Reflection on research and design for a graduation project in Explorelab

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Introduction

Since I have two passions, music and architecture I decided to take the opportunity to combine both for my graduation project. I was lucky to be accepted within the graduation studio of Explorelab.

From the very beginning I was interested in the performance of classical music in outdoor public spaces. Classical music is developed in an interior environment and is therefore associated with rather closed of theaters and concert halls. My ambition for my graduation project was to bring the music outside.

Since music and space meet each other in the field of acoustics I had to gain a good understanding of this relatively young and complex science.

The research resulted in a good understanding of the general principals of acoustics and more specifically the acoustic qualities of outdoor public spaces within a historic city. The research led to a redesign of the highly complicated urban situation at the Binnenrotte in Rotterdam. A very large public square where the origins of the city lie but that is also for almost half a century a very problematic public space. Different architectural competitions have been held on this location, the most recent one was the Prix de Rome 2014. I have taken up the graduation project in line with these different competitions and developed a rather radical urban plan. A specific part of this urban plan is developed in detail.

In this reflection I will reflect on the relation between the research and the design and the project in relation to the wider social context.

relation between the research and the design

The field of acoustics is related to space and materials and therefore to architecture but it is not part of our architectural studies in our faculty. Therefore I had to dive in this new, unknown world for me. As a musician I have experienced how different spaces can react acoustically to the music I play. It was great to get to understand now how spaces and materials create an acoustic climate. In the research I tried to understand the general principals of the hearing mechanism, acoustic parameters, measuring acoustics in digital models and acoustic qualities of specific location in outdoor public spaces. More general I studied how music throughout the history has been performed in public spaces.
The research led to a general understanding of acoustic principals and led to a more specific understanding of the acoustic qualities that can be found in public spaces in an historic city center.

I digitally modelled different open public spaces that can be found in Delft, a narrow alley, a square, a tunnel etc. By measuring the acoustic parameters with CATT-acoustics I got to understand how these spaces might work acoustically regarding reverberation time, echoes etc.

To get to better understand the meaning of these results I took my cello and played in these different locations while documenting it audio visually. This resulted in the understanding how well a city like Delft is suited to perform classical music outdoors. The vast network of small scale enclosed outdoor spaces creates an acoustic climate that seems to be continuously able to support outdoor performances.

For my design I decided to work in a completely different urban fabric: the city of Rotterdam and more specifically, the very large public square The Binnenrotte, the square where the very first traces of the origins of Rotterdam can be found: the dam in the Rotte.

Because after the bombardment in the Second World War the city council decided to take the bombardment as the opportunity to build a new city center in the modernist tradition the urban fabric has completely changed in offers a completely different acoustic situation.

I decided to approach the project as a design project with music as a hidden agenda. First of all I found that the current situation is all about autonomous buildings scattered around a very large but undefined square. I found a train station that does turn its back to the this empty square. It was hard to find successful small, narrow or even cramped public spaces. Everything is big and everything is floating everywhere.

My first radical decision was to start digging. I propose to dig out the square, make it one level below ground level while creating a new plinth which makes a well-defined enclosure for this vast open space, which offers a permanent program in these plinths in order to keep the square lively on non-market days. All the autonomous scattered buildings share now the same plinth and are therefore more bound together. Acoustically this does not result in something very interesting although the plinths will reflect some of the sound produced on the square and therefore will help experiencing this enclosed feeling. It will also create a sort of shadow-zone for the sounds outside the square. Since the square is 5 meters lower one will hear less of the urban noise of the rest of the city.

To connect the square to the surrounding network of streets I propose to create in these surrounding streets a series of steps and ramps to bridge the height difference to the square of the Binnenrotte. By doing this I suddenly introduce a complete different scale in the city center of Rotterdam: the scale of the pre-World War II narrow alleys that could be found everywhere in the center of Rotterdam. These narrow spaces, stepping down, create conditions as I have found in Delft. These spaces create a very natural acoustic environment suited for outdoor performances of classical music.

