles are improvising together, a leader might decide how potential material should be distributed. John Zorn's COBRA project and Walter Thompson's sound painting language are examples of this direction. In my own practice I have worked with similar restrictions in a quartet project with Tetuzi Akiyama, Eivind Lønning and Espen Reinertsen⁷ and with Trondheim Jazz Orchestra & Kim Myhr.⁸ Those rules can also be defined by the musicians themselves. I will try to give an example. Here, in this specific piece, when playing with two musicians I have known since a long time, my focus is more on my own playing than listening to them and trying to adapt to their style. We have played numerous concerts together, and I am comfortable with the different approaches they might take to an improvised set of music. From the beginning of this piece until just before 15 minutes, I limit myself with short evented sounds, often with no or little pitch. More focused on the materiality of the sound than the actual pitch. In this part I am playing my instrument in an unfamiliar way. When I have been playing a limited material for a long period, the wish to play something more melodic, louder or more free grows stronger. Personally, I don't think I always make good judgments in such situations. I wonder if the wish to be more extroverted in my playing comes from an old

⁷ Varianter av døde trær, SOFA 526 (2008)

⁸ Stems and Cages, MNJCD008 (2010)

expectation of showing off skills on my instrument? In this case I think the main explanation might be a human aspect, namely the wish to interact with each other, and create a collective sound, a sound that this specific trio has developed together since our first concert in 2006.

Another element which could also be one of those self-imposed restrictions is the approach to time and the temporal distribution of musical ideas.

I often try to be a little bit *ahead of time*. In this context meaning that I have ideas about what to play next, when the material change. Very often the idea of what to play is a contrast to what came before. The strategy of *being ahead of time* comes with a risk. I find it easier to have this strategy when playing solo, or with established bands, where my own intuition and taste is combined with the choices of people I know well. In *ad hoc* projects where the musicians might not have met before it could be a better strategy to *be in the moment*. Sometimes I can also use imitation in real time, where I for a while can follow one of the other musicians' string of ideas, a way of being *behind the time*.

Reflections of December 2019

I am not sure anymore if it is true that we stick longer to each idea in the 1st set. Listening closer to the 2nd set, I can hear that I am developing my ideas in a different way, but not jumping quickly from one idea to another. In the 2nd set I am paying more attention to my instrument, the microtonal tuba. In the 10 first minutes of the set it is as if I am saying to the audience. "*Hello, this is me and my microtonal tuba, listen to what the microtonal tuba can do.*" Here I am producing more traditional sounds on the tuba, exploring different microtonal intervals, and slowly developing some kind of melody. After 10 minutes I start to blend into Toshimaru Nakamura's electronic sounds for a few minutes, before I am returning to something that sounds like warm-up exercises.

Some thoughts about the experiment

There are a few issues with this experiment I would like to discuss. In experimental and contemporary music, we are often asked to play with two-dimensional graphic scores. Signs, drawings and geometrical shapes on a piece of paper. Is this experiment, using prints of famous buildings, any different from interpreting a graphic score from a piece of paper? I would say probably not. A further development could be placing 3D models of buildings in front of the musicians and let that be the score. But even this wouldn't be correct, if the idea of the exercise was to make a musical interpretation of an architectural work. In this case we are only looking

at the outside. We could of course make a cross section of the model, so the musician could look at both inside and outside, but it would still be only a model. Architecture is a multi-dimensional artform and should ideally be experienced live. In addition to the dimension's length, width and height I would like to add movement and time as a fourth dimension. Taking this into account, a possible next step for my exercise could be to use the room we are sitting in as a score. In this case, all the musicians will have more or less the same score in front of them. Depending on the placement of each musician in the room the score could look different for each individual. The audience could also try to follow the musician's ideas. Another option could be to let the musician pick a building they know well, e.g. the house they live in or grew up in. But then again, I would like to underline my intention. I am not trying to "play" architecture as such. I want to use architecture, in all its different versions, as a leap vehicle for a creative process. A way to introduce a set of restrictions for the improvisations and compositions.

2.2 Case 2 – Le Modular – Martin Taxt/Lasse Marhaug – Feb 13th, 2019



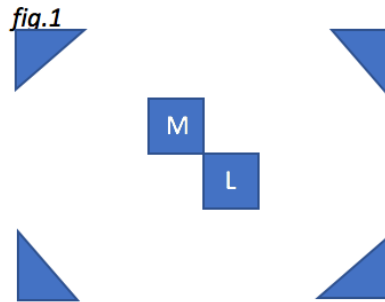
Photo: Helge Lien

My second master concert was with the Norwegian noise artist and composer Lasse Marhaug. I asked him to make a multichannel piece with me. I have earlier worked with multichannel pieces in theater but have never composed one myself.

Using multiple speakers surrounding the audience, there were many possibilities of creating a space with a clear sense of direction and lines. Figure 1 is showing the stage plot, with speakers

placed in each corner. Me (M) and Lasse (L) were placed in the middle of the room. I played acoustic tuba, sometimes with amplification, sometimes without. Lasse was controlling the sound from the corner speakers.

The audience was encouraged to stand as close to the center as possible, but also invited to move around freely in the room during the performance.



The project started with a meeting with Lasse at my studio in Oslo in early October 2018. I shared my thoughts with Lasse about the material I wanted to use in the piece. At this point, I was considering using electronics and field recordings, and I was also expecting Lasse to bring in parts of his vast instrument park. I wanted the audience to be surrounded by a *sound ecology* with sounds from many different environments, both electronic sounds and environmental sounds. Similar to the sound forests created by David Tudor and Luc Ferrari. Through some discussion we instead decided to limit the material to the tuba as the only sound source, focusing on the physics of my main instrument. One of the reasons we decided to leave the electronics and field recordings behind was the time we had available. Our schedule was one day of recording and one day of mixing before the performance.

Part one is using sounds from the surface of the tuba, while in the second part I am playing the tuba in the original way, by buzzing the lips in the mouthpiece creating sound waves passing through the tubes. The piece is dealing with *inside/outside*, a theme that is essential in architecture.

Part 1 – Le Modular [05:40]: The first section of the piece consists of recordings of external tuba sounds. By placing a contact microphone on the instrument, I can amplify sounds like snapping or rubbing the brass, hitting the springs connected to the valves and trigger systems and other almost pitchless sounds. To make a rhythmic structure on this part I decided to use Iannis Xenakis ‘undulating glass panes’, a window façade made for Le Corbusier’s Monastery

of La Tourette as a fundament for my score. The façade was drawn by Xenakis when he was working at Le Corbusier’s office in the early 50s. He was using classic principles as the Fibonacci series and the Golden Section as fundaments for his drawings. Playing with the distances between each window casing he created a dynamic and aesthetic structure. Especially when he juxtaposed the three layers on top of each other it created a certain complexity that he was looking for. Fig.2 below is a simplified model of three juxtaposed layers derived from the first 8th numbers of the Fibonacci series. (1,1,2,3,5,8,13,21...).



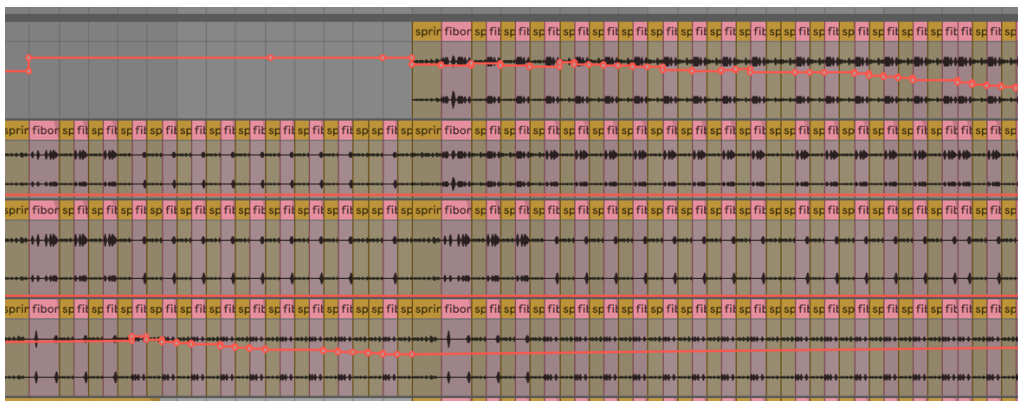
This section of the concert was played through miniature speakers placed around the room, creating an ecology of sounds.

In Ableton Live I organized the short sound events in a similar matter as Xenakis did with his ‘undulating glass panes’. While in the process of organizing these sounds, I did a recording of a small colony of jackdaws in Arendal city. The way the birds communicated with each other with their short, frequent and metallic sound reminded me of the multilayered Fibonacci series I was working on, so I decided to include them in the recording despite being a very different sound than the snapping on the tuba surface. Although the collective bird song was almost ‘Fibonacci like’ in its distribution of sounds from the very beginning, I only wanted one single bird on my recording, so I separated one ‘chyak’ from the recording and put it into my piece. I made subtle variations on the single bird squeak by changing the pitch. Towards the end of this section I introduced another idea derived from experiencing architecture. I am fascinated by how different sections or houses in a street often have a very clear cut.



