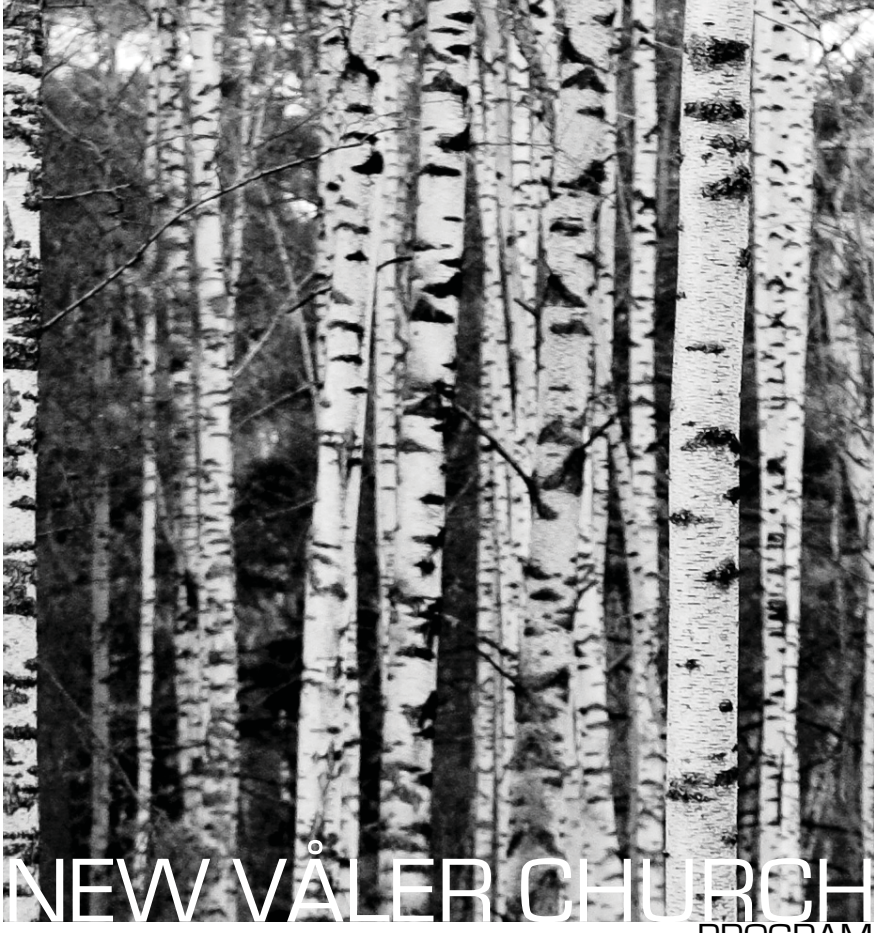

NEW VÅLER CHURCH

PROGRAM

“ARCHITECTURE IS ONLY FULFILLED
WHEN NOTHING CAN BE ADDED
NOR TAKEN AWAY”
[VITRUVIUS, N.D]

AALBORG UNIVERSITY, DEPARTMENT OF ARCHITECTURE,
DESIGN & MEDIA TECHNOLOGY
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SYNOPSIS

PROGRAM

The project is based upon an open competition which took place in the autumn of 2011, formulated by the municipality of Våler. The competition describes the design of a new church for the parish of Våler, as a result of the devastating fire which destroyed the original Church of Våler.
To support the design of the church, theoretical investigations about Sacred Spaces, Nordic architecture and Tectonic design have been made. Furthermore, as the technical focus of the project is sustainability and energy, these themes have also been studied.
The new Våler church is designed as a low-energy building in a Scandinavian context.

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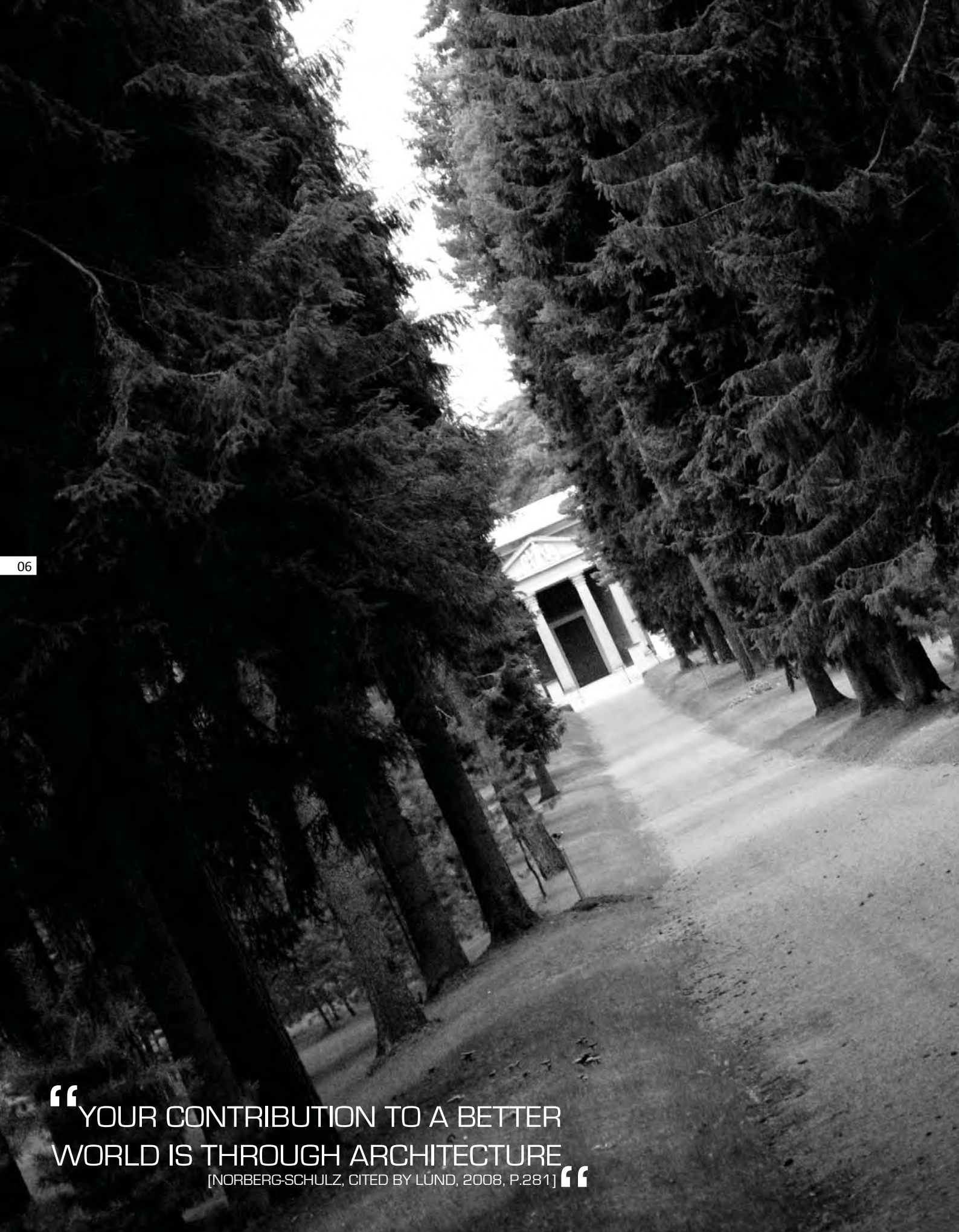
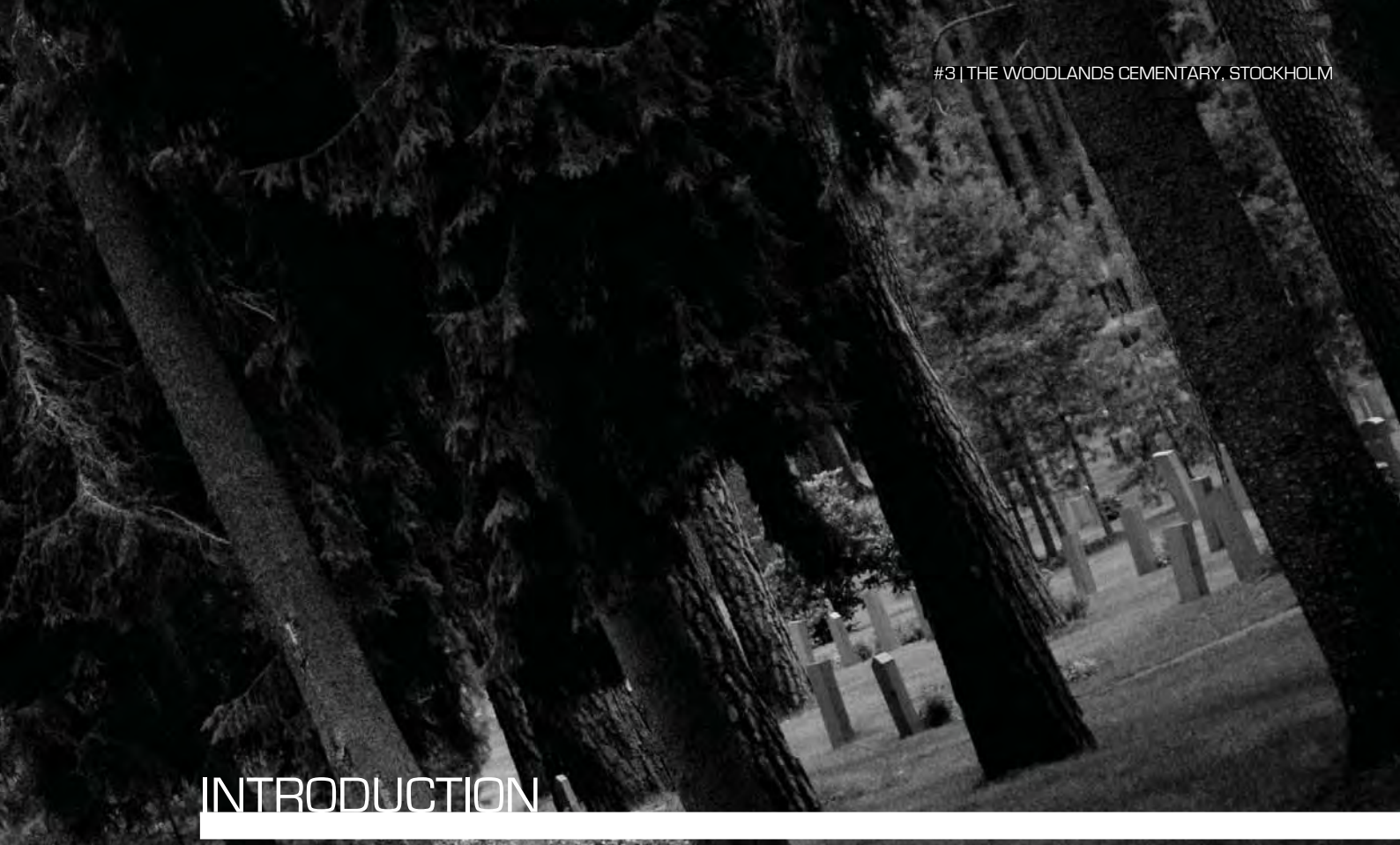


"YOUR CONTRIBUTION TO A BETTER WORLD IS THROUGH ARCHITECTURE"

[NORBERG-SCHULZ, CITED BY LUND, 2008, P.281]



INTRODUCTION

The project is defined from an open competition which took place in the autumn 2011, formulated by the municipality of Våler. The competition describes the design for a new church for the parish of Våler, which is needed as a result of the devastating fire which destroyed the original Våler Church.

The following holistic definition of the overall vision for the new church is taken from the competition brief:

We wish for a forward-looking church, which carries the past, the present and the future. We wish our room program put into a flexible and temporal church. A church which can be used of all in the parish in everyday life, in festivities and in feasts. A place for happiness, song and music, grief, quite whiles and reflection.

The main focus is to design a church, which will link to history, but as well will be a forward-looking church, designed according to a strong and characteristic concept and narrative, with a fully functional distribution while linking to the Nordic approach of designing architecture.

The main focal point for the development of this project is to reach an understanding of Nordic architecture. These understanding of Nordic architecture is deeply rooted in the Scandinavian tradition, and is represented through the integration of the pure form, structural honesty and not at least the social relations. The understanding and approach to Nordic architecture is achieved by studying it in a historical and theoretical perspective to gain our definition of the term.

For defining an approach of the development of the New Våler Church, religious architecture has been studied to establish our interpretation of the Nordic approach to religious architecture, in a historical and sacral perspective.

The devastating fate of the original Våler Church will most likely overshadow the new church, and likely will be the basis for comparison. In order to create a church with a new contextual belonging, released from the old, will be demanded a new church with a defined and, not at least, independent narrative. A phenomenological perception will act as a mind-set for designing and, with that in mind, phenomenological studies has been initiated through the studies of the architectural and theoretical historian Christian Norberg Schulz.
The creation of architecture is succeeded through equality between construction, structure, technology, aesthetics, ethics and through sensuous qualities. The collaboration of these parameters is defined through the integrated design process. The initial method was already defined in the antiques by Vitruvius, who stated firmitas, utilitas and venusta as keystones of designing architecture of high quality.

Through these approaches the design of the new Våler Church was created.

METHODOLOGY

The following paragraphs describe the used methods and tools to project and design the future Church for Våler municipality.

Designing methods

Integrated design process defines a holistic design method for designing architecture, which describes how to integrate and combine knowledge of architectural parameters, as expression, aesthetics, functionality, etc., with engineering parameters as technology and construction. Through the integration of the above mentioned parameters, very complex problem tasks are more likely to be solved, easier and more effectively.

An integrated architectural design project is defined by five overall processes: initial problem, analysis, sketching, synthesis and presentation.

The initial design problem describes an overall problem in which architectural and engineering aspects have to be taken into considerations in an early stage. This phase ends up with a concept or a basic idea for the project.

The analysis phase defines all the information derived from the theoretical analysis, site registrations, user analysis and pre-conditions according to the site. The derived information leads to a specific design vision and parameters used in the further phases.

The sketching phase is an initial settling of the early design, through an initial integration of architectural and engineering aspects and considerations, through sketching and modelling.

The synthesis defines the final optimisation and detailing of form through an integration of architectural and engineering parameters.

The presentation phase presents the overall concept and design, developed through the former phases, to give a visible understanding of the project. [Hansen & Knudstrup, 2004]

Mapping and registration methods

The mapping and registration of the site is completed by the *Kevin Lynch Method*. Kevin Lynch is the author of *Image of the City* and, among others, describes a method for mapping and registration of a given site or location. Kevin Lynch belongs to the empirical analytical school, which is expressed through his analytic division of how to perceive objects, places etc., though with a subjective perception. He defines it as a perceptual mapping and registration system, a tool for sensing a place. He divides the methods into several paragraphs in order to create a systematic and separated perceptual analysis of given characteristics of the location, creating a greater understanding of possibilities and not at least needs. The paragraphs of the method is divided into the following points; Pathways, Edges, Landmarks, Districts and nodes. [Evans,2007]

MOTIVATION FOR THESIS
ARCHITECTURAL APPROACH

"THAT THE CHURCH STANDS APART FROM THE COMMERCIAL DEMANDS OF CONTEMPORARY BUILDING, THAT IT IS EXPECTED TO BE SOMETHING ELSE AND PROVIDE SOMETHING MORE HAS ENABLED COUNTLESS ARCHITECTS TO CREATE THOUGHTFUL, POWERFUL AND IMPORTANT BUILDINGS WHICH HAVE SEEPED INTO THE GENERAL ARCHITECTURAL AND PUBLIC CONSCIOUSNESS." [STEGERS, 2008, P. 77]

Design a sacred building is an unusual and rare task that appeals to every architect, regardless of their religious believes, as the opportunity to create something of architectural permanence, through the search for 'atmosphere' and the 'sacred'. A sacred space offers an experience of beauty where architecture, music, poetry, painting, sculpture, light and colour work together moulding form and space to embody the substantiation of faith [Crosbie, 2006, p. 8]. When designing a sacred building, the phenomenon of the sacred should emphasise the substantial over the functional. However, one must not forget that a church is a working building and, citing Heathcote (2007), "(…) more than symbols or monuments, they are excluded from art because they have a function, and because they have a function they lose meaning when that function becomes debased or inhibited." The liturgy provides the perfect narrative, hierarchy and aspiration, as well as a far more defined backstory and symbolic language than a house or a public building [Heathcote and Moffatt, 2007, p.75]. But the opposite is also valid; architecture can provide an immeasurable dimension to religious experience.

