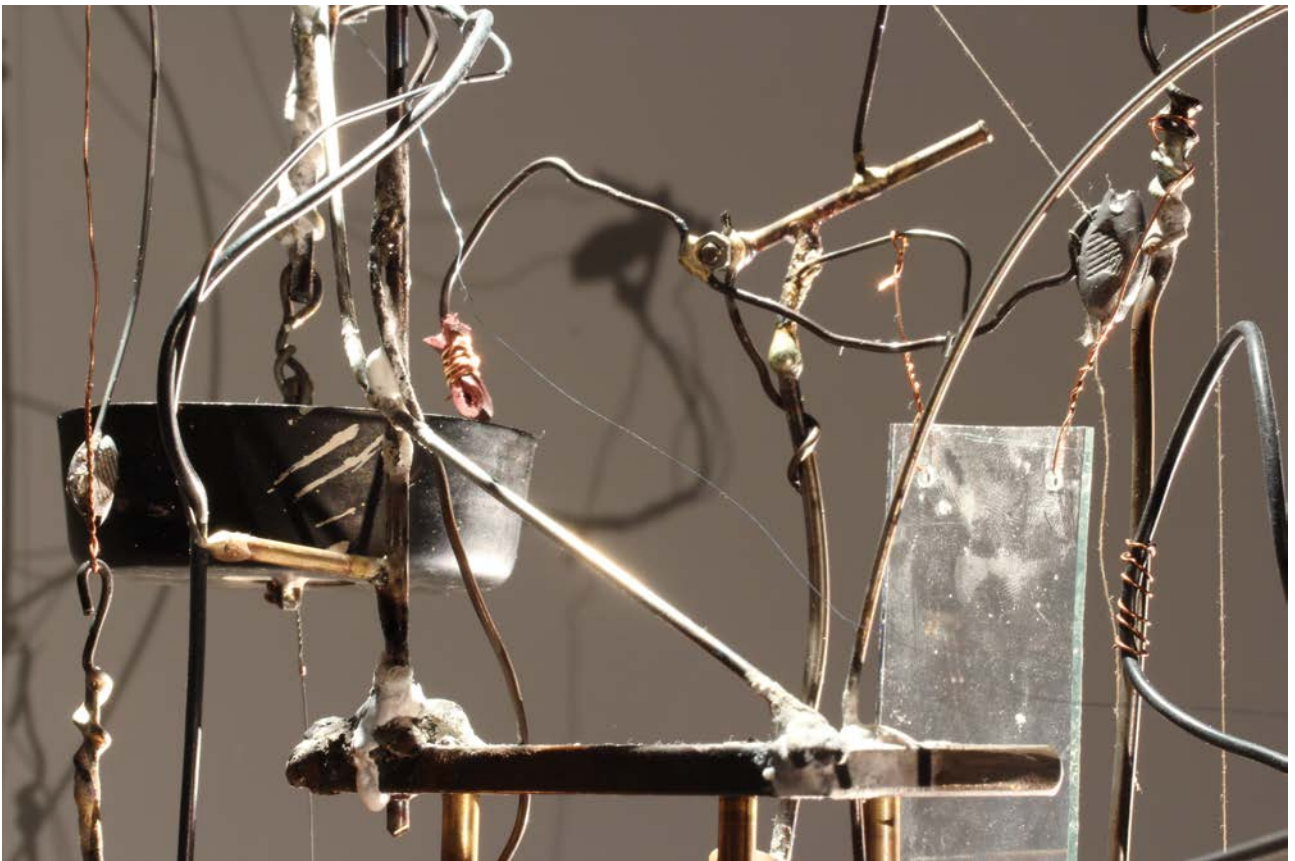


Organized Time

Strategies for transmedial composition



Christian Blom 2017

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Introduction

I consider a work's poetic potential to be whatever room there is left in a work for my imagination. By room, I mean whatever conclusions are not yet drawn, connections not yet made or associations not yet followed. In these rooms I can weave within the work from available threads. I can add and subtract in hindsight. If it is sparse and suggestive, I find room, I can complete. If it is dense and confusing I can contribute by creating order.

For many years I was a part of a performance group called *Verdensteatret*. We made large scale performances and installations. They were often dense with information. Speech, movements, video, lights, sounds and music, all utilizing their full scales at once, fast to slow, loud to soft, bright to dark and so forth. This meant that we had many situations where the amount of information was overwhelming. Anyone attending would have to make choices of where to focus and what to follow. I recall sitting in rehearsal for the work *Louder* (Verdensteatret 2007) thinking: *Isn't that sound finishing off Marius' movement? They are both coming to a halt after finishing a similar arch through the room. And the sound continues ten seconds after Marius has stopped. They start together but finish separately. A connection appears as they separate. The connection is clear for the ten seconds between when Marius is finished, and the sound finishes in a similar manner as Marius did. Nothing else enters and connects more strongly to either and their initial connection is strong since they start out as if in unison.* I didn't think all this then, it's only now that I can put words to it. After all *things are indications before they become phenomena* (Bachelard 1958, 176).

This points to a very interesting beauty, the kind that transforms an experience in hindsight. Where a thing or happening turns beautiful in memory. The light of memory cast in a particular way can bring out qualities that were hidden in our presence. What we access is a blend of the initial experience and our imagination. To remember is partly to imagine.

I imagine that what I had seen was a glimpse, a very short glimpse of a connection between movement and sound, where they were parts of a common structure of time. Not appearing in parallel as in dance and music, rather as a third something that could only exist between them.

This glimpse and my imaginative memory is the basis for *organized time*. Through this research project I have tried to recreate this glimpse, to isolate it and force it to show itself. It has been a hunt. I started fiddling about, juxtaposing things and hoping for a dialectic miracle and as things became more clear I increased precision and gradually formulated a strategy for transmedial composition.

Research questions

At the beginning I had two research questions that I wanted to circle in on. Here is a short rendition of the questions and my findings.

Research question #1

Which qualities, in an element, can be accentuated to discover the element's potential for connections and kinship in a temporal composition?

In simpler terms, what can I accentuate in sound that will make it connect more easily to movement or light? Temporality was already mentioned in my application. I assumed there would be more qualities to find. My first observation was degrees of intensity, the intensity with which elements fill and shape time. My second observation was that an element's potential for connection increases if it appears as somewhat incomplete, being a good building block involves being a singular or incomplete entity, rather than compound or complex. Another observation is that it is good if an element can be fairly abstract. Any kind of obvious emblematic function or strong relation to an *outside* world will threaten potential connections *inside* a work. And, the connections I have looked for are frail, they only appear in glimpses here and there.

My findings, the aspects upon which other composer can build can be found in *Basic structures of time and intensity*, *Good building blocks*, *Good connections* and *A strategy for transmedial composition*. There is also a condensed text on these findings in *Knowledge*.

Research question #2

Which qualities, in a composition, are accentuated by exposing it at different sites?

By sites I was referring to the gallery space, concert space, the video format, the sound recording and so forth. The question pertains to transmedial as translation from one medium to another. So, what I might have written was *spaces and media*. What I have found along these lines is the awareness that translation involves reshaping and that this can be used to my advantage. To put an installation out as a sound recording or a video, can be to create a new work. *Spaces and media* would also have covered what happens to a work when it is transferred from a performing machine to a performing human? I have done this in *Lyrical Pieces*, *Bring Me That Horizon* and *Transmedial Studies*. In hindsight this shift is an important change in my artistic practice over recent years. I have also found that there is an apparent powerbalance between a space and a work, a space can swallow my work if I am not careful about how I use the space.

My reflections on research question #2 can mainly be found in the texts:

Bring me that horizon, surrounding works and translation
Institutions spaces and their questions
Ideal spaces
Darkness can substitute solitude

Light and darkness

A condensed version of my findings pertaining to this question can be found in the texts under *Knowledge*.

Other questions

Another question I might have asked is: *How are my works brought forth by chance operations distinctly different from my works brought forth through intuition?*

I have tried both during my research period. I didn't set out to map this area. Still, this shift in my way of working is important to me and I assume commenting this shift will also cast light on issues with direct connection with the research questions. This shift is mainly reflected on in *Bring Me That Horizon, Surrounding Works and Translation*.

The final discussion I have included is, *Is It Music?* I did not set out to answer this question either, frankly I don't think that would be possible. Nevertheless, the question comes up wherever I show my work. As a consequence I take this opportunity to look at different ideas of music, including my own.

Digressions

A research question is not an isolated instance, nor is an artwork. So I offer *Digressions* as a loosely knit collection to shed light on my way of thinking and working. This, along with the surrounding works, creates a context for my findings.

The texts that I present have been written over a period of 15 months. Some of the notes that they are built from are several years older. As a result I circle around many of the same topics, repeating myself but from a different perspective. The long period and different situations of writing is also reflected in my mix of past and present tense in the texts. Some texts were written during the making of the art, others have surfaced later.

When I refer to an audience or a spectator this is only to the best of my knowledge. I do not know what they are thinking. I study audience behavior and talk to them as much as I can. I also use my own experiences. I evaluate my work partially from an audience point of view when others, or my machines, perform them.

Particularly technical descriptions and anecdotes are placed in boxes like this.

Works

Central works

- 2013 The Singer
- 2013 On Speed
- 2016 Stick, String and Light
- 2016 Transmedial Studies
- 2016 Bring Me That Horizon

Surrounding works

- 2011 al Khowarizmis Mekaniske Orkester
- 2013 Lyrical Pieces
- 2015 Weak Questions Strong Music, hats off to Burrows and Ritsema

The text assumes that the reader is familiar with the works listed above. The central works are those that pertain directly to my research questions, whereas the surrounding works are included to cast light on my practice as an artist and provide context for the central works. They are all referred to on some level in the text. I should mention especially that I have decided to include *al Khowarizmis Mekaniske Orkester* even though it predates my research project and should not be evaluated as artistic output. I include it because it is central to understanding a longer line in the developing of my ideas and I've used it as a music machine for composing on *Bring Me That Horizon*.

Literature

Throughout my period as a research fellow I have finally been allowed to turn off the freelance engine, stop jumping from project to project and read. Although reflection on artistic practice, as it is required in artistic research, does not require a scientific standardized text, I wish to mention the literature I have read. Research is a communal effort and my ideas do not come out of a void.

My use of literature is that of fuel for the fire. I read psychology, fiction, philosophy, music theory or manuals for technical gear. I am looking for the spark that sets my mind in motion. I do not refer to literature with any idea of having understood the depth of their impact in any other sense than their impact on me and my art. My context is art and this is where my contribution lies. In some instances, a text can give a new insight that makes me see things I didn't see before. Gaston Bachelard's *The Poetics of Space* was crucial for my understanding of my instruments and their interaction with the spaces in which I tried them out. Bachelard has also influenced my constructions and how I create spaces in my things. His sentence: *There will always be more things in a closed, than in an open, box* (Bachelard 1954, 88) is perhaps the most important sentence I can remember reading. In other instances, a text can support something I suspected; this adds weight and confidence to my ideas. The apparent relation that I experience between degrees of intensities in sound, movement and light are described in Daniel Kahnemans *Thinking*,

Fast and Slow as mental association. Kahneman points to David Hume who described three principles. Similarity, proximity in time and space, and causality are different ways of grouping things. I found this illuminating, the connection between sound and movement is an association that takes place because they can be similar. Movement, light and sound can express time and intensity in a similar manner.

I borrowed tone and style from Morton Feldmans *Give My Regards to Eighth Street*. Although I lack his sharp tongue and immense knowledge, he showed me how a composer can be personal and direct in conveying a project.

An important aspect of researching the arts and their transmedial connections is to question the order of things. Michel Foucaults *The Order of Things* showed me how our underlying ontology, and with it what is acceptable in a discourse, changes through history. This book really made it possible to see how artform, medium and technique can be taken apart and combined on different levels. This is a fundamental understanding for my research into transmedial composition.

I initially used the term media in reference to artistic media. My assessment committee, Morten Riis, Karmenlara Ely and Peter Ablinger, asked that I also consider a wider understanding of the term media. I am grateful for this. Although I have only scratched the surface of the perspectives from Friedrich Kittler, Marshall McLuhan and Wolfgang Ernst, their concepts illuminate my work, and I use them throughout the text. They are not used as a theoretical mesh through which to read everything, after all these perspectives were added at a very late stage in my process. Rather, the concepts are used where they bring a new understanding to the artistic work.

My initial text had no references other than in the main text. I have opted to change this. By bringing in the perspectives of McLuhan, Kittler and Ernst I had to reference their work and therefore it seemed necessary to also tie the rest of my text more closely to an origin of thought. I have referenced to the best of my knowledge knowing very well that my contribution is but a shoot on the deeply rooted tree of composition.

Time and media

Time

The time that I speak of in the title of this project is recognized by gradual change, available to our senses and our memory. It is the subjective flexible time. This time slows down if you watch a bird in flight from a distance and it speeds up if you sit between its feathers on its back. It is relative to our senses, our perspective, our position in space and the speed with which we move through space. And, it is the common element that both structures and is structured by movement, sound and light. This time is also the common denominator in which movement, sound and light can be organized. Henceforth the title for this project is a hats off to Varèse and his definition of music as *organized sound*.

Media

In trying to understand different ways of using the term media I reached out to the professor of media theory at the Humboldt University, Prof. Dr. Wolfgang Ernst. It seemed to me that with McLuhans *extensions of man*, extended to include *roads and paper routes* (McLuhan 1964, 97), the term medium was getting a bit too expansive for me to handle. Ernst was kind enough to reply to my email with the following:

I will always argue in favor of a more precise term of media which is technological media.

(Ernst 2016a)

Which is what I will use. And for my purpose I must also include artistic media. For if I sing I am not the technological medium that a music machine is. I am a body and I can use sound as an artistic medium. The equivalent to oil on canvas could be sound on silence.

The artistic media I speak of with reference to transmedial composition are sound, light and movement. The technological media are my computers, my welder, pen and paper, music machines and recorded music. The definitions are in touch in that the technological media produce the artistic media, the machine moves and produces the movement. But I too move, and I am not a technological medium. For this reason the text reflects two understandings of media.

As a consequence my terminology is subject to context, there is no final definition here, I can only hope to be clear. I speak of medium, instrument, instrumental quality and machines depending on the point I am trying to make. The stick in *Stick, String and Light Bulb* is a technological medium when it mediates basic structure of time and intensity, to me it is also an instrument in this little ensemble, it is instrumental in the sense that it serves a particular function fairly well still it can also be seen as a machine or a sculpture. Whilst standing still it has a slight sculptural quality, in which case the artistic medium would be considered metal.

Content

Our conventional response to all media, namely that it is how they are used that counts, is the numb stance of the technological idiot. For the “content” of a medium is like the juicy piece of meat carried by the burglar to distract the watchdog of the mind.

(McLuhan 1964,19)

I admit to being a technological idiot at times, content is important to me. I write about medium and content in this text, even if *the “content” of any medium is always another medium* (McLuhan 1964, 8). In the case of *Bring Me That Horizon* one might say that the content of the recording is the music, and the content of the music is a translation from an installation, and the content of this installation are mechanical instruments connected to microcontrollers and a computer, there are seemingly layers upon layers of media in every direction. But, for practical purposes, whether I speak of it as content or a medium is a matter of perspective chosen and what the context demands.

Machine agency and human interpretation

Friedrich Kittler argues that media deliver structures and formats that determine what and how one can think, technological solutions are the premises for culture, *media determine our situation* (Kittler 1986, 60). And indeed, digital media are prerequisites for my work and my work bears the mark of digital technology through the process and in the result. The degree and ease of deconstruction and reconstruction offered by digital media is evident in the *Little Bird of the Lyrical Pieces*. The jagged rhythms are a direct result of digital media and the techniques they offer. Had I done it with dice or intuition and magnetic tape it would have sounded differently.

I covet machine agency in so far as making things and performance goes, and then I put the human in the centre on the receiving end. I want the audience to contribute in the creative act as co – creative spectators, to realize the work as seen or heard by them.

All in all, the creative act is not performed by the artist alone; the spectator brings the work in contact with the external world by deciphering and interpreting its inner qualification and thus adds his contribution to the creative act.

(Duchamp 1957)

Two ways of transmediality

A cross section of wikipedia, etymonline and dictionary.com tells me that trans is a latin prefix and means something like across, beyond and through.

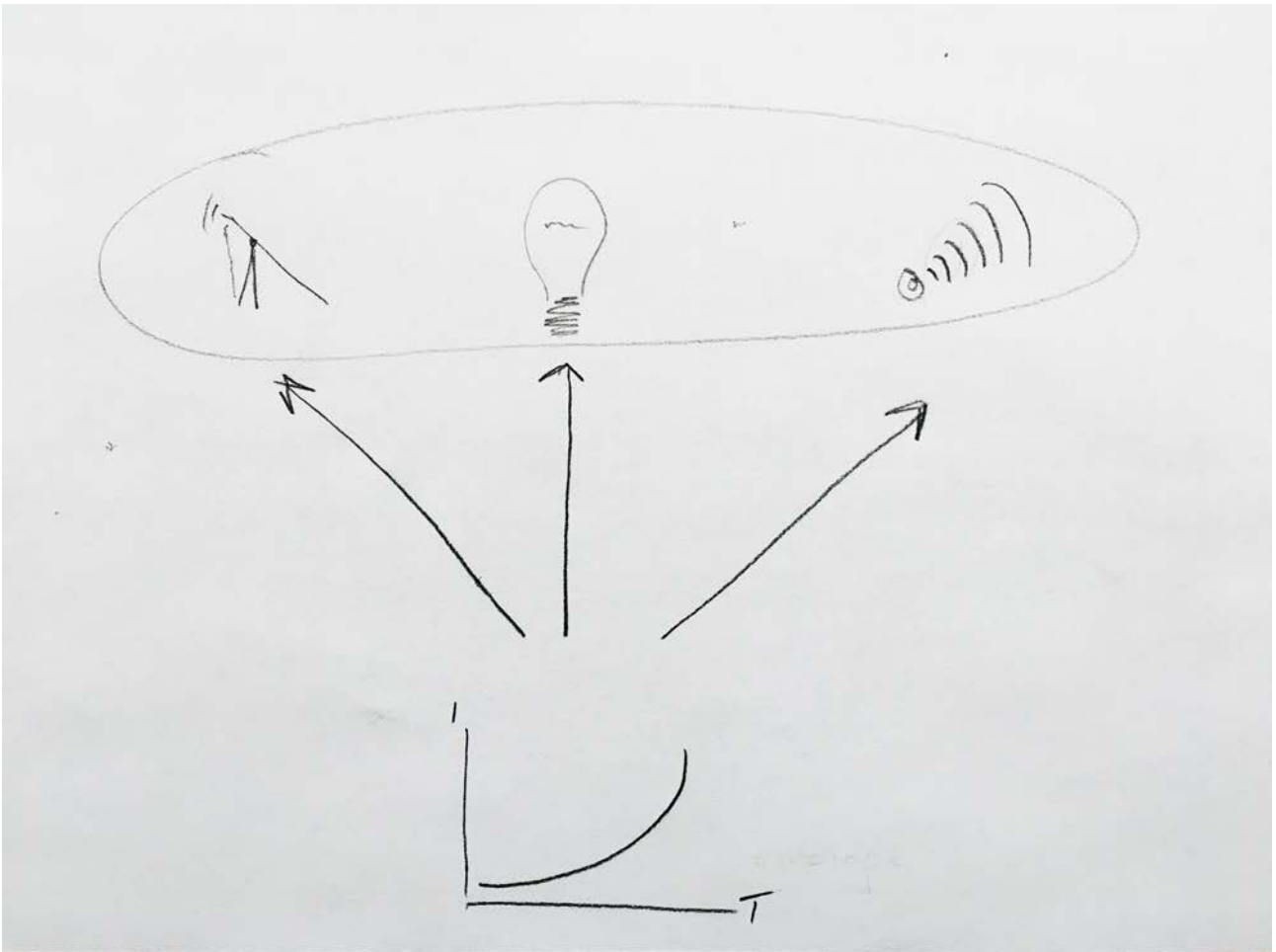


Figure 1. Two ways of transmediality (2016).

The drawing above displays two ways in which transmediality is understood in this text. At the bottom you see an envelope of time and intensity, something is moving from slow and low to fast and high. When this drawing is translated into sound, movement or light this is an instance of transmediality understood as a *translation from one medium to another*. Paper and led is translated into light.

The other way to read transmediality out of this drawing is as *transmedial composition*, to compose across media. In the oval at the top you see a stick, a light bulb and a sound source. A focus for his project has been to compose with these as my elements in a common structure, as in a musical piece, but with sound, light and movement instead of only sound, a transmedial composition.

The two ways of transmedia are entangled. As the project progressed I discovered that a seeming prerequisite for transmedial composition is adequate similarity between the media and that this can be obtained through attempted translation.

The term transmedial composition stems from professor Ivar Frounberg, my first supervisor. Frounberg was, at the time, directing the research area on transmedial and intermedial artistic research projects at the Arne Nordheim Centre at the Norwegian Academy of Music. Frounberg looked at the practices of mixed media and made two distinctions, intermedial and transmedial. Intermedial is the situation in a ballet, where two or more complete specific structures work in parallel. You could take out the music and the choreography would still stand on its own. You could also take out the choreography and the music would still stand on its own. Transmedial is a situation where the media connect across their boundaries in a common structure. The distinction was clarifying for me, and the challenge of the transmedial composition was exciting. I realized when I heard the term that I had seen and heard this occur, hence my reference to the rehearsal situation in *Verdensteatret* in the introduction. In my research I have tried to facilitate a situation where movement, sound and light are co-dependent to *make sense*. I aim for a structure from which you cannot extract a set of sounds, movements or lights and have a complete structure that stands on its own. I myself do not use the term intermedial.

Translation is problematic

When I google transmedia the top hits are concerning transmedia storytelling. This is a recent practice where a concept such as Disney's *Sofia the first* is a fantasy world presented through movies, colouring books, lego, dolls, games and so forth. Transmedia storytelling is *the technique of telling a single story or story experience across multiple platforms and formats...* (Transmedial storytelling 2016). *Practitioners conceive and design a fictional world to be expressed across distinct media and environments* (Dena 2009, i). A concept is conceived to be suitable as a transmedial something, where each medium is deliberately used in whichever way it is thought to be used best.

In contrast to this practice I turn to Kittler and his view of the media and translation between these.

A medium is a medium is a medium. Therefore it cannot be translated. To transfer messages from one medium to another always involves reshaping them to conform to new standards and materials.

(Kittler 1986, 265)

I understand this in the sense that there can never be a perfect translation between media. Indeed, *every transposition is to a degree arbitrary, a manipulation* (Kittler 1986, 265). My work *Bring Me That Horizon* is a translation, almost an extraction, of the music from *al Khowarizmis Mekaniske Orkester* to a recording of its sonic side. Then, this is further translated to a sinfonietta ensemble and both versions are presented as streams, on CD and on Vinyl. The media are lining up in very explicit ways in this work. And, there is indeed a *manipulation* and a *conforming to new standards and materials*. The understanding of transmediality that is operative at this level in my project does not require a perfect translation, it requires a *good enough* translation and a concept that can utilize the necessary *manipulation* that is involved when it is realized across a fan of media.

This leads me to conclude that for my purposes transmediality, understood as translation, has degrees along a spectrum where the pure state, the perfect translation, is impossible. Rather, In my work I understand translation as a question of recognizing *the same* in a different medium, despite the differences between the media.

On transmedial composition

In the following three texts I present a very basic technique for transmedial composition, a result of my research that I offer for others to use or build upon.

Basic structures of time and intensity

In the process of researching, or really observing, what sound, the movement of an arm and the flash of a light had in common, I observed something that was not specific to a single medium; it was a shared trait, the ability to unfold in time and to shape that time through varying degrees of intensity. I observed basic structures of time and intensity. A basic structure of time and intensity can be realized with similar precision through light, sound and movement. I have divided them in two groups, simple and compound.

Simple

At first there is nothing.

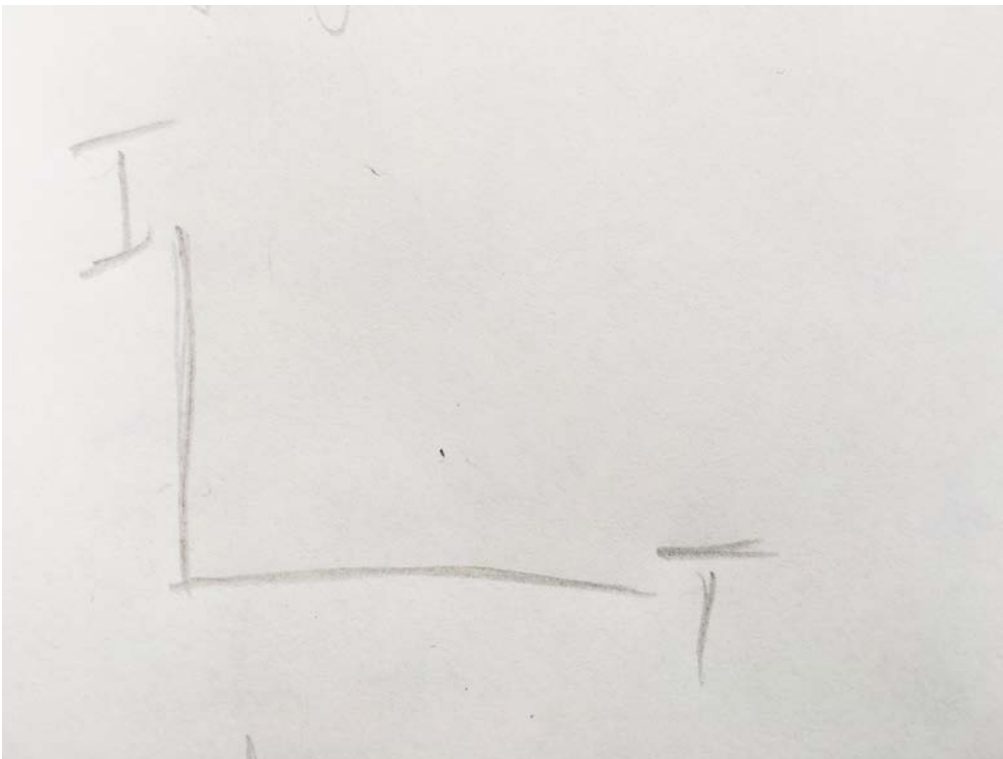


Figure 2.

