In the contemporary architectural discourse, architecture is expected to be reactive and adaptive considering changing climatic circumstances that elaborates on our senses and our comfort, for building smart. One can consider the reaction, adaption and experience within architecture in two ways. The first one is a more contemporary interpretation, which relies on technological developments that enables architecture, architectural elements or active components to react on changing circumstances and provide stable or comfortable indoor climate. The second one considers architecture and the creation of atmosphere as an outcome of a collaboration of reaction, adaption and experience for a multi-sensory design. The second one - where tools for architecture are mastered by the designer seeks for interaction between the built environment and the senses of the body for appreciation - intersects with the urge to incorporate senses in architecture for a sophisticated experience of a building.

The aim of this research and project is to reconsider the role of senses in the perception, appreciation of the indoor environment and determination of atmospheres. The leading question of this research will be: ‘How can we facilitate a multi-sensory perception for an embodied experience of architecture?’.

Project brief

In the context of Parkstad there are two separate historical layers which are not clearly visible and recognisable in its contemporary state. Those are the ‘Via Belgica’ and the mine industry, both are significant for the development of the city. Therefore an attempt will be made to incorporate those historical layers in the redevelopment projects of Parkstad. The increasing interest for ancient cultures and new visions for the restructuring of Parkstad Limburg provides us an opportunity to make the history of the area visible and accessible by incorporating the area to the restructuring. The city Heerlen inhabits remnants of Roman architecture, which is still exposed as the Roman Thermae of Coriovalum and oldest building of the Netherlands. The contemporary condition of the museum is decreases the importance, the imagination and the experience of archeological foundations. Therefore the program and the building will be determined by the remnants of the roman bathhouse, an important component of the Via Belgica.

fig. 1 from: http://www.iba-parkstad.nl/nl/organisatie/werkwijze
Research questions

The choice for investigating different climates and atmospheres defined my thematic questions about indoor environments.

“How do we perceive indoor architectural environments?”

“What is the relationship between the scientific architectural method and the devices of technology as they have been applied to determine the atmosphere in buildings?”

“How is the indoor environment affected by materials?”

“To which extend do form and shape contribute to indoor environment?”

Reflection

RELATIONSHIP BETWEEN THE THEME OF THE GRADUATION LAB AND THE GRADUATION SUBJECT

The studio provides an opportunity to develop and elaborate on your own fascination and interest related to technology and the context of IBA (Internationale Bau Ausstellung) in Parkstad Limburg. Among the different themes of IBA which are defined for the revival of the area, I choose for ‘Cultural Heritage’ which consisted mainly of the Roman excavations and the mining industry that is almost disappeared. Both subjects are not clearly present in the experience of the area or the city. This particularly interested me in relation to my personal fascination about atmospheres, and indoor environments. Since the traces where not clearly visible it was possible for me to imagine, develop and design an atmosphere and experience instead of just framing visible objects that define this ‘Cultural Heritage’. Therefore thematic research was also focussed on the understanding our perception, perception in architecture, the indoor environment and environmental imagination in order to reappreciate the multi-sensory experience of passive architecture. Among the indoor environment as technical fascination I decided to search for an innovative and contemporary manner for the construction of this bathhouse.

RELATIONSHIP BETWEEN RESEARCH AND DESIGN

The graduation course consisted mainly of two parts: a technical/thematic research and an overall design research. The technical research on human perception, the indoor environment and architectural perception defined by material expression increased my knowledge and the importance of the climate household in architecture for the human being. Designing an experience every individual equally senses is not predictable as it is advocated by early indoor environment researchers.
Ole Fanger (1970) an indoor climate researcher, who certainly influenced the climate regulation for working conditions extended the amount of parameters for the definition of comfort he,

‘*defined the comfort concept by means of six measurable factors: air temperature, radiation temperature, air movement, relative humidity, metabolism or energy conservation and the thermal qualities of clothing. Subsequently, measures have been added to air pollution, quantity of light and limits related to the acoustic environment*’

(Fanger in (Dahl, 2010, p. 28)

These aspects of comfort, which are advocated by Fanger certainly influenced my design process. Subsequently these influenced the volume, shape and thermal qualities of the building I designed by continuously calculating its effects and defining standards. Nevertheless the sensation is constituted with either immeasurable and measurable parameters, which indicates some room for manipulation of the general experience. Considering the validity of the general experience some indoor environmental parameters are defined for the bathhouse: thermal, lightning, indoor air and sound.

In essence the indoor environment parameters are most of the time elaborated and adapted to vernacular building throughout history. However cultural and symbolic qualities that emerged from the environmental condition have been taken into consideration. In the research paper a part is also dedicated to vernacular architecture and Roman baths to understand the cultural and symbolic qualities of a contemporary bathhouse in Heerlen.

Additionally, the absence of traces made it possible for me, develop and design an atmosphere and experience instead of just framing visible objects that define a visual experience of cultural heritage.

**THE RELATIONSHIP BETWEEN THE METHODICAL LINE OF APPROACH OF THE GRADUATION LAB AND THE METHOD CHOSEN BY THE STUDENT**

The methodical line of approach of the Architectural Engineering graduation starts with a technical, thematic fascination. This fascination leads to a mainly technical thematic research question which suddenly defines your field of interest for this project and a tutor,
to guide the student in this process of investigating the technical aspect and designing an innovative solution.

In my case my technical/thematic question was mainly about the ‘real experience’ of architecture by human beings, so my methodical line of approach was slightly different. As I explained in the introduction, one can consider the reaction, adaption and experience within architecture in two ways. The first one is a more contemporary interpretation, which relies on technological developments that enables architecture, architectural elements or active components to react on changing circumstances and provide stable or comfortable indoor climate. The second one considers architecture and the creation of atmosphere as an outcome of a collaboration of reaction, adaption and experience for a multi-sensory design. Since I choose for the second one it was important to understand the biology of the human being and physiology in architecture. In order to achieve the imagined results and character in the architectural expression of the subject.

The methodical line of approach of the graduation lab was more focussed on concrete and technical solutions for a problem, whereas I was focussed on achieving a particular quality in architecture. Since this quality was not particularly concrete but also poetic and defined by general human perception on contrary to dominantly visual perception it took more time to complete my research. Additionally I did a separate study on the vernacular architecture, architecture of bathhouses and its separate functions to understand the sequence of the ritual or even to reestablish one.

I believe that the first part about human and architectural perception in my research which where not technical fascinations but related to the perception of indoor environment were necessary to understand how to achieve a quality from the users perspective that is not dominated by the visual perception, which we are used to.

THE RELATIONSHIP BETWEEN THE PROJECT AND THE WIDER SOCIAL CONTEXT

The ‘Via Belgica’ was an ancient Roman road that connected the northern part of the Empire from Boulogne sur Mer to Koln. In its contemporary condition the road is divided among different countries: France, Belgium, the Netherlands and Germany and is mostly not recognizable. The route crosses Parkstad Limburg and dissects varying urban areas and landscapes. The potential of this area as cultural heritage and link to the communal roman history is still to be explored. The increasing interest for ancient cultures and new visions for the restructuring of Parkstad Limburg provides us an opportunity to make the history of the area visible and accessible by incorporating the area to the restructuring. Thereby making it possible to shape a shared identity in the area of Parkstad by connecting the route with components of the Via Belgica.