Present in the Nordic tradition of designing architecture, the value of purity of form and structural honesty are characteristics than can lead to a sacred space. These points are aesthetics characteristics, but equally importantly is the differentiating point of Nordic architecture, its ability to implement the social aspects in architecture. The interpretation of architecture in Scandinavia is closely related to the political and cultural history, as it creates a clear connection between form and content, between ideology and society. The cultural and political understanding engraves a more significant meaning to the Nordic architecture, securing that architectural design is not only interpreted as a surface, but seeking for the hidden elements behind the surface. According to Nordic architecture, architectural design is much more about ethics as it is about aesthetics. [Lund, 2008, p.21]
This approach of designing architecture will form the framework for a contemporary church design in a Nordic context. The architectural design will appear as the main focus point, and thus reflect upon a definition of a Nordic contextual church design, and how to integrate it in a modern society. Though the values present in Nordic Architecture, the design strategy aims to reflect a sense of permanence.

The Nordic context defines, in addition, a further need for a mindset towards sustainability, which describes an awareness of using natural resources with a main aim to stop the continual degradation of the natural environment. With this in mind, the design of a future church will through an integrated design process create an energy optimized building, according to the future requirements of designing in a Nordic context.

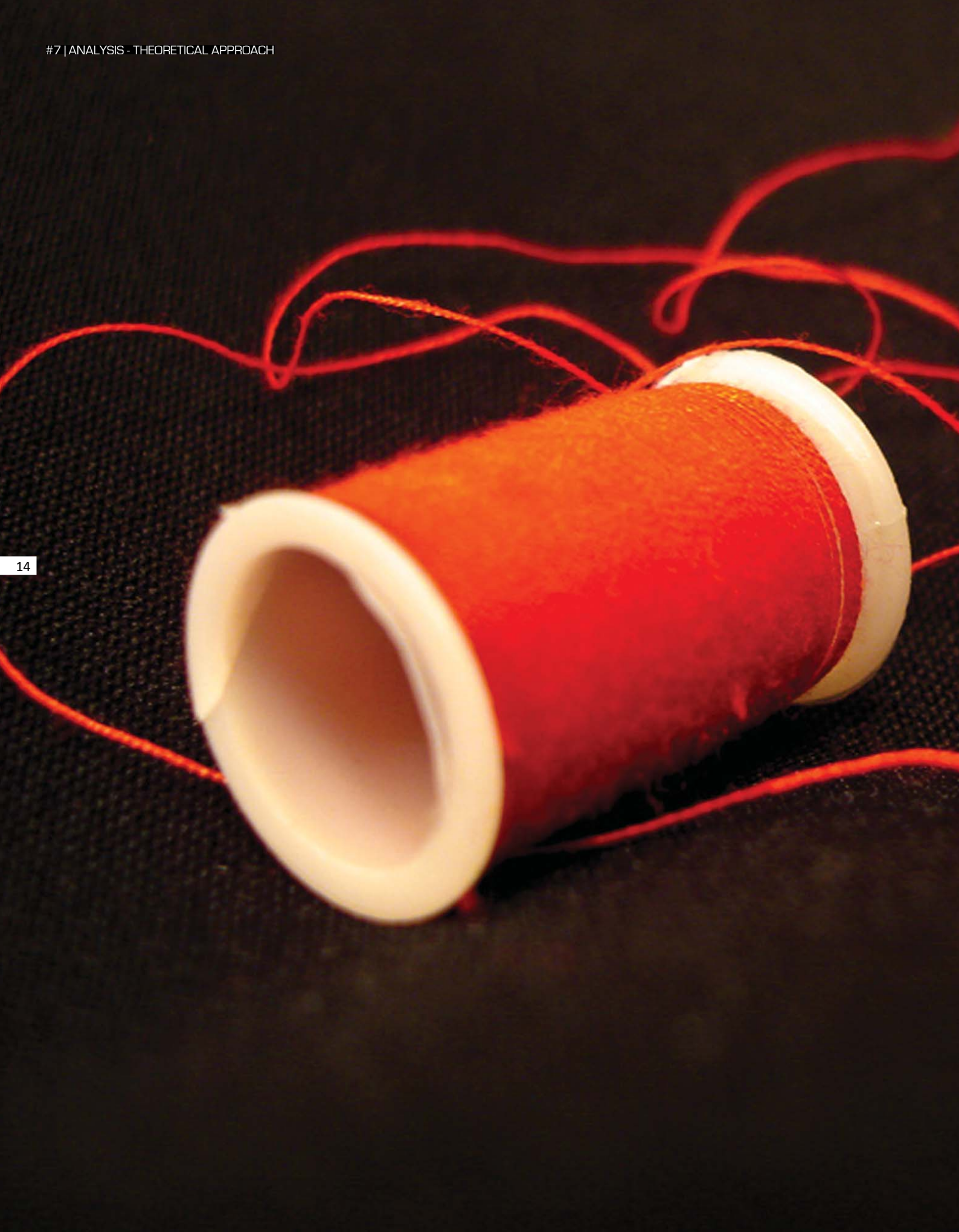
"DESIGN A SACRED SPACE IS ABOUT REPEATED ATTEMPTS TO FIND NEW ANSWERS"
[STEGERS, 2008, P.27]

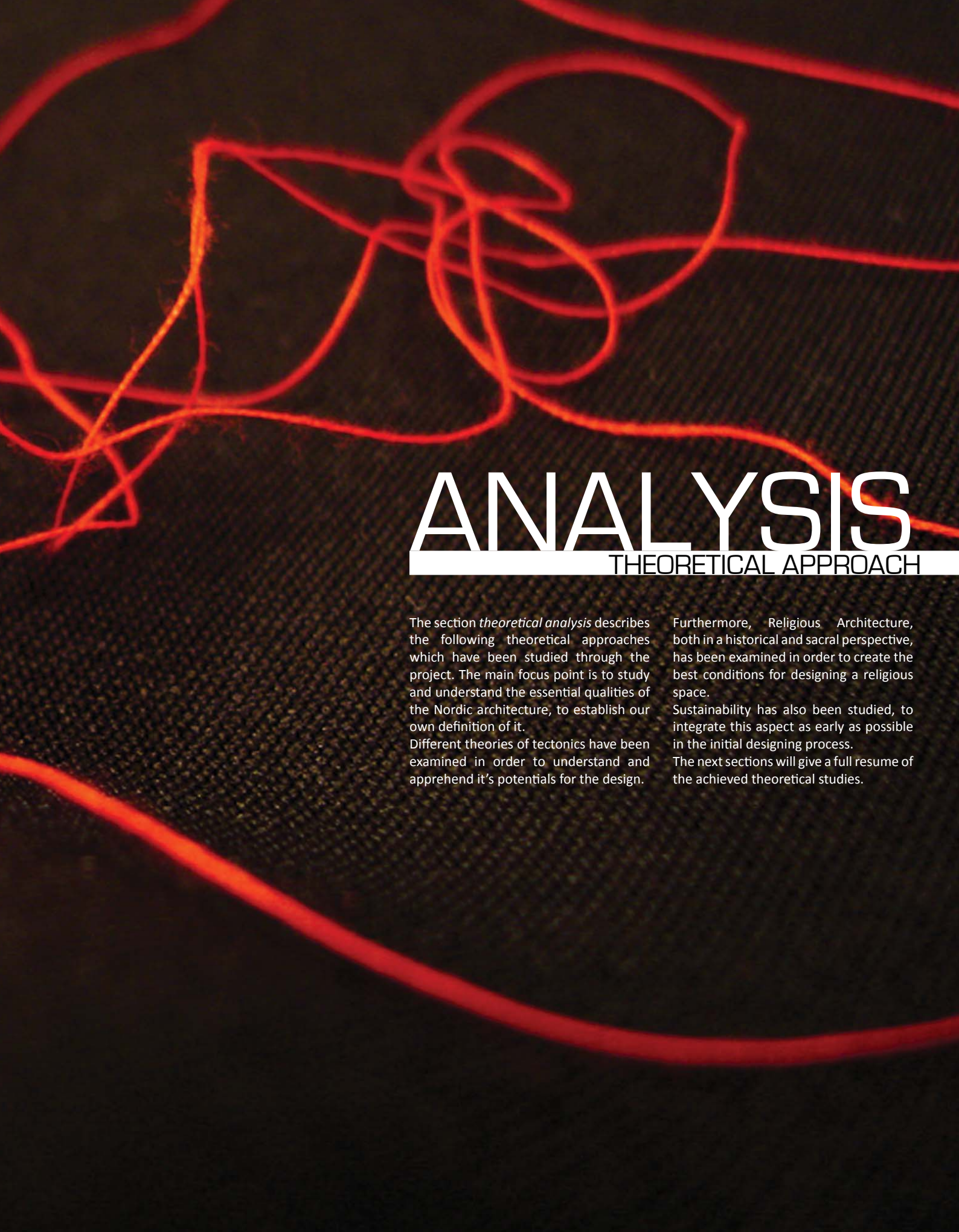
SUMMARY OF BRIEF
NEW VÅLER CHURCH

Våler is a minor village located 150 kilometers north-east of Oslo, and is located in one of the most important woodlands of Norway, wich is the basis for a major wood cultivation industry.
The old church of Våler, built on the visions of a future in its shape and volume, was with its central location an important urban landmark in the village, as it was an urban element in a rather desolated centre. The old church was destroyed by a devastating fire in 2009 and thus the design of a new church for the municipality of Våler shall be seen in the light of this tragic event.
When designing the new church, the main objective is to consider how to link the existing original historical built area together, while simultaneously take advantage of an innovative and modern architectural church design. The parishioners of Våler wish a forward-looking church which is carrying the past, the present and defines the future.
The church design should suite an everyday use through a flexible plan, preferably distributed in one level. A church designed to celebrate life, happiness, song and music, grief, quite whiles and reflection.
The church, as an institution, wants to become a major contributor to the identity and values in the society by encourage reflection about faith, ethics and social issues, through a design appealing as a centre of faith and culture. Cultural investments will contribute to the future service of the church as a social and cultural Centre.
The new church of Våler is desirably to be erected in a contemporary design with a high architectural and artistic quality to ensure continuity and belonging. The architecture should be shaped with a clear and sacred architectural message with recognisable features of traditional character, as a high raised tower.
The wood cultivation of Våler is a major contributor to the cultural history of the municipality, and thereby is an objective to take advantage of the potential of the wood. The materiality of the church shall reflect the local culture and wood is desirable as a main material, as it is a cornerstone in the community. In addition there are also political constraints for innovative and extensive use of wood in the construction of a new signal building.
An overall goal for the church is to create a main structure consisting of renewable and CO2 neutral materials.
[Våler Kirkelige Fellesråd, 2011]

The conditions of erecting the new church of Våler have dramaticly changed from the original competition brief, after visiting the site. During the visit of the site a contact to the Våler Parish is established. The project has been created under an ongoing contact with the parish, where several new points of view have influenced the project.
Despite the old site of the church not be a part of the original competition, the majority of the community of Våler desiers the new church to be erected on the site of the old church. Thus the parish of Våler has expressed their wish of construct the new church with traces and recognition to the old church.
This new point of view has been an important part of the development of the new Church of Våler.

"BUILD IN THE PRESENT -
FOR THE FUTURE"
[MOSENG, 2011, P.1-2]





ANALYSIS

THEORETICAL APPROACH

The section *theoretical analysis* describes the following theoretical approaches which have been studied through the project. The main focus point is to study and understand the essential qualities of the Nordic architecture, to establish our own definition of it.

Different theories of tectonics have been examined in order to understand and apprehend it's potentials for the design.

Furthermore, Religious Architecture, both in a historical and sacral perspective, has been examined in order to create the best conditions for designing a religious space.

Sustainability has also been studied, to integrate this aspect as early as possible in the initial designing process.

The next sections will give a full resume of the achieved theoretical studies.

NORDIC ARCHITECTURE
HISTORICAL DEFINITIONS

Introduction
Seen from an internal perspective, Nordic architecture has great differences in the way of being build and in its expression. However, seen from an external perspective, architecture of the Nordic countries appears rather uniform, due to the relative similarity between its living standards and social development. [Lund, 2008, p.5]

Nordic architecture developed simultaneously with the modernism and functionalism in Europe, being a variation of the international modernism. In Scandinavia the modernism was marked by a pragmatic and social awareness approach of designing architecture. The architecture became an architecture of the welfare state, and was nuanced and "human" in its expression. [Lund, 2008, p.5]
Throughout the architectural history, architecture has aimed to link the construction and form. The link between shape and construction has always been represented, caused by the wish of capturing the honesty, laying as a cultural heritage in the mind of architecture. Due to the development of the building industry, this has changed. New techniques have implemented a more fragmented architecture, as building parts are divided according to the purposes. The exterior is liberated from the interior, as the bearing from the borne.

The characteristics of Nordic architecture are dominated by the idea that ordinary house constructions can also be seen as a major part of the history. Architecture in Scandinavia is not reserved for the public and for symbol-bearing buildings, but is also about ordinary housing, which is the physical human environment. In the Nordic tradition even details, inventory and furniture have great importance in the conceptual world of the art as institution. This approach might have been caused due to historically determined preconditions. Through history, the Nordic people have been situated in a defined geographic zone, which have created some specific challenges, an influence which have coloured the views and attitudes of Nordic architecture. [Lund, 2005, p. 9-11].

"THAT ORDINARY HOMES CAN BE REGARDED AS ARCHITECTURE IS SOMETHING NORDIC."[Lund, 2008, p.21]

#8 | THE WOODLANDS CEMETARY, STOCKHOLM

Nordic architecture in a modern context
Modern architecture was a result of a scientific and technical breakthrough of the eighteenth and nineteenth centuries. Hereby the first gap between technological culture and architecture was established. Due to the new materials and construction systems, construction moved from craftsmanship towards industry. This development expanded the field of architecture so that public buildings as offices, factories and railway stations also became a part of the architectural field. This development was magnificent in US and major part of Europe, but the Nordic countries were in many ways a kind of a cultural province. In the Nordic countries there was still an architectural approach towards the local construction and customs, even though the industrialization made its entry.

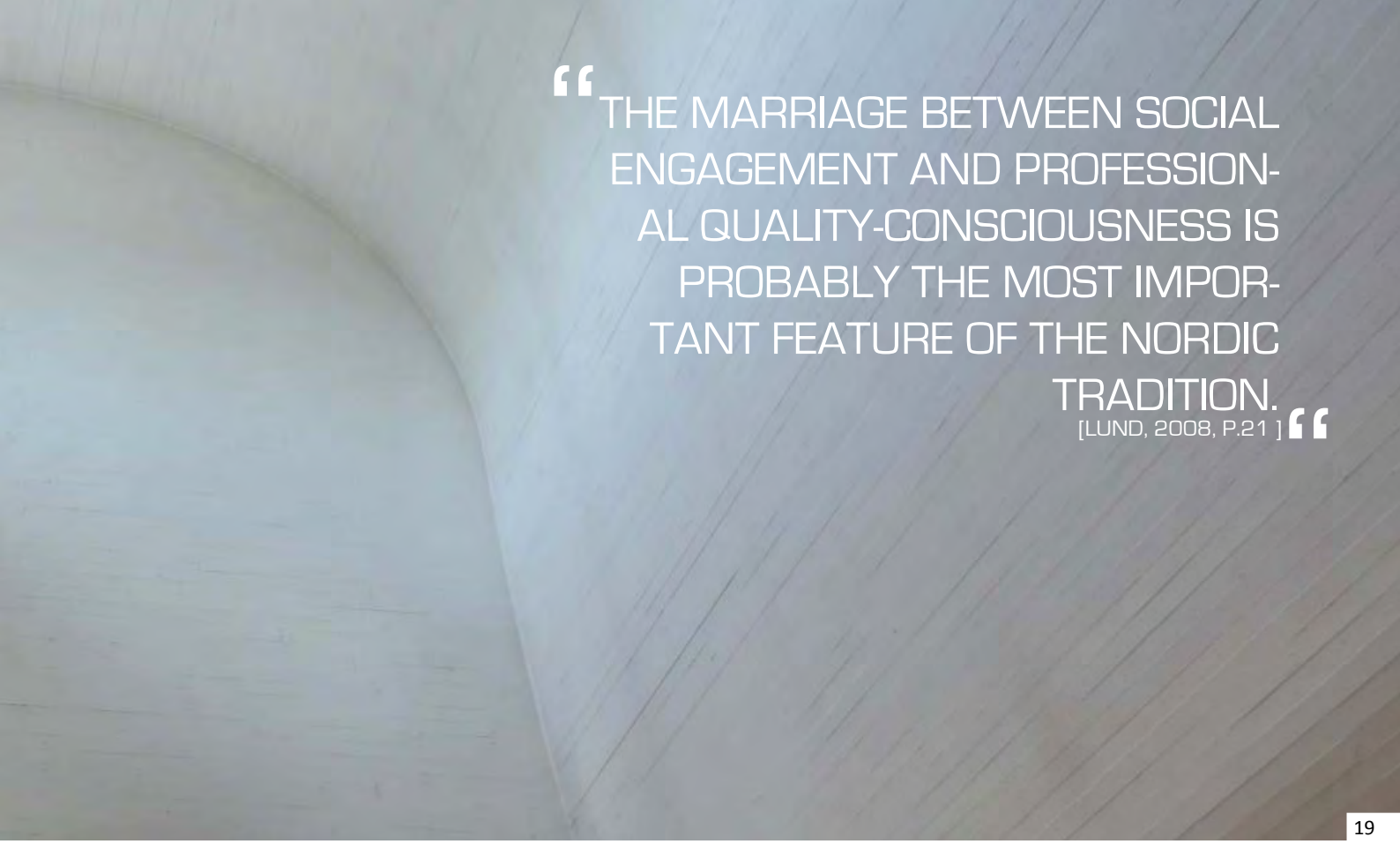
During the First World War Neo-classicism manifested itself in the Scandinavian countries, where the impact was specially implemented in Denmark and Sweden. Especially the Swedish interpretation of Neoclassicism was admired for its elegance and mannered approach, which can be found in the work of Asplund. [Lund, 2008, p.64]. The revival of the classical approach in modern architecture lasted for around fifteen years, where the architectural focus point was of a purely aesthetics abstract from ideals of beauty.