Figure 2 shows T for time on the x axis and I for intensity on the y axis. Nothing is displayed. Nothing is present.

Then there is *something*.

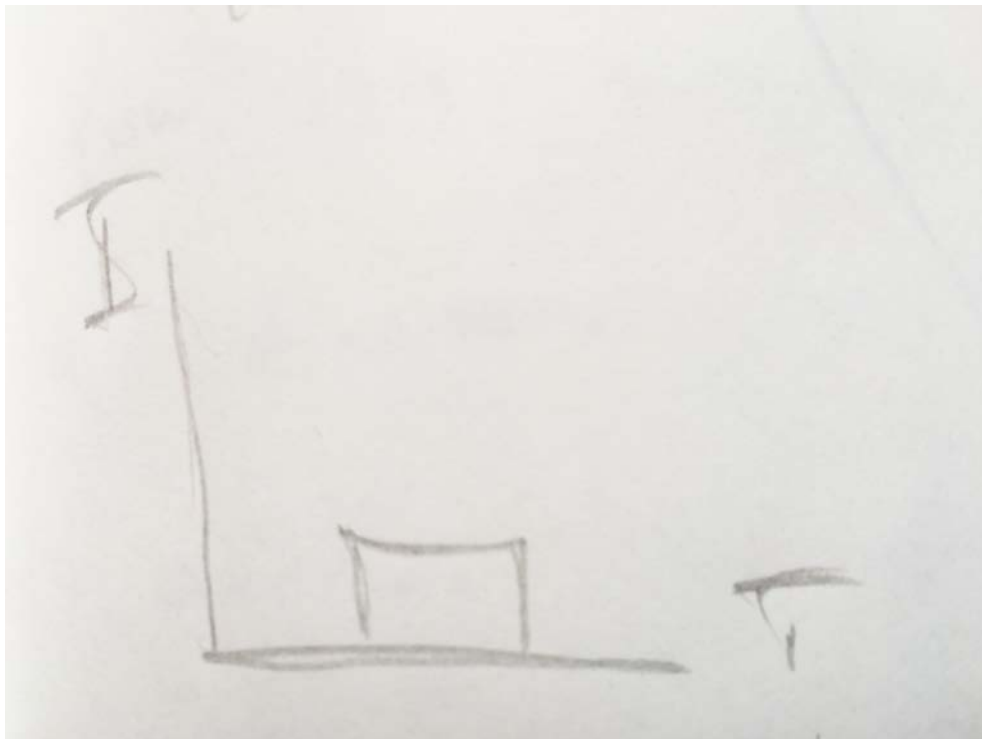


Figure 3.

The difference between *nothing* and *something* is a presence of *something*. The little square is *something*. This *something* has a duration in time and a degree of intensity. more being of higher intensity and less of lower intensity.

I am aware that for example softer sound can have a stronger intensity than louder sound. Also, quality of sound and circumstance has a great influence on intensity. But, for now, let's keep it simple for the sake of the argument. More is more and less is less.

Through *somethings* intensity, *something* has a form. I refer to this form as its *envelope*.

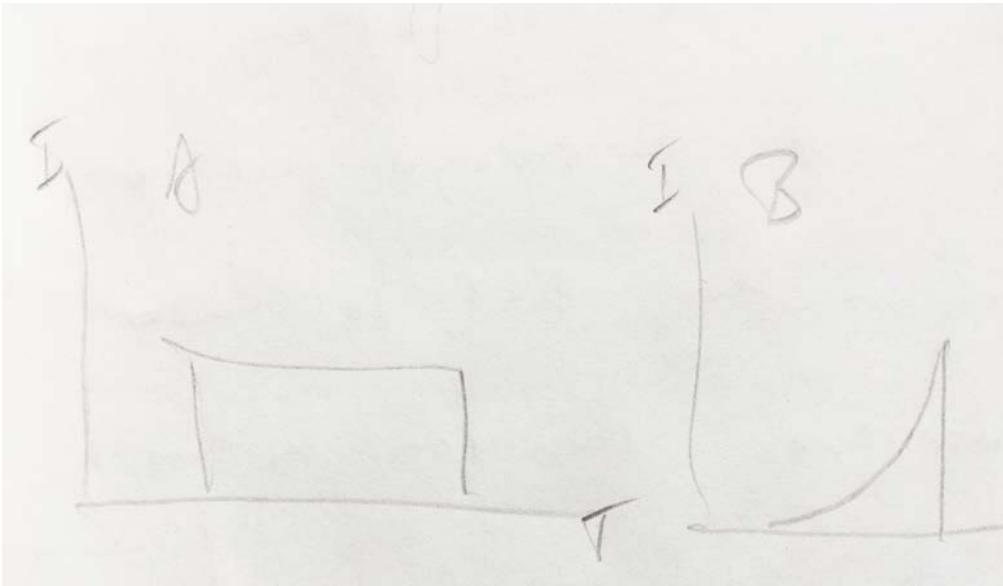


Figure 4.

In figure 4A the intensity is evenly distributed throughout the duration of *something*. In figure 4B there is an increase in intensity. It starts with very low intensity increasing slowly. Then it gradually increases intensity faster until it suddenly drops to nothing again.



Figure 5.

Figure 5A is a gradual rise and fall of intensity, it is equally applicable to light and movement. These *somethings* with their envelopes are what I call *simple* basic structures of time and intensity. They can be performed using light, sound or movement. These are building blocks for a transmedial composition.

Compound

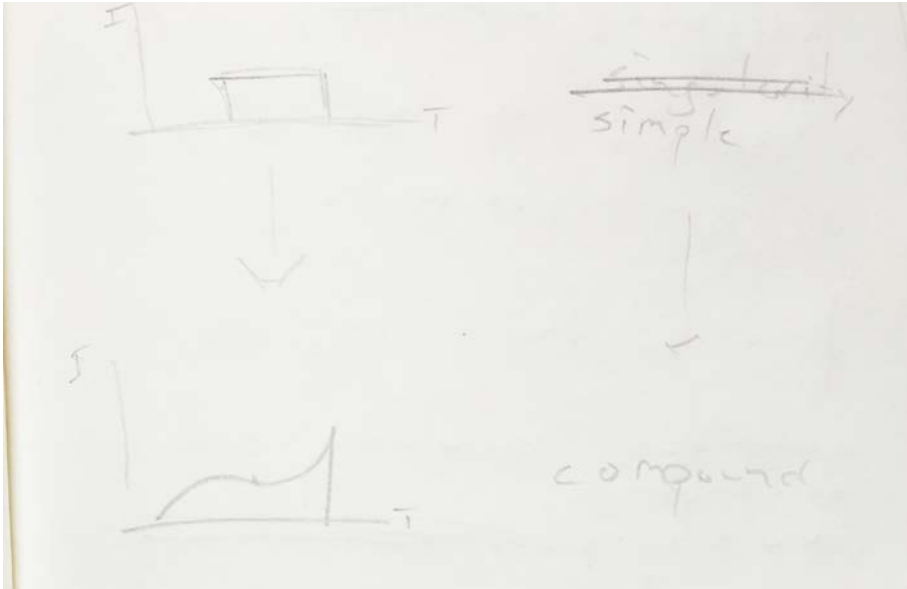


Figure 6.

The next level of basic structures, after the simple, is the compound. As seen in figure 6, this has a more composite character than the simple structure. The compound has the traits of indicating the simple structure and then adding something. It is more than simple, yet not complex.

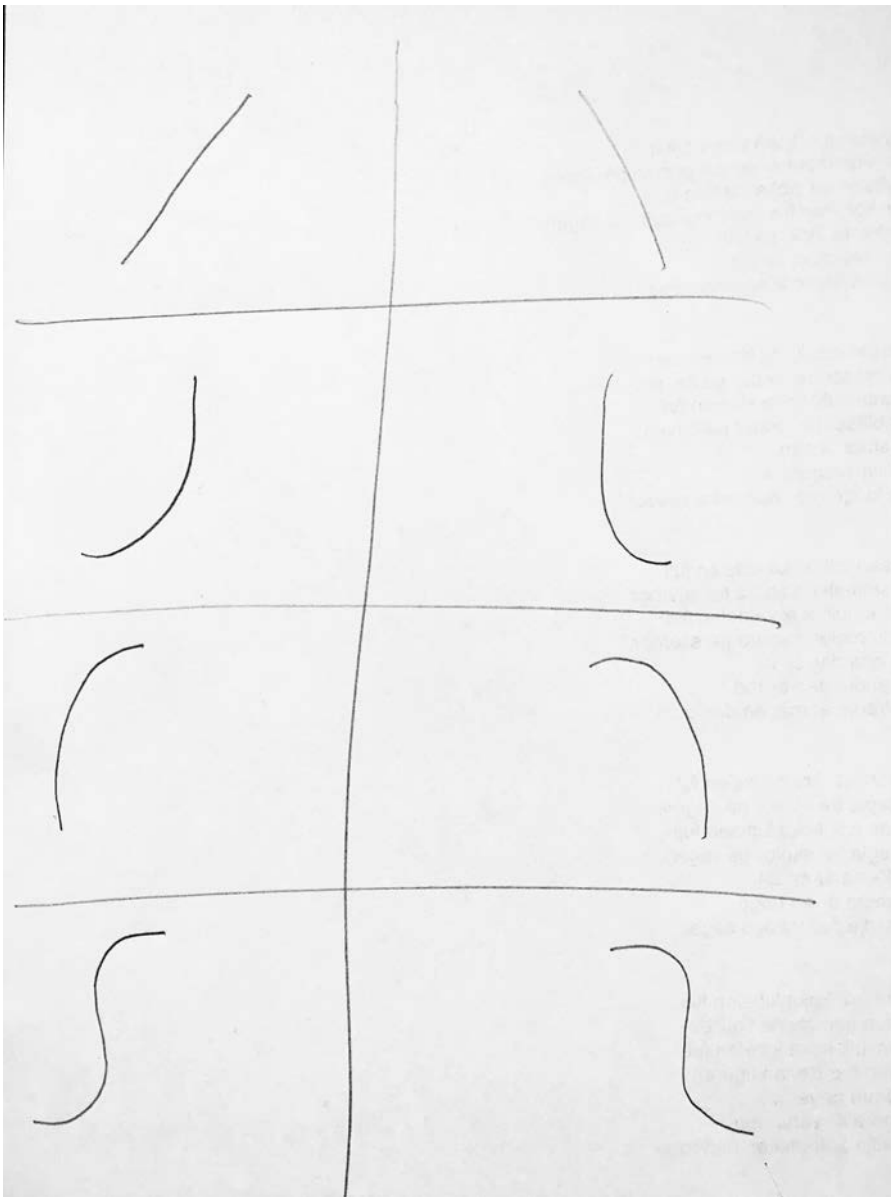


Figure 7.

In figure 7 I have drawn the basic structures that I have chosen to work with. There are three simple ones on the left and their counterparts on the right. I consider the pair at the bottom to be compound. I stretch and shrink both time and intensity, but basically I vary upon these.

To summarize for now

I have basic structures of time and intensity. These are simple or compound. A combination of these basic structures of time and intensity is a composition. To perform the composition, I need to choose media and translate it to them. If I translate it to sound I get a sonic composition, what I've learned to call a 'musical work'. If I translate it to movement I get a composition of movements, or 'dance'. If I translate the composition to light, I get something that doesn't have a name yet. Lights aren't commonly used as instruments in this fashion, although they could be. If I translate the composition to a combination of light, movement and sound I could get a composition that I want to name transmedial composition.

Single or blended basic structures

When I translate a basic structure to other media, I do so in a single or a blended way.

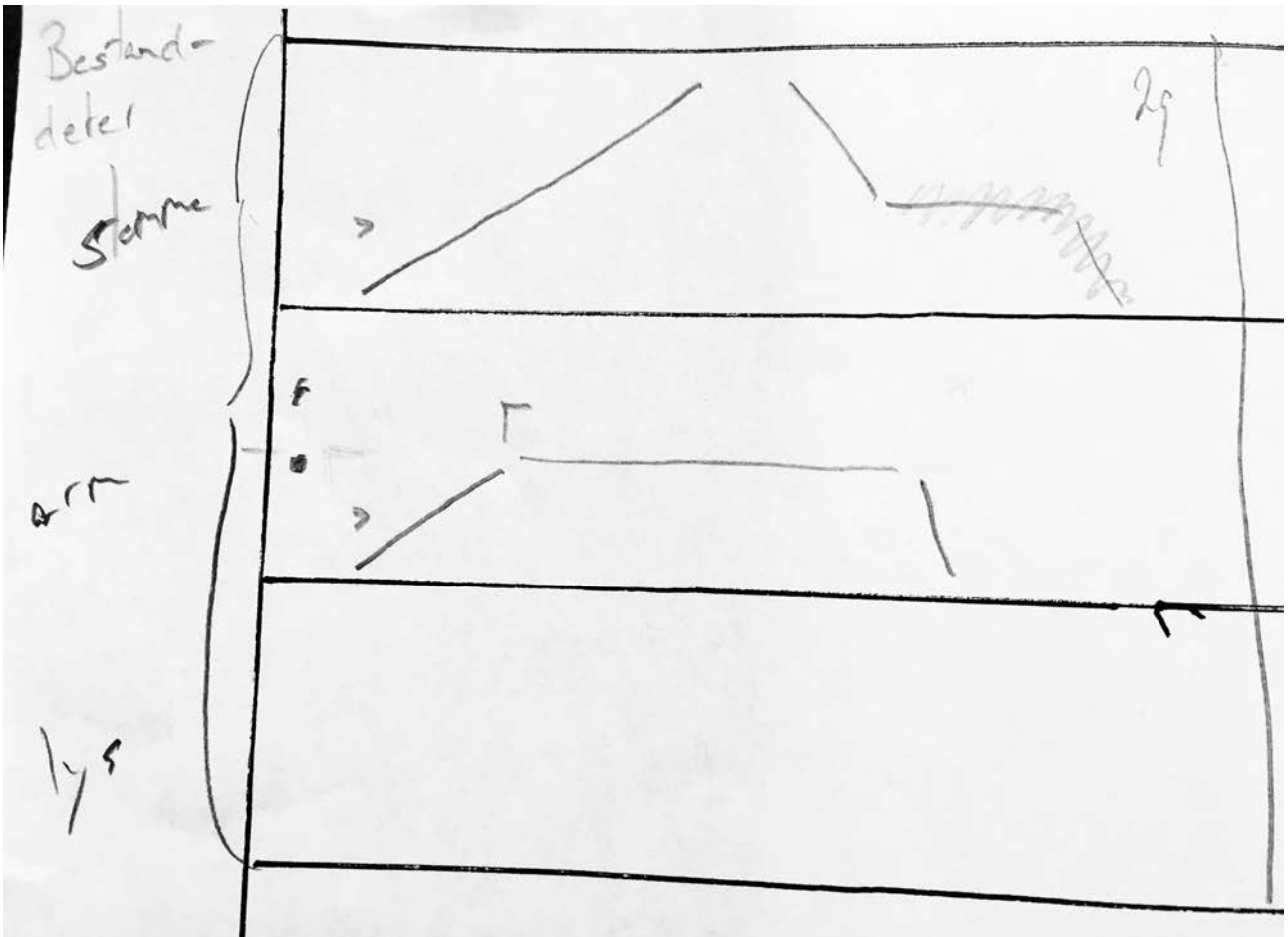


Figure 8. Detail from the score of *Bestanddeler (Parts)* (2015).

I translate the complete basic structure to one medium, the single, or to several media in a blended fashion. In figure 8 the line for my voice is at the top and the line for my arm is in the middle. This is an example of a blended way of performing two simple basic structures. A straight increase in intensity is started in unison, half way up, the arm stops and the voice continues. The voice starts diminishing in intensity alone, half way down there is a slight overlap with the arm, and then the arm finishes off the movement alone. The voice and the arm blend as they perform a simple basic structure.

To summarize again

I have basic structures of time and intensity. These are simple or compound. When I translate them to other media, I do so in a single or blended fashion. A combination of basic structures translated to a combination of single or blended media in a single work, is my transmedial composition.

Good building blocks

In order for basic structures to connect more easily in a transmedial composition, it helps if the bits and pieces appear as incomplete, as if in need of something outside of themselves for me to make sense of them. This is very literal. A single, seemingly unfinished gesture connects more easily with a sound than a compound gesture. Two simple, seemingly unfinished, basic structures of time and intensity, translated into different media, connect more easily than two compound structures of time and intensity. The compound structures have a tendency to appear as meaningful themselves, complete and sealed, so to speak.

It's also good if the objects or movements involved have weak emblematic qualities. If they are tied too strongly to the outside of the work, this tie might be stronger than their connections inside the work and the whole thing falls apart. I realize that all things have emblematic qualities and belong to some world of associations, it's just important to try and get the balance right.

Light, sound and movement

Light, sound and movement are very different to work with. To have them connect in a composition I have tried to understand their differences in order to make them more similar.

Sound has a highly developed harmonic and melodic language in addition to being what we use to speak with. I fear that getting near to any of these realms might tear sound apart from the movement and light. For this reason I need to put some distance between myself and *music as a heavily semanticized cultural art* (Ernst 2016b, 24). If I had used a guitar or a violin, their sound and appearance, would have recalled their history, repertoire and cultural status. To avoid this, to whichever extent I did, I have tried to introduce strangeness. The string instrument in *Stick, String and Light* is new to the world, it is a stranger, I only vaguely associate it with hundreds of years of music. I also used, almost exclusively, glissando, the tone gliding from one point to another rather than stepping through a scale of some sort. Scales have repertoire, historic eras and belong in specific geographical areas, in my mind glissando has less of this. Another thing I do is to set the scale of amplitude fairly low, I don't want sound to start reflecting off of surfaces in the room and mediate the room, I want focus on the source itself and what it was doing, not the quality of building - materials. There will always be a bit of this, the point is to minimize it to set focus.

I find electric light, in the form of a light bulb, to be simpler than sound, at least it does not have a repertoire. I find it quite efficient for mediating envelopes of time and intensity. I have differentiated between direct and indirect light. Indirect light draws the room or shows an object, it is reflected. Direct light is my instrumental use. I place the bulb in front of me, together with the other instruments and focus on the bulb itself rather than what its light reflects off of. There will always be a bit of this, again the point is to minimize it, to balance the direct light with the indirect light.

Light and sound share a trait in that they can vanish or appear at any intensity. I find that this makes them flexible for composition. An arm is stuck in presence and has to move

from any current position. The similarities and differences that I have found makes me group sound and light as more similar and flexible, movement is somehow the weaker link. As a result I have tried to make the light and sound imitate the arm, more than the other way around. The stick in *Stick, String and Light*, with the nitinol wire needing to cool down, takes forever to come down. This is closely described in the text on the work. For now it is enough to know that it dictates the slow tempo. The nitinol wire shows itself as a technology that delivers a structure and dictates *my* composition.

Size is also an important factor, they all have size and I have tried to balance them. This is not by way of weighing or measuring but by way of the subjective yardstick, association. I looked and listened and trimmed the length of the arm and its arch, the size of the string instrument and its amplitude, and the size of the lamp and its brightness. I found sizes that worked well on the table before me, but when I entered the big room for the final presentation at Sentralen, the balance was lost. The sound needed amplification and I put a piece of white tape at the tip of the arm to increase its visibility, however the light remained unchanged. The balance between the media is also a balance between the media, the room and the spectator. It must be re-evaluated for each site.

Good connections

Close proximity groups things, so I put my instruments on a table in the near vicinity of each other. When two things are juxtaposed in a way like this, where each influences the perception of the other, a connection seemingly exists between them. Connections vary in strength. Two tones played seemingly simultaneously have a very strong connection, they appear as one. The stick moving and the string played in *Stick, String and Light* is another connection, but this connection is somehow weaker. If done simultaneously their connection is obvious. Mickey Mousing, mimicry and mimesis are established terms. But, they are not one. If done with a distance, both in time and space I find that their connection rapidly weakens. Their connection then depends on the lack of other options for a connection.

If a tone and a movement are the only things that occur, I connect them. But, if there is a series of movements and a series of tones I find that sounds connect more easily with other sounds and movements connect more easily with other movements. In order for my transmedial composition to be realized, the sounds, movements and lights must have no other option but to connect with each other. Sound must be isolated from sound but open towards movement and light. The insulators are slow tempo and place in sequence.

My strategies for transmedial composition

For transmedial composition to work, the media should resemble each other. Adhering to a common set of basic structures helps this resemblance along. My basic structures of time and intensity are simple or compound. When I realize them in light, sound or movement, I do so in a single or blended fashion. A combination of basic structures translated to a combination of single or blended media in a single work, is my transmedial composition.

I combine the basic structures in patterns and create a seeming connectedness to a common structure. I use even rhythmical patterns, patterns that arise from my blending of media, repetition through variation to contrast, and apparent causality, the connection that appears when the light turns on in the same instance as the arm finishes.

In order for my transmedial composition to be realized, the sounds, movements and lights must have no other option but to connect with each other. They cannot be given room to form separate parallel structures. In addition to resemblance I regulate proximity to group things together. Sound must be isolated from sound but open towards movement and light. Light must be isolated from light, but open towards movement and sound. Similarly, movement must be isolated from movement, but open towards light and sound. The insulators I use are slow tempo and place in sequence.

Works

The Singer

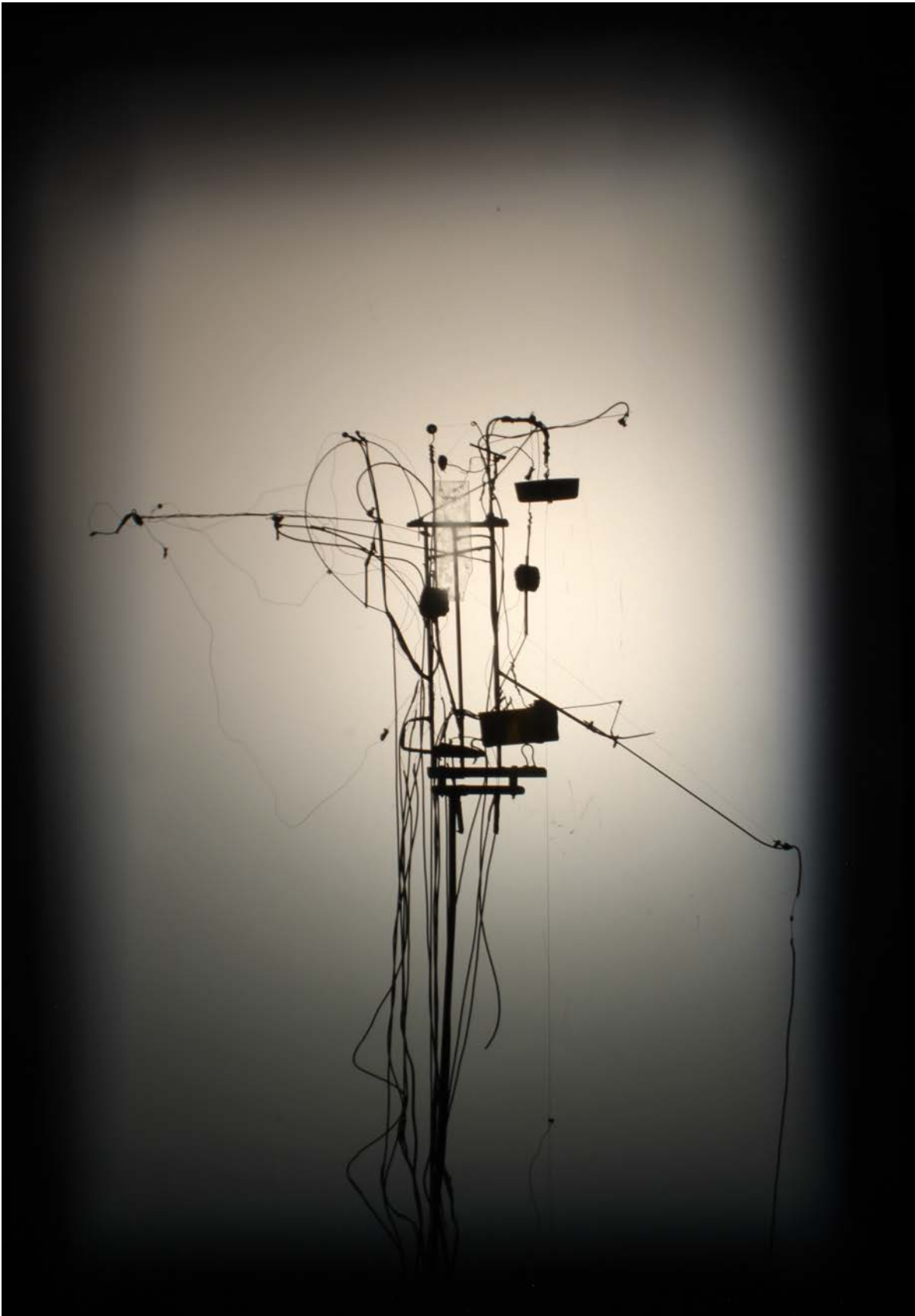


Figure 9. *The Singer* at Kunstnernes Hus during the Ultima Festival (2013).