House facades in Schweigaards gate in Oslo (Photo: Martin Taxt)

In this example from Schweigaards gate in Oslo we can see a masonry building from the early 20th century squeezed in between a modern style building made of glass and steel. In much music we are often using cross fades, and smooth transitions between different material. I have also experienced this myself when making musical transitions either in Verdensteatret, or in improvised concerts. Here I instead wanted to try the effect of a clear cut. In Ableton Live the sound is visualized in this way:



Screen shot from Ableton Live project

I am going back and forth between two different sounds. Because I am repeating the two different sounds multiple times it creates a steady rhythm. This is the only part of the concert where one could feel a steady beat because of the short-repeated sound events. This idea can be found from 08:20-08:55 in the 15 min edited video of this performance. In a similar manner shifts in material, color and proportions can create a sense of visual rhythm in architecture. While rhythm in music has a temporal dimension, it is the relation between the architectural

components that create the feel of rhythm. In that way, rhythm in architecture (and visual art) is on a more abstract level. One could imply that using the Fibonacci series as a foundation for a composition is using pure mathematics, rather than architecture in particular. That is of course a valid observation, but in this case my initial wish was to see how the different versions of the Fibonacci series would sound like placed in layers on top of each other, in a similar matter as with Xenakis undulating windowpanes. It is also worth mentioning that the use of Fibonacci series and Golden section theories have been used in many different art forms, and could be seen as a universal phenomenon, and a prove that art and science are naturally nurturing each other.

Part 2 - 4Cs [20:00]

The first musical idea I came up with was having a C in four different octaves in four different speakers.

c1 (32.85h) **c2** (65.70hz) **c3** (131.41hz) **c4** (262.81hz)

I wanted to create a monumental atmosphere, and I thought that the finely tuned octaves would create a stable foundation where additional pitches derived from the harmonic series would open up the sonic space in a beautiful matter.

The recorded additional pitches were picked from C's partials:

g2 (98.55hz) and **g3** (197.10hz), **Bb3** (229.95hz), **d4** (295.96hz) and **f#4** (361.35hz)

If we follow the harmonic series upwards, spaces between the pitches gets smaller the higher we get. In decimal form the space between Bb3 (partial 7) and d4 (partial 9) is 1,287, and between d4 and f#4 (partial 11) it's 1,220. If we go even further, up to partial 13, the ratio will be even smaller (1,1818). Le Corbusier created Le Modular using the Fibonacci/ Golden section theory, and in fact there are similarities between the Fibonacci/Golden Section and the harmonic series as well. First, I was imagining a reversed Fibonacci series, where the highest pitches were equal to the first numbers of the Fibonacci. Going down towards the fundamental note, the gap grows exponential. However, the comparison is unprecise. We cannot transfer the Fibonacci ratios one to one with the harmonic ratios.

If I was to be consequent with the Fibonacci idea, I could maybe come up with the following harmonies instead.

65,7hz (C2) + 131,4hz (C3) + 197,1hz (G3) + 328,5hz (E4) + 525,6hz (C5) + 854,1hz (Ab5) + 1379,7hz (F6) + 2233,8hz (Db7)⁹

Starting from the highest number, divided by the number below equals approximately 1,618.

$$2233,8 : 1379,7 = 1,619$$

$$1379,7 : 854,1 = 1,6153$$

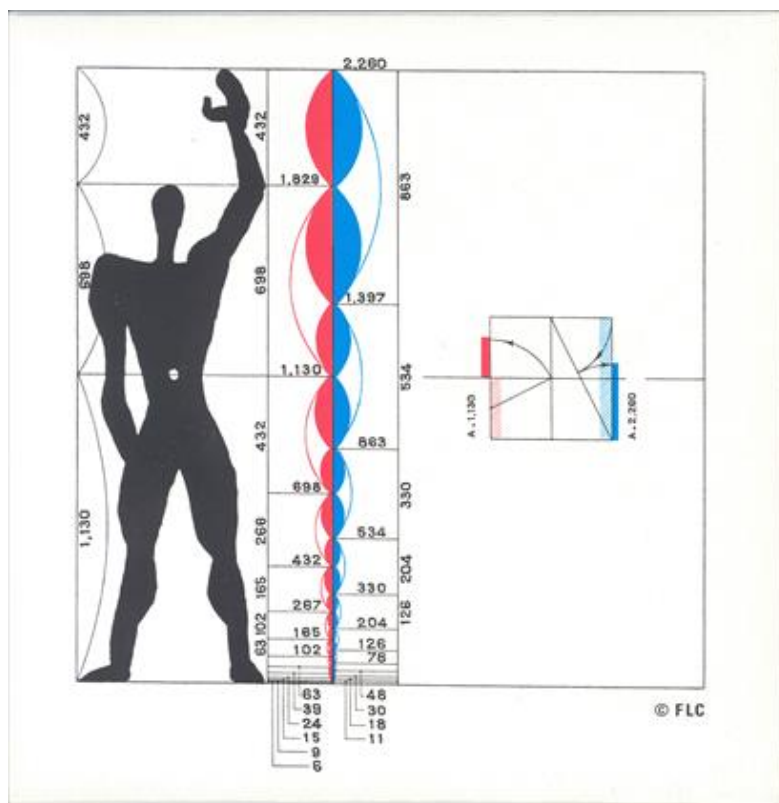
$$854,1 : 525,6 = 1,625$$

$$525,6 : 328,5 = 1,6$$

$$328,5 : 197,1 = 1,666$$

$$197,1 : 131,4 = 1,5$$

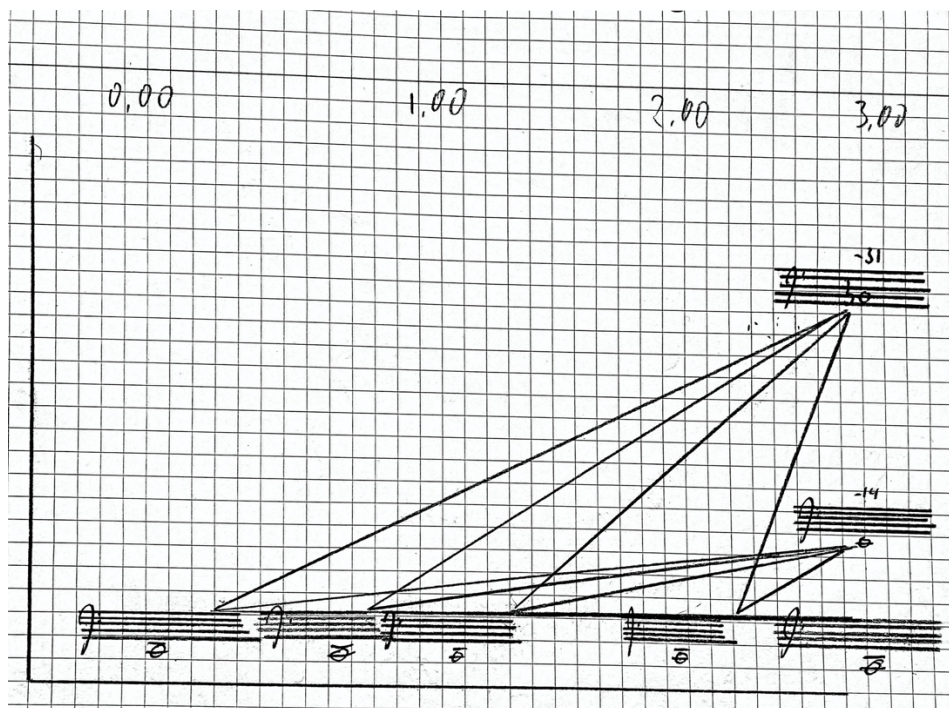
$$131,4 : 65,7 = 2$$



⁹ <https://www.dropbox.com/s/yha5o4ttupqjltto/fibonacci%20akkord.wav?dl=0>

This part is nearly 20 minutes long. By limiting the material and staying in this moment for a long duration I wanted to create an illusion of a time that had stopped or slowed down. In such a listening situation one can go through different stages of perceiving the material. When I am listening to this kind of music, I try to channel my focus towards the small interferences between the octaves and the additional pitches, as well as listening to the harmonic play in the upper partials. I think this is a good approach to have when listening to music with long duration and slow temporal development. In this particular piece, all pitches are played on the tuba, and there is always a certain pitch fluctuation that will create variety in the music.