The development of the functionalism was seen by many as a liberation, as the aesthetic bonds were replaced by a technological and functional approach. For instances Le Corbusier's architecture expressed a search for harmony, rather than a search for creating new form for a new technology. This underlines that what seems of a change of architectural style, rather is an extension and extraction of Neoclassicism towards the functionalism. Both the classicism and the functionalism are seeking for harmony and rationality, and hereby was the Neoclassicism more likely as a step towards functionalism. It was dominated by the simple cubic expression together with the lack of ornamentation, creating the connection to the "white style".
The Nordic approach was heading towards avoiding the spectacular, striving instead for a harmonious architecture with a great attention to the regional manners. Elements from the international style were taken up in the Nordic architecture during this period, but fused with the Nordic approach, thereby avoiding the rigidity of the International Style. This was, for instance, represented with the introduction of the free plan.

The Nordic Architecture was dominated by the functionalism, as it in many ways fitted with the start of the welfare state. But importantly, it was still appearing human by accepting contrasts within the formal order. The Nordic approach to the Modernism softened the dogmatic harshness of Bauhaus-type Modernism, responding more closely to the landscape and the body. Thus, the Scandinavian functionalism developed differently from rest of the Europe, as it appeared light and sophisticated. [Lund, 2008, p.65]

The international influence became less and less visible during the end of 1930's and replaced by local features, making the Nordic functionalism characterized by appearing soft and elegant. This development was underlined by the war, which created borders, making it natural to apply local customs and materials.

During the 1950's the Nordic Architecture was seriously acknowledge for its human an mature approach on a greater scale, represented by famous architects as Arne Jacobsen, Jørn Utzon and Alvar Aalto. From an external point of view, the Nordic architecture appeared as a unity, with a great technical orientation, in close combination with a varied individuality. [Lund, 2008, p.12-21]



> "THE MARRIAGE BETWEEN SOCIAL ENGAGEMENT AND PROFESSIONAL QUALITY-CONSCIOUSNESS IS PROBABLY THE MOST IMPORTANT FEATURE OF THE NORDIC TRADITION."
> [LUND, 2008, P.21]

Nordic Architecture and nature

One of the greater representatives of Nordic Architecture, Jørn Utzon, published in collaboration with Tobias Faber a manifesto in *Arktekten* (1947), entitled "Tendencies in Present Day Architecture". The manifesto expressed the author's opinion that the present architecture lacked of fixed points of reference. As a response to the formal approach of architecture, they articulated a wish for creating architecture as a setting for the human life, an architecture ground on mankind's original approach for sensible architecture. An architecture of nature, as in nature one is more likely to define the elementary influences which shape the fundaments for understanding and experience. According to Faber and Utzon, it is of great importance to train ones perception of nature and as well of architecture, a perception of space, form, light, shadow and colour to understand the basic laws.

"One must know that the simpler a form or a composition is in its expression, the easier it is to understand and the stronger its effect on us – we must see that all elements in a composition in a house or in the landscape mean something and can help both to enrich and clarify the totality, or further to emphasise the main form and character – we must understand that widely different forms and materials both can accentuate and efface one another."[Lund,2008, p.100]

Jørn Utzon and Tobias Faber can be characterised as organic inspired architects, which under normal circumstances would prefer a free form. But they use a combination of simplicity and variation, created by the geometrical systems of nature. As a result, the work of these architects shows that ordering principles of nature and modern construction technologies can be united in the present Architecture. [Lund, 2008, p.100]

Architecture in Scandinavia, as earlier explained, is interpreted as a natural bridge between form and content, between ideology and society. A strive for creating a deeper meaning in architecture and that seeks for the hidden behind the surface, is an approach that appeal to our manners of designing architecture. This approach will define the ideological approach for the design.

Nordic architecture is closely comparable with nature, and is interpreted in its elegance in a mannered way. Its light and sophisticated expression, and not at least its relation between ethics and aesthetics will be the entry for the future design.

NORDIC ARCHITECTURE
THEORETICAL APPROACH

The theoretical approach of Nordic architecture has been, through the 20th century, permeated by the architect and theoretical historian Christian Norberg-Schulz, the only Nordic well-known internationally architectural historian. The importance of his contribution to Nordic Architecture will be described in the following chapter.

The point of view of Christian Norberg-Schulz develops from an early modernistic theoretical idea into a religious approach, enhancing valid concepts as meaning, place and identity. His works are dominated by a striving for finding the lost *Hinterland*, a result of the heavy industrialised mass construction during the sixties and seventies, and searching behind currents to find a meaning for the future. He justifies architecture by trying to purify its concept, focusing on the basic meanings. According to Norberg-Schulz, the meaningless architecture which has been erected in the end of 20th century was result of architects losing their profession, and instead of solving the society through architecture, they wanted to solve society through socialism and politics. [Lund,2008, p.279-284]

Christian Norberg-Schulz actively tried to develop a common formal idiom for architecture, as he describes that there are no eternal truth in architecture, but some fundamental and constant formal possibilities. Norberg-Schulz defines order in the way of designing architecture as “A construction job where the individual parts are interdependent is `thoroughly structured´ and can therefore absorb a more complex content than a form that is simply a juxtaposition of individual motifs.” [Lund, 2008, p. 284]

With *Intentions in Architecture* the focus point of Christian Norberg-Schulz starts to change towards a more philosophical direction and phenomenological approach of the theories, based upon the psychology of perception and semiotics. He starts to question the physical order of architecture without a meaning and consistency in a classic sense. He states that the main task for architecture is to specify the values of culture, and it is clear that his focus changes from space of architecture into place; which he sees as the most important tool of architects. The “place” refers to the essence of live, and is a focus on the human existence, a conception of the structure of the surroundings. [Lund, 2008, p.285-291] Christian Norberg-Schulz claims; “if we negate place, at the same time we negate architecture” [Norberg-Schulz, cited by Lund, 2008, p.288].

"ORDER IS. DESIGN IS FORM-MAKING IN ORDER"
[NORBERG-SCHULZ, CITED BY LUND, 2008, P.289]

The approach of Sverre Fehn

According to Norberg-Schulz, Sverre Fehn is an architect who excelled in the Nordic approach of architecture, displaying the essential and simplicity in architecture. The quality of the projects of Sverre Fehn can be seen in the light of different perspectives, but most importantly he followed his passion for architecture unaffected of the trends of the modern architecture. Norberg-Schulz sees three main qualities of Sverre Fehn's works: adaption, modular repetition and construction.

First of all, the quality of corresponding to their location, mostly remote and solitary, is a quality that only enhances the perception of his work. The characteristics of his works are striking in their ability to adapt to the surroundings, while offering a compelling answer to the most complex conditions. An adaption that appears as a sort of significant opposition rather than a subjugation to nature. In addition, the significance of his works is, according to Norberg-Schulz, characterised by plan solutions integrated on a modular system, having the construction as the primary expression. [Norberg-Schulz & Postiglioni, 1997, p. 19-20]

The basic quality of nordic architecture erects from its ability to adapt to the place, as an appearence, a sort of an opposistion rather than a subjection to nature.

Norberg-Schulz, refering to the basic values of architecture, defines order as essential, as structured design absorb a more complex content than a form that is simply a juxtaposition of individual motifs.

As a result, Norberg-Sculz's theoretical approach is striving for the validation of the pure concepts of architecture, as meaning, place and identity. Norberg-Schulz strive can be directly related to the concept of the future church, as the more pure the concept will be expressed, the more meaningfull it will be.

TECTONIC DESIGN
THEORETICAL DEFINITIONS

Etymology

The term of tectonics has marked the architectural history in decades, and can be traced in many architectural theories for several centuries. Tectonic originates from the Greek culture, and according to the dictionary can be defined as: "The theory of shaping and joining of form-elements to a unity" [Ordbogen, 2012]. Tectonic derives from the word *tekton*, meaning a carpenter or a builder. *Tekton* in general terms refers to an artisan, who is working in hard materials except metals. In the fifth century BC the term developed from being a term of a physical significance into a more generic notion of making, implementing the ideas of poesies. [Frampton, 2001, p.3-4] The term technology derives from *techne*, signifying the word of technology and the art of making [Hartoonian, 1994, cited by Andersson, 2005, p.8].

Tectonics in classical terms

Vitruvius, an engineer and theorist of the antique Empire of Rome, had major importance to the understanding of architecture. Vitruvius, among others, claims that "architecture is only fulfilled when nothing can be added nor taken away". He introduces the three requirements for designing architecture, which today are defined as the key stones in order to create design of high quality: *firmitas*, *utilitas* and *venusta*, signifying strength, utility and beauty [Kruft ,1994, cited by Andersson, 2005, p.8]. Thus Vitruvius claims that *techne* characterize the substance of construction, function and as well aesthetics. According to the term of tectonics, *firmitas* has a particular interest, as Vitruvius sees it as the relation between statics, construction and material, and enhances the importance of using materials in relation to its physical properties. [Werne, 2003, cited by Andersson, 2005, p.8]

According to Vitruvius, a transformation in an architectural understanding is something poetic. Whether if it is a transformation which relates to symbolic feeling of its use or if the transformation enhances a certain concept. For instance with a column of a temple, as an example, as it transforms from being a load-bearing necessity of a certain construction into a stylistic representation. [Hartoonian, 1994, cited by Andersson, 2005, p.9]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The definitions of tectonics

During the last centuries several architectural theorists have stated their interpretation of the term tectonic. Selected theorists definitions are here presented to obtain our own interpretation of the term. They will be presented chronologically, in order to give an understanding of the evolution of the term of tectonic.

Karl Bötticher based the theories on the studies of the Hellenes and Greek. Architecture, accordingly to him is divided into two main orders – The core form (*Kerneform*) and the symbolic art form (*Kunstform*). According to his publications, Bötttticher sees tectonic as what ties all the elements of a Greek temple into an elaborate system [Frampton 1996, p.4]. He claims in order to fulfil the requirements of tectonic, that the symbolism of the ornament should never be premised to obscure the fundamental structure of a building. Preferably, should the ornament enhance and reveal the essence of a certain construction, and most importantly be able to divide the ornament from the fundamental structure [Frampton 1996, p.82]. According to the ornament, Bötticher states that a certain work of art cannot represent an idea, but instead it represents it through symbols of a certain idea. [Andersson 2005, p.11]

Gottfried Semper presented his thoughts with point of departure in the theory of the Four Elements of Architecture. Semper's theory based on a sociocultural approach, describes a model consisting of four elements. These four elements are divided into two categories, signifying the technical or ontological elements (earthwork and framework) and the symbolic or representational elements (hearth and screen wall) [Hartonian 1999, cited by Andersson, 2005, p.12]. The four elements are associated with four industries (ceramics, carpentry, masonry and textiles), with emphasis on the relationship between form, material and the manufactural procedures [Frampton 1996, p.16]. Even though Semper's perception of architecture is characterized by fundamental factors as materials and tools, Semper describes the importance of implementing the climate, place and religious, social and political aspects in architecture [Werne 2003, cited Andersson, 2005, p.12]. Semper presents architecture as ritualistic art, comparatively with dance and music, rather than comparing architecture with a figurative art, like painting and sculpturing. This statement, according to Semper, grounds on the symbolic essence of tectonic, which is not a direct representation but more likely an expression of culture and rituals. [Hartoonian 1999, cited by Andersson, 2005, p. 12]. According to Semper every work of architecture consists of two contrary elements, the tectonics and the stereotomics, where the tectonics represents the fundamental structure and the stereotomics represents the heavy construction [Frampton 1996, p.7]. Most importantly is his perception of beauty, as he states that the beauty of architecture emerges from the joint, the transition of the architectural work – from the stereotomic base to the tectonic frame [Frampton 1996, cited Andersson, 2005, p.13].

Eduard Sekler, a 20th century theorist, grounded his theories in the essay called *Structure, Construction and Tectonics*. He claims, according to the theories, that the differences and diversity between the structure and construction of today has a tendency to obscure. In the light of this, he determines the differences between these two erected concepts. The structure, he describes in a general term as the elaborated and ordered arrangement of elements, while the construction is more like given elements ordered consciously. Thus, he specifies in relation to architecture, that a certain structure can be apprehended as the main bearing-part of the loads in a given building, where the construction

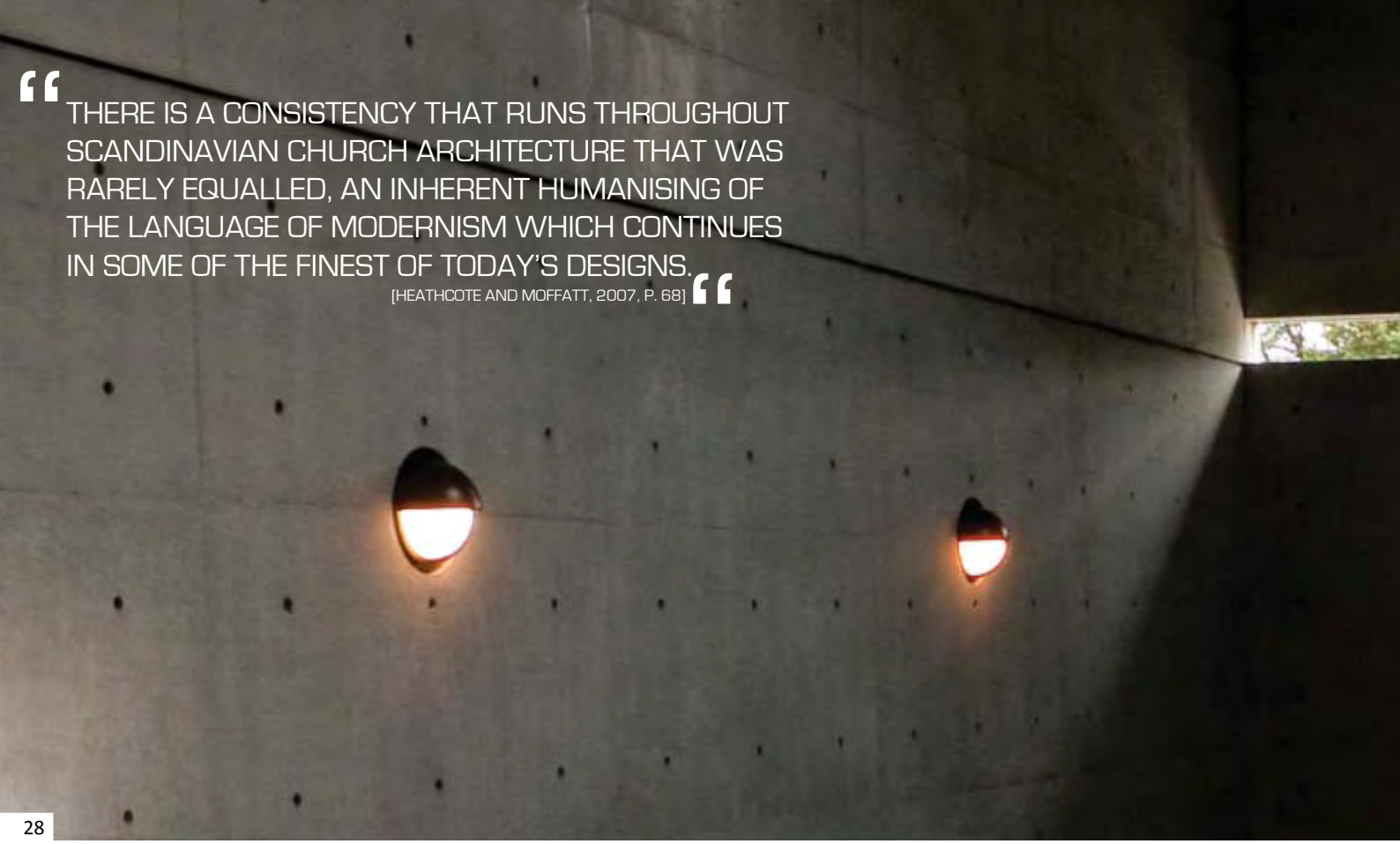
represent the realisation of the principle [Andersson 2005, p.14]. As a result, the structure can be evaluated according to its performance in a given situation, and the construction is related to the choice of handling materials, where synergetic variations between the structure and the construction can create a transformation of the overall expression. From the result of the interaction between construction and structure, also seen as a generator of a given expression, emerges the term of tectonics. [Sekler, 1965, cited by Andersson, 2005, p.14]. The concept of tectonics arrives from the rhythm of elements, and the intervening joints, as long as structure and construction are kept independently. Tectonics, in accordance to Sekler's theories, expresses the interplay between forms and forces. [Anderson 2005, p.15]