In *The Singer* I wanted to isolate what I had observed at the rehearsal with *Verdensteatret*, the imaginative memory referenced in the introduction. I aimed for a situation where sound, light and movement were on more equal terms. I decided to limit myself to one bell, one light bulb and some dancing threads for movements. Its first name was *trio for dancing thread, light bulb and bell with damper*.

Then I started working in my usual manner and it grew out of control. Today, the thing is about 150cm tall. 110 of these are mainly a long foot and the main structure is placed on top. The main structure has two pieces of thick metal at the bottom about 3x7cm and 7mm thick. There is a space of 2cm between them, initially I made this space because I was building it on a table and I wanted it to hover a bit. Now, with the foot in place, it's just a space that's hidden until you bend down. From the upper of these two pieces of metal there are three copper pipes that run 30cm straight up into a similar piece of metal. Inside the pipes there are threaded metal rods. These are 3mm in diameter. The rods go through a hole on the metal pieces and are fitted with nuts on the other side. The three pipes are placed in a triangle with odd sides. Tightening the nuts presses the metal pieces against the copper pipes and makes the whole thing stiff. I think of this as a main structure with two floors.

A lot of other things branch out from this. On the right rod there is a 30° branch which runs right and up for about 4cm. On the top of it there is a joint. An arm of about 20cm is attached to this; it points to the right. Between the outer end of the arm and the main structure there are three very thin threads hanging. They have different lengths and are bent in different places. These are nitinol, or memory wires. The word Nitinol combines Niti – an alloy of Nickel Titanium – and nol – is an abbreviation of Naval Ordnance Laboratory. Nitinol is a piece of technology released from US army laboratories. It's really a crystal, not a wire, and it can be trained to remember structures. It comes in the form of wire on a spool.



Figure 10. Board for training nitinol wire (2013).

I made a little board with pieces of plaster spread around and a bolt in each end. I fasten the wire at one bolt, run it through the pieces of plaster to give it a structure with angles and fasten it at the other side. Then I mix acetylene with oxygen, this gives a flame of about 3000°C, and I heat it until I see the wire is almost red. I have to be fast, my flame is really too hot. When this is done I have changed the crystal structure of this alloy. When

the wire is chilled you can straighten it out. When it is heated to 70°C it will return to its newly trained shape. The idea was to have these as dancing threads. They were to move in and out of position just by the variation in temperature and I would control the temperature by running a current through them.

It doesn't quite work that way. They do not stretch when they cool down. They have to be stretched by some force. I attached an arm to do that. The idea was that the wires would do their magic, then the arm would stretch them out and this would repeat. I made the arm move with another piece of wire, this kind shrinks 5% when heated. It's referred to as flexinol, or muscle wire. Now, 5% contraction is not a lot. And, 5% is if you are lucky or know what you are doing, 3% is more accurate in my case. To raise the arm, I made a small angle up from the joint. The muscle wire is attached to this and it runs about 45cm from there to the tip of a rod that sticks out left and downwards from the main structure. The arm, the rod and the muscle between them are visible in figure 9.

I use a muscle wire with a 125µm diameter, that's 0.125mm, so it's really thin. I do this because it responds quickly to heat and also cools down fast. To increase strength, I run it three times between the fastening points. So far I haven't had to change it, so it seems to be properly dimensioned. The dancing threads were meant to be the moving parts; they still are, but the arm going up and down is the most noticeable. There is a shift in roles here. It is very indicative of how I work when I am process oriented rather than sticking with the plan. The mechanism that was supposed to *aid* the presence of the dancing threads took their place instead. The process introduced the necessity of the arm, and the arm then ended up being more present in the work than the threads that had been my originally planned focus.



Figure 11. Bottle as filter for light (2013).

At the lower part of the main structure there is a green glass cylinder. It is left slightly off center, lying horizontally with openings to the left and right. The cylinder is made from a small bottle and now functions as a filter for light. I had a good time making it. When I was a teenager I followed the recipe from Lillebjørns Store Gitarbok (Nilsen 1987, 155) on how to make bottlenecks for playing guitar. You dip some thread in alcohol and tie it around the bottle neck, set it on fire, once it has burnt out you pour ice-cold water on the bottle and crack, you have a neck, all you have to do is sand it down. I did the same thing here with a small bottle, only I kept the lower part of the bottle and made holes at each end. Inside there is a small 50 watt bulb. I used teak as an insulator for the wires that run to the

light bulb. I have a thing for wooden boats, so every now and then I find myself smuggling wood, sandpaper, oil and varnish into my workspace.



Figure 12. Bell with lead *mallet* in front (2012).

At the top left of the main structure there is a sort of gallows structure. The gallows has a black bell hanging upside down from it. This was the old doorbell from my previous apartment. Coincidentally NMH has the same type of bell as fire alarms in the offices of the old building, or *first house* as they call it. The bell is struck by a piece of lead attached to a thin pin, which in turn is attached to a ring on a 3mm ball - bearing. The ball - bearing's inner ring is stuck to a short rod that comes horizontally out from the gallows. The outer ring is moved by a metal rod, attached by hoops of thin wire, which is pulled down by a solenoid, a kind of electro-magnet. This is the golden coil in figure 12. At the core there is a 4cm piece of copper pipe and around it there are 400 windings of .6mm lacquered copper wire. This turns into a magnet when you apply a current and it pulls ferrous metals to its center. What I do is hang the metal rod slightly into the copper center, then turn on 5 amps at 12 volts for 50 milliseconds. That is just enough to pull the metal rod to the center and let go in time for it to fly through a little further. This yanks the wire that is connected to the outer ring of the ball - bearing, which in turn makes the thin pin and lead on the other side strike the bell. At the back there is a similar mechanical part with a piece of leather attached at the end, this touches the inside of the bell and holds for a while, serving as a damper. As it turned out, the damper makes about as much noise as the mallet so it's less of a damper and more of a soft mallet.

As I pointed out in the beginning of this text, this project started out as a neat little plan to make a *trio for dancing thread, light bulb and bell with damper*. Then it got out of hand and just grew. I made it early in my research project and my way of working *process-oriented* was still very integrated in me, I was used to fiddling around with stuff until something falls into place and starts talking to me. I remember thinking, *ah what the h....*, and then I threw away the research questions, drawings and plans, and instead started to add and subtract, mostly add, at will.



Figure 13. Shadow from glass plate (2013).

One of the things I really like about *The Singer* is a small piece of glass that I let hang from a part of the damper. I was working on a glass cube for the ice crystal project, learning to cut glass, when, for some reason I put a little piece of glass into *The Singer*. By that time, I had the diffusion filter and a lamp up, and the shadow from the glass was amazing (figure 13). When the light is off, the glass piece is hard to see, even with light on it's hard to see, but the shadow it casts is highly visible as a rectangle of a different quality light with spots from dirt in it. With the shadow from the glass the backside of the diffusion filter took a step in the direction of being something slightly other than just the shadow cast from lighting the figure in front. Employing light to shine through dirty glass effectively lent a separate identity to the two dimensional shadow, I had to keep it. The best place for it was where the damper was placed, so whenever the bell is dampened there is a slight *clang* from the glass. I have a rule of thumb whenever I am not sure if I like something. I leave it in place for a week, if I still don't like it it's out, if I get used to it, it's in. It's a good rule when working

in a process oriented way. It gives the odd bits the benefit of the doubt and facilitates diversity and unexpected directions in a work. In short, it adds the kind of richness that you can't plan. Incidentally, it also messes up plans.

Sounding through

I watch and listen to my works for a long time while making their software. In the case of *The Singer* I slowly tired of short sounds of a struck bell and eventually decided it needed a string. I attached a string to the bell and strung it down to a 3mm circular plate of plywood near the bottom of the foot. Underneath the plywood and attached to its sides is a metal hoop that comes up from the foot of the whole thing, this keeps the plywood in place. In the middle there is a spiral of nitinol that contracts when heated, this gives the string a glissando when it pulls or releases the plywood. Once I got this working, this thing suddenly had a voice.

The word *persona* comes from Latin and means mask (Persona 2016). It is speculated that it could be related to *per sonare*, which means something like *sounding through*. As if we are persons through the ability to sound. Sound is also given a constitutive role by Peter Ablinger as he states, *hearing is that which creates me* (Ablinger 2013). I understand this in the sense that we are continuously coming into being through our relation with the world and Ablinger underlines that hearing is a very important part of this. If I couple these ideas, being a person through the ability to sound and being created through hearing. It seems that by giving *Trio for Dancing Thread, Light Bulb and Bell with Damper* a voice, I animated its parts into a persona, *The Singer*. Conversely, as I heard *The Singer* in there, it created me as its animator.

I had finally connected with this work, it even got an Edvard award (Norwegian Grammy) in 2014, but the research question had not been answered, it had been ducked. In becoming a being of some sort it lost all instrumental qualities. Its ability to express was limited to expressing itself. It was no longer a tool for investigation into transmedial composition. This is one of my insights during the research period. There is a power balance between a medium and a content. As a medium, the machine *The Singer*, became too strong, too present and the content was lost to me. *The Singer* was much too elaborate. I needed to start over. That led directly to another insight. My research questions alter the way I evaluate my art. Outside of a research situation I would have been happy with the result and considered the way it turned out a result of a good process. But when dealing with artistic research I alter my evaluation criteria, I ask *is it good enough?* the way I always do, and in addition I ask *did it answer my research question?* In this case the answer was no. But, the work had shown the direction. I had to start over again, and I did so with the work *Stick, String and Light*.

Stick, String and Light



Figure 14. From the left, string instrument, light bulb and movable stick (2015).

I had wanted *The Singer* to show transmedial structures with simple means. That had failed, it grew to become too elaborate. I tried to make machines with instrumental qualities again, with even simpler means, to force my focus away from what they are, to what they do. I built a stick that moves by force of a nitinol spiral, a light bulb on a simple stand and a stringed machine that plays itself with the insides of an e-bow, a plucker and a damper. I did my best to make them appear functional.

I initially started with a program of chance operations. In one mode it would tell the media to do three to five instances of *something* every fifteenth second and spread the starting points of these instances over 500 milliseconds. Through this I got a fairly unison movement of some sort. If I spread the starting points over 10 seconds, I got more singular things happening. I had a set of these modes for the first months, I was learning to know it. I wanted it to demonstrate transmedial connections and then I was to make little pieces from these, rehearsal pieces, like etudes, focusing on one particular approach for each piece. The word demonstration is important here. From this I lent form. I did not aim for any kind of dramaturgical twist. I wanted the media to demonstrate connections in a straightforward manner.

Initially I made two etudes, *Mimesis* in which the media were to play basic structures of time and intensity in a predominantly single way, all in unison, and *Bestanddeeler (parts)*, in

which the media were to perform simple and compound basic structures in a single and blended way.

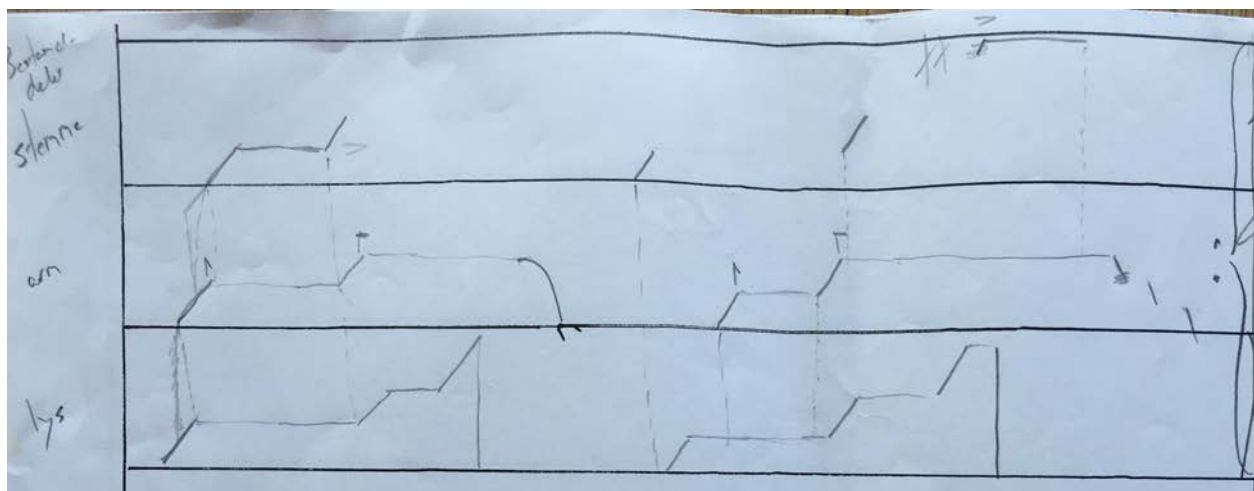


Figure 15. Detail from the score of *Bestanddeleer (parts)* (2015).

It looked like figure 15. *Stemme* (voice), *arm*, and *lys* (light), had one line each. I wanted them to appear as if working together.

For this to occur with precision I needed to drop the chance operations and have the same structure come out every time. I needed to make a program where I could write down a set of instructions and have them performed each time they were initiated. I started making a sort of syntax in which I could write scripts.

```

1 1, twig 0 2 2 3 1 4 1 5 3 5 3 0 string 0 0.2 4000 0.4 15000 0.6 15000 0.99 4000 pitch 0. 10000 0.4 7000 0. 4000 0.6 7000 hold bulb 0 0.2 5000 0.4 15000 0.6 5000 0.99 5000 wait 16000 2;
2 2, twig 0 4 1 3 1 2 1 2 1 1 3 0 string 0 0.6 2000 0.4 2000 0.2 2000 0 2000 pitch 0. 5000 0. 2000 0. 2000 0. 2000 let bulb 5000 0.6 2000 0.4 2000 0.2 2000 0 2000 wait 12000 3;
3 3, twig 0 2 1 2 1 3 3 4 3 5 3 0 string 0 0.4 1000 0.45 3000 0.6 2000 0.9 500 pitch 0.1 7000 0.2 7000 0.5 4000 0.9 1000 hold bulb 0 0.4 10000 0.45 5000 0.6 1000 0.9 500 wait 12000 4;
4 4, twig 0 4 3 3 3 2 1 2 1 1 3 0 string 0 0.9 500 0.5 500 0.3 10000 0. 18000 pitch 0.2 7000 0. 7000 0.2 4000 0. 1000 let bulb 7000 0.6 500 0.5 500 0.4 4000 0.25 10000 wait 12000 4;
5 5, twig 0 2 3 3 4 2 5 3 5 3 0 string 0 0.4 100 0.45 100 0.6 100 0.9 5000 pitch 0.1 700 0.2 700 0.5 3000 0.9 3000 hold bulb 0 0.4 600 0.45 500 0.6 1000 0.9 5000 wait 12000 4;
6 6, twig 0 4 1 3 3 3 2 3 1 3 0 string 0 0.6 5000 0.45 100 0.3 200 0. 500 pitch 0.2 7000 0. 7000 0. 4000 0. 1000 let bulb 0 0.6 10000 0.45 5000 0.4 100 0.25 500 wait 12000 4;
7 7, twig 0 2 2 3 1 4 3 4 1 5 3 0 string 0 0.2 100 0.2 7000 0.6 100 0.9 5000 pitch 0. 7000 0.2 2000 0.5 5000 0.9 2000 hold bulb 0 0.4 7000 0.45 2000 0.7 100 0.9 5000 wait 12000 4;
8 8, twig 0 4 1 3 3 2 3 2 1 1 1 0 string 0 0.6 5000 0.45 100 0.3 200 0. 10000 pitch 0.1 7000 0. 7000 0.15 1000 0. 1000 let bulb 0 0.7 10000 0.45 200 0.4 100 0.25 5000 wait 12000 4;
9 9, twig 0 2 3 3 1 3 1 3 1 3 2 0 string 0 0.2 3000 0.4 2000 0.6 2000 0. 2000 pitch 0.2 3000 0.2 2000 0.1 2000 0.1 2000 let bulb 0 0.3 3000 0.4 2000 0.6 2000 0. 2000 wait 12000 4;
10 10, twig 0 3 3 3 2 2 1 2 2 1 1 0 string 1000 0.6 3000 0. 3000 0.3 3000 0. 100 pitch 0.5 4000 0. 100 0. 100 0. 100 let bulb 0 0.5 3000 0. 100 0.3 4000 0. 100 wait 12000 4;
11 11, twig 0 3 3 4 1 4 1 4 1 4 1 0 string 0 0.1 3000 0.4 2000 0.7 4000 0. 500 pitch 0.2 3000 0.2 3000 0.1 3000 0.1 2000 let bulb 0 0.2 3000 0.4 3000 0.7 4000 0. 100 wait 12000 4;
12 12, twig 0 3 2 2 2 3 2 2 2 1 1 0 string 1000 0.6 3000 0. 3000 0.3 3000 0. 3000 pitch 0.4 800 0. 100 0. 100 0. 100 let bulb 0 0.5 3000 0. 3000 0.4 3000 0. 2000 wait 12000 4;
13

```

Figure 16. *Stick, String and Light* the first syntax (2015).

My initial try looked like figure 16.

The syntax was:

Twig (the stick): *wait* (in milliseconds from initiation), *goal* 1–5 (how high to go), *speed* 1 slow–3 fast, *stay* (stand in position for however long once it gets there)
 / *string*: *wait* (in milliseconds from initiation) *adsr* (an envelope of four points (attack= 0.2 4000) meaning go to 0.2 in 4000 milliseconds)
 / *pitch*: *adsr* (same as string), *let* or *hold* (let the tightened string go or hold it in place)
 / *bulb*: *wait adsr* (same as string)
 / *wait* next line, (wait x milliseconds before the next line of commands is initiated).

My idea was that I would initiate the first line of commands. Then the rest would work like a chain of events, much like dominos. I went about by writing some lines that I thought would work. Then I tried them out only to find that they didn't work. After that I went into the

syntax to make adjustments to try and make it work. Two things were in the way of this process. The first problem was that the syntax I had made was completely unintelligible. I could not pay attention to the instrument and at the same time read this script and know where I was, where to change the values. There was no indication of time. The other problem was that a fixed script more or less requires a stable instrument, and the nitinol wires are not stable at all. If the stick goes all the way up, the time the stick takes to make it back down varies by up to three seconds. The nitinol spiral does not cool down and behave similarly twice in the same room. Also, as the wire cools down it stretches in steps, this made the stick come down in steps. I liked it a lot, but it's not what I wanted. I considered switching the wire with a standard servomotor. That would be very precise but add linear movements and noise from the gears. I opted for the silence of the nitinol wire, softer movements and imprecision. The process got the better of me again. I choose silence over precision. I accepted the stick with the wire as a premise for the work. With this in mind I made a new software and a new syntax.

```
1, 0 250 0.7 0;  
3, 0 500 0.35 0;  
11, two;  
14, 0 200 0. 0;  
15, three;  
32, 0 250 0.4 2000;  
38, 0 525 0.99 0;  
43. four:
```

Figure 17. *Stick, String and Light*, second syntax (2015).

Instead of having the script run like a domino effect, I made a central clock. I also separated the scripts, one for each instrument, to make it more legible. The clock puts out a count for each second. In the example above you see a stick script. The numbers to the left indicate seconds. Something happens at the first, third and eleventh second.

What happens in the first second is:

0 An option to wait to execute a command within each second
250 The goal position
0.7 The amount of power applied to the nitinol wire, less is slow and more is fast
0; Time to stay in the position when it is reached

The string and light have similar scripts. This is a lot easier to keep track of.

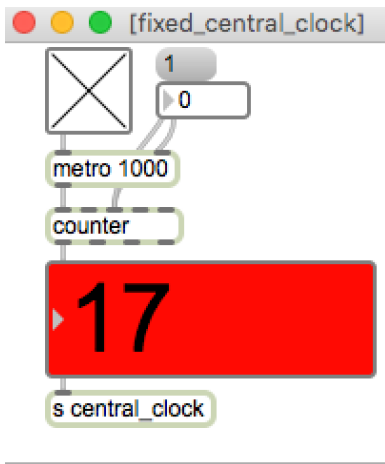


Figure 18. *Stick, String and Light*, central clock from the software (2015).

I have a big central clock in black on red. It's easy to watch the instruments do what they do and keep an eye on this at the same time. When I see something that needs a fix I know exactly where I am. I find the corresponding line in a script and the syntax is simple, so adjustments are quite quick. The workflow is an actual *workflow*. But, in terms of demonstrating my *basic structures of time and intensity* and the etudes I had made from them. I had to find a different solution. *Stick, String and Light* does the etudes, but it isn't very clear. The point does not come across in a straightforward manner. I needed more precision. Again, the quality of the medium was standing in the way of a proper rendition of what I conceived of as my content. And I had invited it, I could have used a servo motor and gotten much closer, perhaps close enough, but the silence and soft moves of the nitinol wire got the better of me.

Sightseeing along the signal path

For *Stick, String and Light* I set up a fairly randomized program to set this in motion. I ran it over and over to observe how the elements behaved, together and on their own. This is a little sightseeing tour of that first test-program.

You press the lit button. The circuit connects and 5 volts are registered in the microcontrollers analog input 1. A signal is sent to the computers serial port, *analog in 1 says the button is pushed*. Max/MSP registers the signal through a serial object, it reports anything that comes through the computers serial port. The message is in OSC (open sound control) syntax: *analog/1/998*. The last digit is the value, the first two are an address. I route out the address and evaluate the value. Ten-bit data gives a scale from 0 to 1023 for the value, I register anything above 800 as a *button is pushed*. This sends a *bang* through the software; bang means “do”: “Do whatever it is you do.” Open the gate, set the counter correctly, shut the light on the button, start the metronome and go. A mode is chosen: “do something that involves two or more elements every 20.000 milliseconds and have the onset spread over 15.000 milliseconds, repeat this 4 times then choose another mode.” The elements are chosen: 1 and 5 correspond with the stick and the pluck of the string. The stick chooses between 0, 1 and 2. Zero (0) gives .37% power for 15.000 milliseconds, *analogWrite/11/0.37* is sent through the serial object. The arduino microcontroller starts modulating its pulse-width so that the connected MOSFET transistor lets through .37% of 5 amperes at 12 volts. The spiral I made from nitinol wire starts to heat up. When it gets close enough to 70°C, it contracts, slowly and, most importantly, without a sound. 0.37% is the point at which the stick is at its slowest; it won't move at any lower than that. If they get a nearly simultaneous onset, it will seem as if the stick goes up as a response to the pluck: they will become one. That doesn't happen. The pluck comes 5.700 milliseconds after the stick starts. The stick is in mid-air on the way up. The pluck is a medium strength pluck without pitch-bend. Five amperes at 12 volts is sent through a coil with 450 windings for 40 milliseconds – just enough time for the coil to turn magnetic and pull the steel rod towards its center before it lets go. The rod is fitted to a ring on a bearing; the ring has a metal *pick* attached to it, which is the part strikes the string. If it were with an ascending pitch-bend, the stick and string would tie more easily together, two things going up. As it is now, the stick moves up, the pluck comes, and the sound fades out. The elements don't link very well; they share only an approximate simultaneity. The stick is halfway up now, the tip is as far from the shoulder joint as it gets in relation to a horizontal plane, it's never heavier. It does not make it past that point. 15.000 milliseconds have passed. *analogWrite/11/0.* is sent through the serial object. The microcontroller shuts off the power on its eleventh output. Thirty-seven percent of 5 amperes at 12 volts turns to 0 all across. The nitinol spiral starts to cool down and gradually increase in length. The stick tilts downwards in a stepwise fashion; it's not a smooth glide, more like the way a person sitting falls asleep, with nods. *Knock*, the lead weight on the tip of the stick, hits the table. The metronome in the software has 3.000 more milliseconds to count before the ordeal starts over. Pick the elements, set the onset and shape each element before go.

Transmedial studies

This is a performance where I went on stage with *Stick, String and Light* in order to demonstrate my strategies for transmedial composition, media is here understood as artistic media. At some point in the fall of 2015 I figured I might as well demonstrate the transmedial connections with my own body. The link to machinery was, after all, not necessary. It took me a while to understand this, building things and programming for them had been my way of working for a very long time. But, when I just wanted to show something, why not just show it? First I bought a handheld dimmer for a single lamp. I used my arm, voice and this lamp. I showed this to my second supervisor, Per Gunnar Eeg-Tverbakk, who was not convinced. He suggested using my eyes instead of the lamp. Arguing that to transfer the whole project into my body would be very reductive and consistent, also that the eyes are channels of light, so in a sense, guilty by association. I bought the whole argument. I included both the suggestive approach of *Stick, String and Light* and myself as a performer in the final artistic result.