Ending [35:30]



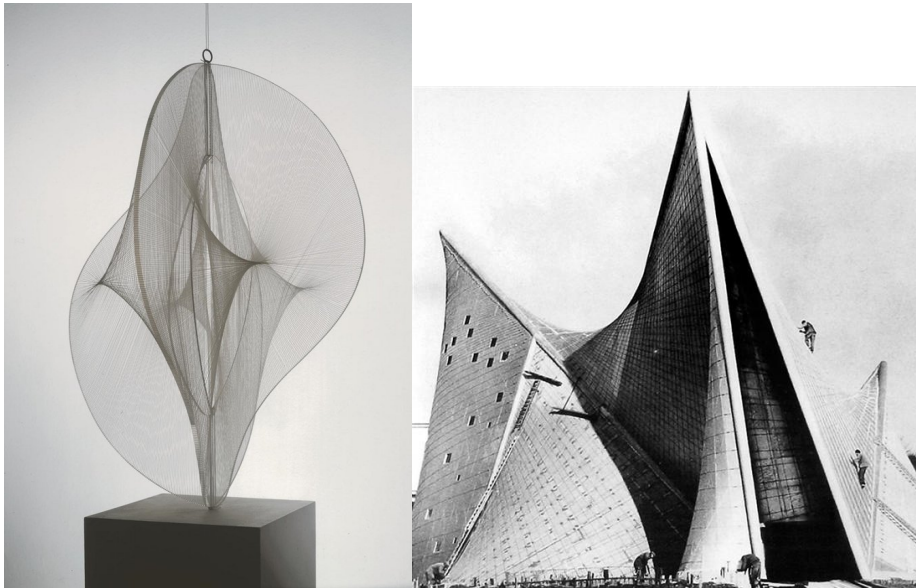
The ending is inspired by Xenakis ending of his piece *Metastasis*, which is again often connected with his work on the Phillips Pavillion in Brussels.

In my piece, all the glissandos start from C1, starting from different time, and with different tempos. During the 3-minute section the cluster is growing, but in the last seconds it resolves in an open just-intonation chord (1/1, 5/4 and 7/4). The relation between Xenakis composition *Metastasis* (1954) and the Philips Pavilion, in collaboration with Le Corbusier (1956-1958) is well known. In both projects Xenakis is using the concept of ruled surfaces, where two families of straight lines are creating a fluid development from two-dimensional shape to a three-dimensional volume. This concept was popular in the 1950s art practice, and a very good example are the spatial sculptures of the Russian artist Naum Gabo. In the score of *Metastasis*,

Xenakis is trying to make music with this concept. Straight lines interpreted as glissandi by the string instruments. On a visual level there is a similarity between the *Metastasis* score and the sketches of the *Phillips Pavillion*, but there are also other connections. Sven Sterken writes that

Both creations can be considered as two different hypostases of the same idea, namely the continuous transition between the two states (Sterken, 2007).

Sonically this is articulated in the development from unison to clustered sounds, and in the architectural space expressed by merging the horizontal level surface and the vertical wall plane.



Linear Construction no.2 (Naum Gabo) Phillips Pavillion - Le Corbusier/Xenakis

How did architecture influence this piece?

The main architectural influence in this piece was the work of Le Corbusier and Iannis Xenakis. Both the opening section [05:40-16:00] and the ending [35:40-38:35] borrows much of the logic and inner structure from their work. In particular reading about Xenakis' contribution on the façade of Monastery of La Tourette and Le Corbusier's design on the Phillips Pavillion inspired me.

Articulation was another *key word* for me while working on this music. When describing architecture, we often use the same vocabulary as when describing music. Both art forms can be *articulated, contrasting, linear* and *spacious*. What does articulation mean in music, and what does it mean in architecture? When talking about speech, articulation is the 'formation of clear and distinct sounds' and in music it is 'clarity in the production of successive notes' (Oxford Dictionary of English). On a general level one can say that articulation is about being clear, distinct and polished.

One of the most famous examples of highly articulated architecture is the Seagram Building on Manhattan by Ludwig Mies van der Rohe, and in particular the corner details of the building is often used as a reference. Completed in 1958, one of the characteristic traits was to articulate the structure of the building externally, and by making these structures visible one would achieve a formal decorative articulation, and more honestly speak to the public than with any system of applied ornamentation.

If I was to transfer the architectural interpretation of the word into music, I should pay more attention to the inner structure of the music. Making the overall form as clear as possible, and not trying to hide my initial structural ideas when creating music.

Some reflections made in October 2019, 8 months after the concert

Here are a few examples of my live involvements in the piece:

[24.00] I am playing a solo that is improvised. Most of the pitches I play are derived from the same harmonic spectrum.

[26.45] I am playing pedal C. The pedal C is already represented in the playback file, so I find this to be an unnecessary choice of material.

[28.00] I am playing deliberately slightly off the pitch to create interference with the playback, but I quickly continue to something more consonant. This is for me a sign of hesitation. If I could make the choice again, I would have continued with the unjust interval for a while.

[32:00] I am hitting the surface of the tuba with a ring on my finger. It creates a series of clicks. A contrasting material to the already existing drone. It also hints to the opening section. This was maybe the most spontaneous choice I made during the set, and this choice still make sense when listening back to it. I like this situation where, what seems to be, a quite busy soundscape with a powerful drone played on a high volume through four speakers suddenly is joined by the non-amplified, acoustic sounds from the live instrument. The fact that the metallic clicks are situated in a different frequency range, and with a different tone quality makes it possible for the human ear to observe both phenomena simultaneously. Loud and clear.

[38:28] Sustaining my last note while the playback file has stopped.

Immediately after the concert I was not satisfied with my role as an improviser in this piece. Why was that? Could it be that because I had spent so much time with editing the playback file, and listening back to it, that I didn't feel the need to add more material? I asked questions about

how I could create a situation where both the playback material and the live music were more interconnected. Could the piece have been played without musicians on stage? The reflections I've made here are mainly based on listening back to the audio recording of the performance. However, we should remember that the choices I made as an improviser was perceived differently in the room in the moment of the concert, than when listening back to the documentation. If I look at this project with a *spatial approach*, I would say that the staging with two men sitting concentrated with their instruments elevated in the middle of the room, tells something different than an empty stage. It gives a focus point for the audience. Having Gumbrecht's *presence effects* in mind makes the decision of sitting on stage understandable. However, if my aim was to have the audience moving while listening to the piece, I could easier have achieved that if the musicians were removed. and the audience could freely move between the speakers on the floor. The first time I listened back to the recording I was not convinced by my decision of sustaining the last note. The lonely acoustic tone of one tuba sounded too weak compared to full sound of the 4 speaker PA system, but I have to remember that the live situation in the room might have left another impression. The opening section with the external tuba sounds must also have been perceived differently in the concert, since the sounds were distributed in six different speakers laying on the floor among the sitting audience.

2.3 Case 3 – First room, October 9th, 2019

Project description

On October 9th the third concert in my master program took place. This time I was accompanied by bass player Inga Margrethe Aas and video artist Kjell Bjørgeengen.

In an early description of my master project I wrote that *I will look at how Japanese traditional architecture have determined the size of the rooms by combination of tatami mats.*

Later, I decided to use this project to see how I could use the tatami mats as a fundament for my compositional ideas. Below is a definition of modular architecture from Encyclopedia Britannica.

***Module**, in architecture, an arbitrary unit adopted to regulate the dimensions, proportions, or construction of the parts of a building. A number of modules, based on the diameter of a column, were used in determining the proportions of the order in Classical architecture (Britannica, 2018).*

Figure 1 shows a traditional Japanese tearoom. It consists of four tatami mats with the measurement 1,84m x 0,92. This gives a 2:1 relation between the short and long side. In the middle is a 0,92x0,92m square.

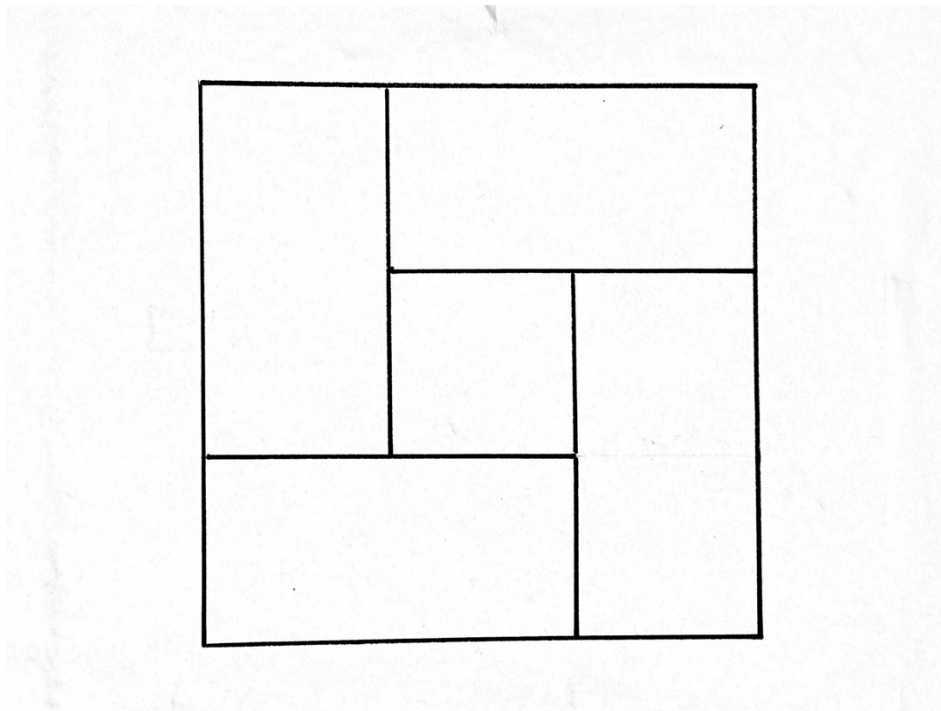


Figure 1

The 2:1 relationship is known in musical terms as the perfect octave. If the 1:1 pitch is 220Hz, its octave would be 440Hz, which is the same as 2:1. My first musical idea when looking at the floor plan of this tearoom was to let the long side of the tatami mat represent an octave. My preferred choice of notating intervals is by whole number ratios, known as just intonation, and I quickly stumbled into a problem here since whole number ratios won't let themselves divide in two equal parts.