Kenneth Frampton, likewise a 20th century theorist, brought the term of tectonic into a re-discussion in the 1990s, in the light of the beginning of digitalisation, where the architecture of today is erected. He describes tectonic as a term emerging from a clear structure – to show the constructional logic of a given building. Furthermore, Frampton defines tectonics through the ability to express the true essence of a given building, as for instance, through the ability to articulate details displaying the transfer of loads though joints. [Jameson, 1997, cited by Anderson, 2005, p. 16]
Frampton also segregates his view of architecture into two representatives, a representational and an ontological part. Especially the representational matter has interest as it sums up the scenographic in the spatial values of architecture, which are defined as an abstract of the concept of the building. With this bearing in mind, Frampton describes that architecture strictly related to economy and technology, independent of the contextual idea, is the worst threat of modern architecture. Well-balanced architecture will only arise through the triad of scenographical, technical and economic aspects. [Jameson, 1997, cited by Anderson, 2005, p. 16]
As explained, Frampton pays a lot of attention to the scenographical qualities of a building, especially to the spatial qualities, as he formally categorises it in three aesthetic parameters: tactile, tectonics and telluric. The tactility of a space reflects the ability to sense the materials, as the tectonics defines the general understanding of a given structure, whereas telluric explains the laws of earth. According to the abstraction, the joint is a representation of the three above-mentioned parameters, whereas the joint articulates the connection and typology of given materials, while expressing the laws of the nature. [Andersson, 2005, p.16]

The different theorists, as described, have different perceptions of the definition of tectonics. The differences can be seen as a result of the temporal gap between the different theories. The movement of tectonics, from Bötticher's towards Frampton's theories, seems to be a clarification of the comprehensive construction, and a result of the contemporary technological evolution of constructional freedom.
In addition, the theorists claim that architecture can be divided into a tangible part and an abstract part. The tangible defines the construction, material and methods, where the abstract determines the structure, concept and representation. In a general understanding, the jointing and interplay between the tangible and the abstract seems to define and articulate the term of tectonics, and will form the tectonic approach for the church design. [Andersson, 2005, p.24]

RELIGIOUS ARCHITECTURE
HISTORICAL DEFINITIONS

After centuries of conservatism and revivalism, it was first in the beginning of the 20th century that architecture start to embrace the genuine energy of the time in the design of new churches, according to the ideas and concepts of the modernism. [Stegers, 2008, p.23]
The 19th century was marked by a return to a blind admiration of the medieval forms and thus, the situation at the beginning of the 20th century was comparable in many places to the Middle Ages. Architecture has stopped to be a living response to changes in theology, becoming a historicist exercise of detailing and style. Besides, the Church has gradually been losing its central position in an increasingly materialist and rationalist society. [Heathcote and Moffatt, 2007, p. 34]
This situation led to a reform of the Church and its liturgy, which was committed in reassure its role in the society. Thereby, at the beginning of the 20th century, the architecture of the church started to reflect, in the words of Heathcote (2007, p. 35) "a rejection of the hypocrisy of the prevailing situation that was characterized (…) by a lack of understanding of the fundamental roots of the space and the liturgy".
This church 'reformation' coincided with the beginning of the Modernism and in many ways its objectives also reflect the principles of the Modernism. Thereby, when the Modernism approach was applied to ecclesiastical architecture, its principal concern was a rational examination of the brief, which lead the architects to a return to the fundamentals of the worship. The first examples of modern church architecture took the liturgy as its heart and developed its expression from the inside out. New construction materials were used and different forms explored to create an architecture which was both sacred and relevant to an industrial age. [Heathcote and Moffatt, 2007, p. 35, 36]
However, the most decisive turning point of the modern history of church architecture happens after the Second World War, which awoke a strong desire for spirituality. The church building became a symbol for a new beginning. "Church architecture was the medium through which the avant-garde architect expressed himself." [Stegers, 2008, p.23]
Many churches were built, in almost any conceivable plan and elevation, material form or construction. Longitudinal and square plans, and also circles, ovals, ellipse or parabola were explored, a multiplicity that Rudolf Schwarz entitled "Architecture as Holy Image", and which continued until the 1960s [Stegers, 2008, p.23].



> "THERE IS A CONSISTENCY THAT RUNS THROUGHOUT SCANDINAVIAN CHURCH ARCHITECTURE THAT WAS RARELY EQUALLED, AN INHERENT HUMANISING OF THE LANGUAGE OF MODERNISM WHICH CONTINUES IN SOME OF THE FINEST OF TODAY'S DESIGNS."
> [HEATHCOTE AND MOFFATT, 2007, P. 68]

From then on, a more sculptural architecture of plasticity and dynamism was developed, inspired by Le Corbusier's chapel at Ronchamp (1952-5). Citing Heathcote (2007, p. 50), "Ronchamp (…) is the fundamental turning point of the Modern Movement; the point at which something like Expressionism, a sculptural approach to architecture, found its way back into the fold (…)". Seen by some Modernists as an affront to the Functionalism, due to its lack of truthfulness to structure and material; and by others as a gesture of sculptural expression that made wilful symbolism to become acceptable again, Ronchamp was one of the critical moments in Modern architecture. In contemporary church architecture, this polarisation remains as two threads that run side by side. "The reverence for the artist (which comes out of the Renaissance humanist tradition) and his works provide us with one extreme attitude and the liturgically driven Functionalism provides the other". [Heathcote and Moffatt, 2007, p. 51]

In the late 60s, as part of the movement that gave origin to the political and cultural reform, the parish centre hall of the churches gain a multipurpose function. With this conceptualisation the design of many churches began to resemble a cultural centre, used for a whole variety of purposes. The architecture became primarily functional. However, the flexibility to conduct different functions in the same space made dissolve the boundary between the sacred and the secular, making the church become de-sacralised. [Stegers, 2008, p.26]

Today, many contemporary churches contain sacred and as well secular uses, such as spaces for city libraries, adult and children education centres and cafeterias. However, the space used for the service it-self, whether for Catholic or Protestant services has an exclusive sacred function, a space dedicated to celebration. [Stegers, 2008, p.12]

From the late 1980s, new sacred architecture starts to receive greater attention from the people when compared with the previous decade. Inspired in the Northern tradition of the naked churches of Protestantism, Peter Zumthor's Chapel in Somvix, Switzerland (1988), and Tadao Ando's Chapel of the Light in Japan (1989), had a strong influence on the design of sacred architecture. With its 'minimalism' expressed in the combination of the archaic and the modern, both buildings exhibit a radical aesthetic restraint, both in terms of their geometry as well as their materiality and construction, that marks the beginning of a new approach to design sacred buildings. [Stegers, 2008, p.26, 27] Ando's architecture expresses an aesthetic restraint inspired by the Japanese contemplative Zen traditions which, despite has little in common with Christianity, lead to great changes in modern church design, based not on expression and on the special, but in subtlety and thoughtful carelessness [Heathcote, 2007, p. 72, 73].

Scandinavia

According to Heathcote (2007), two distinct streams emerged from Scandinavia modern architecture that had a big contribution to the 20th century ecclesiastic architecture. The first of these is a Nordic classicism which makes the connection between a traditional architectonic language and the Modernism, exemplified by Asplund; the second is an organic approach to the functionalism made by Alvar Aalto, which responded more closely to the landscape and to the body.

In Scandinavia, in the years before and after the First World War the architecture reflected a conservative neoclassicism influenced by the National Romanticism. In this context, the work of Asplund reflects, in the words of Heathcote (2007), a 'touch of genius' to this style through a blend of spatial manipulation, materials and reference to tradition in a modern

way. Asplund's 'romantic classicism' is best expressed in his crematorium chapel in the South Stockholm Cemetery (1935-40), which stands simple and eternal in relation to the landscape.
A similar softened classicism can be found in the work of Aalto, which produces a human synthesis of the pure Modernism and elements of an archetypal classical language with notes of Romanticism. Aalto's church at Riola in Italy (1966-8) is another example of the Scandinavian Modern architecture which had an inestimable influence until the present. [Heathcote and Moffatt, 2007, p. 66]

Naked Churches

In resemblance with the Nordic architecture, also the Protestantism adopted quite easily the harsh and rigorous language of Modernism, as it reflects the self- denial of the senses of the Lutheran worship. The values of the Nordic architecture, as a softened and humanized modernism reflected, thereby, the ideals of the Lutheran Church, creating a sacred architecture which expressed simplicity and purity, focusing on the essence.
Although the Catholic Church have also adopted the language of Modernism, that was expressed in a different way. While Catholicism makes the building special, as an iconic building, the Protestantism emphasises the sacred in the ordinary. Following the traditions of Nordic architecture, Protestant sacred buildings are appreciated for their forms, spaces, materials and tectonics, which emanate not from their sacrality but from their exquisite attention to the details of the everyday. Because of their attention to the ordinary these are buildings from which we can extract inspiration. They are buildings which see Good in the ordinary. 'God' is, as Mies said, "in the details". [Heathcote, 2007, p. 72]

Finnish Church Architecture

After the Second World War, churches were built in exceptional numbers in Finland, with no comparison elsewhere in the world. Most modern churches have been built as the result of architectural competitions and thus represent the very best of their time. [Jetsonen, 2003, p. 5]
In the 17th and 18th centuries, after the Reformation, the stone churches were followed by a rich tradition of wooden churches built by vernacular master builders. Modest in their materials, these churches express harmony, honest sensitivity and balance of light and space that still speak to today's visitors. [Jetsonen, 2003, p. 6]
Contemporary Finnish churches aim to create the framework for a powerful experience, by offering a possibility of withdrawing from the commotion of the surrounding world. In a church, architectural vocabulary is at its most delicate. In modern Finnish churches, the subtle interaction of light and space is the most characteristic feature. Another powerful conveyed theme is the feeling of nature. These characteristics generate the pure atmosphere of today's Finnish church. [Jetsonen, 2003, p. 8]

Designing a church for the future is about bringing the design back to its sacral essence, in a return to the fundaments of the worship and liturgy.
In relation to the mentioned history, after the Second World War, church design became the symbol for a new beginning, a symbolism which can be applied to Våler Church, due to its tragic past.
With the parish centres of the 1960's, the church design became primarily functional, loosing much of its sacral essence.
When designing a church it is necessary to find the right balance between the *substantial* and the *functional*; a sacral church hall should contain the essential of worship and believe, while the spaces for the serving facilities should improve the conditions of a church for the future.

RELIGIOUS ARCHITECTURE
SACRED SPACES

With the development of the 20th century the consciousness of the sacred has gain significance, becoming its atmosphere a delusion of aesthetics. For a building to be used as a place of worship it has to be considered the role of the atmosphere as aspiration, giving a certain grace to the place and eventually making it sacral. However, the subjective-physic component of an atmosphere should not be underestimated and as well its objective-physical component should not be overestimated, leading to a "false sense of phatos and drama" [Stegers, 2008, p.32]. A sacred place should oscillate between trace and aura, to quote Walter Benjamin: "The trace is an appearance of closeness, no matter how distant the thing that leaves it behind. Aura is the appearance of distance, no matter how close the thing that calls it forth. In the trace we gain possession of the thing; in the aura, it takes possession of us."

A church is a symbol, the external frame of holiness, one of the essential qualities of human life. Holiness has been seen to represent an organised reality alongside the chaos of life. As described by Jetsonen (2003), experiencing it is at once mystic, fascinating and awesome. "Architecture can be the fabric of holy experience, if only the qualities touching the emotions are present in the space." [Jetsonen, 2003, p. 8]

Sacred Spaces have certain physical characteristics that appeal to all our senses, our heart and our intellect, telling us stories. They can raise our spirits, with their sense of permanence. But these spaces cannot be made sacred only through their physical qualities (walls, floors and ceilings). It is the connection of the believer with the divine that makes the space sacred. It is up to the architecture to combine the 'magic ingredients' in the exact way that makes a place become something mysterious and much larger than ourselves, creating the link to the divine. [Crosbie, 2006]

The churches of the Romanesque and Gothic period, through their position on a hill, the towers at the corners, through their length, breadth and height and through their majestic windows, transmit an image of a magnificent and divine Church. Those churches occupied central positions of the towns and cities, with its towers dominating the urban skyline until the 20th century. Today a modern church in an urban context rarely has such a dominant position, unless they have a great symbolic significance. [Stegers, 2008, p.12]

However, the church remains a pivotal building in the community, the place where birth, marriage, death and the rites of passage continue to be celebrated, mourned and marked. It remains a sanctuary. Its role is perhaps more important than ever as a space of quiet contemplation and concentration, of escape. [Heathcote and Moffatt, 2007, p. 77]

Faith and Religion in the Present Day

In the modern society, during the 20th century the doctrine of Christianity starts to be questioned. Despite the socially anchored traditions of Christianity, modern society is becoming more heterogeneous, moving towards a hedonistic way of life, with absolute religious neutrality. "Christianity is gradually disappearing from our general back ground and education." [Stegers, 2008, p. 10]

Modern societies are shifting to more diffuse forms of religion, where different doctrines are being reconciled under the same private forms of belief, "the invisible religion" as described by the sociologist Thomas Luckmann. Is the desire of the contemporary human the self-expansion and the transformation of the self, no longer through the transcendental spiritual experience of the faith but instead through "art, pop, sport and sex" [Stegers, 2008, p. 10].

According to Stegers (2008), when designing a modern church, this shift away from distinct denominations towards a more diffuse religion as to be taken into consideration, with a clear conscience of all the changes that has entailed.

The church can be seen as the external frame of holiness, and shall have certain physical characteristics that appeals to all senses through a storytelling. However, the physical framework does not states a space sacred by itself, the connection of the believer with the divine is what makes a space sacred, and can be seen as the essential for the future of the church.

"Whatever sacred may be, it should be made apparent through design: through dimension and number, i.e. proportion; through extreme purity or extreme coarseness of a particular material, so that it is beyond all use and for its own sake; through something incredibly weightless or something tremendously massive, where the force behind it is not apparent to the eye; through translucent rather than transparent surfaces, in which light can simply be light and not have to illuminate this or that object." [Stegers, 2008, p.27]

RELIGIOUS ARCHITECTURE
LIGHT IN SACRED SPACES

Daylight has always been a key aspect in the design of sacred spaces during the different periods of history, and especially in churches, as Christianity is a theology of light. In the churches of the Romanesque, small windows puncturing the walls sent rays of light through the darkness, and in Gothic cathedrals coloured glass windows illuminate the sacred space, through the fusion of the immaterial – light – and the material. But it was during the baroque period that the control of light in churches was taken to perfection, where transparent glass windows allowed light to flood into the interiors, lighting up the frescos, the plaster work and the altar. [Stegers, 2008, p.60]

As the most abstract cipher for the ethereal and the heavenly, light as become, in the words of Heathcote (2007), the most powerful resource of architects. Light is uncontrovertial; it is universally understood and taken to be ideal for the purpose of expressing God. Light has become one of the motifs of modern architecture, "somehow self-sufficient, as if light itself was able to express everything an architect is not able to believe: the other, the beyond." [Heathcote, 2007, p.76]

In Northern Europe where light, in its near-permanent presence is the most radical indicator of the seasons it is celebrated like nowhere else. In Jørn Utzon's church at Bagsværd (1976) in Denmark, the light floods in in waves through the roof, which reflect and direct the glow in an undulating way. In Kaija and Heikki Siren's Otaniemi Chapel in Finland (1957), the church hall is open to the forest outside, letting it come in and allowing the sacred space to be 'polluted' by the realm of the everyday outside. The opposite of this is supplied by the deep, thick walls of Ronchamp, but even here it is the light that gives emphasis and form to the mass, to the physical weight of the structure. [Heathcote, 2007, p. 76].