Form

It begins with the instruments doing a four - minute part, I sit beside it and watch. Then I walk on to the stage and do a part myself. After that, I return to the machine and it does another part. And again, I walk onto stage and do a part, in which the instruments join at the end and take over. In this way I strengthen the machines agency by allowing it to open, I imagine that it sort of shows me how it's done. I chose a simple form with repetitions in order to focus on the basic structures of time and intensity. It's not a thrilling dramaturgy, but I think it is clear. I show simple basic structures performed in a single and blended way. I show compound basic structures performed in single and blended ways. The general tempo is slow and then there are some short fast parts.

The general dynamic range is pianissimo to mezzo forte, with bursts of fortissimo. I have included the bursts in tempo and dynamics for sake of variation. The whole thing is 25 minutes in length, so I think that using wide ranges are in order; I am not trying to be quiet and mysterious. For clarity and a sort of *matter of fact* attitude some parts must be fast and loud. I make sure that there is no building up and they are not two thirds into any part. They are not prepared, they come out of the blue. I am demonstrating, and demonstrations strike me as holding the dramaturgy of necessity, a demonstration contains the parts that are needed to understand what is being demonstrated. The parts come in the order where they are best understood. The general slow tempo and mellow dynamics is meant to allow the transmedial connections to form. Mellow dynamics reduce the risk of me becoming a private person acting out; also, highly intense things take up more time, they linger in the room and demand a follow up, I try not to promise more than I can keep. I don't want to start telling a story. The slow tempo is chosen to avoid the sounds coming close together, they form a melody very quickly. I use time, space and place in sequence to insulate the sound from sound, movement from movement and light from light. I aim to force connections between media.

Performing with my body

The audience should ideally forget me as a person and focus on what I am doing. For this reason, I have tried to root out all my mannerisms and make a really neat and tidy performance. It is the futile attempt at being an instrument whilst knowing all too well that I can never escape being a body. The choreographer Alan Lucien Øyen helped me set up some basic movements and to tidy up my transitions. I speak to myself in Alans words as I perform.

I am sitting stage right on a stool in the darkness, very close to the table with the instruments on it. The instruments finish. I shift my head left and look at their shadows on the diffusion filters that act as a back wall. Five seconds to let the room settle. Then I shift again and look to where I am going. I get up and walk there with nine steps, starting and ending with my left foot. I find the tape mark on the floor and collect my feet on it, heels together, toes slightly apart. My left hand reaches left and finds the light switches. I turn on my spotlight and turn the light for the instruments off. I relax and take in the audience with my eyes for ten seconds. Then I look down at my left arm, my right hand comes across and pulls the sweater on my left forearm up, slow secure movements. In one movement I straighten out my bare left arm and turn it into a stick, my right hand moves back into place and I lift my face, now with eyes shut. I am an instrument, arm, voice and eyes.

I watched the machine and taught myself its moves to get as close as possible to being an instrument myself. I blink wide eyed, wave and sing, knowing very well that since I am a body, I can easily start telling a story that I can't finish. Wide open eyes signal fear or surprise, my voice is a very intimate instrument and waving an arm can be associated with greetings, hails or even semaphore for all I know. I try to avoid these associations by submitting to the role of an instrument in a composition. I hope this context and the absence of any motivation for fear, hail or semaphore will allow the compositional structure to come to the fore. For this reason, I start the performance with the mechanical instruments. By coming after them I become an extension of them. I do the same things they do, and in that way I aim to keep the focus on the transmedial structure, remain as an instrument and keep my bodily presence to a minimum. I never show the palm of my hand, it's always kept facing stage left, in the hope of avoiding a gesture that looks like a wave of greeting. I restrict my vocalizations to *dååååå*, in English this is the vowel in *lawn*; I restrict myself to come across as disciplined and reduce my presence as a body of flesh and blood. When I squint or open my eyes up wide I try not to use the muscles in my cheeks, mouth or nose area. This is to keep from being expressive. I hope my eyes, if left alone, can be instruments.

I wear a marine blue fine knit, cotton sweater with a round neck, blue 501 Levi jeans and marine blue Adidas – clothes for blending in, not standing out. Also my hair is simplified, I cut it really short five weeks before the performance. It grew a little more than one centimeter in five weeks and looked like a default male cut by then.

On Speed

Most of my works start with some sort of question, and sometimes the questions get really big. In this work the question was *what is music?* On a day in the winter of 2011 the answer was that *music is a cultivated natural phenomenon*. I don't recall specifically but the resulting reasoning must have been something like this: *I am a composer, I compose music, music is a natural phenomenon, which other natural phenomena can I cultivate and compose with? Why not try ice crystals?* I started drawing. At first I imagined a glass cage where the crystals grew and melted in a controlled manner on the walls. I would have valves on the sides to let moist air in. At the bottom there would be an outlet where the melted water could run onto a hot plate and evaporate.

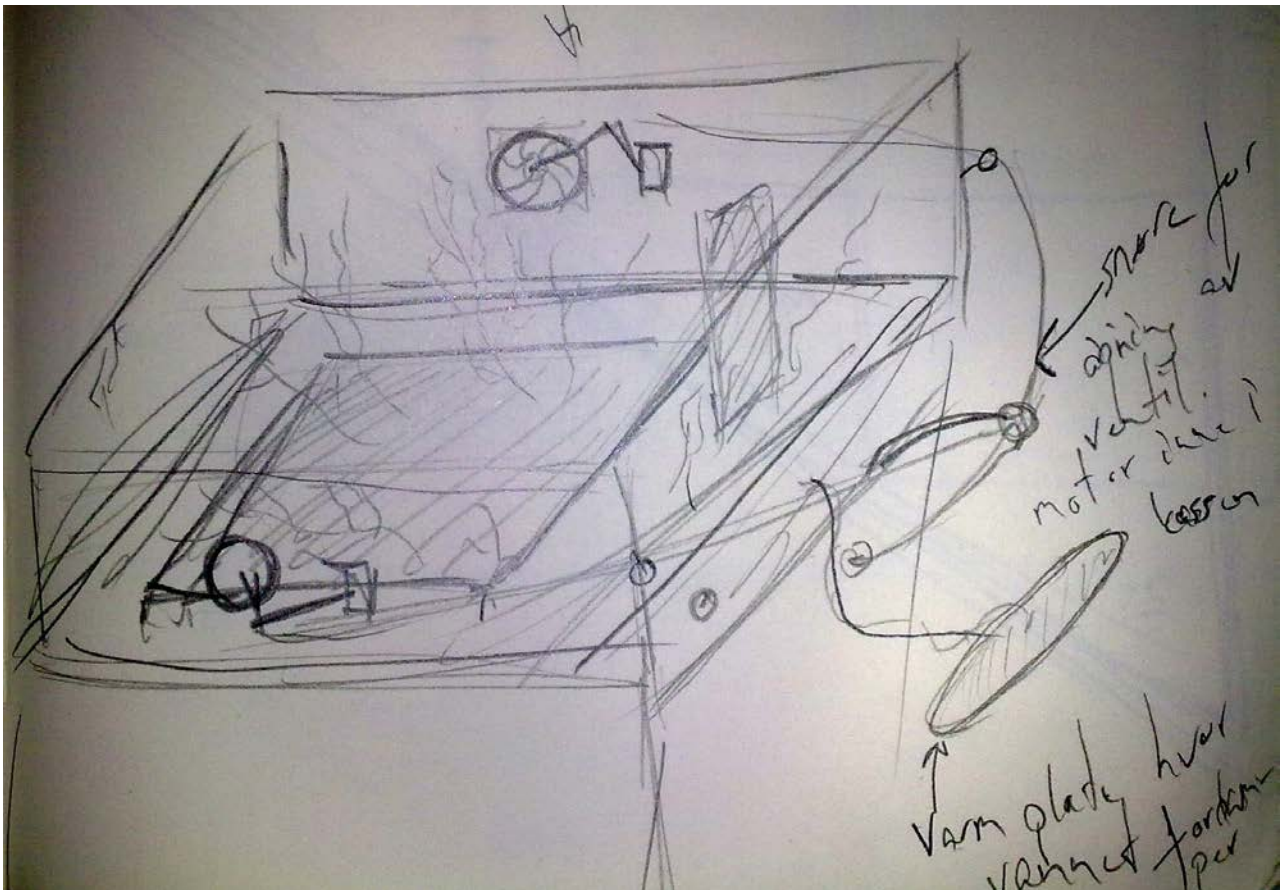


Figure 19. On Speed, first sketch (2012).

The natural place to start was to try and cool down anything at all below 0°C. I started picking apart a big freezer my brother gave me. I wanted to get the freezing element out and put that inside a glass cage. Instead I ended up puncturing the tubes of freon. The tubes were completely stuck inside some kind of insulation mass inside the walls of the freezer, they are clearly not meant to be replaceable, I gave up that idea. I searched the internet and found water cooling and thermoelectric coolers (TECs) to be the most promising.

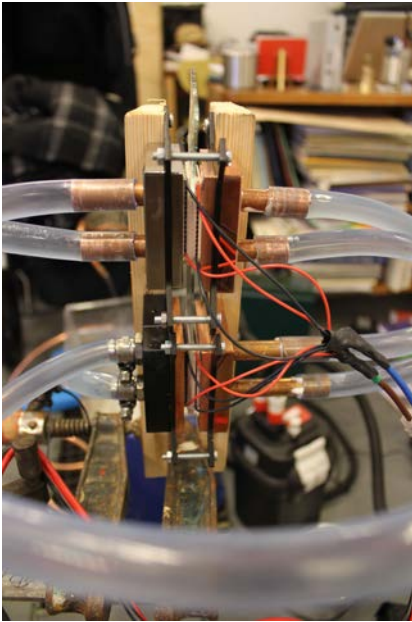


Figure 20. Early attempt at watercooling (2013).



Figure 21. Small frozen spot (2013).

I ordered, received and assembled. I was able to cool down a little spot using a water - cooling system for computers and a TEC. From that point I forgot about the glass cage and focused on freezing a surface in a controlled manner instead. The problem was to get a big enough surface cold enough and to control smaller parts of it. The biggest cooling system for computers was 5 x 5 cm, not very impressive. Eventually I found something called a cold plate or a liquid cooler, originally it's a piece of lab equipment. I used this to cool down six TECs. These are flat squares that cool on one side and heat on the other when a current is applied. The cooler the hot side gets, the cooler the cool side gets, that's why they are placed on top of the liquid cooler, which itself runs on TECs that are cooled by a large fan and a cooling rib.

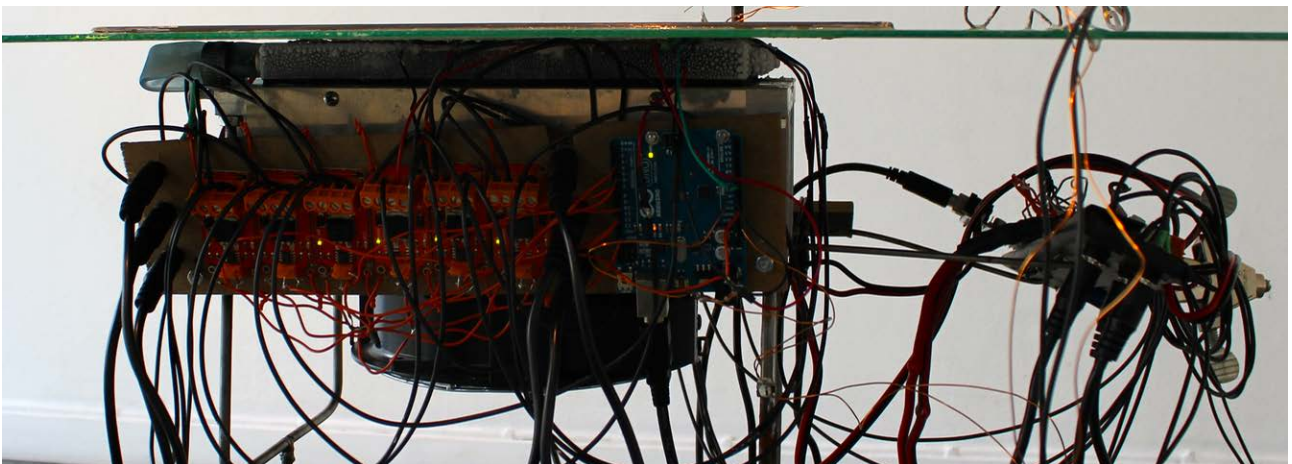


Figure 22. On Speed at the Metamorf Biannual, with liquid cooler in place (2014).

Originally I had a fan and a temperature sensor on the surface up on top. The fan was to help melt the crystals by blowing at them and the sensor provided the surface temperature for the software. In the end I didn't need either of them.

Today the work from top to bottom consists of a thin layer of water, a 3mm mirror, six thermoelectric modules of the type 200 – C from TE technology, tp-1 thermal paste from TE technology, the liquid cooler LC-200 also from TE technology; everything is mounted on a three-legged stand. This is the physical build. What happens is that the LC-200 cools everything down to a running temperature and then I control the six TECs under the mirror to cool one point at a time and make small crystals, or to cool the whole thing and make one big crystal. For controlling the TECs I use Omron g2rl-2 relays, not the transistors in the picture, and two arduino microcontrollers. The single TECs are powered by DC adaptors that deliver 12 volts at 5 ampere. The main cooler, the LC-200, is powered by a bigger DC adapter, it's a Powernet ADC4370/24-3 and delivers 0–36 volts and 0–30 amps. I have set it to 17 volts at 20 ampere. In other words, I hold my breath every time I turn this thing on. The program runs in Max/MSP from a computer over USB. In the works final state the TECs are wired in such a way that I can control their polarity. This means that I can switch the hot and cold sides. I can freeze first and then switch the polarity and melt. That's why the fan on top is gone. I have a temperature sensor under the mirror now, the one on top is also out of use and gone.



Figure 23. 5 TECs in paste on the liquid cooler (2014).

On the top of the TECs in the picture I place the mirror and as thin a layer of water as possible. Surprisingly, the water needs to be approximately 2mm thick to spread out evenly. If it is any thinner it will curl in on itself and leave dry spots. In the beginning I went through great difficulties to get the mirror clean. I tried all sorts of detergents and alcohols. All of them left a residue that made the water curl even more. In the end I just used really hot water a couple of times and then did nothing. If you look at cars after a rain shower you'll understand why. A newly waxed car has water spread like pebbles on it whereas a

car that hasn't been waxed for years will have a thin even layer of water. By doing nothing for some years I now get a very thin layer of water and this makes for better crystals.

On titles

The crystal thing started out as *Isroser*. I like things that are seemingly called what they are. There should somehow be a close connection between what a thing is and the word that represents it. This connection is of course a very subjective understanding; still I keep hoping someone will agree with me. *Twig* is a good English example. I find that a twig looks the way it sounds. It is the same way with a stone, as long as it's round. And bread, bread looks the way it sounds. There is also a connection to how bread breaks and the word bread. This is all in my head but my point is that I often look for these connections when I try to come up with a title for a work. And in order to do that I need to know the work, to understand what it is. So, any given work has at least two or three titles throughout the process of emerging. In this case it started out as *Isroser*, which is the Norwegian word for ice crystals as they appear on windows. For a brief while I called it *Ice Roses*, then I realized this is not the English term, it's ice crystals. Ice crystals was out of the question, it just doesn't have a nice ring to it. Then I left my understanding of the thing as *it is* and called it *Roses*, this stuck for the first exhibition during the Ultimafestival in 2013. I was never really happy with it. *Roses* didn't stick to the thing. Besides, roses have a very distinct correlation to the amorous pursuits of humans, so the whole work was twisted into a symbol. Quite the opposite of what I was looking for. I wanted a direct connection. I focused on the square patterns it makes in the ice. This is due to the shape of the TECs, and I place these in a horizontal/vertical grid for some reason. The result was that the patterns that emerged kept reminding me of Piet Mondrian's late paintings.

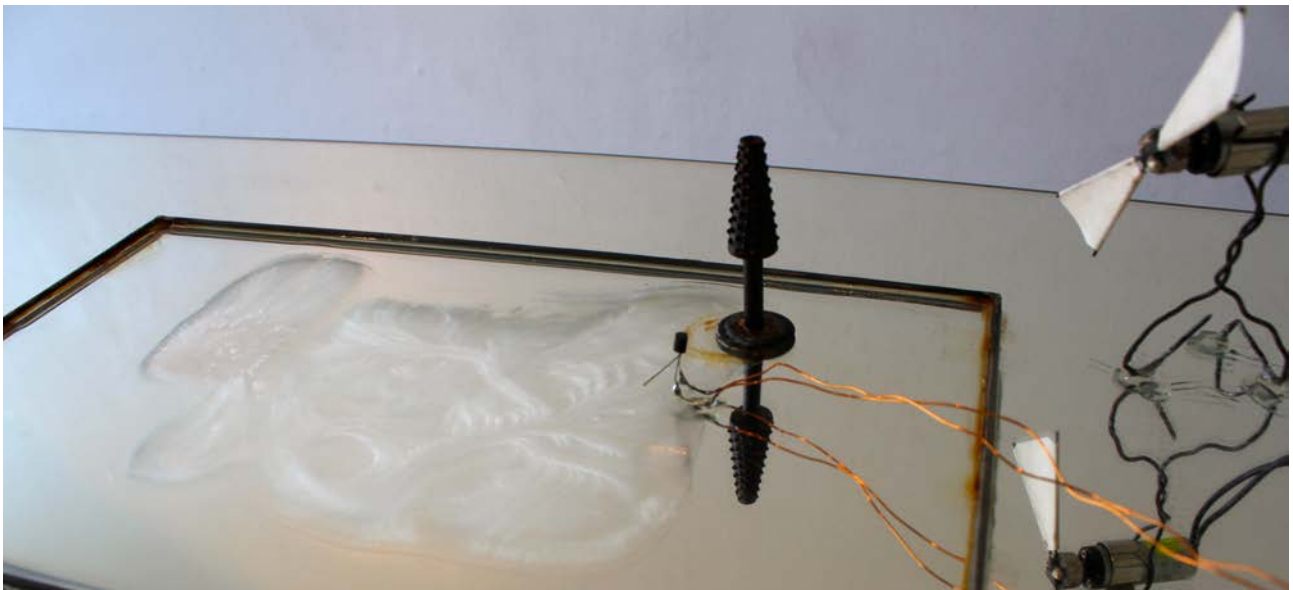


Figure 24. *Piet on Ice Metamorf Biannual, Trondheim (2014)*.

For a while the world was in balance, it all came together. Mondrian started out painting trees, these became more and more abstract, leaning towards planes of color, and in the course of 30-plus years he arrived at his famous squares. I was composing with a natural

phenomenon that often resembles trees, bushes and the way things grow in nature. And I was forcing it into squarish patterns, there was an obvious parallel here! I started referring to the temperature sensor on the top of the mirror as Piet, the propeller turned into a windmill – we are in Holland after all – and just to complete the picture I made a little tree of a drill bit and put it on there, *for I am not afraid to paint a figurative picture!* For the exhibition in Trondheim I called it *Piet on Ice*. The appropriate punishment was that I had to spend half the festival explaining the title to my colleagues. British artist Stanza nodded but dutch artists Marnix de Nijs and Driessens & Verstappen gave me empty stares.

Piet on Ice is designed to do two modes, *lilypond* and *rosett*. The *lilypond* mode freezes and melts crystals for each TEC. This means that there is a pace of about 90 seconds between each occurrence and melting of a crystal. Depending on the number of functioning TECs, I set it up a little differently for each time, between five and nine different little *lilies* come and go at this pace. I let the set of *lilies* run twice before the mode switches to *rosett*. In this mode the whole thing freezes to one big crystal, I've done that in two different ways. First I had a target temperature. The temperature sensor has its own scale where .60 is in the vicinity of 20°C, less is colder and more is warmer. I never bothered to convert the scales since I only need to know what works for me and where I need to be. The sensor is placed underneath the mirror in between the TECs and needs to reach .545 before I can start firing off the *lilies*. In *rosett* mode with a target temperature I set it to reach .532. This would take about 50 minutes in my 19°C workshop. In a warmer room it took over an hour or didn't make it at all. So this had to be modified, I put up a time limit of 55 minutes. So the computer code would say, *go to .532 and if you can't, stop trying at 55 minutes*. Then eventually I understood that no one hangs around a slowly evolving piece for over 45 minutes so I dropped the whole target temperature and simply wrote, *get as cold as you can in 45 minutes*. So today, whenever I set it to run the two modes alternately, anyone who stays for an hour and ten minutes or so, will see a whole round.

I don't want to know how many hours I've spent staring at a big crystal growing. But, while sitting there, staring for the nth month, at some point, it dawned on me, I can't see it grow. I am looking at the growth of a crystal, I know it's growing, and still I can't see it. I should be able to see this. But, I have to look away for 30 seconds or so and then look back to see a change. I am using my memory to aid my perception. The speed at which it grows is so slow, it is slightly out of reach for my perception. I need to use my memory to notice change. It was a huge insight for me. I thought, finally I have come to know this strange work, it is about tempo and speed and our limited perception! The work balances between memory and perception. Armed with the confidence of my insight I gave the work a new bold name, *On Speed*. I wanted to go far out because of this surprising turn of events. It would have the reference to drug use and fast cars through the title and the surface of the mirror but really be about perception and something extremely slow, the title would open up a vast world of associations between the work and the title, while still being precise! I showed the work at NMH and Vinterfestspillene at Røros under this title and gradually became more and more tired of explaining this idea that seemed dumber by the minute. I thought as I wrote this text that the name of the work should be *on perception and memory*, or simply, *on memory*. I do think that the tempo where memory takes over for perception is a very interesting tempo. It is an interesting grey zone to shed some light on. Or, perhaps I should go back to the beginning and just call the work *what is music?*

Titles are a big issue for me, not that mine are very good for that reason. But, I can't call something symphony nr. 40. The question *what is it?* is never answered categorically in that way, *it is a symphony, my fortieth*. Making these *things* in the way that I do, learning to know them and their names is a part of the process of making them.

On Speed and tempor(e)alities

I finally decided to keep *On Speed*, my neighbor Morten Qvenild made the decision for me. And I am glad he did, because I was recently introduced to the term tempor(e)alities through reading, and corresponding with, Wolfgang Ernst. Tempor(e)alities, as a term alone, opens this work to me in a most refreshing way and it secures the works connection to its title, *On Speed*.

The computer does calculations so fast that our senses tell us that it is happening all at once, in a now. But, actually nothing happens at the same time in a computer. The computer holds a micro drama of temporal realities: databuffers, cache memory and so forth. This is what one, with a pun, might call, tempor(e)alities – in other words, different time – realities.

(Ernst interviewed in Eliassen and Grüter 2015 (my translation)).

On Speed and music was an unresolved issue. It has the fan, the clicking of the mechanical relays and, at one point, the *windmill*, but other than that it is silent. I showed it to my esteemed colleague Carola Bauckholt and she suggested I should do something about this, but I never knew how. An external soundtrack seemed just that, external, and a handful of contact microphones never solved anything for me, I tend towards acoustic sound. Then along comes this term *tempor(e)ality*, and *On Speed* stretches out in its full temporal specter. The clicks from the relays and the humming from the fan become indicative of its internal micro drama. The term tempor(e)alities places tempo and rhythms at the core of the work, disregards my sensory system and lets the machine be a rhythm machine on its own terms. I reached out to Ernst to be sure that I had understood his term correctly and in the course of our correspondence I introduced *On Speed* to Ernst and his reply was:

On Speed, from what I learn by your description, is a brilliant piece of artistic research, even an epistemic work in the sense that it un-covers a kind of hidden processual knowledge which is implicit in matter combined with technical media. By letting a process happen which is not immediately accessible to the human senses is truly "object oriented ontology" (Harman, Bogost). The rhythms and tempor(e)alities which unfold within this physical/logical combination comes close to what in a recent monography I call the Chronopoetics within the machine.

(Ernst 2016c)

I was aware of the two different tempor(e)alities in perception and memory, one is sensed and the other is recollected. With this the work stretched into my eyes and my memory. With tempor(e)alities understood as the *micro drama of temporal realitites* in the computer the work also stretches down from the frozen water and into the socket in the wall. In both ends of this *scale of speeds* the work extends beyond my senses.

The concept of tempor(e)alities doubles the power with which *On Speed* tells us something about the discrepancy between what I experience and what is *really* going on, a nice reminder of our narrow field of perception. Out of the wall socket comes alternating current at 50 Hz, that is 50 cycles per second, the computer runs at 2,3 GHz and the clockspeed of the micro-controller is 16 Mhz. These simple terms, the gigas and megas, hide amazingly fast rhythms. A MHz is 1 000 000 cycles per second and a GHz is 1 000 000 000 cycles per second, a superfast poly – rhythm is playing under the hood of *On Speed*. This is no longer just a reminder of the lack of my ability to sense this, I can not even begin to understand this beyond a cartoon like idea of *superfast*. If I add that the computer asks the microcontroller *what´s the temperature*, at yet another rate. And, in my program I have clocks ticking at 1 Hz, buffers storing sets of instructions and so forth, *On Speed* displays a variety of tempor(e)alities from 1 000 000 000 cycles per second to a crystal growing at the rate of falling water molecules in any given room, and this is handed to me on a platter by a term, tempor(e)alities. The title is *On Speed* and even though most of the work is denied me, I feel relief.