To divide 2:1 into two parts, multiply both terms of the interval by 2 to obtain the equivalent ratio 4:2, then interpolate the missing integer in the series, 3, to obtain 4:3:2. This indicates that the simplest division of 2:1 yields the perfect fourth (4:3) and the perfect fifth (3:2). (Doty, 2012)

Another way to solve this task would be to place two identical ratios on top of each other.

The only whole-number ratio intervals that can be divided into two equal parts which are also whole-number ratio intervals are those in which both terms are perfect squares, such as 4:1 (2:1+2:1), 9:4 (3:2+3:2), 16:9(4:3+4:3). (Doty, 2012)

Figure 2 is showing a score I have made using the 4:3 interval to represent the sides of the square. Multiplying this by 2 gives us the 16:9 interval on the longer side of the rectangle.

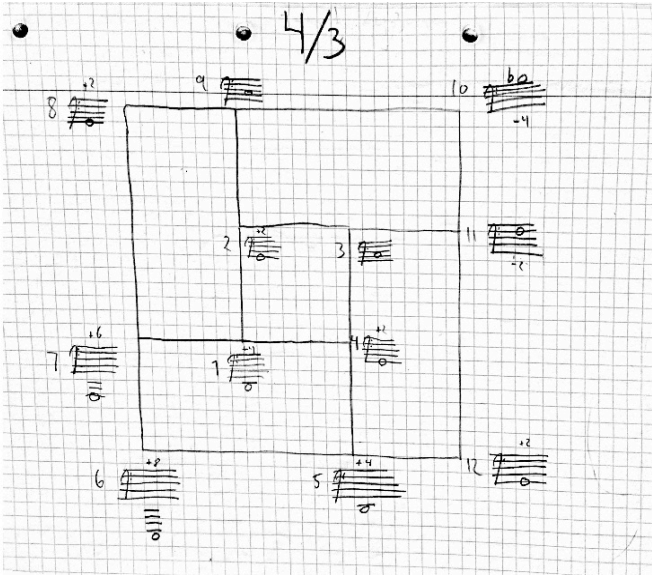


Figure 2

Another way of dividing intervals is by cents. When working with my tatami score, transferring the proportions of the room into pitch I found it useful to use cents. 1200 cents is equal to the octave, and the distance between each half step is 100 cents. This is also known as the tempered tuning. Figure 3 is another score I have made for this project, where the 2:1 relation of the tatami mat is equal to one octave. Dividing the octave (1200 cent) by 2 gives us 600 cents, which is known as the augmented fourth or the tritone.

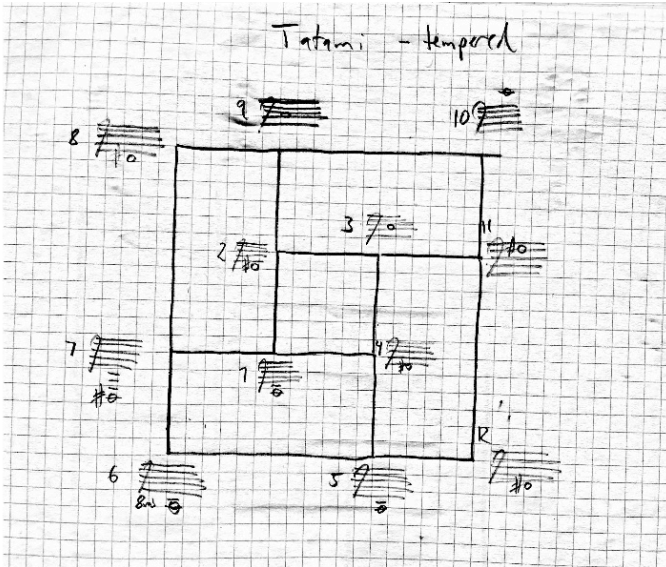


Figure 3

This particular master project took place from October 7th to October 9th. The two first days consisted of rehearsals, a studio recording, and a mixing session. The plan was to let the tuba and the double bass/viola da gamba record the scores and to play them out through speakers during the concert. I wanted the recorded material to leave enough space for the two instruments to play live as well. I had an idea that the music played live was improvised, thinking that the melodies created by the live instruments were a way to move from one place to another, referring to the tatami score, like human movements in the space.

On the left side of each stem there's a number. When recording the scores, I wanted the tuba and the double bass to play the pitches in a certain order from 1 to 12. Another way of using the score is by playing a selection of the pitches simultaneously. However, the system I created here with octaves and tritones gives only two different pitches within three octaves.

To expand the idea about modules, and to be able to create more complex harmonies, I made some adaptations of the tempered score (figure 4)

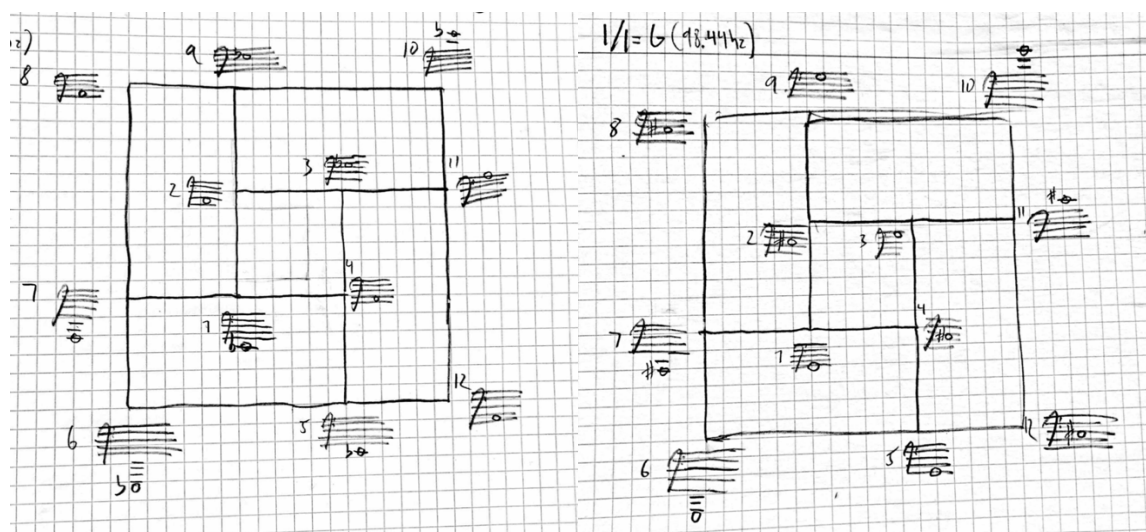


Figure 4

In the last days before the project started, I felt a need to clarify the form and started working on a more precise score or timeline. This timeline had four voices; tuba, double bass, viola da gamba and tuning vine.