Light has a fundamental effect on the atmosphere of sacred spaces, whether is natural light or artificial light. Light and shadow determine the spatial qualities of a space. "When used in the right amount at the right time and in the right place, light can accentuate, direct attention, create an atmosphere of contemplation and composure, foster togetherness in prayer, or underline the solemnity or festiveness of an occasion." [Stegers, 2008, p.60]

Natural Light

"DAYLIGHT CAN LEND SACRED SPACES A SPIRITUAL ATMOSPHERE."
[STEGERS, 2008, P.60]

Daylight can be a diffuse and soft light without shadows, that can lend spaces an appearance of weightlessness; or a sharp direct light that casts shadows, creating layered spaces through the interaction between light sources from several openings. Daylight can model spaces, changing their appearance during the day, and reflecting the passage of the seasons. And, unlike artificial light, sunlight is available every day, free and dependably, which should be considered in terms of energy efficiency.

The degree to which daylight contributes to the illumination of interiors is expressed by the daylight factor, determining the lower limit of daylight illumination. To achieve a sufficient level of daylight illumination it is also necessary to ensure that the light is consistent, which depends of the orientation and the position of the windows, as well as of the kind of glazing. [Stegers, 2008, p.60]

"The amount of daylight and glazing in a church fundamentally determines the

character of a space." [Stegers, 2008, p.61]
While translucent facades close off the world outside and concentrate the attention on the activities in the church, lend the space a contemplative and introverted character, transparent glazing provides a light and clear illuminated space, connecting the interior with its surroundings. However, direct light can make more difficult to differentiate between object and shadow. In contrary, diffuse light can be used to neutralise boundaries, but it can also impair our perception of space, making it appear monotonous and lifeless. [Stegers, 2008, p.61]

For full-glazed surfaces the degree of shadow and the direction of incident light are fundamental for the resulting quality of natural light. When the sun is lower in the sky, the west and east facing facades are exposed to greater direct solar irradiation and therefor have warmth light than sound facing facades. However, the south façade can be shaded more efficiently, avoiding overeating and danger of glare.
Deep spaces can be more evenly illuminated with light from above. Skylights receive the brightest light from the zenith rather than the weaker light from above the horizon, and causes less glare than a normal window. Light that shines from above can lend the space a transcendent nature, and can be used to emphasise particular areas of a space. [Stegers, 2008, p.62]
For spaces lit only from above a higher daylight factor – at least 4 per cent - is required to provide a pleasant level of brightness indoors than for spaces lit by windows. [Stegers, 2008, p.63]

"A SPACE IS REGARDED AS EVENLY LIT WHEN THE PROPORTION OF MINIMUM DAYLIGHT FACTOR TO MAXIMUM DAYLIGHT FACTOR IS LARGER OR EQUAL TO 1:2. FOR SPACES LIT BY WINDOWS, THIS PROPORTION MUST BE LARGER OR EQUAL TO 1:6." [Stegers, 2008, p.63]

Artificial light
Like natural light, artificial light can also acquire symbolic meaning. In darkness, artificial light can be used to create spatial impression of its own or to simulate daylight as far as possible. [Stegers, 2008, p.63]
Natural and artificial light have different qualities in terms of colour, colour rendition, intensity and dynamics. Natural light is far superior to artificial light, and neither the intensity and colour of daylight, nor its variety of modulation can be achieved artificially. Nevertheless, artificial light is required in churches as soon as it gets dark. To create appropriate lighting conditions in churches that are used for different activities, light can be used which can be switched and dimming in various combinations. A space appears light and pleasant when the luminance of its vertical surfaces is high.

During the day the intensity of illumination should be higher than in the evening, with a preferably value between 300 and 500 lux. In the evening, an intensity of illumination of 80 to 150 lux is necessary in the nave and seats, while the altar, focus of the activities should be brighter, with a light intensity of 150 to 250 lux. [Stegers, 2008, p.64]

Light is a key aspect in the design of sacred spaces as it enhances the ideal purposes of expressing the divine. The essence of light in sacred spaces can be found within its potential to determine the character of space, linking it to the divine.

RELIGIOUS ARCHITECTURE
ACOUSTICS IN SACRED SPACES

The sound in a sacred space is fundamental in the experience of the atmosphere of a place for worship, playing a major role in how it is perceived.

A sacred building demands a wide variety of functional requirements, such as prayer, readings, sermon and songs, which have acoustic requirements that contradict one other, making a church one of the most complex cases of architectural acoustics. Through the history, the acoustic requirement of the different functions led to the formation of characteristic spatial shapes and design elements which are connected to one other, shaping the traditional church with its nave, side aisles, transept and choir. [Stegers, 2008, p. 54]
During the worship, the sound source changes positions (priest, organ, choir), which can be confusing for readers, singers and audience, as the sound reflected through other parts of the church reaches them with a delay. The form of the space as well as the position of the sound source is the key factor that determines the acoustic interaction of the interconnected spaces. [Stegers, 2008, p. 54]

Sound propagation
Sound waves radiate from a sound source at a speed of approximately 340 m/s, reaching each listener in staggered succession and reflecting of walls, ceilings and large obstacles. The intensity of a sound source attenuates rapidly with the distance travelled, and thereby it is important to improve acoustic communication through the use of amplifying sound reflections.
Our aural perception combines the direct sound and the sound reflections to an overall impression of the sound quality. We perceive the sound as more lucid and intense as closer the interval between the reflections, within a frame of 50 to about 150 milliseconds. The early reflections improve the sound clarity and later reflections are heard as reverberations. Lateral reflections strengthen the impression of spaciousness. [Stegers, 2008, p. 54]

Geometric analysis
The shape of a space has a major influence in the sound reflections and in the sequence in which they arrive at the listener, and thereby in the quality of the sound perceived. Acute angles and niches lead to localized sound accumulation, which can be intrusive if that is where listeners are located or if they lead to a delay of the sound to the listener. Right angles and rectangular spaces give the most even distribution of sound. Concave surfaces concentrate the sound in a focal point, while convex surfaces disperse it. [Stegers, 2008, p. 54]

Reverberation Time
Reverberation time (RT) is the time required for the sound pressure level to fall by 60 decibels. For enclosed spaces in which sound can distribute rapidly and evenly, the reverberation time can be calculated with Sabine formula, in which it is influenced by the volume of the room and the area of the absorption surface area. The reverberation time is represented by a decay curve, determined for every frequency, generally between 500 and 1000 hertz. [Stegers, 2008, p. 55]

In a speech the clarity of the sound is particularly important. However, according to measurements taken in sacred buildings, relatively long reverberation times can be used when reverberations decay sufficiently rapidly and evenly for all frequencies, which also have good concert and vocal acoustic properties [Stegers, 2008, p. 55].

In sacred spaces with a volume between 500 and 20.000 cubic meters, for frequencies from 500 to 1000 hertz, the recommended reverberation time vary between 1,5 and 7,5 seconds [Stegers,

2008, p. 56].

Special aspects of acoustics in Sacred Spaces

"The architectural acoustics should be considered throughout the entire design and building process - whether the spatial distribution of functions and the design of the interior fittings, the formal design of the space or the choice of materials, all aspects contribute to the design of the acoustics." [Stegers, 2008, p. 57]

For the sermon and reading it is sufficient to raise the speaker to ensure the necessary direct sound radiation to the listener. A niche or close flanking walls can create early reflections that strengthen the intensity of sound, and a reflector positioned above the speaker can be used to exclude the acoustic volume of the space above.
By contrast, singers and organists are dependent on reverberation to transmit the sound and are therefore best paced on a raised gallery not too far from the ceiling.

The use of electronic acoustic amplification can help to amplify the voice, but their effect is much better when the space is heavily sound insulated. However, "the excessive use of sound insulation causes sacred spaces to lose one of their most essential qualities: the sense of other worldliness, the atmosphere that creates the conditions for transcendent experience". [Stegers, 2008, p. 57]

"The spatial reflection or absorption of sound immediately affects our psychological response to a given volume, so that we may find it warm or cold according to its particular resonance rather than its appearance." [Frampton, 2001, p. 9]

Just as important as the light settings are in how the churchgoers interpret the experience of the space, the acoustic in a sacred space is fundamental. With the above mentioned quote in mind, cited by Frampton, the psychological perception of the churchgoers is deeply depended on the acoustical performance of the sacred space, giving them a larger perception of the quality of the space than its appearance. Therefore, will the shape, form, materiality and tactility will be taken into consideration when it comes to its acoustical ability, in close relation to the conceptual expression.

ST. HENRY'S ECUMENICAL ART CHAPEL

CASE STUDY

Situated in the island of Hirvensalo, close to Turku, St. Henry's Ecumenical Chapel rises on top of a hill, orientated west-east, like a large sculpture clad in patinated copper. The copper surface of the chapel will become green with time and so the building will be in harmony with the colour of the surrounding trees [Schmidt, 2009].
The form of the chapel speaks quietly, thought to resemble the Christian symbol of the fish.

"THE BUILDING IS A REFUGE".

[JETSONEN, 2003]

The path to the chapel rises up the hill leading to the entrance, made through a small foyer. While the impressive fish volume appears rather compact and enclosed from the outside, the experience changes radically while entering the entrance at the western gable [Skude, 2005]. In the Chapel made of pinewood, the wooden walls, articulated by rhythmically repeated ribs, curve softly towards each other to meet at the pointed peak of the ceiling [Jetsonen, 2003].

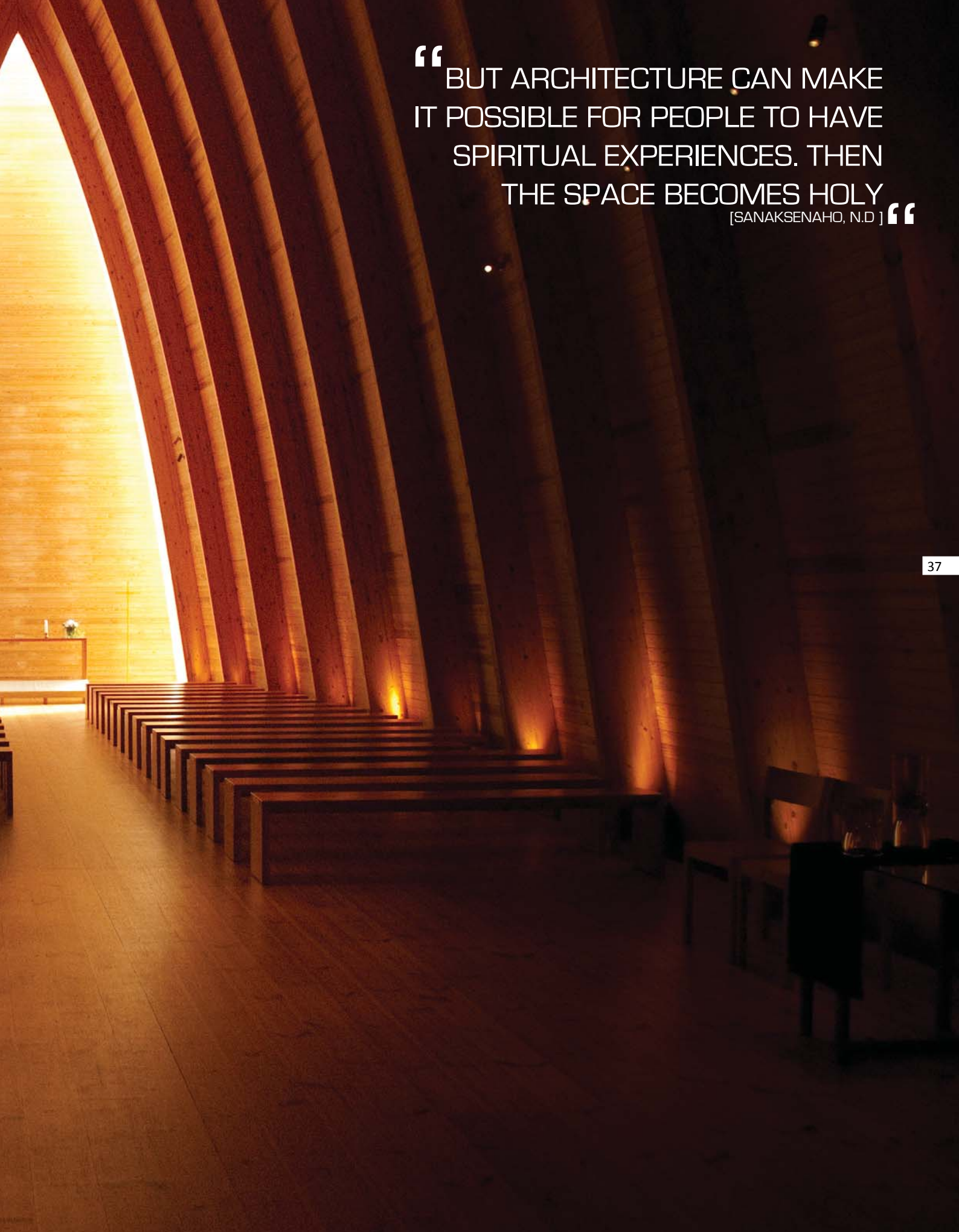
"THEY ARE LIKE HANDS HELD TOGETHER TO FORM A SHELTER."

[JETSONEN, 2003]

At the bottom of the major space the aisle is spatially separated from the nave of the church by secondary spaces hid in two wooden boxes intersected by a rampart moving upwards. Along the sides of the rampart rest rooms, an office as well as a staircase leading up to the choir balcony are hiding. [Skude, 2005] The gallery and the chapel are one space, being the altar at the end of the axis. In the rear space the benches are taken away when there is an art exhibition. The contrasting play of light and shadow powerfully articulates the interior of the space, illuminated by strong indirect light from both ends of the chapel. [Schmidt, 2009] A rear stained glass window, in full height illuminates the altar, bringing a varying play of light and colour to the dimness of the room [Jetsonen, 2003].

The architect, Matti Sanaksenaho, has restrained the wooden cross at the altar so it almost appears camouflaged, making the religious symbols less intrusive, and providing a naked interior for quiet speak in order to allow greater space for the visitors own reflections [Skude, 2005]. Citing Skude in an interview to Matti Sanaksenaho (2005), "At best holiness, spirituality and the sense of the sacred should arise in people themselves, since architecture itself will not be able to create these feelings, Matti claims: 'But architecture can make it possible for people to have spiritual experiences. Then the space becomes holy.'"

By his restrained use of religious forms and symbols, Sanaksenaho has succeeded in making an utmost simple and monumental chapel at the same time, thereby containing modesty as well as greatness in architecture [Skude, 2005].



"BUT ARCHITECTURE CAN MAKE IT POSSIBLE FOR PEOPLE TO HAVE SPIRITUAL EXPERIENCES. THEN THE SPACE BECOMES HOLY"
[SANAKSENAHO, N.D]

SUSTAINABILITY
HOLISTIC APPROACH

Definition
Sustainability is the potential for long-term maintenance of well-being, which has environmental, economic, and social dimensions. The environmental sphere describes the use of natural resources, and has as a main goal trying to stop the continual degradation of the natural environment. The social aspect of sustainability considers the standard of living and values such as education and community. Sustainability interfaces with economics through the social and ecological consequences of economic activity, and thereby the economic sphere defines the cost-benefit part of the trinity of sustainability, and how profit or cost savings can be gained. [McDonoug, 1992]
Throughout history humans have tried to master the nature, which resulted in the destruction of much of the biophysical resources and especially in the Earth's ecosystems. However, to achieve sustainability it is essential to understand that humans are dependent on the natural environment for their own survival and well-being. Without a healthy natural environment, it is impossible to have a healthy society or economy. [Greenwood, 2004]

Sustainability and Energy
Most of the energy consumed worldwide is used in city-areas, for local infrastructure, electricity-supply, household etc.; and the majority of it comes from fossil fuels, compromising the future of the modern society through the emissions of greenhouse gases. The issue of energy consumption has become increasingly important, as concern about the effects of economic growth on over-consumption of natural resources and the impact on the environment, in particular the atmosphere, have been noted. Thereby, it is important to reduce and replace the use of fossil fuels for renewable sources such as wind, water and sun, which are inexhaustible and create very little pollution. Furthermore, the individual behaviour and responsibility has to be changed dramatically in order to reduce the personal energy consumption.
Thus, sustainable design has to become integrated in the modern thinking of architecture. This started among others with the Hannover Principles (designed for the Expo Hannover 2000), which aim to provide a platform upon which architects and designers can consider how to adapt their work toward sustainable ends. Designing for sustainability requires awareness of the full short and long-term consequences of any transformation of the environment. [McDonoug, 1992]

"WE MUST EMPLOY BOTH CURRENT KNOWLEDGE AND ANCIENT WISDOM IN OUR EFFORTS TO CONCEIVE AND REALIZE THE PHYSICAL TRANSFORMATION, CARE AND MAINTENANCE OF THE EARTH." [MCDONOUG, 1992]

Sustainability and the elements
The Hannover Principles take form of a framework based on the enduring elements of Earth, Air, Fire, Water, and Spirit, in which design decisions may be reviewed and evaluated. The five elements provided a structure for the ancient world, and it can still be perceived along these lines.