Everything about a creature that comes out of a shell is dialectical, and since it does not come out entirely the part that comes out contradicts the part that remains inside.

(Bachelard 1958, 108)

Through technology and hermit crabs I become aware of my limitations as a sensory being. They tell me: *You are limited. You only experience a partial reality, there is more, fully functioning, just not for you.* I find this to be a relief. It leaves me a bigger room for error and makes me less important.

Bring Me That Horizon, surrounding works and translation

This text understands transmediality as translating a content from one medium to another. Kittler firmly established translation as impossible without making adjustments to the new medium. Today I welcome this. In the following text I will explain how I have moved from not wanting to translate anything, to embrace the translation involved and rather approach it as if making something new. I now aim for the strength in the new format, to impose change and sometimes constitute a new work, to treat the work as raw material.

Along the same lines I have moved from working solely with computers for making live – art through chance procedures and algorithms to documenting these works and making fixed structures. The last leg of this transition is to make fixed structures by way of intuition.

Using chance procedures to arrive at live - art

My prior position was that chance would at some point produce more interesting music than I could ever make, so I would set up some options and roll the dice. Also, using chance procedures is a way of filtering a *self* out of the music. I wanted this filter because I am not looking to express myself. I am curious. I have nothing important to say. A work usually starts with, *what happens if I do this?* I realize that in making a computer algorithm, I decide what the parameters for the music are. My taste is very much involved on that level. Still, I do not tell it what to play. This gives me a distance to the result. My prints are not on the composition. My prints are on the algorithm that produced it. Here is a piece of text I wrote in 2008:

Ephemerality as a premise.

Through algorithmic projects I want to make a music where the composer is present only to give direction and scope. The algorithm is to be made in such a fashion that the possible variations are more and more varied than what a composer normally operates with – most of us have our methods to ensure a signature in the musical expression. I do this by using banks of values in all parameters. This ensures that the possible combinations rise above a normal compositional practice.

Another important aspect is to omit recording possibilities. What Gudbrand... .. plays can never be repeated and is not to be considered as fixed works. The knowledge of something ephemeral introduces a concentration in the listening. One can experience it in a concert hall or with street musician. The intensity of a live moment cannot be duplicated through sound recording. Ephemerality is one of music's strongest cards. That is why I construct my algorithms to never repeat themselves precisely. Variation and ephemerality are grave and beautiful aspects of music.

My activities have always been divided between different strands. Performance, acoustic scored music and computer music, with electroacoustic music and electromechanical installations counting as the computer music. The text above concerns the computer music part. *Gudbrand* was a software for live composition and execution. It was displayed in a booth, *ticket-sales style*, for the audience to set up their own parameter values and have it perform *their* music. Tempo, rhythm, selection of pitches and about 15 more choices had

to be made. I left this project and went on to *al Khowarizmis Mekaniske Orkester*. It is largely the same, except it has acoustic sound and the interface has boiled down to one button. One of the miscalculations of *Gudbrand* was giving the audience too many options. Only the musically skilled and patient ones got anything out of it. One button works a lot better. I suppose there is a balance between 20 choices and a single button, but I opted for the one. I should have seen that coming, I can be very impatient myself. I was a student in the US, and in the beginning it drove me nuts to have to make 10 choices just to get a sandwich. *White or wheat? Mustard or mayo? Everything on? Onions too? Should I cut it in two? Do you want a drink with that?* Granted, once I got the hang of it, I came to appreciate Subway. But, no one got the hang of *Gudbrand* but me. One button seemed better.

What I find interesting about the text from 2008 above is that I seem to be searching for a way to question where *the work* is. It is not the specific sounding part that comes out. I don't see it as a machine that makes an infinite number of fixed works. It is more as if the sonic parts represent different representations of a work. It reminded me of how traditional music is relayed from musician to musician, always the same and never the same, different expressions of a work with no finite form. And, as a consequence, I refused the translation into recordings and repetition because it would violate the idea of variation and live-art. This was my very strict position. And, as we shall see, I had to soften it up a bit. For one thing, life isn't ideal, it's practical. How would I ever get a concert or an exhibition if I had nothing to show as promotion? I built the mechanical orchestra and utilized all my contacts, the ones who take my word, to have it shown. Then it stopped.

Using chance procedures to arrive at fixed structures

To accommodate a need for promotion, I made the video in 2011. That has given the work an active life continuing till today. It also changed the work – not for better or worse, just changed.

The works it made for *Bring Me That Horizon* are pieces of music in their own right. It took on the function of a composer. And in extracting the sounds it became clear that *mechanical music machines are not just silent mediators of a perfect symbolic, algorithmic musical idea, they have their own sound* (Riis 2012, 25). I did not think of this at the time, I just accepted the noises. The distinction Riis makes adds helps me understand the machine as an inherent quality in the music.

Today, I also use the mechanical orchestra to play with improvising musicians. It has all the challenges of a deaf and stubborn colleague. It will stay silent for five minutes, leaving the floor to the improviser, only to burst into something completely unrelated. This context, with its expectations, transforms it from a charming odd little something into an arrogant musician.

What comes out of the chance procedures in the computer is a sort of instruction. In performing this instruction the machine adds hissing from the gears in servo motors, clanging from the rods in solenoids and rhythmical motor noise from a DC motor that drives a bilge and gives air to the flute. Every single instruction to sound is accompanied by the noise that's made whilst performing the instruction. The machine as a medium is as much a part of the music as what it is trying to mediate. I ran it for a full day in a studio and made the selections afterwards. The pieces are uncut. Then came the recomposing for

musicians, the transfer from machine sound, through my ears and on to paper. I used my ears and my guitar to pick the music. I assigned the instruments to more or less permanent roles to strengthen the sonic identity of the ensemble. In this process of recomposing and transcribing I also transcribed the sounds that the machine had added, the humming from motors and squeaking of mechanical joints, it's all in there, integral to the music.



Figure 25. Recording in Morten Qvenilds Studio, *The Green Room* (2015).

Bring Me That Horizon I and II are particularly interesting to me. On the machine side the sounds appear as points of reference for the silence between and behind them. The tone, set as *dal niente*, from nothing, is indicative of a space it came from and a space it disappears into.

Then, translated into Ensemble Ernst, I tried to move closer to the sounds, to make them large and stand at their foot. I imagine the music as a physical

When I photograph, I try to remember the paintings of Edward Hopper and his indication of space. His *Morning Sun* has that window I'd like to look out. The *New York Movie* has the staircase I'd like to climb and the darkness around the corner in *Nighthawks* most certainly hides something. I do not come close to his art, but I try to show details that indicate a whole. If I give away very little in a photograph, an imaginative spectator can easily make a whole new work.

presence and make a shift in perspective to have a closer look at it. This music for ensemble is then recorded, bit by bit, a whole take there, a few bars here, cut and edited, submitting to the media of digital sound. Presented as files for streaming and analog vinyl, with a CD inside for those who don't have a record player, a product in compliance with every preference of medium.

Bring Me That Horizon was translated from being a symbolic musical idea to an installation, to a sound recording, from a sound recording to a score, from a performance of the score to another recording and a radio show. In this sense of transmedia, the translation, my strategy has been to incorporate the standards and formats of a given medium and submit to the medium. One might say, open the room for the medium to create new works that stand on their own.

Surrounding works

In the example of the *Lyrical Pieces* I used chance procedures to arrive at a first sketch, and then added several rounds of editing afterwards. This editing was based solely on taste and intuition. This was a commission from the Norwegian Broadcasting Company to mark the hundredth anniversary of Edvard Grieg's death. Several composers were asked to make a little something based on his music.

Flies have multi-facet eyes. They see an object from several angles at once. The object becomes slightly disjointed. For the *Lyrical Pieces* I wanted music that sounded as if one listened with multi-facet ears. The music is there but with everything slightly out of place, disjointed. At first, in 2007, I ran a midi file of *Butterfly* through a software I made for the project until what is on the record's B-side came out. That piece of music is the result of an algorithm with me trimming the parameters. There was not even the slightest alteration after the computer had done its part. I was happy with the music. It made people laugh, and I don't usually make people laugh with my music. However, it was a lot of programming for only three minutes of music so I continued with other pieces. Through the years up until the winter 2013 I made four more *Lyrical Pieces* and gradually the method changed. In the end I only ran the algorithm until I had something that had potential. The method is similar to that of a sculptor. The algorithm produces a workable block of stone, and then I go at it with my hammer and chisel. I spent a lot more time on the level of editing. I had pieces that started out looking like lists of data.

1, 86 77 1137;	1, 0;
2, 67 41 3022;	2, 2174;
3, 86 70 1055;	3, 149;
4, 79 70 504;	4, 38;
5, 81 68 720;	5, 64;
6, 78 57 473;	6, 643;
7, 74 68 350;	7, 37;
8, 74 68 350;	8, 47;
9, 67 41 2848;	9, 33;
10, 82 59 461;	10, 172;

Figure 26. *Lyrical Pieces*, the left file is for tone, dynamic and duration, and the right file for delay between tones (2012).

Then I would work intuitively on these lists, running them through a sampler I made for the occasion, listening and editing, over and over: *move that note 50 milliseconds closer to the start, stretch that other note 220 ms longer*, that sort of thing.

There was no commission involved, other than the one from NRK in 2007, so I worked in the evenings at a slow pace. Whenever I had something nice I would call to my wife, Ellen Ugelvik, and she'd come down and listen. At some point Ellen suggested that I should make notated music from this, for her to perform. There wasn't much to think about, other than how to do it.

Anyone who has seen the notation software *Finale* make sense of a computer generated midi file, which was the format I had to convert my lists into, knows what kind of mess you get. This translation between media involves quantizing music heavily. My software operates with milliseconds as the smallest unit for adjustment, this level of precision had to be translated into the wholes, halves, quarters, sixteenths and thirtyseconds of music, and a lot of tuplets. It was a fair sized cleaning job to get the music quantized properly and in that process another layer of editing was done, this time using taste and intuition as the only tools.

I probably sound a bit uptight by now, yet, this transition from working solely with chance operations, at first dice and later computer algorithms, and then turning gradually to let taste and intuition into the music making, is significant for me. I had to find a good place for intuition to enter the process. I ended up strengthening the last leg, the editing part. I also had to embrace the idea of translation between media as a possible point of departure for a new work.

Weak Questions Strong Music, Hats off to Burrows and Ritsema went through a similar process. It came out of its software algorithm in 2010, and from then until the premier in 2015 I worked on it off and on, gradually shaping it with my hammer and chisel – right up to two hours before the concert. Some last minute cuts were made, I tend to freak out before performances. This time I took out two minutes of material. It was a completely unnecessary cut; the two minutes are now back. The performance recorded on the 30th of October 2015 has the cuts back in place, performed by midi instruments – that should help me remember not to make cuts just to calm my nerves.

Using intuition to arrive at fixed works

The biggest change came in 2015, while making *Stick, String and Light* and *Transmedial Studies*. In these works I use intuition to write fixed structures. I had gone from using chance procedures and insist on live-art, to using intuition to make fixed structures. One of the reasons why this was OK is that the goal and criteria had changed. I was following a research question, and by then I had missed the question so many times that to me whether or not the art was good became secondary to whether or not it addressed the question. To show my bright idea, the transmedial composition, I needed to be precise. For precision of message a fixed structure was required.

Another reason is that using my intuition was fine in these waters. I was not expressing my self. I was presenting an argument. For me, writing a piece in a research setting alters not only the criteria on which I evaluate the piece, it also alters the function the piece has. It is no longer only a goal in itself, it's a part of a body of knowledge developing around a research question.

The funny thing is that my works have not lost any of the aspects I initially wanted to protect. Realizing how a shift in medium is an option to look at the initial piece as raw material, is in a sense liberating.

Three things needed to fall into place for me to realize this. I needed to accommodate the practical side of life and have documentation to get work. I had to find a place in the process of writing music where intuition could enter, editing and revising were found to be the right places. And, intuition had to come loose from the expression of a self, in my case it did so when I realized I could use it to get closer to my transmedial composition.

Is it music?

My works are presented as music, kinetic art, installations, sound-art or music machines. I often get the question, *is it music?* and it always leads to the question *what is music?* I have not set out to answer that question in my research, I am not sure there is *one* answer to this question. The important thing is that we know that how we define music frames what we can do as musicians. Music as *a cultivated natural phenomenon* opened me to making a machine that composes with ice crystals. Music as *organized time* opened me to this venture into transmedial composition. I seem to use varying definitions to challenge my practice. My only concern, beyond my own practice, is that we should not draw the borders too tight and too rigid.

The Singer won the 2014 Grieg award (Norwegian Grammy) in open category. The prize is handed out by Tono. This is the Norwegian collection society, it collects and distributes performing rights royalties and mechanical rights royalties to individual rightsholders in Norway and abroad. The text from the jury is an informative backdrop for this discussion.

In the prizewinners fascinating universe there is no difference between musical and physical craft. Welding certificate and counterpoint training have been equally important premises for developing a deeply personal and original artistic language of handmade fragile structures that combine sound, light, shadowplay, movement and subtle use of technology.

The prizewinning work gives a feeling of approaching music in a new way, through other dimensions. To experience the work is like being part of a close reading of something one only almost knows what is. Something that may collapse at any moment – or just simply stop. One holds ones breath as one sees and hears a musical composition, but also sculpture and ballet in micro-formats. Tiny events, organized in time and space, melt together. Material, technic and media become impossible to separate, they constitute a poetic work which is minimal and modest in expression, conversely, it leaves a similarly strong impression.

(Kindem, Solvang, Asheim, Hagen and Bengtsson 2014).

In order to shed some light on the issue I will discuss some of music's borders as I perceive them today. In the following text I will look closer at music and sound art, music as exclusively sonic, music and composition and finally music and the institutions. I separated the topics under the headings in the previous sentence, but as you will notice, they are thoroughly intertwined.

The idea of what music is has changed radically over the last hundred years. Music has moved from being a sonic object, which could be described in terms of rhythm, melody and harmony, to being *what we listen to with the intention of hearing music*. This observation is credited to Luciano Berio (Definition of Music 2016). This attitude towards the act of listening, and underlining of subjectivity, might as well have been attributed to Max Neuhaus; it is an immanent reflection in his series of works from the sixties and seventies, *Listen* (Neuhaus 1966 – 70's).

In the courses on the history of modern music, I was taught that Edgard Varèse spoke of music as organized sound, a radical definition in itself in the early twentieth century. He was inspired in his definition by the nineteenth century philosopher Józef Maria Hoene-Wronski, who spoke of music as being the *corporealization of the intelligence that is in sounds* (Oulette 1968, 17). This is a very interesting formulation, if I understand it correctly. My understanding of it presupposes intelligence as being information. Music then becomes *the corporealization of the information that is in sound*. How do I bring about the information that is in sounds? My answer would be that I listen and interpret. So in my mind Wronski's understanding of music emphasizes the subject and its interpretation as constitutional. Wronski also includes any kind of emblematic or conceptual reading of a sonic matter since this is also available information in sound. This is my highly subjective understanding in 2016. Varèse used the word *organized* and put a stronger focus on the sounds and their internal organization. Either way, Varèse's definition has had a powerful influence. Today, *Organized Sound* is a journal, a festival and an often repeated 'definition of music'. It's also a brilliant phrase, easy to remember and with a certain punch to it, *music is organized sound*.

During the twentieth century humans gained a very different understanding of ourselves and our place in the world, but even more importantly, the world's place in us. Objectivity is exchanged for subjectivity and inter-subjectivity. As a consequence, increasingly larger parts of the world seem to move into our heads. *The way I see it* becomes a legitimate argument. In the forties and fifties John Cage developed his ideas of *music is in all sounds and all sounds can be in music* (Licht 2007, 12), a line of great iconoclasm and a leveling of hierarchies. The beautiful result is that we can listen music into a sonic matter. The act of listening can constitute a music.

Music and the sonic

Both *organized sound* and *what we listen to with intention of hearing* assume that music is sonic. However technology is pointing in a different direction. It is speculated that the technology of musical notation is as old as 4000 years. An example of a cuneiform writing on a clay tablet was discovered in Syria in 1950. It contained a hymn to Nikal, the moon god, and instructions for performing it (Stolba 1990, 5). With the introduction of musical notation music evolved and developed its silent side.

In the symbolic order of musical notation, so – called structural listening can take place in the mind through intelligent score reading without the presence of an external sound source.

(Ernst 2016b, 24)

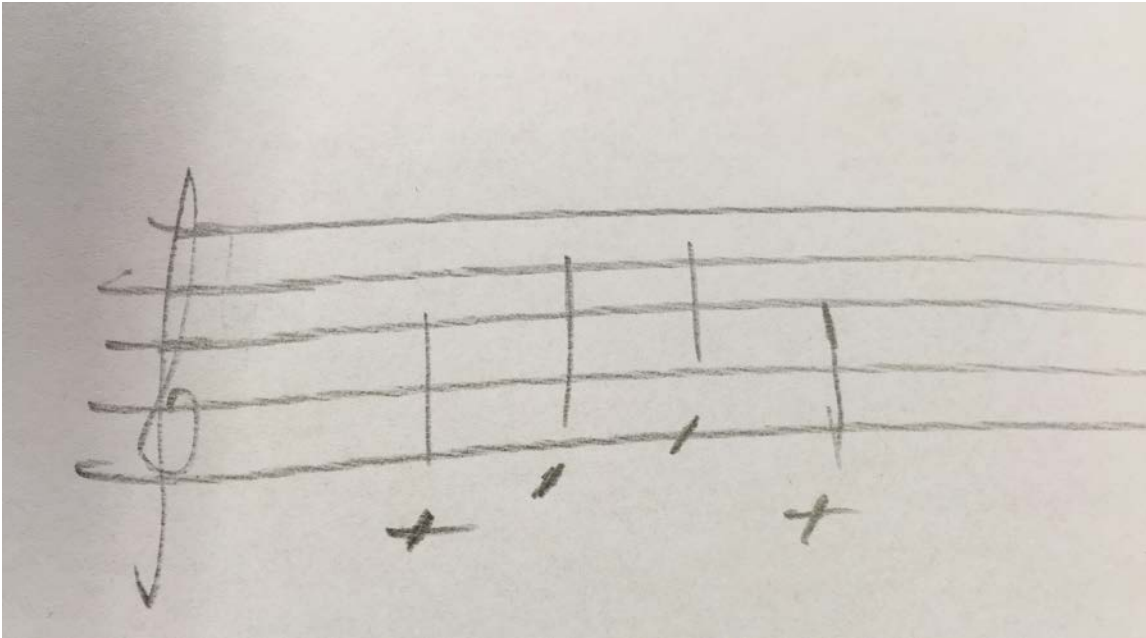


Figure 27. Musical notation (2016).

Notation is also a technology with which we started to think differently. With this technology music was able to evolve into advanced harmony, melody and form. The four movement symphony is unthinkable without the aid notation. Technology allowed us to sit outside of the music and get the overview needed for composing, the storage needed for memory and the performance instructions needed for synchronization. Much in the same manner techno – logical development over the last 70 years or so, has contributed with a digital technology which is constitutive to the way I can write, imagine and program music.

Universal alphabets

The importance of the Greek alphabet for Kittler is that a single signifying system was used to denote letters, number and musical notes.

(Sale 2015, 60)

The European Middle Ages demolished this trinity of writing, tone and number for good – or so it seemed. It was not until the days of Alan Turing and John von Neumann that we once again had universal alphabets.

(Kittler 2006, 57)

There is a link between what music is and how it is notated and the technology we use to compose it with. Through computers music is attached to a universal alphabet, it shares a language in the computers with video. The editing tools have almost identical traits. If I attach a micro controller I find that music shares a language with transistors that control

the flow of electricity. In the extension of this, music shares a language with electrical motors and lights.

To me, this indicates that through digital media, music is stretching to connect in a manner similar to that of music in antiquity, threatening the exclusive link between music and sound. In this perspective, my inclusive approach to music is indicative of the link between antiquity and present time. The link being the presence of a universal alphabet. As a consequence, my practice as a composer is close to the understanding of music in antiquity when *music was associated with melody, words, and rhythm including dancing* (Stolba 1990, 10).

Music and composition

The distinction I make is between the performative, or musical, aspects of the composition and the machines as objects in a room, the works both *do* and *are*.

What they *do* is the composition as a sequence of events. What they are is the thing as a sculpture, the relation to the physical room, the lighting, the shadow, the cables and even the computer, all of this is also a composition.

The distinction is only useful to me as a composer. As an audience member myself, the distinction above is superfluous, the two ways of understanding composition are intertwined. The media, both technical and artistic, are integral parts of the composition. There is also a part of the composition which I only facilitate, that which takes place within each audience member.

In many ways parts of my practice might just as well be understood as performance. And indeed my idea of the transmedial composition came from working with the performance group, *Verdensteatret*. It goes to show how closely knit and overlapping music, theater and performance are.

However, for me it is important that I think in terms of musical composition because this includes a set of ways to work. I can structure things in a musical sort of way. I already used the musical understanding of *envelopes* to include movement and light into a musical way of composing. Other techniques are moving a motive along the axis from repetition through variation and into contrast. The sense of disposition, rhythm and timing are also elements from my musical training.

Performance, dance and theater have techniques that resemble these. What I am pointing out is that I am a musician and I approach light and movement with techniques derived from working with sound, this affects how I work with light and movement. As a consequence I sometimes think of my work as music. But this is my music, not music as such, the jury statement above has given this idea some weight. But I have no wish to impose this on any one else. I am happy to use composition for this activity, transmedial composition.

Music and sound art

Sound art and music are more often than not found in the same festivals and concert programs, some music academies even teach sound art. The issue at stake in this text is the understanding of sound art as something other than music, which I believe to be wrong. I believe that sound art is a development in music, an expansion of what music can be. The distinction is important to me because in my mind the world of music is conservative enough as it is, if we also start defining experimental practices as something other than music, we lose important perspectives on music.

At the Ultima Festival for Contemporary Music 2016 Ensemble Ernst premiered *Bring Me That Horizon*. The sinfonietta and conductor, Thomas Rimul performed the ensemble side of the project and we used *AI Says* from *al Khowarimis* side as an insert between the third and the fourth piece, a little nod to Varèse and his *Deserts* (Varèse 1954). In the online program it said, *The Sound Artist Christian Blom...* I had them change it, I am a composer, I have never regarded myself as a sound artist. I build instruments and a lot of installation things in addition to writing for acoustic instruments and in my head it is all a part of one practice. I have one practice and one profession. Where does the term sound art come from, and what does it cover that music can't contain?

The term sound art dates back to William Hellermann's Sound Art Foundation, founded in 1982, which primarily seemed to work with experimental music or new music.

(Licht 2007, 11)

Sound art has been applied retroactively to noise music, sampling and various forms of musical collage.

(Licht 2007, 12)

To illustrate the challenge I have found three examples of what is considered sound art today; a very early musical collage, a work based solely on listening and a site specific work. I consider these to be important new works of music.

Walter Ruttmann (1887 – 1941) made *Wocheende* in 1928 – 30 (Ruttmann 1930). Ruttmann was an experimental film director whom had made *Berlin: Symphony of a Great City* (1927) a sort of depiction of, or homage to, city life in Berlin. Many things are striking about this film, but of particular interest to me is the way it is cut. There is a distinct rhythmic layer in the cutting. The idea of the *symphony* and associations to music that follow is really activated through the cutting. The cutting underlines form and medium. And as it turns out:

Ruttmann was in a milieu of painters, poets and musicians who saw in the new media a possibility to expand the limits of the fine arts. They described their abstract

films as visual music, seeking to achieve a similar experience in the visual as in music.

(sfsound.org 2016)

Following its success, the Berlin Radio Hour wanted something similar. For this project Ruttman utilized a Tri – Ergon system of sound on film which was patented in 1919 (Tri-Ergon 2016). Here Ruttman takes the musical component even further. He makes a 10 minute *film without pictures*, It's only sound! The work is comprised of recorded sounds from the city, music and voices. Judging from the rhythmic contrasts and abrupt collage – style composition I am guessing that sound on film could be cut and re – organized. Also here, the underlining of form and medium is brought about through the rhythm of the cutting, and in addition Ruttman uses a strong uniting force known from verse and music, namely *repetition*. And the result is stunning! Ruttmanns *film without pictures* is a very early example of recording technology used to make music. To my ears today, it is not even controversial to call this a piece of music. This is 10 – 15 years prior to Pierre Schaeffers efforts. Schaeffer was of course much more methodical, still Ruttmanns piece was first and it displays an inherent understanding of the role of the media in composition and when it comes to new media, *who was first?* is an important question. In that work, both the history of music and the history of *the music of that medium* is being relayed. It is a very early example of sampling and musical collage, and an indication of the relation between music, understood as sonic, and film, how they have grown into a common rhythmical artform of cutting displayed in most modern film; suspensions and anticipations, montage technique and canned theatre all at once.

Max Neuhaus (1939 – 2009) and his series of works *Listen* is another interesting example of music. It is also a very interesting example of how the musical discipline behaves towards its most experimental practitioners. Neuhaus was a percussionist. He knew the trend of taking everyday sound sources into the concert hall and treating them as instruments. To Neuhaus, the next logic step was to take the music out of the concert hall. And he did this in a remarkably radical way. Neuhaus staged himself as a sonic tour – guide. He stamped the work *Listen* on the hands of the audience and guided them through the city from one interesting place of listening to another. Standing under the Brooklyn Bridge would be one such spot.