First of all general acoustic principals have been used to design these new introduced narrow spaces. These designs have been digitally modelled and tested in CATT-acoustics to hear if they work acoustically as intended. If needed the design was adjusted and tested again until the result was satisfactory.
On this large, empty but now well-defined square one permanent building is introduced: a music pavilion, a Band Stand.

This building is a multifunctional building. During market days it hosts some market stalls, sunny afternoons can be spend on the south-facing terrace, outdoor and indoor performances can be held and concerts can be organized in and around this building.

The building is designed in such a way that its acoustic characteristics can be adjusted according to the type of performance. This is done in a very simple mechanical way. Normally a concert hall is designed for the longest required reverberation time. If a shorter reverberation time is needed panels are opened with absorbing materials in the inside. Because my pavilion is not climatized I can open the windows to add absorption: sound that leaves the space is absorbed sound. Normally the sound energy will be caught in sound absorbing material but in my design it will be given away to the rest of the city. In return we will also get back some noise of the city making the pavilion feel even more part of urban life.

This acoustic principal is also digitally modeled and tested with CATT-acoustics.

I think the design and the research are very closely related. The research has given me a good guideline to work on this extremely difficult part of the city of Rotterdam. I think it is very important to listen to our cities. Do we hear the reflection of our footsteps? Is our presence confirmed by the walls we pass?

relation between the project and the wider social context

At the start of my research I have formulated a problem statement. Throughout the history of music there has always been the ambition to organize concerts in public space. Since the invention of electronic amplification it is not too difficult to stage a concert on an open square. But the spontaneity of a performance in public space does come with a price: the loss of authentic acoustic qualities. I have had meetings with directors of different music festivals like Grachtenfestival Amsterdam and the Holland Festival. The directors of these music festivals do underline the problem statement and are therefore very much interested in ways how to bring classical music into outdoor public space while somehow keeping the acoustical qualities of concert halls.

So the research is embedded in the practice of organizing concerts outdoors. Then for the design I researched the different design competitions that have been held on the location of the Binnenrotte. I think my graduation project should be seen in this series. It is another attempt to grasp the challenging urban and historic context of the Binnenrotte.

According to Marinke Steenhuis “Rotterdam is ready for different forms of poetry besides that of rawness and rolled-up sleeves”. According to her the city otherwise becomes “a caricature of itself”. She pleas for a transition from a model-based society to a narrative society. For about 40 years the western world based its urban planning on the idea of the model city inhabited by “measurable, quantifiable and predictable model human beings”. The emphasis now should be on the personal experience and the identity of place: cities can become personages themselves.¹

¹ Marinke Steenhuis, Prix de Rome 2014, Architectuur (Rotterdam 2014) p. 32
My project can be seen in line with this development. The city can become a stage. The city accommodates unpredicted use. It makes it possible to unpack your violin and perform a beautiful Bach Partita. The passersby can decide to stop and listen or just continue to their destinations accompanied by the unexpected musical performance. The project aims to give the city a voice which can be heard when citizens decide to make it heard by their spontaneous performances.

**Reflection on the process**

I would never recommend to graduate within Explorelab. It is extremely challenging to formulate your own brief, to develop your own research and to not have fellow students to work with together. It is very individual and therefore not representative for the architectural practice which is all about collaboration. I have struggled a lot. In the end I am very happy that I got the chance to experience this struggle. I learned a lot.

I learned to structure my thinking in discussions with my tutors, fellow students, friends, family and of course the discussions with myself. I learned to embrace the fear of not knowing where your project is going. I think doing such a project means that you have to cross many boundaries. In the end the project does make sense to me but during the whole process most of the time I didn’t feel at home in my own project. I was lost and had to keep searching. At the point that I found how things were coming together it became a pleasure again to work on this project.

I am very grateful to my patient tutors and my friends who were always willing to reflect on my thoughts.