Earth: In architectural design, the earth is both the context and the material. Thereby, a balance must be struck then which provides a meaningful and viable diversity of scale. Thus, design solutions should enhance the overall sense of community, linking humanity and nature. Building materials need to be considered for their broadest range of effects, from emotive to practical, within a global and local context. Local production should be stressed, along with approaches that emphasize the regional, cultural, and historical uniqueness of the place. Further-

more, materials should be considered in light of their sustainability; their process of extraction, manufacture, transformation and degradation through proper resource management and biodiversity on a global and local scale.

Air: The air is the element whose degradation we can sense most immediately; when the air is bad, all can feel it. Any design should be evaluated in terms of their atmospheric effects, both on the ozone layer and on global warming. The alteration of the micro-climate is equally significant.
In order to design integrated solutions which can exploit of the wind natural conditions, wind patterns in all seasons should be evaluated for both detrimental and beneficial effects on the site configuration. Natural ventilation patterns must be considered at every scale from the urban to the domestic as an alternative to artificial climate control.

Fire: Fire is the most dramatic symbol of the human ability to harness natural energy. Energy is required to achieve comfort and convenience and to transform materials to useful effect.
Designs should be based on on-site renewable energy sources, without reliance on fossil fuels, as far as possible. Solar energy should be evaluated in terms of its efficiency and its enjoyment by people throughout the annual cycle.
It is also important to understand that the energy 'embodied' in the building materials, the energy necessary to extract, refine, transform and utilize the materials, can have a significant impact on the energy consumption of the project.

Water: Water is the most basic element of life on the planet; it is celebrated as a fundamental life-giving resource.
A building design should recognize the communal, cultural, historical, spiritual and poetic possibilities of the use of water and its central role as a precondition for life.
The collection of rainwater as a possible resource for inhabitants in building systems should be considered. The design should also minimize the impermeable ground cover.

Spirit: This most ineffable of elements is also the most human. Concern for sustainability is more than a matter of compliance with industrial regulation or environmental impact analysis. It embraces a commitment to conceive design as part of a wider context in time and place.
The design must foster the sense of place essential to any human experience of the meaning of sustainability. To present the message of the value of all life and the rightful human place as a part of this, people must be able to experience the feeling of belonging to the earth firsthand.
Thereby, a design should be building on the principle of humility, trying to plan and direct both human and natural processes. The design may encourage a sense of permanence and community, but it cannot legislate for it. Similarly, no assumed laws of nature can be the only criteria for evaluating a design. The solution must present an aesthetic statement which sets up human society as a conduit toward the further understanding of nature. [McDonoug, 1992]

Designing for sustainability, and with sustainability, defines in matter the essential of designing with nature.
Designing under the conditions of nature, as the ancient five elements describes, gives a definition of how to design according to the sustainable principles, by taking advantage of the context. Sustainable design lays in the essential understanding of a place through human experience.

SUSTAINABILITY
LOW ENERGY REQUIREMENTS

Definition
A low-energy building is any type of building that from design, technologies and building products uses less energy, from any source, than a traditional or average contemporary building.
In low energy buildings, the low energy consumption achieved is mostly due to the significant reduction of energy used for heating and cooling, which represents the biggest parcel of energy consumed in a building. Therefore, the insulation of the building envelope has to be continuous and extremely efficient, minimising the thermal bridges.
The consumption of as little energy as possible and the use of renewable energy sources also make the building to be CO2 neutral, and thereby to reduce the environmental impact. This impact is also reduced by minimizing the use of virgin non-renewable materials and non-renewable fuel resources and by the use of reusable materials.

Energy design process
Incorporating sustainability into the building design process has never been more important as almost 40% of CO2 emissions come from the building industry. To incorporate energy-efficiency into buildings design, knowledge of energy optimisation is an essential parameter, which should be included from the conception. [Larsen, n.d.]
In addition to the degree of thermal insulation and thermal mass, the building relative compactness is of an extreme importance when designing low energy buildings. The design and geometry of a building, as well as its orientation and the distribution of windows on the façade, are some of the parameters that contribute to the building's collective energy consumption. [Pedersen, 2009, p. 40]
Energy efficient buildings can be achieved by using an integrated approach to design, which can be summarized in 3 steps: reduction, optimisation and production.

1. Reduction: As a part of the design process it is important to reduce every parameter to the essential. The energy consumption is reduced by optimising the design, function configuration and overall technical systems of the building.

2. Optimisation: In the second phase all the elements will be optimised. The energy consumption is further reduced by adjusting the systems according to certain parameters as daylight, energy production, energy loss, indoor climate and overheating. Intelligent control systems and energy-reducing materials can be implemented.

3. Production: In the last phase is necessary to consider and optimise all the steps of the production of the materials used in the building. This could for instances concern pre-fabrication, production and transportation of materials, making sure that every solution through the entire process is sustainable.

Norwegian Low Energy buildings
According to TEK10 (Byggeteknisk Forskrift), the Norwegian building legislation, the overall Energy Frame has to be lower than 165 KWh/m2/year. As the aim of the project is to develop a low energy church, examinations of different documents for low energy building have been made.
At the present, the Norwegian legislation for low energy buildings only has demands for residential buildings. However, the report "Criteria for Passive and Low Energy Buildings" recommends the criteria's for low energy buildings with other purposes than residential. According to this report, the energy consumption for a low energy cultural building, based upon the recommended air change rate and internal heat gains from Passive House Criteria, is 50 KWh/m2/year. This future classification of a low energy cultural building will be aimed for. [Dokka, Klinski, Haase & Mysen, 2009, p.9-19]

BUILDING CATEGORY	AVERAGE AIR CHANGE IN USAGE	AVERAGE AIR CHANGE OUT OF USAGE
Cultural building	7 m^3/hm^2	7 m^3/hm^2

The Norwegian Passive House requirements for the recommended air change rate is given as

BUILDING CATEGORY	LIGHTING	EQUIPMENT	PERSON	INTERNAL HEAT(AVG)
Cultural building	1 W/m^2	1 W/m^2	3,2 W/m^2	3,3 W/m^2

The Norwegian Passive House requirements for the internal heat gain are given as

PROPERTIES	VALUE
U-value external wall	≤ 0,15 $W/(m^2 \cdot K)$
U-value floor	≤ 0,15 $W/(m^2 \cdot K)$
U-value roof	≤ 0,13 $W/(m^2 \cdot K)$
U-value window	≤ 0,80 $W/(m^2 \cdot K)$
U-value doors	≤ 0,80 $W/(m^2 \cdot K)$
Normalised cold bridge value	≤ 0,03 $W/(m^2 \cdot K)$
Heat recovery effiency	≥ 80 %
SFP factor ventilation system	≤ 0,15 $W/(m^3/s)$
Leakage figure at 50 Pa, n_{50}	≤ 0,60 h^{-1}

According the various building components from the Passive House requirements, reference criteria's can be used as guidelines, and are displayed as

INDOOR CLIMATE
PASSIVE SOLAR STRATEGIES

Building form and layout

The building form and internal layout determines the exposure of the interior spaces to solar radiation, as well as daylight and wind. The optimum shape of a building is the one that loses least heat during winter and accepts low amount of radiation during the summer. This can be measured by the ratio of volume to exposed surface area, which is used as an indicator of the speed at which the building will heat up during the day and cool down during the night. In cool temperate climates, a high volume to surface ratio is preferable, as it offers small exposed surface for the control of both heat losses, in winter, and excessive gains in summer. [Heiselberg, 2008b]

In the table below are described some requirements for buildings form, for a cool temperate climate.

The interior organization of a building should also be optimised so that rooms with the same level of thermal comfort are displaced next to each other, creating different comfort zones in the building. This will create a reduction of the energy consumption by reducing the heat losses between rooms with different temperature requirements.

Solar orientation

The winter sun path is much shorter and lower than the summer path. In winter, because the sun rises and sets south of east and west respectively, the east and west facades receive a low amount of irradiation. Thereby, the best strategy for taking advantage of solar heating in winter is to face the major wall and window areas to south. This will also be advantageous during the summer, as the sun altitude angle in the summer is higher, making the building more easily shaded through overhangs or the use of shading devices.

For the utilisation of direct solar gains in the heating season it is important that

ELEMENT & REQUIREMENTS	PURPOSES
Minimise surface area	To reduce heat loss
Moderate area of north and west walls	To receive heat gain
Minimise roof area	To reduces heat loss
Large window wall	For heat gain and light

Table I - Requirements of building form for a cool climate type

vegetation or other buildings are not obstructing the sun, being their highs determined by the solar access boundary. [Heiselberg, 2008a]

Shading devices

Window shading is extremely important, and especially during the summer period. Window protection reduces solar insulation, avoiding an increase of both air and mean radiant temperature, and avoids direct insolation on occupants. When solar energy is brought into a building in a very controlled manner it can supply high-quality lighting as well as reduce the heat gain.

Exterior shading is, from an energetic point of view the most effective, as it prevents the solar radiation from entering a room. Overhangs and roof protection, when placed above a window facing south, admit low winter sun while blocking high summer radiation. They also present the advantage of having little or no effect on view. However, the horizontal overhang is not effective in east and west facing windows, because of the low morning and afternoon solar incidence. In west and east facing windows vertical shading should be used.

Louvers or exterior blinds can also be effectively used in south facing facades, being especially effective in shielding diffuse radiation. However, they have the disadvantage of obstructing the view. [Heiselberg, 2008b]

Thermal mass

High thermal mass materials, like stone or concrete, act as storage for both heat and cold as they heat up and cool down relatively slowly. This procedure provides an attenuation of peaks in internal temperatures, by delaying the discharge of heat until a later time. The thermal mass of a building absorbs heat during the day, regulates the magnitude of indoor temperature swings and transfers part of the absorbed heat into the night.

The distribution of thermal mass in the building envelope and its size play an important role in the effectiveness of the heating or cooling discharge. [Heiselberg, 2008b]

INDOOR CLIMATE
VENTILATION STRATEGIES

Integrated and Climatic Design
The design of an energy optimised building is achievable through an integration of sustainable technologies, as natural ventilation, daylight, passive and natural cooling, passive solar heating, etc. This can be achieved through an integration of close relationships between the architecture, its surroundings and mechanical systems.
Climatic design benefits of the natural elements, as sun, wind, earth, moisture and air temperatures, in order to create a comfortable, energy efficient and environmentally intelligent building. The method of climatic design, heating, cooling and lighting, is separated in three steps towards a climatic design, comparable with the three steps of the Energy Design Process from Henning Larsen architects, early described. This method will be used to elaborate the technical parameters in the initial energy design process. The first step, the basic design, is the initial design of the building itself, and is defined as shown in the table below. The second step, the climatic design step, is defined through the integration of passive features, as passive heating, passive cooling and trough daylight techniques. The third step consists in the further development of the first two design steps.[Heiselberg, 2006, p.7-8]

Hybrid ventilation
Hybrid ventilation systems are defined as systems which can provide a sufficient comfortable internal environment consisting of both natural and mechanical ventilation, which work in a symbiosis assisting each other through the day, the season and year. The hybrid ventilation system differs from a conventional system, as it provides an intelligence control which automatically is able to switch between natural and mechanical ventilation methods. Towards a sustainable design it is of major importance, as it decreases the overall energy consumption, while it optimises the balance between indoor air quality, thermal comfort, energy and the environmental impact. [Heiselberg, 2006, p.3-6]

Natural ventilation
The design process is crucial for creating an effective natural ventilation system that has the ability to ensure a comfortable indoor air quality and passive cooling in the building. A mechanical ventilation system can be designed to integrate and assist a certain design, which it not possible with a natural ventilation system. In contrast, the natural ventilation system is only supported by the use of natural forces, as wind and thermal buoyancy,

STEP 1	HEATING	COOLING	LIGHTING	LIGHTING
Basic design	Conservation	Heat avoidance	Daylight	Natural ventilation
	Surface to volume ratio	Facade design	Window types	Building form
	Zoning	Solar shading	Location of windows	Surface materials
	Insulation	Exterior colour	Glazing	Location of windows
	Infiltration	Insulation	Interior finishes	Location of openings
		Thermal mass		Atria, stacks

and thereby is deeply depended on the design, as it is the design itself that drives the efficiency of the system.
Natural ventilation is driven by the pressure differences created at the building envelope between the inlet and the outlet, and is utilised through a volumetric flow, which renews the indoor air and as well the transfer of heat, resulting from the outdoor conditions as for instance wind velocity and/or stack effect. In an overall perspective, natural ventilation can be actualised through the infiltration or through the allowance of air flow in and out of a building volume, for instances through window openings, door openings and fissures.
The understanding of the microclimatic conditions, as wind velocity, temperature, humidity and surrounding topography around a building is essential in the creation of an effective system, in relation to the design parameters of the building as orientation, number of windows or openings, sizes and locations. The microclimatic conditions, furthermore define the possibilities for natural ventilation, as for instances in cooler climates it can act as passive cooling and dry out the humidity in the air.

Natural ventilation strategies
The principles of natural ventilation are defined by three principles that are reliant on the wind and the thermal buoyancy, defined as driving forces. Thus, an optimisation and promotion of natural ventilation is applied through a fully understanding of the micro climatic conditions. The ventilation principles are given as single sided ventilation, cross ventilation and stack ventilation.

Single-sided ventilation is defined by openings only in one side of the room, where the main driving force is given by the thermal buoyancy in winter and wind turbulence in summer. In comparison with the next coming strategies, this generates lower ventilation rates and will not penetrate deeply into a given space. The single-sided ventilation can be enhanced by stack effect, if openings are located in different heights. Single-sided ventilation creates only the sufficient efficiency to a depth of around two times the floor to ceiling height.

Cross ventilation defines openings on two sides of the building and in this case, the main driving force is characterised by wind-induced pressure differences between the given openings. It can provide a high ventilation rate caused by the great and rapid variations in wind flows, which can, however, be difficult to control. By having the wind crossing the room, rather deep rooms can be ventilated. Cross ventilation creates the sufficient efficiency to a depth of around five times the floor to ceiling height.
The rather small depths lead often to re-thinking of the plan layout, and here the implementation of courtyards is often preferred, as it is also beneficial according to daylight. In courtyards is, although, difficult to ensure a significant wind pressure difference between inlet and outlet, requiring an efficient plan solution.

Stack-ventilation is defined by the placement of openings both at low and high levels, and the main drive force, in this case, is caused by thermal buoyancy. Due to moderate temperature, it is succeedable to have a steady ventilation flow, and when it crosses a room, bigger room depths can be ventilated. [Heiselberg, 2006, p.22-25]

INDOOR CLIMATE
GENERAL REQUIREMENTS

To create a comfortable indoor climate several parameters have to be considered, as atmospheric, thermal, daylight and acoustical conditions. The following chapter will briefly introduce the Norwegian requirements for indoor climate according to thermal comfort and perceived air quality.

According to the Norwegian legislations (Byggforskserien, Byggdetaljer and 421.505 - Krav til innemiljøet i yrkes- og servicebygninger), the indoor climate is classified by tree categories, category 1, 2 and 3, which define the level of perceived indoor climate, according to the percentage of non-satisfied users. As the category 1 is used for highly demanding buildings, such as hospitals, the category 2 will be used in the design of the church, as it seems appropriate in order to create a comfortable indoor climate. This category describes an average level, with a percentage of unsatisfied people of 20%, which is also liable according to the TEK10 requirements for indoor climate. The person factor for category 2 is given as 7 l/s pr. m2 of supplied air for person load.

In the following tables some of the most important values for designing a comfortable indoor climate are presented.

BUILDING TYPE	PERSON FACTOR [l/s pr. person]	PERSON FACOR [m^2/person]	AIR FLOW [l/s pr. m^2]
Closed office	7	12	1,5
Auditorium	7	0,7	11

Table 1 - Minimum required air flow in the represented facilities.

Table 2 - Overall indoor climate requirements for the presented facilities for category 2.

	PERSON LOAD [PERS./M^2]	OPERATIVE TEMPERATURE - SUMMER [°C]	OPERATIVE TEMPERATURE - WINTER [°C]	MAXIMUM AIR VELOCITY - SUMMER[m/s]	MAXIMUM AIR VELOCITY - WINTER [m/s]	SUPPLIED AIR FLOW [l/s pr. m^2]
Closed office	0,1	23 - 26	20 - 24	0,22	0,18	1,4
Auditorium	1,5	23 - 26	20 - 24	0,22	0,18	1,2

THEORETICAL ANALYSIS

CONCLUSION

Scandinavian architecture is interpreted as the natural connection between form and content, ideology and society. The characteristic of Nordic architecture is its ability to strive for the hidden behind the representative form, making it closely comparable with nature. Nordic architecture can be summarised by its ability to adapt to the context, while still appearing as a kind of an opposition more than a subjection to nature.