To me, Neuhaus demonstrated how to *Listen* is to create a music. *Listen* is an inquiry into how the subject and its urban sonic surroundings constitute a music together.

Gordon Monahans (1956) work *Aeolian Winds over Claybank Saskatchewan* (Monahan 2006/7) is a large scale sound sculpture built in, on and of an abandoned brick factory. Hundreds of meters of pianostrings are stretched between chimneys and *abandoned barns, storage buildings, and factory workshops* (Monahan 2017). The wind blows through the strings, exciting them, and the houses work like resonant bodies. In this work the composer is a facilitator. I have not been there, I have only seen the video documentation, I imagine it is as if the audience walks inside the music. The work has no

On a personal note I would mention the Experimental Media and Performing Arts Center (EMPAC) at Rensselaer Polytechnic Institute, *an absolutely silent environment with changeable seating arrangements* (Licht 2009, 46). I played *And the Questionmarks Started to Sing* there with Verdensteatret after a tour through Philadelphia and New York. Our sound, dense as always, had never been that clear and precise, we played the piece 15 minutes faster than what we normally did, the halls were always a part of our pieces.

beginning or end, other than that one might make for oneself. The music is distributed in space, and form is given to the music through choosing where to walk and the given weather. It's a work that sparks thoughts on scale, subjectivity and most importantly, site. The work is from 2006 – 07, its fairly recent and made in a world where the term *sound art* is established. Still, I cannot help to think how important this work would be if understood as music. The work contributes with a notion of music as a place one can walk within, and perhaps even more exciting, because of the strings between chimneys and wooden houses, the connection between instrument and surrounding is consolidated, in this work there is no difference! The work adds to a body of knowledge about sound and site, a line from the st. marcus church (not a cathedral until 1807 (Stolba 1990, 230)) in Venice where Villaert and Gabrieli wrote their site specific, antiphonal music 450 years ago. These composers remind us how site is always a part of the music. Vilaert and Gabrieli through utilizing acoustics and letting site in on a score level and Monahan by having the site be the instrument and weather play the instrument. Monahans piece makes this knowledge of the link between site and sound explicit. But, Monahans piece is not music, apparently it's sound art.

The above are three examples of why I argue the importance of understanding sound art as new music. Sound art is continuously exploring what music can be. It is a mistake to think that sound art is a different artform, As Neuhaus puts it, *it is essentially new music* (Licht 2007, 10), a distinction of music. Monahan has a more open attitude and writes that *perhaps some pieces can be both at the same time* (Monahan 2017). They are, of course, much of this comes down to a listeners intentions and the context.

My concern is this, if sound art such as these three examples is not defined as music by the major institutions within the musical discipline then the borders of the musical discipline are not outlined correctly, the map is false so to speak. We shut of a corrective perspective and a lot of good ideas. The consequence is that the ordinary becomes the radical because we keep closing the doors on those who venture too far. This strict way of tending the borders of music threatens possible developments. I sense that it is important to have a more complete development of a field of knowledge that is being researched and produced. Perhaps it might be fruitful to talk about different musics.

In my examples we saw Monahan researching sound in relation to space and site in a manner related to Gabrieli. Neumann and his *Listen* underlines the creative role of the listener. In the example of Ruttman, film became music through the possibilities of sound on film and the limitations of radio(!). To me they are outstanding examples of the close relation between experimental music and philo – sophy, love of knowledge.

The expansion of musical material

Another development over the last 100 years or so is the intensified questioning of musical material. I mentioned Varèse earlier because he was among the first to conceive of *liberating music from the tempered system, from the limitations of musical instruments and from years of bad habits, erroneously called tradition* (Oullette 1966, 18). Varèse included sirens in his work *Amériques* (Varèse 1921) as early as 1921. In 1931, with his *Ionisation* (Varèse 1931) for 13 percussionists, Varèse demonstrated how the tempered system, melodies and harmony are traits of a highly developed sonic music, an advanced form and that prior to scales and harmony there is a unifying basic something, rhythm. George Antheil also underlines the importance of time, his *Ballet Mécanique was a genuine composition with and by time as matter* (Ernst 2016b, 43)(Antheil 1924). Prior to this, in 1913, Russolo wrote *The Art of Noises. Russolo and his brother Antonio used instruments they called intonarumori, which were acoustic noise generators* (Futurism (music) 2016). Russolo and the futurist movement is often cited as being the first to introduce noise into music. But, a closer look at history has shown how *the machine's noises always have been an inherent part of any piece of musical technology* (Riis 2012, 24). So it seems more precise to say that noise moved from being an inherent part of musical technology and into the center of attention.

My point is simpler. Within a few decades *extramusical* material had become musical material, also keeping Ruttman in mind. If we include how Cage omitted sounds from any instrument in his work *4:33*, pointing out that there is no such thing as silence, music had expanded to include noise and (no such thing as) silence by 1952.

In addition and in parallel with the expansion of musical materials another development was coming to that *one's own body is in the world just as the heart is in the organism: it continuously breathes life into the visible spectacle, animates it and nourishes it from within, and forms a system with it* (Merleau – Ponty 1945, 209). Forecasting the work of Neuhaus and the development of music as something one might *Listen*.

Music and the institutions

In a very coarse manner, unfair and indicative, the field of music can be divided in two. The larger institutions such as broadcasters, operas and orchestras that maintain the *Urtext*, and the smaller institutions, the free field that supplies the comments to the *Urtext*, slowly forcing it to adapt to new practices.

In *Listen*, Neuhaus waves goodbye to the composer, the musician, the promoter, the hall and very importantly – form! Neuhaus left the economy, the institutions and the idea of

music as a sonic something with a beginning and an end. He skipped the institutions and turned musicians and conductors into middlemen of musical life. As a reward he was later expelled from music history.

Considering that the term sound art came into use in 1982, I think it is the strangest thing that experimental music has been redefined as sound art in retrospect. Its equivalent is to redefine old terrain according to a new map and give away terrain with the knowledge and resource produced in it.

Non conclusive

The definition of music will not appear from this text, or any other text. The definition of music will more likely appear from a common practice of music.

I am not saying everyone needs to write music for light bulbs. What I am saying is that my practice, and the practice of the artists mentioned in this text, explores what music can be. And, through that exploration we fall in and out of the discipline on a regular basis. The works ask; *could this be music?* Sometimes the answer is no. But, sometimes it's yes, and that seems important, even for the student who wants to write well for string quartet. And I do wish that the tendency in musical life was to be a little more expansive and inclusive.

If the borders of music are drawn too rigidly, the student is missing out on important steps that music makes under the heading of sound art, performance or some other label. In my examples; the importance of listening, understanding site and the connection between medium and composition technique, are steps that might be very useful, even for chamber music.

I would like to round off with Feldmans words concerning total consolidation in academy, *You made a small circle and excluded me; I made a bigger circle and included you* (Feldman 1967). The question that follow is which is the more preferable, including or being included?

Presenting art

Institutions, spaces and their questions

There is no right or wrong in meeting with an artwork, just difference. As an artist I have to work with the fact that *people are diverse*. It seems an obvious thing to state: *people are diverse*. However, to me the implications of the statement are significant. The differences between people are not evenly spread; we group ourselves according to similarity. Those who can sit and listen for hours are on the left shelf and those who can look at paint for hours are on the right shelf. Around our similarities and shared preferences, we build our institutions.

Because I make artworks that sometimes do not comply with existing modes of presentation, it is very important that I know which aspects of the works are brought out under different circumstances. How a work can be in compliance or defiance of an institution, when to be in the institution and when to seek alternative solutions.

My works have a sculptural side and a performative side. I generally want a spectator to focus on the performative side. *What is it doing?* is the question I would like to facilitate, not that I always accomplish this. I hear *What is it?* quite often and that indicates that I am doing something wrong.

My concern in this text is not that of institutional critique as it is seen in the world of visual arts. My practice is not subversive. My reason for addressing the institutions is to understand which elements in my works are brought out by them. I do not pretend to control what a work *is*, *does* or *means* to any one person; as I said, people vary. Still, if I know which questions to facilitate, which ballpark I am in, I can facilitate more precisely. Sometimes I have made mistakes and miscalculations in this area; other times it has been surprisingly successful. Here are two examples from the norwegian academy of music and the nordic music days, Copenhagen.

The norwegian academy of music

Throughout November 2015 I exhibited four works at the Norwegian Academy of Music. I had just come back from five months of paternity leave and had arranged it so that I would head straight into a pressured work situation. This was on purpose. I could easily fool around for a few weeks wondering where to *really* start. In making this commitment to exhibit I had to get the works up and running as fast as possible. In return I had a tight schedule from the moment I shifted my brain from being a full-time father to a researcher.

The academy consists of two rectangular buildings with six floors above ground. They are connected on the short ends by a bridge on the third floor. The stretch of building runs from west-southwest to north-northeast. I enter on the ground floor in the west-southwest corner and walk diagonally 237 steps to get to the north-northeast corner. That's where I placed the works, as far away from the entrance as one can get. The corner is a staircase where few pass by. Between each floor there is a landing, with room for a work, two or

three people, and passers-by. The staircase has windows from floor to ceiling and only indirect sunlight. In November the light in Oslo is mainly in shades of blue and grey. Since the hours of daylight shrink from 8h 44m to 6h 33m and there is normally no snow yet it's increasingly dark outside,. The sun is never *in the sky*; it just rolls on the southern horizon. From my experience working in the staircase for several days that month I would estimate that 5 to 10 people pass on one floor or the other in the course of an hour. That gives a spectator probable solitude of ten or more minutes on any specific floor. Apart from being a little cold and next to an elevator shaft, with the occasional rumble, it's a very good spot. I put *al Khowarizmis Mekaniske Orkester* between the fourth and fifth floors and *Stick, String and Light* between the fifth and sixth floors. On entering the building from the staircase on the second floor there is a bridge that stretches through an open space outside an auditorium, it has three floors of air around it and is equipped with a loitering area. This space has windows facing southeast, but since there is a tall building only a narrow passage away, the whole space rests in a shadow and is darker than the staircase. I placed *On Speed* and *The Singer* there.

The academy is filled with students and teachers. We study, research, teach and play classical, jazz, pedagogy, folk and contemporary music. There is a technical staff – about 10 men keep the house running – and then there is an administration of 70 people. The exhibition was also open to the public, but not very many found their way through the maze of floors and stairs to the furthest end. The concert halls are placed by the entrance for good reasons.

NMH has a front part for presenting, which is where the concert halls are, and then in the back, we have production spaces. I exhibited in the stairwells of a production space. Perhaps being in *production, teaching* or *learning* is a more active role than that of *spectator*, the space already belonged to the people there, the works were the strangers. This is the opposite of a gallery or a concert space, where the spectators are the strangers. Also, my works were open from 10:00 to 14:30 on weekdays; these are work hours, when we are awake and alert. Concerts are usually in the afternoon, this is a time for leisure and entertainment.

All the works except *On Speed* were equipped with buttons where a spectator could start a sequence, in other words one could stop, take in what it was and then, in one's own time, press the button to see a sequence. It is a good to have a sense of control when meeting something new.

In an institution of music one expects some kind of performance, music or sound. The questions seemed to be *what does it sound like, how can I start it* and *what is it playing?* I didn't hear *what is it?* In the course of the month teachers brought classes and individual students as a part of their teaching and the word spread from there. As a result, information on the exhibition came through the official channels as well as by word of mouth.

These three factors, being a guest in a production space, the spectator being in control of the situation by using buttons, and advertisement through official channels as well as the grapevine, seemed important factors in the success. How do I know it worked well? I spoke to colleagues and students. Some students enrolled in my course as a result. And, I keep a log in the computer software that gives me date and time for each push of a button.

A really nice thing was that the technical staff at the school were among the keenest spectators. My works involve computer technology, microcontrollers and mechanical gadgetry, these are all potential ingredients for male bonding. It turned out that some of the technical staff were into making things of their own, they even told me they'd bring their colleagues over from the Police Academy next door to show them. For a while I was on a first name basis with most of them. It reminded me of the importance of trying out different spaces for art.

There is something about the works in this context, it's not all circumstance. This is an institution for music learning, my works are curiosities in this context. They do not threaten to take anyone's place, and you can live a long and happy life without ever encountering one. This makes them a suitable expansion of what a *music lover* expects in this institution. I was very careful not to be confrontational. When a colleague, and they are all senior to me, would ask *do you consider it music?* I would say *I consider it composition*. That usually led to nodding.

Nordic music days in Copenhagen (2015)



Figure 28. The black diamond, Denmark's national library (2015).

I showed *Stick, String and Light* at the Black Diamond. This is Denmark's new National Library. It's a huge building on a canal bank in Copenhagen, hosting concert halls, exhibition spaces, conference rooms and the library. The festival was constructed in such a way that there were simultaneous events continuously and they were all free. Most of the concerts were held in rooms where you could close the doors, but a great many were held in an open space in the center of the house. This space was full of bridges and stairs, a café, rolling sidewalks and of course a generous mix of people. Some had come to see the spectacular building, others came for the concerts and some were simply looking for a beer in the afternoon sun. It was lively and quite noisy.

I find that a free festival tells an audience that *yes, it is OK to arrive late and leave early*. The lack of cost lowers the value of the music. This was a disturbance during the concerts I heard. Cheap tickets are fine, but free entrance leads to squandering. If you buy a ticket, you own a part in a shared experience and invest in it being good. Free concerts promote a browsing approach from an audience.

I had a separate room on the second floor next door to the spectacular place full of people and events. And I had a careful, fragile and silent work. At the time, the software was set to create various degrees of simultaneity of *something* from the *Stick, String and Light*. It was a first trip out of the workshop and just barely working. It was a little boring, but with very interesting instances for anyone who would lend it focus for five minutes.

THE BLACK DIAMOND							
	Atrium	Rifbjerg exhibition	Dronningesalen	Kirkebybroen	Holbergsalen A	Holbergsalen B	Karen Blixen Salen
15.00	14.50: Dania Brass & Anders Brødsgaard: <i>Lydbølger</i> (5 min)		15.00: Athelas Sinfonietta, Jakob Hultberg & Andreas Borregaard / Lasse Schwanenflügel Piasecki: <i>Gemmer mig for Rosetta</i> / Fredrik Österling: <i>Endymion</i> (35 min)	15.00: SCENATET, Signe Asmussen & Daniel Carlsson / Allan Grovgaard Madsen: <i>[Six]</i> (10 min)	15.00: Christian Blom: <i>Trio for Stick, String and Lightbulb</i> (Installation all day)	15.00: Birgitte Alsted: <i>Woanders</i> (20 min)	
16.00	15.30: Magdalena Meitzner / Anders Lind: <i>The Mosquito</i> (10 min) 16.00: Dania Brass & Anders Brødsgaard: <i>Lydbølger</i> (5 min)	16.00: Jesper Holmen: <i>Opera introductions</i> (30 min)		16.15: SCENATET & Signe Asmussen / Outi Tarkkainen: <i>Into the Woodlands Silence</i> (15 min)		16.00: Birgitte Alsted: <i>Woanders</i> (20 min)	15.30: Niels Rønsholdt: <i>Ord for ord</i> (Staged by Troels Prindahl) (35 min)
17.00				17.15: Jakob Bloch & Christian Westergaard / Jesper Holmen: <i>Eccen</i> (10 min)			
18.00	18.00: Dania Brass & Anders Brødsgaard: <i>Lydbølger</i> (5 min) 18.30: Kottos, Andrea Pellegrini & Vokalselskabet GLAS / Sunleif Rasmussen & Ursula Andkjær Olsen: <i>En drøm / a song and dance!</i> (20 min)	19.00: Jesper Holmen: <i>Opera introductions</i> (30 min)	17.45: Cikada Ensemble & Elisabeth Holmertz / Henrik Hellstenius: <i>Places of Sounds and Words</i> (40 min)	17.30: Eva Alkula, Heidi Äijälä & Jenny Vartiainen / Adina Dumitrescu: <i>Tuned to the Real World</i> (15 min)			18.00: International Contemporary Ensemble (ICE), Daniel Carlsson, Christian Damsgaard & Erik Røe / Eyvind Buene: <i>Seven Songs (from Motion Girl)</i> (30 min)
19.00	19.00: Dania Brass & Anders Brødsgaard: <i>Lydbølger</i> (5 min)			17.45: International Contemporary Ensemble (ICE) (Cory Smythe) / Rune Glerup: <i>Sonata in 7 Movements</i> (15 min)		19.30: Morten Riis: <i>Opaque Sounding</i> (30 min)	
20.00	20.00: Dania Brass & Anders Brødsgaard: <i>Lydbølger</i> (5 min)		20.15: Theatre of Voices / Erik Peters: <i>Variationer over ett tema med variation</i> / Rebecka Sofia Ahvenniemi: <i>O Viridissima Virga</i> / Cathy Berberian: <i>Stripsody</i> (30 min)				
21.00	20.45: Wayne Siegel <i>No Water No Moon</i> (15 min) 21.00: Dania Brass & Anders Brødsgaard: <i>Lydbølger</i>			21:00: asamisimasa / Christian Jaksjö: <i>Encountering the Imaginary</i> / Jan Øyvind			21:15: Faint Noise / Ylva Lund Beranger

Figure 29. Program from Nordic Music Days (2015).

The festival program was designed in such a way as to only state my work once on the top of a chart, while in reading one would follow the hours down the page and not look back up at what you might have missed. As a result, people didn't know it was open. In this already trying setting, bad assessments. I misled the audience through a faulty use of light and I let the installation run continuously. Also, the noise from the building made me have to close the door from time to time. In sum, these were an almost impossible set of hurdles for the audience to jump.

My initial plan was that people could enter, orient themselves and then press a lit button to start a sequence. I darkened the room to get a focused situation. It did not turn out that way, the work ran continuously and I kept the darkness. I had a button meant for audience control but it had a short circuit and kept killing the power to the microcontroller. I had to go around it and make a software solution for a continuous run on the spot.

Now, running an installation like this continuously is not good. In a music festival setting, things have a beginning and an end. While running it says, *I've already started, you are late and you are disturbing.*

Then there is the code of light, institutions for music never turn down the light until after one has entered. The darkness in the room said *do not enter.*

In addition the dark room where people could come and go as they wished was much too fragile a situation, people did come and go, if not many, but even I felt like an elephant entering in, no one wants to disturb!

Finally, the events in the center of the building just outside my door went off every hour. There would be a short concert of a music considered suitable for a public space – that is, loud. Any kind of concentration that had accumulated in my space was washed away.

The initial questions became *should I be here? Is it correct to come in? What is that?* My work was too quiet and too slow, and I presented it in violation of the code for light and with a closed door.

The lessons from Copenhagen and the academy of music are that if I let the audience start the work at will, they stay for the duration of the performance and invest in their experience. Also, I must always insist on silence around the work. I don't make loud things, and to establish an intimate space between a spectator and a work I can't have a constant reminder of the space next door ruining the concentration. I should follow the institution's codes of lighting to promote *what is it doing?* and *what does it mean?* rather than *what is it?*

Then there is something about the institutions. They are both music institutions, so that's not the issue. At NMH I was exhibiting on the spectator's home turf. This is their place of study, and questions are *in the air* so to speak. Also the duration of a month lowers the intensity, one can always come back. Long durations take the rush out of things. All of these factors are calming and make for a good room to meet something new.

Festivals, on the other hand, have a hectic pace and is no ones home turf. We all carry our masks the best we can, the festival artist meets the festival spectator. The whole setting promotes self-consciousness. And the program of hundreds of concerts in three days, all free and running simultaneously is stress inducing. For me this is a difficult situation in which to stay open, and that makes it hard to meet new things properly.

Then there is the building. In a spectacular place like the Black Diamond the facilities create a particular expectancy. For me, the name conjures wealth, excess, Africa, enslaved miners, the blind celebration of the exclusive few – not questions and knowledge.

These are not in the mix; neither are books or art. To me, the house supports monumental thinking, not vague questions. My small and careful work was in defiance of the situation and too small to avoid being swallowed, especially since the artist put up a few more hurdles by shutting of the light and closing the door.

As an additional comment to this, to back up my assessment of the situation, I'd like to mention that the opening night of concerts was set in a neighboring space, the Kings Lapidarium. For another occasion this was filled with statues from castles around Denmark. It seemed like there were hundreds of statues crammed together. The statues were of the subordinates in the kingdom, which at the time included Norway. *Fisherman from Ålesund* it said at the foot, *Peasant lady from Elverum*. And they seemed scaled 1:1. We could see their arched backs and short stature, faces with stories of hard labor and scarcity of food.

When I spoke to those who attended, no one mentioned the music or sound-art, they were all very excited about the space and the statues. The art had been outshined by the space and the statues. I believe a work should be stronger than the space in which it is presented. If it isn't, it should be presented elsewhere. If the work is in defiance of the space it needs to be extremely strong. John Cage's *4:33* comes to mind as a reference everyone knows. Less well known, but the works I made with *Verdensteatret* are also in this category of strong works. We filled high-end concert spaces such as EMPAC, black boxes or the National Art Museum of China and completely invaded the spaces. Everyone followed our cues. People would sit when and where we told them. I am not there with my works, I'd rather have a hole in the wall on the other side of the tracks, or a staircase at a teaching institution. *The Singer* can be thrilling in an intimate space and tragicomic on the big stage.

I worked with Verdensteatret from 2004 through 2010. In this periode we made *Concert for Greenland*, *The Telling Orchestra*, *Louder* and *And the Questionmarks Started to Sing*. The documentation on these works can be seen at verdensteatret.com

Darkness can substitute solitude

A performance demands a heightened awareness for a limited time, so it is well suited for a silent situation and a lit stage surrounded by darkness. Darkness tells me to be quiet. The lit stage says, *pay attention!* But, some situations demand a break from this customary use of light. For the premier of *Weak Questions Strong Music*, *hats off to Burrows and Ritsema* I went with the default way of lighting the stage and darkening the audience. In hindsight I understand that I should have left the lights on for this piece. In *Weak Questions Strong Music* I wanted to challenge the music in terms of having it struggle to remain in focus for the audience. I wanted there to be a *beauty in spite of* situation. The music is written with weak and somewhat clumsy single parts for the musicians, I wanted the music as a whole to seem beautiful *in spite of* the parts it was made of. I should have added, the music as beautiful *in spite of* also working against a lit situation. But, I forgot to keep the lights on. In dimming the audience and lighting the stage I dealt the music a good hand and turned it into a well-shaped concert piece. I wanted *Weak Music Strong Questions* and ended up with *Weak Questions Strong Music*. I kept the latter title as a reminder to myself that full light puts pressure on music. Light makes it more demanding to stay in focus. Light brings the presence of the room, the color of the chair I am sitting in, the dandruff on the shoulder of the person in front of me and the feeling of being one in a large crowd. I much prefer to feel special, to feel solitude, just the music and me. Darkness allows for that delusion.

It took me a couple of days to figure out what went wrong with this premier. Obviously there are some challenges in the music. I don't think it's grey enough, and it could be doubled in duration. But, the light aspect dawned on me when I thought back to where this piece came from. I saw dancers and choreographers, Burrows and Ritsema, do their *Weak Dance Strong Questions* (Burrows and Ritsema 2001). They not only let the work light remain on, they also left the doors to the hall open. I failed in my *hats off* attempt, I didn't consider the institution and its shaping forces, nor did I consider the working lights as a medium with the complete situation as its content. I shut the light off and focused on the performance, I should have kept the light on and left the performance less focus.

Ideal spaces

In a gallery you can go where you want and stay as long as you want, it is an individual and free situation. The lights are on for you to see the art, they also signal that you can talk and discuss what you are seeing, although in a *hush hush* manner, it's only an *almost* social situation. I have exhibited my works in full light alongside other works and it always bugs me that people seem to take less time. They wander by saying *ahh interesting, it moves as well?* There is something about group exhibitions that remind me of *high end shops*, they facilitate browsing.

Apart from *On Speed* my works belong in focused situations. They easily slide over to the *ahh interesting* side and need every handout they can get, dark surroundings and spotlight being one possible solution. But, if you are alone with the work, darkness is of less importance.

There is a line of ideal spaces and lighting from *On Speed* through *The Singer* to *Stick, String and Light*. The line is drawn from an exhibition space with good light to an *in-between* situation and further to a performance space with a lit stage.

On Speed needs good light to be visible. The best solution I have found is large windows facing north, northeast or northwest on a cloudy day. To help, if needed, I use a 50w focused light at a 30° angle from the same side as the windows. This work does well exhibited in a calm space with places to sit. It's a very slow process so anyone attending for an hour must be allowed a seat. It's quite rugged in terms of circumstances, other works or other people do not disturb too much. *On Speed* is suited for a gallery space.

I think of *The Singer* as a *being*, not an instrument, machine or a medium. To me it expresses itself, not another work. Its sequences are of relatively short durations, 1–3 minutes. It is a quiet and careful work that requires focused observation. This work needs a dim room and enough space for the spectator to move around it, I would say 20–70 square meters depending on the shape of the room. Seating at different angles is also good. *The Singer* requires absolute silence. Since it is quite detailed it invites to close scrutiny and an intimate relationship, for this reason it is best to be alone with the work. People tend to lump together in groups, continuously checking with each other whether they are in, or out, of line. Being alone with a work allows for less self-awareness and greater freedom to move around. But, solitude in such a situation is a rare thing. In some situations solitude can substitute darkness. In other situations darkness can substitute solitude; the larger an audience, the darker the room should be. The work must stand alone, not alongside other works – a receptive situation for its performance cannot be secured in a room with four other works. It needs to be presented alone in a space where it has complete focus and the spectator needs freedom to both move around and sit down. A dim room that one has to seek out is probably the best.