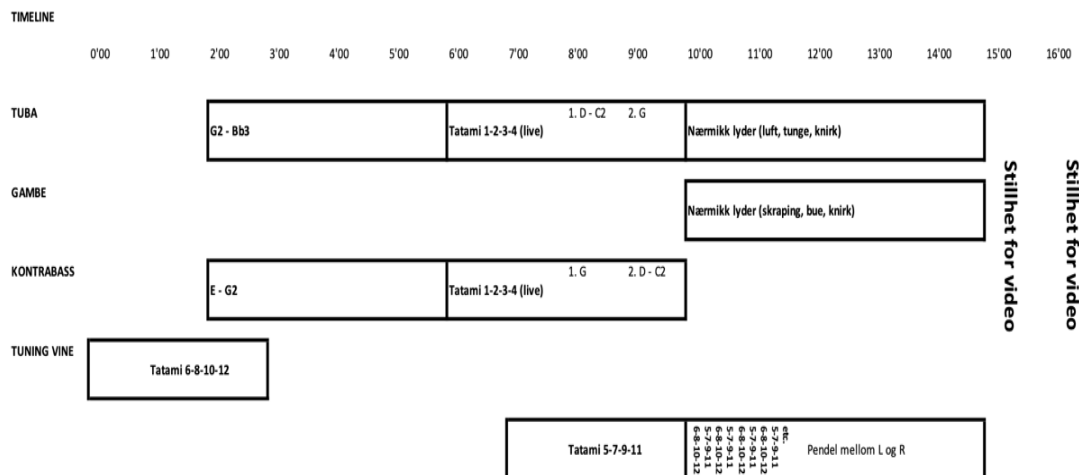


Figure 5 - 1st page of timeline for the Tatami concert

Reflections

I described how I imagined that the task of the live musician would be to improvise melodic lines, as if moving freely through a physical space. However, this idea changed slightly in the weeks prior to the project. In earlier meetings with Inga we have explored the combination of extended techniques on the gamba and the tuba, and we have discussed afterwards that some of this material would sound very good if recorded with high proximity. While working on the section from 10.00-15.00, two interchanging chords derived from the 4:3 Tatami score (figure 2), I wanted to try the close-miked extended techniques in combination with the chords. I think the result sounded surprisingly good. The open feeling of the just intonation chords created a transparent atmosphere for the more articulated and tactile sounds from the instruments. During the studio session with Inga, I gave the two of us the task to improvise a 20-minute stretch using only air-like sounds, scraping and hitting the surface of the instruments in various ways, but with large gaps of silence between each event.

As my score developed, I realized that the three different modules towards the end gave a sufficient harmonic complexity to the piece. Instead of letting the tuba and the gamba choose pitches freely in this last part, I chose to limit the material. Inga's part was Module 3 with G and C# in different octaves. Towards the end (from 23.00) she's adding Bb and E, which is 300 cents from G and C# respectively. I was playing Module 1 (from 26.00) and was adding Eb and A to the already existing C and F#.

Three materials

During the work on this project, I came to think about another connection to architecture. The instrumentation in this composition is tuba, double bass/gambe and sine waves. After a while I started to look at the three sound sources in this piece as three building materials.

Tuba: metal

Double bass/viola da gamba: wood

Sine waves: glass

While the tuba and double bass/gamba have an obvious connection to the material, the sine waves could be explained by the similar sound it creates as when one rubs the surface of a crystal glass. Because of the accuracy of the sine waves it can also create a transparent feel, which can also be associated with glass.

What I find interesting here is how the different materials are sounding together. I also play in an ensemble of three tubas¹⁰. I find the ensemble sound to be very beautiful, but there are not many ways of changing the timbre within the group. In the trio of tuba, gambe and sine waves, or *metal, wood and glass*, I can play around much more with the different combinations. Following the path of my tatami score the instruments arrive at high pitches and low pitches at different times, creating a variety in timbre. When writing this I am thinking of something I recently read of Peter Zumthor. He wants to use materials in a sensuous way, and ultimately to give the materials a poetic quality by putting them in a meaningful situation.

2.4 Case 4 – Second room – Final presentation

My final artistic presentation will take place in Lindemansalen at the Norwegian Academy of Music. I have chosen to include a text about the preface to this concert in my thesis because it is important in order to get a more exhaustive picture of my project. I regard this as an experiment, where I, based on the experiences from Case 1-3, try out different strategies in thinking architectural in music.

Before I explain my musical plan, I want to emphasize a few architectural ideas that has been serving as guidelines in my creative process leading to this concert.

¹⁰ Microtub

Japanese spatial concepts – Ma and Oku

In the introduction I am mentioning the Japanese spatial concepts *Ma* and *Oku*. In music *ma* can mean the combined entity of sound and not sound. In architecture it can be illustrated by the combined entity of wall and not wall, or function and not function. This creates a rhythm of presence and absence which cannot be explained in terms of only one of the pairs (Austigard, 2006). In a musical context I am not only thinking of *ma* as ‘sound – not sound’. I find the pair ‘function – non function’ particularly interesting. What is function, and what is non-function, depends on the musical context. Using musical material that is not expected, could to me be categorized as non-function. This is contradictory, since whatever musical material that is presented in a work serves a function. However, some material will be more important for the structure of the work than other. A compositional strategy could be to follow a set of self-imposed rules. *Non-function* in this context would be to *break the rule*. At this point it is necessary to remind that the definition of *ma* is dependent on the pair as such, and not only one of them.

In the theatre group Verdensteatret I am currently working with the music for a new performance. Recently I tried some ideas having the concept of *ma* in mind. In our studio I decided to set up two speakers. One speaker was placed on the left side of the front stage. The other sound source, a big guitar amplifier, was placed in a storage room next to the studio. The musical idea was to play two steady pitches from trombone in each speaker, and after a while juxtaposed with recordings of a person playing the trombone for the first time. The two speakers represented inside/outside or close/distant. At the same time the steady pitch and the recording of the ‘non-trombone’ represented the entity of function and non-function.

The other Japanese term, *Oku*, has more to do with movement in space. Not only movement as in bodies moving in space, but also how our visual and aural focus is moving inside a space. Brandon LaBelle is writing something related to this in his book *Background Noise* (LaBelle, 2015). He is discussing the possible link between John Cage’s *Black Mountain* project and a Japanese Zen garden. In the *Black Mountain* project Cage is placing different sound objects in an open space. A Zen garden is designed to complicate transparency and open space. Rather than having a totally open space (silence), stones or other objects are placed in the space. LaBelle is using Ryoanji, one of Cage’s favorite Zen gardens in Kyoto, as an example. Here, fifteen stones are carefully positioned in a rectangular pebble garden. The stones are placed in such a way that the viewer can never see all of them. Something is always hidden

from the view. The idea of hiding fascinates me, and I realize that I have used this strategy several times. Both in this master project, and previously. In case 3 I decided that the bass and the tuba should sit on opposite side of the stage, with Kjell Bjørgeengen's video projection on a screen between us. In a way it is a logical placement of two musicians playing with video. Still, I find it interesting from both a performer perspective and a listener perspective to have the musicians separated on stage. What me and Inga played was clearly connected, but with this staging, it also gave an impression of individuality. In the already mentioned Nakamura/Taxt duo we have practiced the same staging with musicians on opposite side of the stage, but here with no projection in the middle. In the wood quintet I wrote in 2007, I placed the horn player behind a wall in the last section of the piece. In retrospect, also this could be related to oku.

Cave vs Nest

In his lecture 'Primitive Future' given at Harvard University in 2011, Japanese architect Sou Fujimoto is using the images of a cave and a nest as two different ways of designing houses (Fujimoto, 2011). The cave and the nest represent two different concepts of living. The nest is a space well prepared for people. On the opposite, a cave is a space that is not designed for people, a natural created landscape, existing long before human beings. The cave has other qualities than the nest. It invites people to be more creative. At first the cave seems chaotic, but spending more time in the space, humans slowly adapt, and can start to find small comfortable places inside the natural cave. Fujimoto is also drawing a line between the image of the nest and the Miesian architecture that is free of ornaments and in his words *serves as a grid for most of modern architecture*.



Figure 6: Screen shots from Sou Fujimoto's lecture "Primitive Future" (Left: Nest – Right: Cave)

Is it possible to use this analogy of different living concepts in music? This is something I will investigate in this piece.

Solids and cavities

Architecture, in the same way as music, is dealing with immateriality. When experiencing architecture, we don't necessarily look at the solids, being the stone, tiles, timber or glass panes, but the relation between the different elements, their size and their character. One could also imagine an architect given the task of making a hollow space inside a mountain. In this case it's clear that the architect should play with the cavities rather than the solids in order to shape his ideas into a finished product. Rasmussen writes about 'structure minded' architects and 'cavity minded' architects. This division is maybe not so far from what Fujimoto is talking about in his lecture 'Primitive Future'.

About the music

In case 2 and 3 I have been using a lot of playback. Having a background from improvised music I would like to say a few things about playback. Using playback could be regarded as controversial in improvised music. I think that one of the reasons might be that there is an expectation about something completely new and fresh in improvised music. Playback in that sense is representing history, something that doesn't belong to 'here and now'. Personally, I don't look at it this way. In 20th century contemporary music (i.e. Musique Concrète, the Darmstadt School and Studio for Electronic Music in Cologne) and in much experimental music, playback has been widely used. The huge technological developments after World War II prepared for many new ways of expressions and use of technology in music. From the 1950's acoustic instruments have been accompanied by tape-machines and computers. Playback does also appear as recordings of environmental sounds or pure electronic music and music where all these elements are combined.