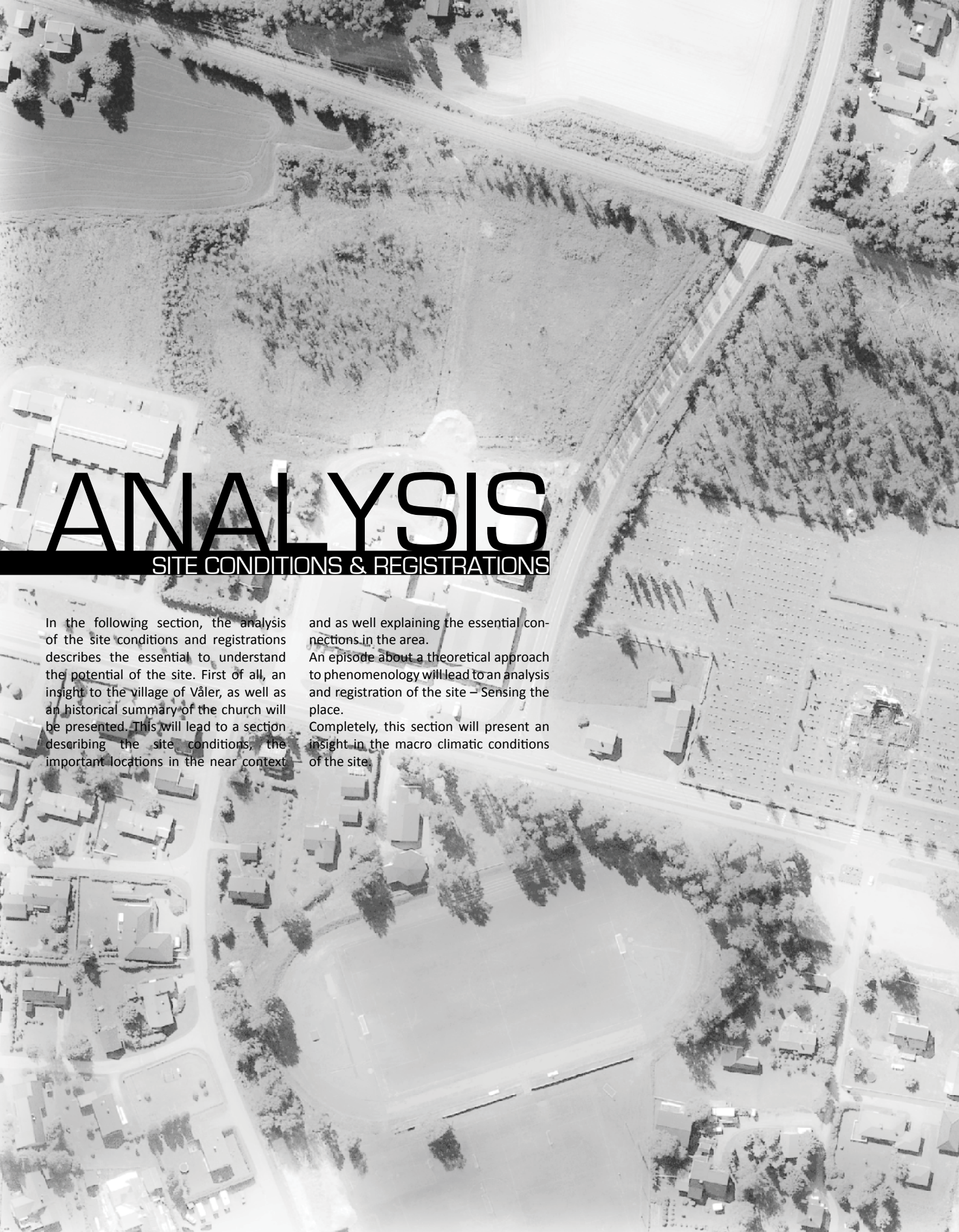
Designing for sustainability is closely related to the Nordic commitment to social responsibility and approach to nature, as it defines designing under the conditions of nature, as stated by the ancient five elements, which define a guideline of how to create architecture in collaboration to sustainable principles.

In general terms, the basic qualities of architecture refer to order as the definitive essential. According to Norberg-Schulz, design is form-making in order, as structured designs simply absorb a more complex content than a form that is a representation of individual motifs. It enhances the vital meaning of purifying architecture, which is achievable by striving for the pure concept as an aim for deeper meaning in architecture.

Seen from a tectonic perspective, architecture reaches holism through a division of it into two essential parts; a tangible part and an abstract part. The tangible defines the construction, material and methods, where the abstract determines the structure, concept and representation.

This dualism present in tectonics is also expressed when searching for the key fundaments for designing a church, as it seems to appear as a balance between the substantial and the functional. Church design for the future can be defined by its ability to bring it back to its sacral essence, in a return to the fundamental meaning of worship and liturgy. Through the architectural history, churches have become the messenger of a symbolic meaning for a new beginning, the new essentials of life.

In a symbolic perspective, the church is the physical frame for believing. However, the physical framework does not state the key to a sacred space by itself; it is the ability of the spaces to appeal for a connection between the believer and the divine which defines the sacral qualities of a space, made through the phenomenological perception of the believer.



ANALYSIS

SITE CONDITIONS & REGISTRATIONS

In the following section, the analysis of the site conditions and registrations describes the essential to understand the potential of the site. First of all, an insight to the village of Våler, as well as an historical summary of the church will be presented. This will lead to a section describing the site conditions, the important locations in the near context and as well explaining the essential connections in the area.

An episode about a theoretical approach to phenomenology will lead to an analysis and registration of the site – Sensing the place.

Completely, this section will present an insight in the macro climatic conditions of the site.

"A WORKABLE IMAGE REQUIRES FIRST THE IDENTIFICATION OF AN OBJECT, WHICH IMPLIES ITS DISTINCTION FROM OTHER OBJECTS, ITS RECOGNITION AS A SEPARABLE ENTITY"

[LYNCH, 1960, P.8]

INSIGHT
VÅLER

The municipality of Våler, also known as Våler in Solør, is located in the countryside of Hedmark, approximately 150 kilometres north-east of Oslo. The population of Våler has 3900 persons, dated from 2005.

Våler is situated in a valley where the river of Glomma passes through, and is a base of a fjord arm, created in the last ice-age. Since then, the valley has slowly raised, being at the present located at 160 – 180 meters above the sea level.

The municipality consists of a total area on 700 sq. Kilometres, where the majority, equal to almost 90 %, of this area is covered by forest. This is the biggest characteristic of the area of Våler municipality, as the forestry and agriculture are the most important income sources. In the municipality, several medium sized enterprises are involved in the industry of wood cultivation, being the largest sawmill of Norway and the largest chipboard factory of the Northern Europe located in Våler. [Nielsen, 2008]

According to the vision of the Municipality (plan 2006 – 2017), it can be resumed in the sentence:

"VÅLER - A GOOD MUNICIPALITY TO ACCOMMODATE AND LIVE IN"

In general terms, the main task of the municipality is to further develop an attractive and dynamic local society, enhancing the development of the service, the welfare and the comfort of the present and future population of Våler. [Anon., 2003]

Due to the historical and industrial importance of wood cultivation in Våler, wood is naturally considered as the main material for the new church, both when it comes to its physical abilities and expression.

I - LANDSCAPE SETTINGS OF HEDMARK

II - WINTER ATMOSPHERE IN VÅLER

III - NORWEGIAN MAP

IV - BRIDGE CROSSING THE RIVER OF GLOMMA

V - WOODLANDS OF PINE TREEES IN VÅLER

VI - THE SUNSET OVER THE RUIVER GLOMMA

VII - THE SETTINGS OF AN OLD LOG CABIN

VIII - THE WINTER SETTINGS OF VÅLER

I

II

III

VÅLER MUNICIPALITY, VÅLER I SOLØR, HEDMARK COUNTY, APPROXIMATELY **150 KM NORTH EAST OF OSLO**, POPULATION EQUAL 3900, CONSISTS OF A TOTAL **AREA OF 700 SQ. KILOMETRES**, LOCATED NEXT TO THE STREAM OF GLOMMA, **90 % OF THE AREA IS WOODLANDS**.

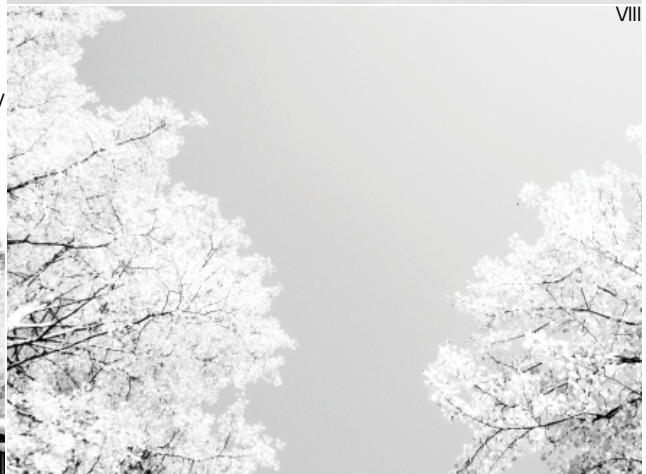
IV

V

VI

VII

VIII



#26 THE EXISTING CHAPEL OF VALER CHURCH

HISTORICAL INSIGHT
VÅLER CHURCH

The history of Våler Church has trays back to around the 12th century, where Olav Haraldsson (Olav den Hellige) Christianised the village. Caused by the presence of the King, it was decided to build a church in the area of Solør. The church was located along the river of Glomma, and named the *Church of Maria* (Mariakirken). Through the centuries, the church was re-build and expanded three times – until the end of 18th century, where the church was in so bad condition, that a valuable renovation was required. In addition, the church was too small in relation to the requirements, so it was decided by the King in Copenhagen to erect a new and more spacious church – north of the original church. The new location was along *Kongeveien*, an important pilgrimage route towards Trondheim until 1835.

The new church of Våler was erected on a ridge (158 meters above sea level) in the year 1806 and was a traditional cross church, crafted as a traditional timber construction. It could accommodate approximately 500 guests, with 2 side galleries accommodating each 20, and further on consisting of a gallery towards west with the organ. The octagonal bell tower was located towards west, and was with its total height of 47 meters a significant point of orientation in Våler.
The original church hall had good acoustic qualities, meting the requirements for speaks, song and music. The church was highly used for concerts and cultural events, and in arrangements with these characteristics the church hall was mostly overcrowded.

The church of Våler is described as one of the most interesting chapters of the church history of Solør, the area around Våler. In light of this, it was devastating when the church, in the 29th of May 2009 burned down to the ground. The only remaining is the foot print of the church, as a symbol of the tragedy, expressing the last two hundred years of history of the church.
"Build in the present – for the future!" [Moseng, 2011, p.1-2]

The devastating fate of the original Våler Church could overshadow the new church, creating a basis of comparison. In order to create a church with a new contextual belonging, released from the old, the new church should have a defined and distinct narrative.

SITE CONDITIONS
IMPORTANT LOCATIONS

In this chapter, a brief explanation of the characteristics and points of interest around the site of the Church of Våler will be made. The important locations are marked in the map, to the right, giving an idea of their location and thereby influence in the new church location and design.

The considered area includes the building elements and the landscape that make the church nearby surroundings. The main road (X) - Vålguta - forms the limitations of the considered area to the west, and the road no. 496 the limitation to the south. The railway tracks and comprising residential buildings surround it on the east and north. The area's elements forms appropriate access routes and parking arrangements, which the new church building will make part.

The cemetery (I) is located on a ridge along the main road, centrally and clearly visible in relation to its surroundings.
The remain parts of the old church (II), have a high symbolic value and is desired that it will be considered in relation to the use of the cemetery, the new church and its close environment. The original foundation is the only remaining part of the church, which forms at the same time its original "footprint". The old chapel (III), from 1911, is to be kept with its design and location.
To the north of the site, the Municipal Sjursen Park (IV) is located, constituting a green breathing space for public use in the village of Våler. In this park there is a memorial to the Mayor and Member of Parliament PN Sjursen.
At the far north, the old good local facilities (V) form an outer structural constraint. These three buildings make with its well-ordered place an intimate courtyard, which the use shall be maintained.
In the south, and almost as part of the cemetery, Kirkelund (VI), a preserved farm, is located. Its location, in the intersection with the main road, forms an atmospheric gateway to downtown.
The maintenance building of the church (VII) is composed of barrack elements; it has an important function but a limited structural value. This building can be demolished and its function assimilated in the new church building.
In the northeast there are two detached houses (VIII) in a private terrain.
The car park (IX) is located to west of the main road, and will still be available for the users of the church, visitors to the cemetery, and other features in Våler centre. The main road (X), Vålgutua, leads to the centre of Våler. [Våler Kirkelig Fellesråd, 2011]

I - THE CEMETERY

II - RUINS OF THE OLD CHURCH

III - THE EXISTING CHAPEL

IV - SJURSENPARKEN

V - THE OLD MUNICIPALITY BUILDINGS

VI - KIRKELUNDEN

VII - THE MAINTENANCE BUILDING

VIII - TWO PRIVATE PROPERTIES

IX - PARKING FOR THE CHURCH

X - THE MAIN ROAD


V
IV
VIII
III
VII
IX
II
X
I
VI

#28 | SATELLITE PHOTO OF VÅLER

SITE CONDITIONS
SITE OPTIONS & CONNECTIONS

I - OPTION 1; THE NORTH SITE

II - OPTION 2; THE EAST SITE

III - OPTION 3; THE RUIN OF THE OLD CHURCH

IV - THE MAINTENANCE BUILDING

V - THE EXISTING CHAPEL

VI - THE CEMETERY

VII - TWO PRIVATE PROPERTIES

VIII - WOODLANDS

IX - SJURSENPARKEN

X - THE PARKING AREA

XI - THE MAIN ROAD

XII - A SMALL COUNTY ROAD

XIII - VÅLER MUNICIPALITY BUILDINGS

XIV - A RAILWAY CONNECTION

XV - EXISTING BARNS

After the church fire in 2009, there has been a commitment in Våler to discuss about the choice of the site for the new church. The available land area shape and extent is open for three alternative locations of the new church:
- A northern location (I), relating to the chapel (V) and Sjursen Park (IX);
- The east location (II), east of the church ruins (III), and
- The old church location (III), at the old church ruins.

The northern option (I) includes part of the park (IX), the road and the open area around the chapel (V). The northern option has a slightly slope towards the east, while the east location is relatively flat and slightly lower in the landscape in relation to the current cemetery (VI).
Both locations have good soil conditions, consisting dominantly of sand.
The third option, at the old church location (III) is placed in a small hill, being the highest location inside the cemetery.

The choice of the northern option (I) may prove difficult to maintain the car passage that currently runs from the main road (XI) towards east, next to the chapel (V) and into the empty area. This road may be closed to traffic between the main road and the chapel. Access can be maintained in the east part of the same road (XII), through an extension between the main road (XI) and the road along the railway, in the north of the municipal office buildings (XIII).
With the choice of the eastern option (II) and the old church plot (III) the current car passage can be maintained. [Våler Kirkelig Fellesråd, 2011]

MAPPING & REGISTRATIONS

KEVIN LYNCH METHOD

#29 NODES & PATHWAYS - SCALE 1:3000

In the map #28 Nodes & Pathways, the pathways marked on the map represent the significant connections to and through the area around the site. West of the cemetery passes the main road of Våler, which makes the connection towards the village centre, crossing the valley of the river Glomma. Thereby, the main nodes and connection points are displaced along this main road. The connection of the main road with the access road to the Chapel is a significant node, as it is the road which serves the chapel and cemetery. In front of the main entrance to the cemetery, another important node marks the pedestrian flow of the area, leading the visitors through the old ruin into the cemetery. This node also signalise the access to the parking which serves the church. The centre of Våler constitutes a connection node by itself.
In addition, to the east of the site the railway line crosses the village, being an important transportation link.

BICYCLE PATH

TRAFFIC ROAD

RAILWAY

NODES

#30 | VIEW FROM NORTH EAST TOWARDS THE CHAPEL

In the map #30 Edges & Landmarks, the landmarks displayed are marking the significant points in the site near area. The ruin of the old Våler Church is the most important landmark of the area, being a memorial to its past. The chapel is also a reference point, having a visual connection with both sites.

The municipality buildings, despite not directly visible from both sites, constitutes an important landmark for the village. These buildings are, together with the chapel, the buildings with better architectural qualities in the area around the site.

In the map are also marked the edges around the site, with influence in the flow of the area. Towards west and south, the roads, together with a small stone wall which delimits the cemetery, constitutes a physical border. Towards north and east, both sites are enclosed by vegetation in form of woodlands, mentioned as soft edges.