I think of *Stick, String and Light* as machines for performance. They perform other works, like instruments. It requires a dim stage so that the instrumental light bulb shows as well as the moving stick. Due to its small size an intimate stage is required, I estimate a maximum of 50 people with an auditorium seating being the best. The auditorium must not be steep, as the work cannot be seen from above.

Light and darkness

In the following paragraphs I discuss light as a means of controlling focus, light as a signal system, light to draw shadows and light as an instrument. Then, as a consequence I explore the performance space versus the gallery space and what to do with the *in-between* works. I mainly use my *The Singer* as an example. This is the work where different applications of light are most telling.

I vary between using direct and indirect light. Direct light is an instrument in this context. Indirect light is more of a vehicle to draw a shadow, for a movement to show or an object to be seen. I therefore deal with them separately here. Another aspect is that lighting or dimming a room is connected to different forms of art as well as different modes of audience behavior. Light and darkness tell you where to look and when to listen. A lit room opens up to conversation, mobility and a public sphere. Darkness, on the other hand, brings privacy and silence.

In *The Singer* I use light and darkness in four different ways. My first use of light is a well-known signal system: a lit button that signals a spectator to *push*. Elevators work in this fashion: buttons with light tell you to push, and after you have pushed the light goes off until you are at your floor or, in the case of my work, at the end of a sequence. Then, the button lights back up. When the button is pushed *The Singer* plays a sequence, and while it does so the light in the button is turned off. Darkness from the button tells you where to focus. A lit button tells you that the sequence is finished. The use of a lit button in an exhibition situation is an important insight that I made through this research period. Originally, I used a motion sensor to start this work. When someone approached, the motion sensor would trigger a sequence. This works fine, but it surprised the spectator and the result was that the work came alive seemingly independently. *The Singer* was in control of the situation, and the spectator was pushed into a more passive role, sometimes even shying away from it.

I found that with a button for the spectator to push there is a shift of power. The button gives the spectator control of the situation. And equally important, by pushing the button, the spectator initiates a contract that states *I pushed the button, therefore I will stay and observe what happens*. Through the button the spectator takes ownership of the situation. And, since I try and keep each sequence short, most spectators push three or more times. With the motion sensor they would keep a distance, uncertain of this *living, out of control, thing*.

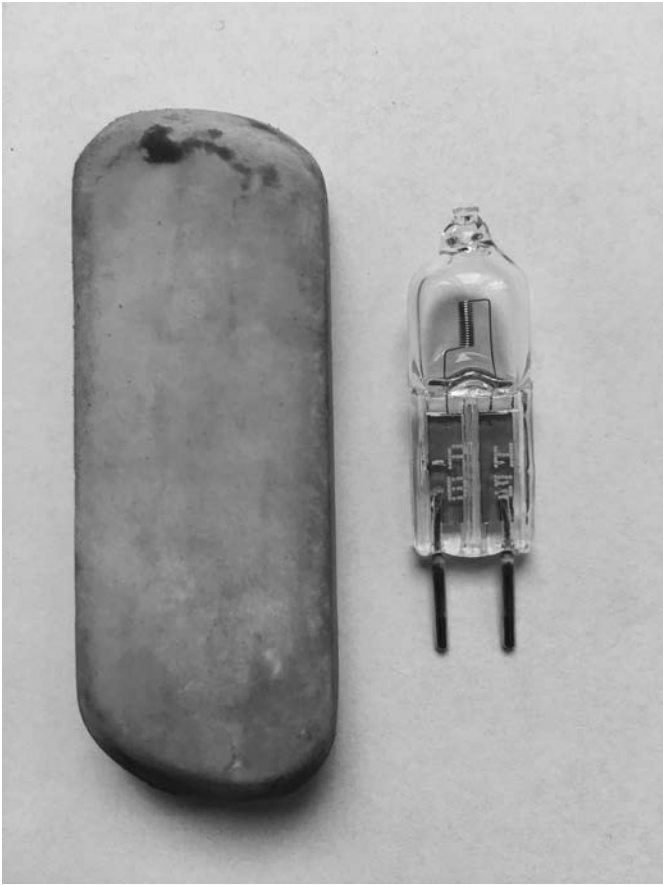
The second way of using light is to control the focus of a spectator by using a spotlight to outline the work and have it stand out from its surroundings. I dim the room for this to work and create a situation where strong spotlight is surrounded by dimmed ambient light. The one who controls the light also controls the attention of anyone watching or listening. In a concert or theater, the expected light signals are ON for entering, chatting and leaving, and OFF for listening and being silent. It is

The Wooster Group did Hamlet at the Pompidou-center in Paris. For every technical difficulty, and there were three full stops during the performance, an actor took the back of a wooden stick chair and stepped into a spotlight. He stroked the back as if it was a harp, and we heard harp music over the house speakers.

a way of controlling a large group of people in a collective fashion. The spotlight zooms in from a 300 square meter stage to a 2 square meter spot, focusing all the intensity and awareness to that spot. Generally, the musical performance is kept to an hour or two, and has a narrative thread that leads the listener through the time. Then there is a break and a second half. We sit down and are carried away, forgetting ourselves. Light surrounded by darkness, music surrounded by silence. This parallel is too good to not be true. For *The Singer* it is a way of demanding proper attention while its short sequences are played out.

But darkening the audience space does not only lead to focus on the lit areas. It seems to me that an oxymoron of light and darkness accompanies the control of focus. Turning the light completely off can fill an empty space. Darkness is connected to the mysterious. It will always hold more secrets than light. And, secrets make me pose questions: *What's with the darkness? What is it that you don't want me to see?* There is a slight touch of dishonesty about darkness, a touch of illusion, where things are never what they seem. Where a chair can become a harp in a split second and nothing is safe. Although concerts and theater are not pitch black, the dim situation is accompanied by a degree of darkness filling the room with secrets (and a sense of being in a situation within a parenthesis), *seeing and hearing is not believing* in this situation.

The third way I use light and darkness is to make a three-dimensional sculpture into a two-dimensional drawing. I learned this technique from working with *Verdensteatret*. I hang a 120 x 200cm sheet of diffusion filter behind the thing. It works like a bobbinett. The lamps I use have two clear convex lenses between the bulb and the opening. When I light up a work in front of the diffusion filter I can *draw* the work in shadows with these lenses. The filter is reluctantly transparent but when lit with an object partially blocking the light, the shadows become very dark and sharp and make a two dimensional drawing on the opposite side. I expand the work from being a sculptural machine to also being a drawing.



The instrumental bulbs also cast shadows. The most effective way of doing this, that I have found, is to use a bulb with a small filament – that’s the tungsten thread in the bulb that produces the light. If the light waves come from a small source the light is straighter and makes for a sharper shadow.

Figure 31. Eraser for size, *projection lamp, type 7724, 12v 50w* (2015).

The fourth way in which light is used is as an instrument. In *The Singer* and *Stick, String and Light* I use Philips Focusline bulbs for this purpose. Fifty watts seems to have an appropriate resistance for pulse-width modulating at 12v 5A. I tried to use a 100-watt bulb but the pulses became visible and the lamp projected a beat, I think it was because the resistance was too high. Along with the bell, string, arm and dancing threads, the light also has an envelope and with this it can shape time and intensity, and therefore perform the basic structures. It has an attack, immediate like a piano or from nothing like a clarinet, a decay where it stabilizes after the initial attack into a sustained period, with or without vibrato-like minor fluctuations for the sake of liveliness, and finally, a release. The breathing out, abruptly as if coming to a halt or in a smooth manner, vanishing into the darkness, an envelope of time and intensity.

Digressions

Building and programming

Shrubbery

One of the pleasures in life is walking past a shrubbery full of finches. I see the shrubbery and hear the birds, but I cannot see the birds. It makes me want to stick my head in. A shrubbery seems to me a protected world of its own. It has an upstairs and a downstairs. Hidden rooms near the stem. Leaves coat it and only little birds can enter without making a mess. For many years I held the shrubbery as one of my aesthetic ideals. Everything I built I wanted to have some of this quality, transparent but full of surprise, something you would want to stick your nose in.

Tools and traces

I like old tools. My favorite is a wire-cutter that I found in a field. The marks on it tell me what it has been through. Anything old has this quality of telling a story; I just happen to like tools. The quality of telling a story in this fashion is another trait that I have tried to transfer onto anything I build. I start out with an idea of what to do. At some point I make adjustments or even large alterations. The process of building has taken on a life of its own. My idea of *what to do* is left behind as a mere point of departure. I do not start over, regardless of how big or small the alteration might be, I want it to leave a trace. I want the decision and mark from the chain-cutter to be visible – *that is where something big was cut off, you can still see the seam from the welder.*

Cables



Figure 32. Siaff .5mm to the left, standard hardware store cable to the right (2016).

Siaff .5mm laboratory cables with highly flexible fibers, red copper, and a black matt finish on silicon rubber. If I have a cable of choice, that is it. Other than that I will take what is at

hand. I do not concern myself very much with resistance and such. If it works, it works. But these laboratory cables are special. They hang in a nice way. They flex around a bend like lace. Their particular way of bending make it seem as if they have grown up from the floor rather than been hung down towards it. When I organize my cables I always think of renaissance polyphony in the style of Palestrina. His clarity of text and musical line is an ideal as to how my cables run. Not that there is any text involved, but his clarity meant he had to create room for every melodic bend to be noticed. He balanced the amount of information perfectly. His music is dense and transparent at the same time. I don't expect anyone to notice this, it's too far off in the world of associations. But for me, for internal use, I try to maintain Palestrina's contrapuntal vocabulary – learned by musicians since the sixteenth century – *when working with Siaff .5mm cables an upward step of a sixth is always followed by a downward second.*

Materials

I build with black steel rods, hardened steel rods, any piece I find to be useful and copper pipes. These things are easy to get a hold of and easy to shape. Black steel is quite soft. An 8mm rod can be bent fairly precisely with your hands. Rods of 0.3–4.0mm hardened steel have the advantage of being easy to bend, flexible and they still keep their shape. They are thin as twigs with the flexibility and strength of a thick branch. Tear apart any household appliance and you find lots of neat little parts, inside old terminal connectors there are useful small screw connectors. Copper pipes are stiff in relation to weight and they add the dark gold copper color, I quite like that in a metal construction. If it's all black, grey and blue it seems to lose depth and becomes two dimensional from a distance – a bit of color prevents this. On a couple of occasions I have used wood as an insulator. I used an old teak handrail that I picked off our sailboat. I am still chipping away at it. Hard wood, sandpaper and an expensive oil or varnish, are the makings of a nice day. I use Le Tonkinois, it's based on Chinese tree oils and linseed oil. It's soft and easy to apply and still hardens in the same way as a varnish. I decided to tone that down. The combination of copper and oiled teak has a strong timestamp and makes anything look like a radio from the fifties. I don't mind this, but on more than one occasion it has been interpreted as nostalgia and that's no good.

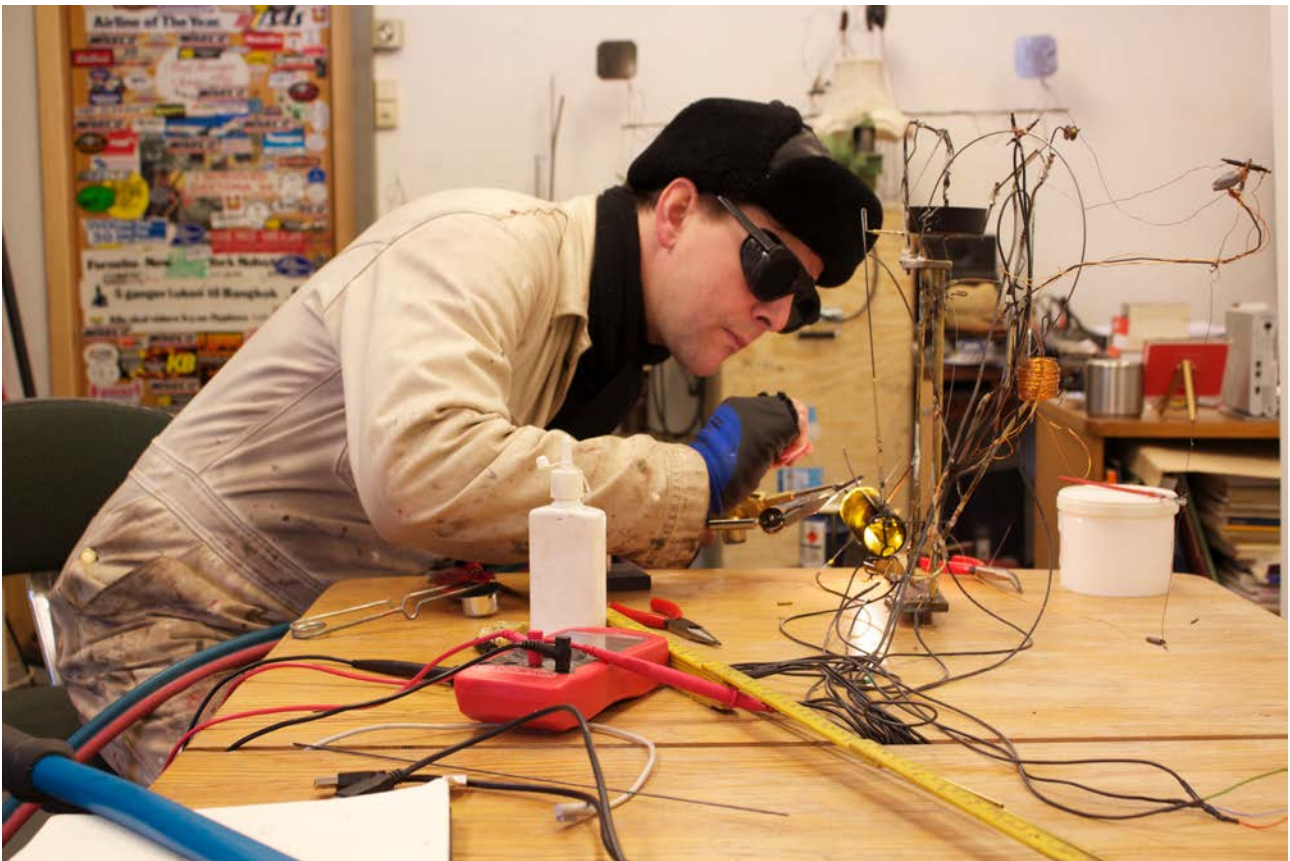


Figure 33. In the workshop (2013).

Joining things together

Welding, hard soldering and soldering are the techniques I apply to join things together. I used to spend a lot of time threading my parts to make them fit like nuts and bolts, it had a much cleaner look and could be taken apart. Today I weld or solder. It's like exchanging a paperclip for glue. It has a different look, but my main reason is that it's faster and I really like to weld. Forging metals together at 4000°C has a feeling of being close to some kind of core. The metal opens up, melts and joins in a yellow and red pool, only to close and turn blue and black when it cools down and closes the new seam.

Plug and pray

I remember rigging for rehearsals at one time with *Verdensteatret*. Håkon Lindbäck and I were setting up the sound system. We had a big, slightly run-down space in an old brick building waiting to be torn down. I plugged the electric chord of an active speaker into the socket. The signal chord was not yet plugged in. As I turned the speaker on, it played soft music. The music was from our sound system; the signal was leaking into the electric wires, and somehow it found its way to the membrane of the speaker. That was odd, but not dangerous in itself; but the leak indicated that 16 amperes at 220 volts could leak the other way, into our sound signals and the faders we operated. It didn't; the sound stopped

so we just went about our business. Being an autodidact in electronics, programming, welding and soldering means I plug and pray a lot. To speak of resistance in the material becomes very literal: at times it's like an emotional rollercoaster. When I burn a circuit close to a concert or exhibition I may just have secured myself work for every waking hour. I usually don't know what happened, so I have to recreate the circumstance and have it happen again to observe; learning by burning. Suddenly everything works and I don't know the reason for this either, it's all a part of the daily humiliation that sets in when Jupiter aligns with Saturn on a full moon.

Frames within frames

When programming I work a lot with algorithms containing random elements. If you listen to the distribution of register in *Strong Music Weak Questions* this is a good example of what I am about to point out. Each instrument has their full register available. But, if I were to distribute the available pitches across the full register all the time, the only variation in terms of pitch would soon be the pitches alone, I would *numb* the effect of register. If I use everything, in any given parameter, all the time, that parameter turns numb, it sort of stops working. In order to avoid this I use a system of *frames within frames*. It's my own little invention and I find it to be simple and effective. I say to the computer that the complete register of the instrument is the largest frame. Let's say we have 100 values within that. Then, I divide that into four registers from treble to bass with 25 values in each. When the computer writes music for the instrument I tell it to stay within each register and jump from any register to another every two to three minutes. When this is balanced right, I get, and this is the important part, *sufficient identity* to create episodes and *sufficient variation* to have a lasting and interesting coherent total.

This example is a simple one, for illustration, with one parameter only. If you choose to apply this you should remember that you can have as many *frames within frames within frames within frames...* as you need. The important part is to find the balance between *episodic identity and sufficient variation in the total*. The total often involves more than one instrument. This means that to apply this technique to all instruments involved also means to balance them in accordance with each other, or choose not to.

Let me also add that I do this in as many parameters as I see fit for any given piece. In *Strong Music Weak Questions* I used the principle of *frames within frames* for pitch, register and stepsize. This last one, stepsize, is very decisive in terms of character. If I have a long stretch where the maximum step an instrument can take is a third, I find myself drawing lines. This is because if there is an equal chance of repeating the note as playing a second or a third you are likely to seem as if circling around a note before gradually moving slightly away from before circling around another note. If I have another episode where the instrument can only take steps the size of sevenths or larger – up to the ninth, I find myself making dots and jumping all over the place.

Apparent causality

This is a method I use whenever I am trying to get to know an installation. I am looking for its limits of coherence as they appear to me. I need to know two things. Where does a sequence of events fall apart? And, where does a sequence of events appear too tight, so that it starts making promises it can't keep?

To get to know an installation's abilities I set up a situation where I can control the degrees of apparent causality. My example here is *The Singer*. After I had built it, and during of course, I needed to get to know its abilities. I make a list of its elements, the arm, the light bulb, the bell struck, the bell dampened, the string and the dancing threads.

These are numbered 1 – 6. Then I set up a program that initiates any number of elements in a flexible amount of time. And this is repeated in any number of cycles before the settings are changed. The result could be that I get string, light bulb and arm activated within 500 milliseconds every 30th second, 5 times. If so, they would seem almost simultaneous. A causal relationship is indicated and the connection between these elements is strengthened. Then I could get dancing threads, bell struck and string with an onset somewhere within 15 seconds, this would then seem less connected, perhaps unrelated, falling apart. I vary all of these parameters; number of elements, timeframe for onset, length of cycle until a new timeframe is opened, and number of cycles. With this approach I can observe how the elements connect, some need to be closer together, some can stand alone, too large timeframes with too few onsets makes the whole sequence fall apart, too strong indications of causality promises too much, and so forth. It's a way of getting the elements in balance with each other and the timespan I have for them. I have never tried using *frames within frames* for one parameter alone. I always make a sieve with layered grids. The difficult, and fun, part is to balance them internally and against each other.

The subjective yardstick

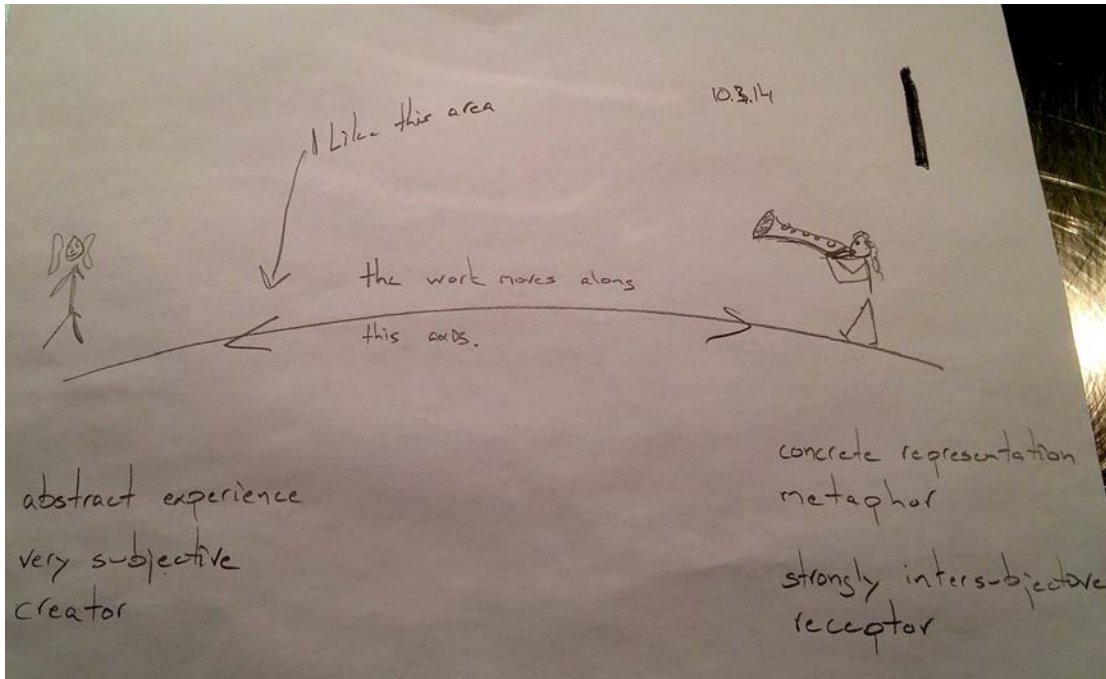


Figure 34. The conception of a work (2012).

I drew figure 34 a few years ago. To the right you see someone playing a soprano saxophone and to the left you see a person listening. I wanted to illustrate how the conception of a work moves along an axis from being played to being listened. I figured that if the music is well known within a cultural hemisphere one can have music as a concrete representation, and the music would be conceived through being played. We would have a strong inter-subjective understanding and the listeners function would be that of a receptor. As an opposite I thought an abstract music would be very subjective and the listener would be a creator of the music, moving the conception of the work into the head of the listener. Today I see I was wrong. It's not an axis for the conception of a work, it's better described as degrees of agreement along an axis between concrete and abstract. I speak only of the aesthetic point of view, I am aware that associations can be just as discrepant here as on anything more abstract. But aesthetically, to the right we agree on what we are hearing, creating very much the same patterns. On the left we start to disagree, creating discrepant patterns. I would put *Amazing Grace* on the right side and *Crippled Symmetry* by Morton Feldman on the left.

For me this points to the world as very much a mirror of myself. I am the center of my universe. I am the subjective yardstick with which everything is measured. *Is it smaller than me? Is it bigger than me? Is it faster than me? Is it longer than my attention span? Is it a bit too dense for me to discern?* My subjective yardstick measures the worlds deviation in relation to me.

Through this understanding I can point out some presumably interesting areas for artistic research. Based on the notion that I want the work to be constituted largely in the recipient's head and I want to challenge our cognitive abilities, yet accepting them as frames. The areas I became aware of can best be described as being on the verge of our perception. Tempo and rhythm is a clear example.

Pitch is nothing but a cognitive metaphor for frequencies... ... Karlheinz Stockhausen in his 1956 essay '... wie die zeit vergeht' described the the chromatic tempo scale starting from the observation that 'pitch may be understood as the microtime equivalent of rhythm.'

(Ernst 2016b, 32)

When the tempo of a steady beat on a snare drum gets fast enough, it becomes continuous. The drum starts to draw a line by way of sustained duration. At the slow end, the connection between beats is lost. Right around where these transformations happen there is a grey area where the world turns unclear and open. *Are these beats, or is it a line?* Where we as individuals no longer agree on what we are hearing or seeing. Through disagreement the individual spectator is articulated and the artwork is multiplied with the number of spectators. In this opening there is a vast potential for art.

On size

The size of *The Singer* is not so interesting to me. It was a mistake to give it a foot, suddenly it had the height of a young boy, I immediately recognize this size, transpose myself into it and feel very much the same. Encountering a human shape or size does not alter me in a noticeable way.

Small things are more interesting. If they are so small that you have to stick your nose in them to take in the details they are even more interesting. I think it's because they alter my normality, I transpose myself into them, I become small. Or, to turn it around, a situation is transposed into them and I become a giant. Small things are invitations to close scrutiny and close scrutiny opens up a small and intimate room between the object and me. Intimacy introduces the smell of something and is associated with trust, comfort, lust and revelations. These are all emotions with strong appeal. When I build things I try to make them small and always keep something hidden, a space you have to bend down and get close to see.



Figure 35. Space between two metal plates at the bottom of *The Singer* (2015).