My working process has in a way directed how I ended up using playback in the concerts. I was working with the ideas alone in my studio where the distance from reading architectural theory to recording musical ideas based on what I have read was very short. Case 2 was the first project I started working on in October 2018. As mentioned in chapter 2.2, I didn't feel that I left enough space for me as an improviser, but this feeling might just as well change if I am to perform the work again. In case 3 improvising happened more in the recording session prior to the concert. From 10.00 to 30.00 we could hear the unedited version of a 20-minute improvised

session paired with the live sounds. In case 3 I didn't miss the live improvised parts. This also reflects my musical point of view today. Much of the music I am practicing today isn't necessarily associated with improvised music, but in spite of that I am constantly using improvisation both as a compositional tool while working alone prior to the concerts, as well as in the live situations.

Case 2 consists of roughly 80% playback and 20% live material, while Case 3 has more or less a 60-40 proportion between playback and live playing. Much of the structural and architectural information of these pieces were found in the playback files. The playback element I have been using in case 2 and 3 have created a musical safe space, a nest. In case 4 I want to think more like as if I am exploring a cave, or as Rasmussen writes, being a 'cavity-minded architect'. I look at the score (figure 7) as a mass. The layout of pitches are all the optional pitches I could use, but like a designer hollowing out a space I am also carving out the sections of the score that I don't want to use.

I want to involve physical movement in my piece. Experiencing architecture is very much about moving in space. One simply cannot experience the whole work from one point. In previous concerts I have organized, where the space has been particularly important, I have tried to make the audience move freely in the room during the concert. I have experienced that this is a very hard thing to make an audience do. People tend to sit down and focus from one angle. Letting the musicians move in the space instead of the audience I can, if not solve the problem with a sitting audience, at least change their acoustic perceptions during the performance.

Designing a band is a crucial part of defining the musical work. In a conversation with my tutor Ivar Grydeland we were talking about Steen-Eiler Rasmussen, and how he maintained a view on architecture in relation to handcraft where the architect had to be as accurate as possible in his technical drawings to achieve what he wanted. As a composer or initiator of a musical project I am already taking some very important decisions when deciding what instruments and which performers that will play the music. In my project I have decided to invite musicians that have a long experience with experimental music, including improvisation. At the same time, I have, in case 2 and 3 in particular, come up with rather strict instructions. What am I achieving with this two-sided effect? I have tried to invite musicians with musical confidence, that besides following my instructions can contribute with their musical initiatives. The Norwegian architect and scholar Christian Nordberg Schulz is referring to three important elements of architectural

work, according to him, the melody, harmony and rhythm of architecture (Nordberg-Schulz, 1997). The three elements are the *outline*, *elevation* and *ground plan*¹¹. Nordberg Schulz are making connections between the ground plan and rhythm, harmony and elevation, melody and outline. In my music-making I find the orchestration to be of maybe even greater importance than the definitions of melody, harmony and rhythm. The music I am making leaves much responsibility in the hands of the performer, so it is of great importance which musicians I pick for my band. Choosing the right space for my concerts is another important element. I realize that many of the decisions I make as an initiator of these projects have just as much to do with curating as with composing. I notice that I care a lot about how the music is presented, where it is presented and in what context it is presented. One last element I will bring in here is time. How long should the piece be? How and when should the different materials and ideas be distributed throughout time?

I am suggesting a new model where I am using Nordberg Schulz's three elements as a starting point.

Architecture	Music
Outline	Orchestration
Elevation	Space
Ground plan	Time

Orchestration

The first musicians I picked for this project were Laura Marie Rueslåtten and Peder Simonsen. Rueslåtten is the carillonist of Oslo City Hall, and she is also playing the organ in addition to the bells. What also fascinates me with Rueslåtten is that she has synesthesia, a perceptual phenomenon in which stimulation of one sensory or cognitive pathway leads to involuntary experiences in a second sensory or cognitive pathway. She tells me that when she listens to music, different harmonies and timbres will automatically be translated to a certain color and imaginative space. I don't have this ability myself but appreciate the potential views that she might bring to my work. In order to play the microtonal pitches, I found it necessary to have another microtonal tuba at disposal, so I have chosen to include my colleague from Microtub, Peder Simonsen in this project as well. He will also bring some of his tunable synthesizers for orchestral purposes. The trio of two tubas and carillon/organ will create the core of this concert. In addition to the trio I will use 12 students from the class Improvisation based contemporary

¹¹ In Norwegian: Omriss, oppriss og grunnriss

music at NMH. These students will receive simple instructions from me and serve an important spatial and aleatorical function in my piece.

Space

Most of the exams at the jazz department at NMH take place at Nasjonal Jazzscene Victoria. An old theater, today a popular jazz club, in downtown Oslo. I don't think that my project would fit on that stage. Instead I have decided to use Lindemansalen at NMH. This is a hall designed for classical orchestra music, and the acoustic situation suits what I want to present. Since orchestras often use this space, the stage is quite big. I am thinking about having the audience sitting on stage.

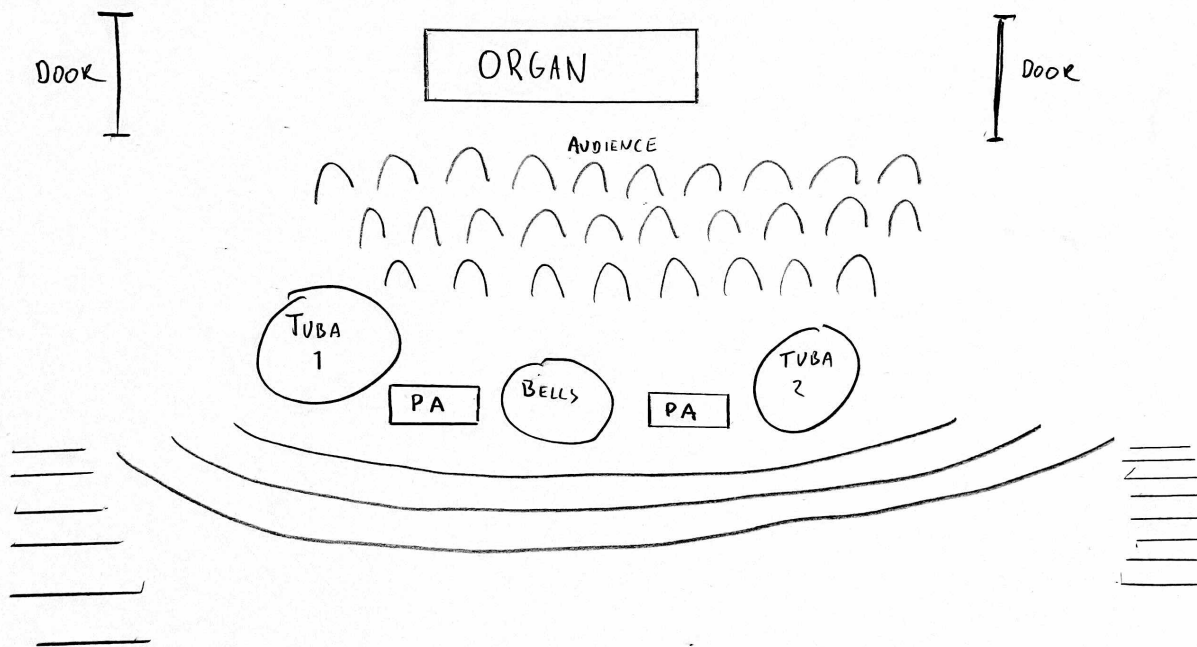


Figure 7

Time

As in case 3 I will make a timeline to structure the concert within the 45 minutes duration that is given as a length for my final presentation. The timeline will have open sections so that the aleatoric and chaotic approach is regarded. In chapter 1 I am introducing the idea of architecture as a game. When bringing the idea of a game into case 4 I try to remember Gadamer's 'concept of play', Gumbrecht's 'moments of intensity' and 'presence' as well as the playful concepts of the deconstructivist architects. I have to remember that I don't want to control every musical detail in this performance, but instead function as someone who establishes a game-board.