An example is the hidden space at the bottom of the main structure of *The Singer*. There's nothing in there, but bending down and getting close heightens one's awareness of detail. Large things are interesting in a different way. They inspire awe or fear. A typical expression is power, something monumental. For large size to work properly an object or a

picture has to be so big that you need to take a step back to take them in. A level of detail must be lost and your head should need to tilt a little backwards. It's a very submissive position, standing at a distance with your head tilted backwards – the posture of awe. I sometimes try to translate scale into the musical parameter of amplitude, it's also referred to as volume. In the second chord of *Bring Me That Horizon II* I try to introduce large scale in the music. The size of the music up until that point has been small or medium, and suddenly I introduce *Grand*. I hope this point makes a listener tilt her head back and open her mouth slightly.

Large scale is monumental, free of doubt. It's harder to find room for my imagination in large things, they don't invite, more often they threaten. You never see an angry mob beheading a miniature, it's always a large monument. Somehow this makes large scale less poetic than small scale. *A bit of moss may well be a pine, but a pine will never be a bit of moss* (Bachelard 1958, 163).

On appearance

If a work indicates strong and persuasive abilities this needs to be followed up by what it can do or else the work will be a disappointment. An example would be *Walking Head* by Stelarc (Stelarc 2006), It's a six legged, interactive walking robot two meters in diameter, I saw this in China at the national art museum, we were in the same show, *Synthetic Times 2008*. It is a very impressive work, but something was off. It sort of walked, but it had an industrial design and looked as if it should be climbing up the walls.

I think it's better for something to look less capable than it is. A little girl lifting 50kg is amazing. I would cloud her in mystic powers, Pippi Longstocking appearing before us. For a grown man 50kg is the least I'd expect. Similarly, *The Singer* looks, and is, very fragile, not as if it can move, sing or do any kind of performance. I think this *weak* appearance gives it an advantage. It surprises us in a positive way by doing more than it looks capable of. Someone else might have built a machine with the same capabilities –, and let's be honest, the capabilities are few. The string and light make nice envelopes, but the threads barely twitch and the arm goes up and down, it's cool, but there are more advanced machines out there. If someone else built this machine and gave it a slick appearance, wrapped in a chrome chassis, I would be disappointed at what it did. I have a rule of thumb, "Don't look as if you are going to the moon unless you are." In connection with my working on *The Singer* I wrote down the following:

The potential in the elements, as they stand still, must be just so. It is relative to expectation.

The balance between a *thing's* appearance and a *thing's* abilities should be in favor of its abilities and facilitate a positive surprise. The *oohhs* and *aahhhs* one might get has less to do with what is actually going on, than having this balance in place. My choice of slim materials springs from my liking of shrubberies and Palestrina. I stumbled upon this balance through them. A metal rod of .4mm can at times be hard to discern from a similar cable so when these things start to move and there is no sound from a motor, *oohh*. I am

underlining the importance of a first impression. Having a spectator *open up and lean* in is a way of opening a door into the work, it's not the work in itself, it's the handshake.

Appearance and ability should point in different directions. This facilitates surprise, at its best it divides and causes doubt, and doubt forces me to think. It allows me to meet myself in the door, turn back and think it over once more. I find that doubt is closer to understanding than certainty.

Digressions on methods

Imaginative memory

To assist my reflection I map out the gap between what I wrote down, and what I remember writing down. To forget is also to add. The imprecision of a memory is a document of a creative act.

On quality

My American friend Lars Dyrud and I spoke about work some years back. He works with space physics and at the time he was programming models to simulate how something molecules move in the tail of a meteorite. Lars explained that it's a model based on the few things he knew and that the enormous amount of unknown factors guaranteed it was wrong. No one would be able to check this for another hundred years or so. Regardless, it was a start. This type of knowledge grows in small steps and it's important to be as precise as possible. To me it sounded like an absurd situation. Then we got to talk about the amount of work put in, and he said something very relieving: *It's not the amount of work, it's the quality of the work, that's the only thing that matters. If one day you are not working well, stop. To think in terms of quantity is a trap.* I love to count things, the higher the number, the better it is. But that is deceptive in many instances, often better is more important than much. Art and space physics have in common that it is all about quality. If I am not working well, I stop.

I have found that the only way for me to accommodate this is proper sleep and to have as short a way from pillow to workbench as possible. So, if I need to go to the office on a particular day I always try to start with a nap. I have a one-hour commute from our house to the office, and sometimes it involves delivering two or three kids on the way. By the time I get to work my head is stuffed with practical issues, and I have a hard time finding a state of concentration. So I nap. I have a good chair that I tilt against the wall and I put my feet up on the office chair. I nap for 15 minutes in the morning to wipe away the disturbances of the world and start with a clean slate.

Thoughtless and attentive

I don't get very far if I continuously cover my back; I am not good at that. I accept a certain degree of inconsequence, I don't like plans, it's more important to be sufficiently thoughtless. Being thoughtless is being rash, quick, doing the unintentional and accommodating the surprise. Attention is required to see the scope of the unintentional.

Found music

If I *create* a music, I am the creator of something new in this world. If I am a good creator, chances are it might even be good. This way of understanding music and composition carries in it the idea of *originality* and *creation*. Neither of which I subscribe to. My belief is that everything is largely a compound of existing *things*. These *things* are sounds, intervals, phrases, forms and relations to other subject matters. This can be coarsely expressed through arithmetic. Take my music, subtract all traces of history, musical and otherwise, what is left is of my creation. Chances are there isn't a whole lot left. That's not to say my music is without value, it's merely another shoot on the branch of the tree of musics. Slow growth makes for solid wood. But there are more gratifying ways to think about it. Belittling oneself with the burden of history is stalling.

I find it much more plausible to think in terms of *revealing* a possible music. As if it's all there. Just waiting for me to find it, chip away to shape it slightly or assemble it in a different manner – as if working in stone, shaping one or building a wall of many. Creativity exchanged with hammer and chisel. This gets me out of the situation of being an original creator. I never felt creative, but I often feel curious. In this understanding of music and composition I get to be the adventurer. I get to discover things that I sense are waiting, without the risk of falling off the edge of the world, this position leaves me with a comfortable distance to the music, it's not mine anyway. Driven by curiosity I go further than I would if it were close to heart. And, it changes the evaluation of my music, interesting is of higher value than good.

In being the finder of a music, there is a distance that lets me be my own critic and reader. In a sense this is an irresponsible way of being a composer, but I can afford this irresponsibility. I am not building houses for people to live in. I don't have to take the chance of an earthquake into my calculation. Boredom or bad music is the worst that can happen. Neither of which are very frightening.

Setting goals

In high school we had arts and crafts. As a part of this class there was a sewing-machine test. The test was to draw a teddy bear on two pieces of fabric, sew along the lines leaving a 2cm opening, fill the bear with rice and close the 2cm hole. I sewed first and drew along the seam afterwards. It was a fairly limp teddy bear but I got top score on the test, not a stitch outside the line.

Getting in the right mood for writing

The initial tone of text depends on the mood I am in when I write it. It's not like music, which is independent of mood, text is somehow closer to my voice and tone in the initial moment it is written. I don't write my music in the same way. I pretend to *find* or *edit* music, so it's more distant to mood. Regardless of how much I sand text down, the mood stays there. This has taught me that spending time doing something that gets me in the right mood is useful. I need to fool myself into the right mood. So, recently I am learning knew knots. I have a great book with *88 essential knots*. If my mood is wrong for writing I practice the knots I know and try to learn a new knot that morning. This is fairly easy, knots aren't hard and the exercise connects a tactile action with brainwork. It feels important that my hands and head are solving it together. For me this gives a great sense of accomplishment – *Look what I can do!* I know reef knot and smugglers knot, I can tie two half-hitches with one hand, I know flying bowline, bowline, twin bowline, tautline, clovehitch, sheet bend and figure eight knot; I can splice my own hoops and thimbles and I know where to apply them! Knots are a very concrete and certain knowledge, reassuring in a sense. And, as if waving a magic wand, I am in a great mood and ready for anything!

Daydreaming

My favorite spot to write, or do any kind of work that doesn't require me to be in the workshop, is my wife's study. It's a 15 square meter room on our bottom floor. It has windows on two sides facing east and north, a small fireplace, her piano, books and a desk. And she has covered it with thick carpets, I'd never have done that, but then she does a lot of things better than me. There is a huge Teddy Bear Chair by the fireplace. It's a replica of the real thing but it serves the same purpose. It protects whoever sits in it. It's like sitting in the lap of a big teddy bear. It closes the world around me. The chair, me, my computer and the fireplace are the only ingredients in that situation, it's very good for concentration. If I get up from the chair and go sit by the desk underneath the windows there is a drastic change. The view out her windows has high birch trees and grey sky. The only present sounds are from whatever kind of weather there is that day and the fireplace burning. It's perfect for daydreaming. I let my chin fall, look up from the screen and fade into the trees. The room is half way under the ground, so the windows are at ground level. When I sit by the desk and look out, my head is level with the ground outside, and I look *up* at the world. I like that perspective. It's different from looking *out* or *down*. Looking *up* at the sky opens me to humility on the inside and the skies on the outside. I connect with the grey sky and loose myself. The daydream comes easily so its hold is weak. I easily slide back into concentration on whatever it is that I am doing. The undisturbed shift from concentration to daydream and back is important. I know of two places where it comes easily to me, my wife's study and on our boat. If I take down the sails far enough from land to loose the details in the landscape the same shift happens. Concentration – daydream – concentration. In this shift I feel I have access to an additional something.

Post heroism

I first came across the terms heroic and post-heroic in *Die Zeit* in 2003. The actual source is lost to me but I think it was German philosopher Jan-Werner Müller who replied to American President Bush. Europe's limited will to march on Iraq aggravated Bush. He called Europe *The Old World*, weak and cowardly. Müller explained how European soil had seen so much war and suffering in recent history that we had installed a system of checks and balances to prevent quick decisions leading to war. Müller referred to this as a post-heroic state. No time for heroes, just a slow and secure process on the border of being passive. Müller argued that at the time of Bush's presidency, the US still existed in a heroic state, where a strong leader could take his troops into war, beat the bad guys and ride into the sunset. Heroic and post-heroic reflects the lone ranger versus the collective: different narratives in which to write our parts. Business management can enlighten us further. William B. Joiner puts it this way:

In business management heroic leaders assume sole responsibility for setting their organizations objectives, coordinating subordinates and managing their performance [...] heroic leadership overcontrols and underutilizes subordinates [...] In this new century, sustained success will require post-heroic leadership. Leaders [...] retain the ultimate authority and accountability that come with any formal leadership role – but they also [...] create highly participative teams and organizations characterized by shared commitment and responsibility.

(Joiner 2011)

The terms open an interesting perspective on the last 100 years of musical history. Composers also adhere to narratives, which in turn dictate the composers understanding of themselves. This gives a set of possible ways in which to write music, which in turn frames which music can come out.

I am not arguing that one is better than the other, just that these are interesting terms when looking at the role of the composer.

I consider my works that lean heavily on chance procedures for music making to be post-heroic, and whenever intuition and taste enters unfiltered I consider the music heroic. I switch back and forth between these positions as if in a role-play. In the projects *Lyriske Stykker* and *Bring Me That Horizon* I show both sides. On the *machine* sides I filter myself, try to open up to chance and circumstance, and use computer algorithms to create a music. I try not to *push the sounds around* (Feldman 1984) so much, taking the approach of a post-heroic composer. I withdraw from a role of decision-making to one of facilitating a complicated set of dice. The form of *Late Night Party in the Algorithm* from *Bring Me That Horizon* is a good example of what I achieve by this process. I would never in my wildest moments make that form with three contrasting parts. I am far too hooked on coherence. It's fruitful to pretend to *find* a music rather than make it.

Then I start making choices of what to notate for a performer. I leave some things out and quantize the rhythms to make them playable. I use unfiltered taste and intuition to mold the music. In *Bring Me That Horizon II* I decided to blow the sounds up in scale. The soft string sounds from the machine side are expanded into a sinfonietta playing at *forte fortissimo*. I wanted to create an impression of standing at the foot of the sound. A shift in perspective from the music I found through my machine, where it is more as if I am looking straight at it, and it is small. In this situation I pose as the all-seeing, all-responsible, omnipotent composer hero. I write my music with a steady hand.

It's interesting to consider what kind of personality types heroic and post-heroic roles recruit. I think the music that comes out differs significantly. A composer's motivation is important to the result. Whether the music is written in the service of god, or expressive urges, to increase the probability of mating or out of plain curiosity, it will not sound the same.

Perfect disturbance

Perfect amounts of disturbance are important. Coffee shops are good. Next to the fireplace in my wife's study is also good, although I have trouble getting the wood from the ash tree we took down last summer to burn. I found out that ash weighs 550kg per cubic meter, that's the same density as oak! It's so hard to get it to catch fire that I spent an hour every morning getting the fire going. I should have bothered to cleave it into finer pieces. However, when it finally does catch, it burns for a long time, that's when I can write with the perfect disturbance.

A way in

The stuff that I do when I am not able to do anything is important. Rummaging through a drawer that I haven't looked in for some years, lighting the fire for the fifth time, making even more coffee. The derogatory term procrastination is sometimes used; I'd rather think of it as looking for a way in.

Closing

Knowledge

The knowledge involved in my art can be described as embedded knowledge, dialectic knowledge, artistic knowledge and technical knowledge. This last one, technical knowledge is found above in the texts in *On Building*, particularly in *Frames Within Frames* and *Apparent Causality*.

This text takes the reader through the other aspects of knowledge. At the end I have also included information on how the knowledge has been shared up to this point and what the plan is for further dissemination. I also outline the community for whom my work may be of value.

The embedded knowledge is the sensuous knowledge, the non – conceptual stuff that can't be talked about for its evasiveness. Dialectic knowledge is a concept of my own making, with this I try to describe what might be happening in the dialog between a spectator and my work that *can* be conceptualized and talked about. Finally there is artistic knowledge. This is more related to craft, the competence that I have developed through my research and share in this text.

Artistic knowledge

My experience is that for transmedial composition to work, the media need to resemble each other. Adhering to a common set of basic structures helps this resemblance along. My basic structures of time and intensity are simple or compound. When I realize them in light sound or movement, I do so in a single or blended fashion. A combination of basic structures translated to a combination of single or blended media in a single work, is my transmedial composition.

I combine the basic structures in patterns and create a seeming connectedness to a common structure. I use even rhythmical patterns, patterns that arise from my blending of media, repetition through variation to contrast, and apparent causality, the connection that appears when the light turns on in the same instance as the arm finishes.

In order for my transmedial composition to be realized, the sounds, movements and lights must have no other option but to connect with each other. They cannot be given room to form separate parallel structures. In addition to resemblance I regulate proximity to group things together. Sound must be isolated from sound but open towards movement and light. Light must be isolated from light, but open towards movement and sound. Similarly, movement must be isolated from movement, but open towards light and sound. The insulators I use are slow tempo and place in sequence. In short, I compose transmedially by way of resemblance, close proximity and lack of options.

Suitable building blocks are simple or incomplete and preferably fairly abstract.

For *translation between media* my strategy is to embrace the new medium with its *standards and materials*. Be it video, sound recording or scoring for musicians I seek to open up to its standards and materials to the extent that translations can reveal itself as a method for producing independent works of art.

There is a power balance between a spectator and a kinetic work. An interface can tilt this either way. By handing the spectators a button I hand them control and power. By rigging the work with a motion sensor I give it the possibility to *ambush* the spectator and remain in control and autonomous.

There is also a power balance between a work and a space. In my mind it is best if a work is stronger than the space in which it is presented. If it isn't, it should be presented elsewhere. I don't mind altering work to comply with a new medium, but moving a work into a space where it is weakened is not connected with altering the work, this is connected with altering the expectations to the work.

Sometimes solitude can substitute darkness and other times darkness can substitute solitude.

I have a rule of thumb whenever I am not sure if I like something. I leave it in place for a week, if I still don't like it it's out, if I get used to it, it's in. It's a good rule when working in a process oriented way. It gives the odd bits the benefit of the doubt and facilitates diversity and unexpected directions in a work. In short, it adds the kind of richness that you can't plan. Incidentally, it also messes up plans.

The embedded knowledge

...in art we sense something of our a pre – reflective intimacy with the world, while realizing simultaneously that we will never explicitly understand what lies there in such plain view

(Borgdorff 2012, 171).

Dialectic knowledge

There is a middle ground between the silence of the embedded and the more explicit technical and artistic knowledge. A knowledge that is produced in the poetic space where the spectator can enter art and *listen music into sonic matter*.

In optimistic moments I believe that a work like *The Singer* underlines individuality as a consequence of my attempt to leave a fair share of *poetic room* for the spectator. That is, one might sense the importance of oneself participating and being attentive, *only I noticed that!* This might lead to the sense of being *connected* with the work and that brings about the knowledge that *I am important as an individual*.

Individuating is also related to size. Small things make me feel big. Upon seeing *The Singer* I feel big, safe and able-bodied.

This point however, needs slight moderation. A work like *The Singer* does not necessarily single out each and every one of us. But, it probably groups us in smaller collectives, the collective of *the experimental art world*, and on a good day that collective is split in two or more.

If you sit through the complete slow part of *On Speed*, 45 minutes or so, you will be faced with boredom. You will feel the urge to get up and leave and probably have disturbing thoughts or at the very least your cell phone will need attention. But, if you stay put and start to pay attention to the structure that is rising before you and reflect on this. Chances are you will react on how incredibly slow it is. This is knowledge about the limitations of your senses. To see a structure rise at the tempo of falling water molecules and reflect on this, is to know something about the limitations of your senses. As one notices how memory is aiding the senses in order for us to recognize change. This is a knowledge connected to our time, place and individuality that comes about through learning the limits of this individuality. If you are among the lucky few who know the term tempor(e)alities and its implications for *On Speed* the knowledge of oneself and ones limits are utterly underlined.

Knowledge through comparison

The activity of asking *does it exist?*, sorting and grouping things, produces knowledge. Meeting new and similar things sets this in motion. We need to learn to know the thing in order to place it correctly in our world. A new piece of music has this effect on me, but it is normally a fairly easy task, the piece might be interesting but the sorting doesn't have to be. But, it is my hope, that the works on *Lyrical Pieces* and *Bring Me That Horizon* sets this activity in motion in an interesting way. Both projects have a machine side and a human side. There is an internal comparative situation at play. One might ask; *what sets the versions apart? What groups them? Where should the projects as a whole be placed?* By answering these questions, and others like them, we produce knowledge about these new things. I have a distance to these projects at the point of writing this text so I can make some general remarks on the kind of knowledge I am producing when listening to them again. I am slightly surprised as to how *organic* the machine side on *Bring Me That Horizon* sounds, my category of machines as stiff and mechanical (!) needs maintenance. I create assumptions as to how it was made, sensing the technology. I learn about the role of the interpreting musicians, these musicians show themselves the deviations. What they add and subtract, especially in terms of timing, gives me a (false, I am sure) sense of who they are. I also hear how this transition of material from one medium to another exposes the composer, me, making the choices of what to emphasize and what to play down. And, similarly, the translation from one performer (al Khowarizmis Mekaniske Orkester) to another (Ensemble Ernst) generates knowledge of what they add or subtract in their performance, what their inherent qualities are. I assume that there are more and different observations for each listener. My point is that by introducing these projects into the world, because they have this situation of comparison in them, they put questions into an unusual active play and therefore these projects in particular, generate new knowledge.

In both *Bring Me That Horizon* and *Lyrical Pieces* I try to emphasize the span between man and machine. I want to put into perspective the human touch through exposing it in a comparative situation – not to provide final answers, just to provide perspective. I think of having a machine perform a music as an exercise in sentimental hygiene. What a composer and an interpreter add becomes more clear. I present the two versions of the music to take away any sense of finality. I want to root out *good* and *bad* and replace them with *different*.

Dissemination

Publishing and archiving

Pending the approval of the project the reflection will be published as a pdf in the institutional archive Brage and in the Research Catalogue together with all of the sound- and videofiles. I will also apply to publish through the NMH publishing series as well as a series of articles in the Journal for Artistic Research, again, pending the approval of the reflection. In addition the production network for electronic arts (PNEK) in Norway has invited me to write an article based on my work for a coming anthology on electronic arts.

Teaching

As a part of the fellowship I have done the following teaching at NMH.

- Supervised Niklas Adams Master in Performance Technology.
- A three day introductory course in Max/MSP for other research fellows.
- I taught in *Performative Thing*, an interdisciplinary course on a master level for students from the Oslo National Academy of the Arts, the Norwegian Academy of Music and the Norwegian Theater Academy.
- I developed and taught two semesters of LYKU 20, a course on sound arts history and present practices.

Internal presentations of project

- The Soup Council, lunch presentations by and for research fellows.
- The Section for Composition, Theory and Music Technology, presentation for colleagues
- Presentation on kick – off for all employees of NMH.
- Composition forum, for the composition students.

National and international dissemination

I have done concerts and exhibitions in connection with the project at:

- Ircam Centre Pompidou, Paris FR. 2012
- World Music Days, Ghent BE. 2012
- Only Connect, Oslo NO. 2013
- Ultima festival, Oslo NO. 2013
- Audio Art, Krakow PL. 2013
- Metamorf Biennale for Art and Technology, Trondheim NO. 2014
- Nordic Music Days, København DK. 2015
- NMH, Oslo NO. 2015
- Vinterfestspillene, Røros NO. 2016
- Final artistic result at Sentralen, Oslo NO. 2016

The reflection, at different stages of development, has been presented at:

- Ircam Centre Pompidou, Paris FR. 2012
- Ultima Academy, Oslo NO. 2013
- Audio Art, Krakow PL. 2013
- EPARM (European Platform for Artistic Research in Music, Graz AU. 2015)

The *Lyrical Pieces* and *Bring Me That Horizon* are distributed nationally and internationally through the distribution network Phonofile. Both works were broadcast on national radio (P2) in connection with their premieres.

All my scores are available through the Norwegian National Library.

My foremost contribution is the strategy for *transmedial composition* and in particular its high level of blending artistic media.

My challenge came from cross - disciplinary work. My contribution is to the composing artists, professional and students, from a variety of backgrounds who come to work in the fields of music, performance, technology based and cross - disciplinary arts. It is my hope that those who compose in these crossroads will find my *strategy for transmedial composition* of some use.

With *Organized time, strategies for transmedial composition*, the works and reflection, I would like to make my own contribution to the international society of art and the society for artistic research.

Epilogue and gratitude

I am a musician. My training is as a guitarist, with a bachelor's degree from Augsburg College in Minneapolis, and as a composer, with bachelor's and master's degrees from the Grieg Academy in Bergen. I also studied one semester with Walter Zimmermann at UdK in Berlin, as a part of my master in Bergen. I am forever grateful to my teacher in Bergen, Morten Eide Pedersen, he recently passed away at much too young an age. It is a tragic loss to musical life in Norway.

Early in my professional life I became involved with theater and dance. I was fortunate enough to work with Verdensteatret, Ellen Røed and Alan Lucien Øyen. They opened doors for me. Through them I became aware of artists such as Romeo Castellucci, The Wooster Group, Jonathan Burrows, Jean Tinguely, Alexander Calder and the Quay Brothers, all of whom have had a great impact on me.

In the world of music I was, and am, greatly influenced by the music of composers such as Luigi Nono, Salvatore Sciarrino, Edgard Varèse and Morton Feldman – composers in a modernist and I would say avantgarde tradition. Later in life I have discovered Luc Ferrari, Max Neuhaus, Christian Marclay, John Oswald, Walter Ruttmann, Gordon Monahan and many others. Their exploratory practices predate mine and are the foundations upon which I build.

These are all composers who expand the notion of a composer and of music. What I am trying to say through all this namedropping is that I come to music, and in particularly composition, with a wide variety of influences. This is one of the reasons why I am so involved in rethinking my angle on composition and why I use different artistic media and technological media.

Another very important aspect of my time and place is that personal computers became affordable tools when I was around 20 years old. I didn't grow up with them, but they were available when I entered college and after a few years I bought one myself. I started to learn programming, and ten years later microcontrollers became available tools. This technological leap has had a huge impact on my music and is one of the reasons I work so much in this cross section between the arts. As Kittler points out, the sonic, the visual and motor control all share a language inside the computer. Through the computer and great collaborators, I have branched out. Skills in musical composition have a way of fitting in, they are welcome perspectives in most situations.

I have many to thank for this opportunity to dig into my practice. First I would like to thank my committee: Morten Riis, Karmenlara Ely and Peter Ablinger. Thanks for challenging me on knowledge, my concept of music and the idea of what a medium might be. Having the opportunity to go over the text once more was very good! Although I have but scratched the surface of the perspectives from Kittler, McLuhan and Ernst, their texts are illuminating.

Thanks to Wolfgang Ernst for corresponding with me on his concepts and being willing to look into my work. I am very grateful!

Thanks to Ivar Frounberg for relentless belief in my project through years of applying and being my first supervisor. Your openness is an inspiration!

Thanks to Henrik Hellstenius for excellent supervision and for always being *on*. I value our conversations and do not want this to end. It has been a pleasure!

Thanks to Per Gunnar Eeg-Tverbakk for being my second supervisor and always bringing eye-opening perspectives from your world of art- and curatorial practices.

Thanks to Peter Tornquist for support of the project first as a head of the department for composition, music technology and theory, and later as the principal. Your support from high places meant a lot to me.

Thanks to Bjørn Kruse for good conversations and advice in the course of my research. I only wish we had talked more.

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Yours

A handwritten signature in black ink that reads "Christian Børn". The signature is written in a cursive, slightly slanted style.

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