Modules

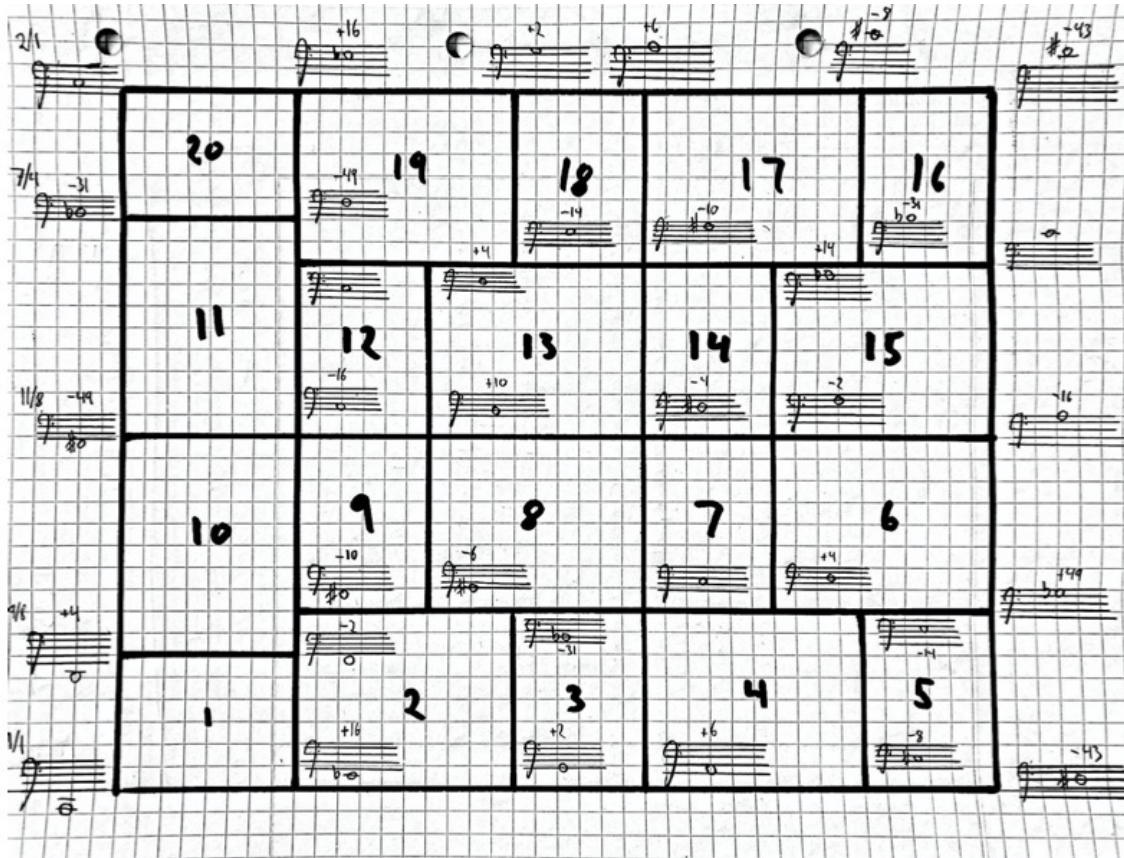


Figure 8

I will continue to use the modular ideas I tried out in case 3. Inspired by the process with the tatami mats, I decided to develop this idea. Figure 7 shows a score, or rather a layout of optional pitches. After using tatami rooms as a departure point in case 3 I subscribed to a Pinterest channel that was sending out daily emails with different modular design ideas. Many different layouts of tatami rooms, but also other ways of flooring. While the tatami mats only have one size, other floor modules like tiles have more sizes. This time I chose three different sizes. While making sketches on a chequered paper I decided the following intervals: 6 squares \approx Major second ($9/8$), 8 squares \approx Minor third ($6/5$), 10 squares \approx major third ($5/4$). Using the Hayward Tuning Vine, I found intervals as close to $9/8$, $6/5$ and $5/4$ as possible using a 11-limit tuning system¹². The organ and the bells are tempered and cannot play many of the pitches in my score. I have therefor mapped out the pitches playable on Laura Marie's instruments.

¹² 11-limit tuning is allowing all rational numbers that can be factored using primes no greater than 11 (Source: Wikipedia)

When I made the first sketches of the score above, I was sitting in a large room, and imagining each pitch belonging to one fixed place in the room. When looking at the finished score I started to think how it could be used in my concert. With the tatami composition I created a path from pitch number 1 to 12. One pitch for each corner. What if I instead numbered each of the 20 squares in the new score? Each of the squares have four pitches, creating three types of tetrachords.

Workshop

In March 2020 I had a workshop with the bachelor students from the class *Improvisation-based contemporary music*. I brought two ways of working with the material to this workshop.

1. I have drawn squares on a blank postcard-sized piece of paper. One card for each of the 20 squares. Each square with four pitches. These cards are placed in different parts of the room. The musicians need to move in the room to be able to explore the different material.



Figure 9

2. With the Hayward Tuning Vine, I have recorded a sequence with each tetrachord square. All the students brought their smartphones and accessed a website where I had uploaded every tetrachord square.¹³ The students picked one square each and played it through

¹³ www.tiny.cc/intuitivepeople (accessed site 04.03.2020)

the speakers of their phones. First, sitting in a circle in the center of the room. Later, I divided the group in two. Each group with one leader. Each group was asked to move around in the space while the tetrachord-files were constantly playing.

Different ways of using the pitches

In the workshop I asked the students to play together in smaller groups after working with these exercises. They were forming duos, trios and quartets, and we explored different ways of improvising with the given material. Remembering Rasmussen's expression 'cavity-minded architect', I look at the score (figure 7) as a mass. The layout of pitches are all the optional pitches I could use, but like a designer hollowing out a space I am also carving out the sections of the score that I don't want to use. This information I will also communicate with my musicians, so that every musician is making personal selections among the pitches.

Some of the instruments will have problems tuning the microtonal intervals. For them I have mapped out the tempered pitches.

Pitches for tempered instruments like bells, organ, accordion and piano



During a session with Peder Simonsen in February 2020, we organized some of the pitches in a scale and fed his modular synthesizer with this.

C	1/1
C# (-8)	135/32
D (+4)	9/8
D# (-43)	297/64
Eb (+16)	6/5
E (-14)	5/4
F (-2)	4/3
F# (-49)	11/8
G (+2)	3/2
Bb (-31)	7/4

Organized in a notation system the scale looks like this:



3. Conclusion

My first ambition when I started this master program was to explore different spaces and to see how my music would relate to different acoustic situations. During the fall semester of 2018 I moved towards a different approach where I started to make music based on ideas derived from architecture, and further, how I could use architecture as a tool in my reflections. One of the first questions I had to ask myself was *what is my music?* To make the project more focused, I decided to work with new constellations instead of continuing with already established ones. This is partly because the established ensembles already have an intrinsic logic developed. By using new constellations, I thought that I could go more directly to the core of my master project. The result has been presented in the three case studies.

Using something outside of music as a point of departure for composition is very common, being mathematical structures, paintings, poetry or nature. Have I achieved something new? Something that can be useful for other musicians? In the new music scene, one is often in a situation where musicians of different backgrounds are gathered to make music. Some might have a classical music background with limited experience with open form and improvisation, while others might come from jazz or traditional music and not used to reading sheet music at the same speed as classically trained musicians. Using architectural references when working with cross-genre projects could be an interesting method in addition to already existing methods.

My two research questions have different qualities and levels of activity. Research question 1 is asking how architecture could be used as a vehicle for composing and improvising. It is an active question, that has been constantly present in my project. Research question 2 is of a more indirect character asking how architecture could be used as a tool for understanding and evaluating music. This question appeared to me later in the process and is an aspect I was not

aware of when I started the work on the thesis in September 2018. Still, at the end of this project I understand that these questions are interdependent.

As an example of how I have used architecture in my evaluation I will refer to a conversation with Erlend Hovland, one of my tutors. He was asking me about a section in the concert with Lasse Marhaug (case 2), where I have recorded a C in four octaves, placing them in separate speakers, one in each of the four corners. What was the connection to architecture here? In my first project description I am writing that I was searching for a *monumental atmosphere* and a *stable foundation* for the additional pitches that were going to be added later in the piece. Both expressions could be used when talking about architecture but could just as well be used for describing other art forms. When reflecting on my tutor's question, I came to think about the architecture of Mies van der Rohe. One of his trademarks was to illuminate the structure of the buildings, rather than hiding them with applied ornamentation. We could say that this highlighting of the structure was a more honest way of speaking to the public. Another trademark was the use of clean surfaces, and glass surfaces in particular. I realized that the 4 C's in my composition could be seen as four columns that served as a structure or a grid, where I could add other pitches on the already existing grid system. I find that the octaves created a static and transparent situation. With no added thirds or sevenths, the music is not leading somewhere but is still full of potential.

When talking with other improvisers about our music, the vocabulary we use is often quite limited. *Percussive, rhythmical, active, busy, quiet, soloistic, loud, soft*. Many people find it hard to express with words what they are doing musically. I have often experienced it myself when trying to put words on what I felt about the improvisation. I could say something like "when we came to the more rhythmical part, I felt that we lost direction" or "next time we play we should try to be more dynamic". Both of these statements are rather vague. Could a language from architecture help me to extend the vocabulary in order to go more in-depth when analyzing improvisation-based music?

I have mentioned *ma*, the combined entity of two opposites, like inside/outside, function/non-function, solids/cavity. Bringing this conception into my terminology of music has been interesting. Yet, I've also learned that when one uses the same word to describe something in architecture and music, one doesn't necessarily mean the same. The terminology can have different content. I can use the term *articulation* as an example. What does it mean in music,

and what does it mean in architecture? When talking about speech, articulation is the formation of clear and distinct sounds and in music it is clarity in the production of successive notes. On a general level one can say that articulation is about being clear, distinct and polished. One of the most famous examples of highly articulated architecture is the Seagram Building on Manhattan by Ludwig Mies van der Rohe, and in particular the corner details of the building are often used as a reference. One of his characteristic traits was to express or articulate the structure of buildings externally, and by making these structures visible he would actually achieve a formal decorative articulation, and more honestly converse with the public than any system of applied ornamentation (unknown, 2008). What is articulation in music? What first comes to mind are the Italian expressions still used in Western music tradition like staccato, marcato, legato, sforzando and so on. This terminology is saying something about how the notes of a piece should be played. We could also include dynamics when we talk about articulation in music. There is a strong connection between the two terms in music. Dynamic architecture on the other hand gives more associations to flexibility and movement.

I am introducing three approaches to architecture in the method chapter. How can these approaches be rediscovered in my cases? First of all, the sensuous, theoretical and spatial approaches are combined in all of the cases. The processes of gaining architectural knowledge and creating new music have constantly intertwined. Yet, I will briefly go through each of the three approaches separately.

Taking a sensuous approach to architecture

For an architect, it is an advantage to have a great awareness for material and space. Awareness is related to openness, and in this context, awareness is directly linked to what we call sensuous knowledge. I have tried to explore architecture using my sensuous knowledge as a fundament. Could I even say that I with a synesthetic approach make music based on architectural experiences? In case 1 it is quite clear that I am taking this approach. Improvising demands a different kind of tempo in thinking. The musical choices that are being made have to happen much faster than is the case with composition. As an improviser one has to trust the choices one makes in the moment. Hyperawareness is a term sometimes used to describe important qualities of an improviser. For example, the dancer Susan Leigh Foster is writing about this in relation between immediate action and overall shape, between that which is about to take place and that which has and will take place (Foster, 2003). The term is also problematized by Gary Peters as a strategy that can have both positive and negative outcome. Although the

hypersensitivity he is writing about might have more to do with a social relation between players.

Improvisations that in their profound concern and care for the other open up a performative space that is attentive to, responsive to, and, above all, supportive of the mark-making project of the other. At its best, such a pursuit can produce improvisations of great sensitivity and delicacy where every mark is considered, every interjection is carefully weighed and weighted(...)at its worst, there can be witnessed what might be described as an escalation of sensitivity where virtually every mark interferes with or intrudes into the marked space of the other.(Peters, 2009)

In case 3 the visual appearance of the tatami score might influence the way I play the pitches. A fellow student asked me how I decided the rhythmic structure of the piece, or the absence of rhythm. Could it be because of associations to the tranquility and solemnity I have experienced myself in Japanese tearooms? I think that the visual appearance of the score have an impact on the final performance. In case 4 I could have shown the musicians the whole score (fig. 7, chapter 2), but by separating each square and distributing them in the space (fig. 8, chapter 2) I believe that they will play the music differently. Also, I could have written thorough instructions on each card, but deliberately I will not do that, so that each musician can trust their own senses. I can admit that my musical preferences are often slow and transparent atmospheres. By deconstructing my score, and even removing large parts of it I hope to achieve this openness even without instructions.

How to take a theoretical approach on architecture

Case 2 – Le Modular is clearly the part of this thesis where the theoretical approach is most visible. The modular system of Le Corbusier, as well as the two and three-dimensional play in Xenakis' scores and buildings, served as main inspirations when starting the work on this project. Case 3 – First room is also theoretical in a sense. The way I work with ratios in this piece could easily be applied to architecture, but in my case the ratio theories came from my background with just intonation. Having in particular Case 2 in mind, what I found challenging with this approach was to go beyond the theory and create music that sounded like my music. The Corbusier-Xenakis collaboration is probably the most widespread in the world of music and architecture and in a way too obvious a choice. I could also have asked the question, *what is architectural theory?* By answering that question, I would have widened the scope of this approach. The theories of Le Corbusier that I used was closely related to proportions and

mathematics. Other architects, especially after Corbusier have focused on other theoretical fields. The architectural theory of Peter Eisenman and Bernard Tschumi was highly influenced by the philosophy of Jacques Derrida. These deconstructivist theories are opposed by Christopher Alexander and his rigid pattern language. In contemporary architecture we have theoretical movements in the direction of digital architecture and ecological architecture, to name only a few.

How to take the spatial approach

I opened this thesis with a quote from Christian Nordberg-Schulz essay “Frozen Music”. He writes about how music and architecture have the capacity of surrounding us. In both artforms we, as receivers, are *inside* the work. We are never standing in front of a piece of music, or even in front of a façade. Totality is a key word. He even writes that music and architecture are performing *the whole world that we are in*. Despite this rather pompous sentence, it is clear that he claims that music and architecture have this ability in common.

In particular for case 2 and 3, I found it essential to define a space different from the traditional frontal view, with musicians on stage, and audience as the fourth wall. In case 4 I am following this idea even more. Nordberg-Schulz is not alone among architects, when he is talking about totality. Swiss architect Peter Zumthor is writing about architecture in much of the same way. His observations contain so many details. In one of his books he is observing life on a busy square in Italy. Each detail might not seem important, but in the end, he concludes:

So, what moved me? Everything. The things themselves, the people, the air, noises, sound, colors, material presences, textures, forms too - for I can appreciate. Forms I can try to decipher. Forms I find beautiful. What else moved me? My mood, my feelings, the sense of expectation that filled me while I was sitting there.(Zumthor, 2006)

In my words, to achieve a sublime art experience, the total experience is what counts. Trying to follow this logic also when making music is essential. Everything is of importance. The notes I've written, the space between them, the instruments I've chosen, the musicians I've picked and their individual choices. But also, the stage layout, lighting situation and the nature of my audience is significant for the total experience of a musical performance.

What have I achieved?

Speaking from a musician's point of view I think that there is a potential for increasing our awareness of material and space through learning from architecture. In some of the texts I have

referred to, I have noticed that some architects have the ability to zoom into a material or a specific field of interest. This ability is not unique for architects, but still, I would say that by reading some of the texts that are digging deeper into a material or a phenomenon for example by zooming into a tree stem, or by focusing on how daylight could affect architecture, has led to a creative process that has been of significance in my project.

How has my thinking about overall form in composition and improvisation changed through this program? Again I want to pinpoint that the improvising and composing processes are often mixed up, and I am often experiencing that if I spend time with a technical issue or working with a specific type of material over a longer period, as is the case with microtonality in *Microtub* and with electronics in *Muddersten* and *Verdensteatret*, it will influence the way I am improvising and composing. Following this logic, it is clear that my investigation in architecture already starts to shape my music. Long before I started the master program, I have been using form elements as variation and contrast, coloring and pauses in my improvisations. With the new knowledge I have widened my understanding of these form-shaping concepts.

Towards the end of this project I have been thinking about how the four cases are connected. In every case, I am, at some point in a situation where I am leaving the architectural idea behind and start to focus on musical questions instead. I am asking myself if an increased architectural knowledge will lead to an even stronger connection, where the architectural and musical logic processes can follow each other even longer towards the final goal?

Further research

Within the scope of this master program I soon realized that I had to focus on only a few projects and a few approaches. If the resources were larger and the time frame longer, I would have loved to invite an architect into my project. This could hopefully have led to a flow of knowledge between me and the architect. It would also have been interesting to see what kind of ideas an architect would get when being exposed to my music. I also think it would have been fruitful to observe a team of architects working on a project. The Norwegian world-famous architect office *Snøhetta* is one good example of a modern architect office that has a philosophy that highlights the importance of teamwork and collaboration. What could I as a composer, improviser and performer learn from the way they are developing new projects? Could they be interested in my thoughts, coming from music, on architecture? Or even, would they find

anything of value in my music or in my thoughts about music as well as my thoughts on the relation between music and architecture? Snøhetta writes on their website:

“We have a long history of collaborating with the arts from the earliest conceptual phases of the design. We are continuously inspired by the unique perspective artists bring to our work and find these cross-collaborations push both architecture and art towards new expressions and content.”
(www.snohetta.com)

Today, architect companies very often develop their projects in a team with other architects and people from other departments. Engineers, designers and carpenters are working together with the architects from very early in the process. Just like many composers today also are developing their music in close dialogue with musicians, artists and curators. If we look at the Norwegian Art Council’s new guidelines for commissioned works, we can recognize this trend here as well. Where until 2018 the whole commission would go to the composer of the work, we are today enhanced to share the commission money between the whole team of artists.¹⁴

This new way of organizing the commission work support is encouraging collaborations between art forms as well as recognizing collaboration as an essential compositional tool. In context of my experience of doing this master project, I now think that there is a great potential for a flow of knowledge and collaborations between music and architecture in the future.

¹⁴ <https://www.kulturradet.no/stotteordning/-/vis/bestillingsverk-og-produksjonsstotte-musikk>

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