SOTF EDGE - HIGH VEGETATION

EDGE

SOFT EDGE - LOW VEGETATION

LANDMARKS *

#31 | EDGES & LANDMARKS - SCALE 1:3000

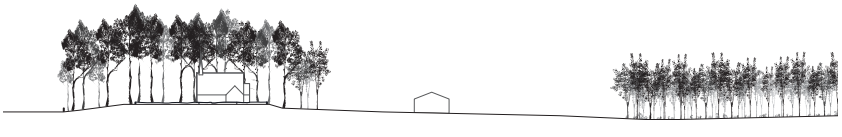
#32 VIEW OF THE CEMETERY TOWARDS SOUTH-EAST

MAPPING & REGISTRATIONS

SECTIONS &VIEWS

I - VÅLER MAP - SCALE 1:2000

The map signalise the sections through the site, both centred in the old church ruin. Furthermore, the views IV-VII are marked in the map, to show the atmosphere of the site.



II - SECTION AA - SCALE 1:2000

In the cross section (section AA) is visible that the old church is placed in the highest point of the cemetery, sloping around two to three meters, both in the direction of the main road and to the woods in east.

III - SECTION BB - SCALE 1:2000

The longitudinal section (section BB) crosses the small chapel, showing the high difference between the chapel and the woods located to the north of it. The old church appears again in a small hill, resembling to the classic church position on top of a plateau.

IV - VIEW TOWARDS THE OLD CHURCH
The view shows the entrance to the cemetery to the far left, towards the old church ruin to the right of the view.

V - VIEW FROM NORTH OF MAIN ROAD
In the picture the cemetery is located to the left, in relation with the main road to the right.

VI - VIEW TOWARDS THE EASTERN SITE
In the picture is visible the relation from the old church ruin towards the eastern site, with the woodlands located as the scenery behind.

VII - VIEW FROM SOUTH OF MAIN ROAD
The view shows the cemetery, visible to the right, behind the original barn located in the edge of it.

SENSING THE PLACE
PHENOMENOLOGY

As a part of the site analysis, two different approaches were examined, the empirical analytical method of Kevin Lynch, and *sensing the place* based upon a phenomenological approach to the site and the near context. To give a further understanding of the meaning of phenomenology, some key points will be presented.

Phenomenology, an experienced based knowledge, is directed towards examinations of the humans own life world, and closely related to emotion and the human body. The life world is defined by the world of where the subject, the private individual, experiences through the impressions, which are personally interpreted. In order of interpreting the world in a phenomenological perspective, the subject has to see away from all prejudices, all theoretical knowledge and conception.

In an ontological perspective the phenomenology is based upon the human intuition, expectations and experiences.

The overall objective of phenomenology is to find the essence in the examined phenomena. The phenomena is processed by the sense based approach upon the subjects own experiences. The subject is the key of understanding a given phenomena, and through the interaction with the phenomena, the truth will be expressed.

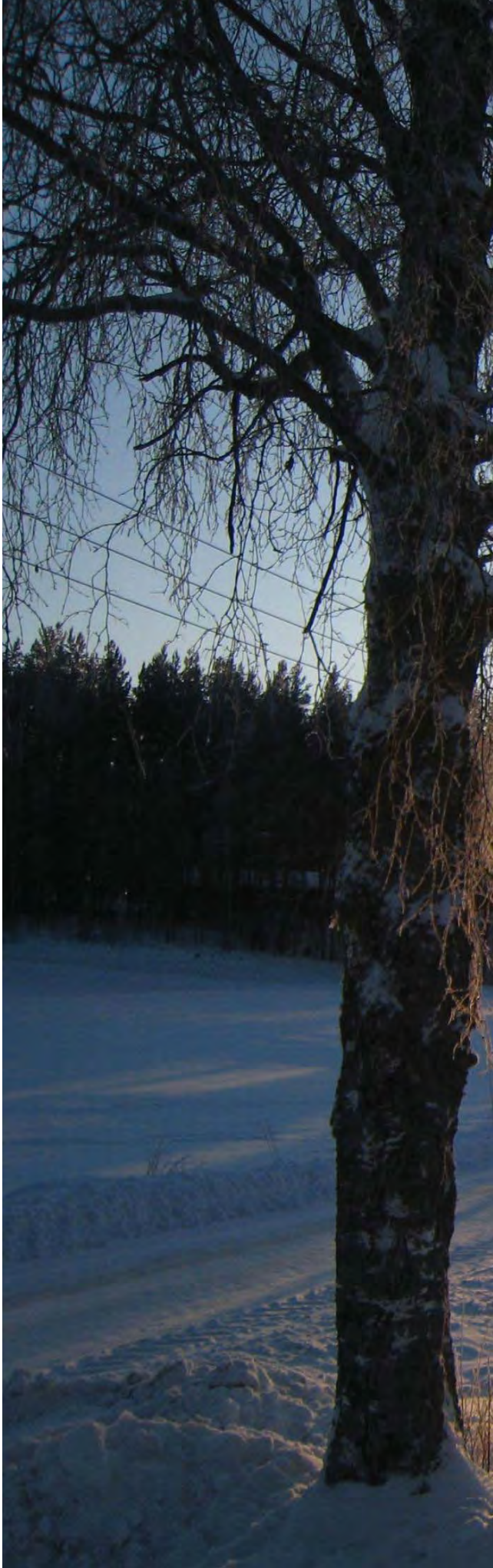
Phenomenology is considered as an analysis, but is required through an interaction between the human and the single object.

The most applied truth of phenomenology is coherence, which is defined through the efforts of creating connection for attaining a meaning. Herby it can be concluded that the approach of phenomenology is intuitive and consists of qualitative examinations. [Botin, 2009]

Genius Loci

Since ancient times Genius Loci was defined by the term spirit of place. Genius loci, in a reduced form, refer to the notation of character. Places, undisputed of location are characterised distinctively. Thus, common to the term of place is its relation to local circumstances, defining a particular unifying identity of the given place. Characters and phenomena are defined by the sensorial perception of subjects, becoming an 'environmental image' of the place, and through the image establish the meaningful relation between subject and place. [Anon., n.d, p. 1-3]

Martin Heidegger's and, later on, Christian Norberg-Schulz's theories of Genius Loci will found the sensory perception of the spirits and phenomena of the area of Våler.



“IN GENERAL, NATURE FORMS AN EXTENDED COMPREHENSIVE TOTALITY, A ‘PLACE’ WHICH ACCORDING TO LOCAL CIRCUMSTANCES HAS A PARTICULAR IDENTITY SPIRIT OF THE SITE!
[NORBERG-SCHULZ, 1980]”

#33 | THE SUNSET IN VÅLER

SENSING THE PLACE

GENIUS LOCI OF VÅLER

The characteristics of the site are determined by the dominant presence of the woodlands, which canopies shape the views until the horizon, towards east. To the west, mountains rinsing from the bank of the river Glomma jag the sky in a protective embracement.

The wood dominates the landscape, tracing the passage of the seasons. As fingers sprouting from the ground, the trees connect the land and the sky, the earth and the air; and so the human shelters shaped in the same wood, spread and dissolved in the landscape.

The winter settings are dominated by the expressive white and crystallised snow landscape, interacting with the sky, through its expression of a various and ever changing white and grey tone. This tone dominates above and underneath the horizon, unified through the surrounding nature. It manifests the meaning of the landscape, becoming this phenomena something more than just elements in the horizon, but the essential (meaning) in the sensorial perception of the place. The naked nature, the essential link between landscape and sky, is expressed through the various light settings. Enlightened by the backlight of the sun in the horizon, the forest is enhanced appearing as a personification, as figures in the horizon.

As a contrast, the cold nature of the winter, warmed by the summer sun springs life by its own. The landscape becomes dense, shaping and framing the horizon and filtering the light. The grey tones give place to a rich variety of greens vivified by an endless pallet of colours.

In contrast with the surrounding landscape, the open space of the cemetery is marked by a rigid regularity of stones marking spaces, times, individuals. The organic spontaneity of the nature is here replaced by the human reason. Undoubtedly, the question of life and dead is raised, symbolized in the ruins of the old church, where the passage of the time is marked.

Placed on a small hill, the ruins of the old church have an immediate visual connection with and from the surroundings. The eye is dragged into the woods in east which, with its natural order and light reflections transmit tranquillity and serenity, creating an almost inevitable connection with the ruins.

I

II

III


IV

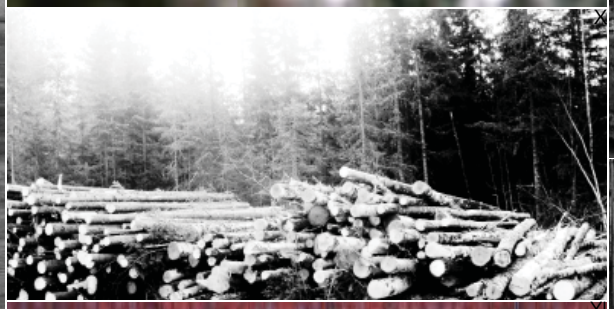

V


VI

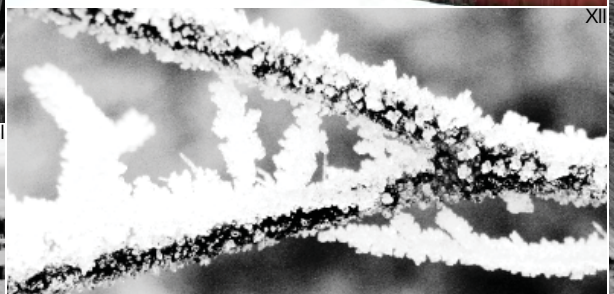

VII

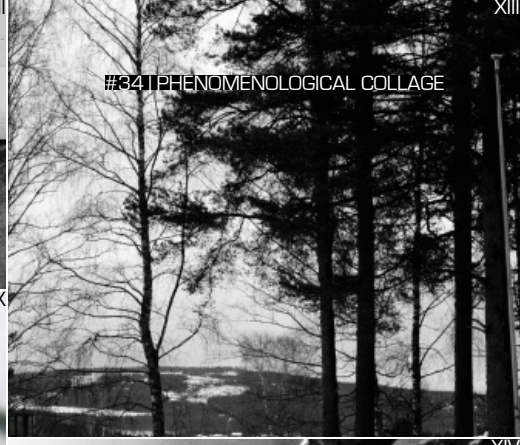

VIII


IX

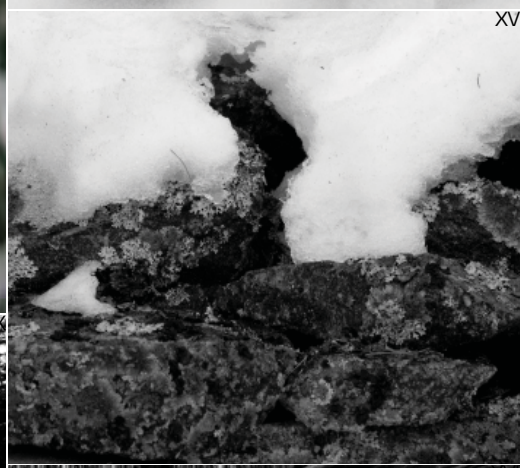

X


XI


XII


XIII


XIV


XV


XVI


I


II


III


IV


V


VI


VII


VIII


IX


X

"MAN DWELLS WHEN HE CAN ORIENTATE HIMSELF WITHIN AND IDENTIFY HIMSELF WITH AN ENVIRONMENT, OR, IN SHORT, WHEN HE EXPERIENCES THE ENVIRONMENT AS MEANINGFUL."

[NORBERG-SCHULZ, 1979]

SENSING THE PLACE

CHARACTERISTICS & DETAILS

I - PINE WOODLANDS APPEARING AS SHADOWS BEFORE SUNSET

II - CORNER DETAIL OF AN EXIISTING NABOUR BUIILDING

III - A WINDOW DETAIL OF AN EXISTING NABOUR BUILDING, MANIFISTATED BY THE RED COLOUR AS A SYMBOL OF NORWAY

IV - TACTILE STONE WALL SUROOUNDING THE CEMETARY

V - FLOWERS IN VÅLER WITH A BEAUTIFULL SHELL STRUCTURE

VI - TEXTURE OF A BIRCH TRUNK

VII - A WINDOW DETAIL OF AN ORIGINAL WOODEN LOG CABIN

VIII - (WYCH ELM SEEDS) CREATING A NATURAL SHELL STRUCTURE

IX - ICE CRYSTALLISATION OF A PLANT, A WINTER SETTING

X - REFINED TECTURE OF A SMALL BIRCH TRUNK

The characteristics of the site are determined by its strong relation with the woodlands, as already described. Thereby, the nature is visualised through the vegetation in relation to the base, soil and rocks, from where it raises.

The relation between the woodlands, as a unity, and the tree as the individual is striking. The woodlands are expressed as scenery surrounding the area, while the individual trees have a manifold expression. The woodlands, mostly constituted by pine trees and birches, display a great variety of textures, varying from refined and smooth surfaces into untouched and rough textures, giving a diverse expression.
Due to the seasonal changes, the textures result in an even greater diversity. In the summer, the diversity is expressed through colours and forms, enhancing the horizontality of the surroundings. As opposition, in winter the diversity is displayed through the naked tactility of the trees, mostly impressed by the trees striving for verticality.
The refined vegetation in the area seems to contrast with the harsh nature, as unity, as the small vegetation appears rather sophisticated, visualised through its great adaptability to the place. The small vegetation is dominated by well proportioned, well-shaped and delicate articulated shell structures, creating a beautiful opposition to the enlarged woodlands in the near surroundings.

The natural elements, rocks and trees, which dominate the landscape, are extended to the human productions. Shelters and dwellings constitutes the human intervening in the area, hence still represented by the laws of nature. They are displayed through the fully understanding of nature, from the overall concept into the most refined details, reflecting the identification to the place. The overall concept of the shelter appear as a meaningful protection from nature by the nature itself.
As expressed in the log cabin, the wood is assembled and detailed after the conditions of its workability. As ornamentations of nature, through the joints and the assembling, the human ideals are shown, creating the ability to accommodate the shelters into human dwellings, emphasised by the light which penetrates them.

MACRO CLIMATE
WIND & SOLAR STUDIES

There are several dominating climate factors to take into consideration when creating integrated solutions for the design of buildings. Some of the most important climatically factors will be displayed in the following chapter.

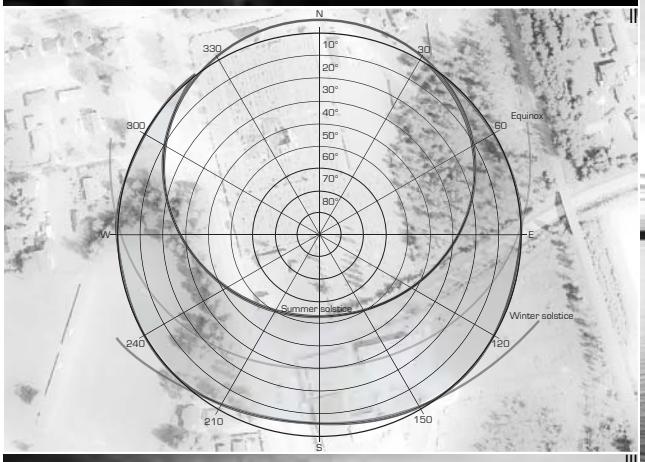
Solar radiation
Through the years and the days the sun follows different paths on the sky. As displayed on the sun path illustration, the sun path can be shortly represented by three paths for the different seasons during the year. The highest sun path represents the summer solstice (June 21th), the middle sun path the equinoxes (March and September 21th), and the lowest sun path the winter solstice (December 21th). As visualized on the illustration, Solar path diagram of Hamar (located 20 km. north-west of Våler), the sun moves 23,5 degrees of each side of the equinoxes due to the earth's axis of rotation, which results in a total vertical travel of the sun due to the seasonal changes of 47 degrees. As the latitude of Våler is 60º42' N, the sun path will vary from, approximately, 6,5º in winter to 53,5º in summer. Thereby, the seasonal changes of the area result in a distinctive opposition, with major impact in the climatic characteristics of the site. The winters of Våler are experienced rather dark and short, whereas the summers have diametrical opposite long and light days. [Heiselberg, 2008a, p. 3-7]

Wind
The wind can have several different characteristics depending on different parameters as, for instances, the location, the direction, the speed and the frequency. To give an overview of the characteristics of the wind in an annual level a wind rose can be used, as it displays the annually occurrence of the wind, and the predominant wind directions.
The Wind Rose of Flisa (located 10 km. south-east of Våler), illustration V, shows that the dominant wind direction in the valley of Glomma is from north and south, with an average wind velocity around 3m/s. This supports the characteristics of the site which, due to its location in a valley is protected from strong winds, mostly coming from west from where the close mountains shade the area. [Heiselberg, 2006a, p. 7-12]

Temperature
The annual average temperature diagram displays the temperature normals of Hamar. It has a great significance in the design of the energy strategy of the building, both concerning the ventilation strategy and the energy consumption.

I

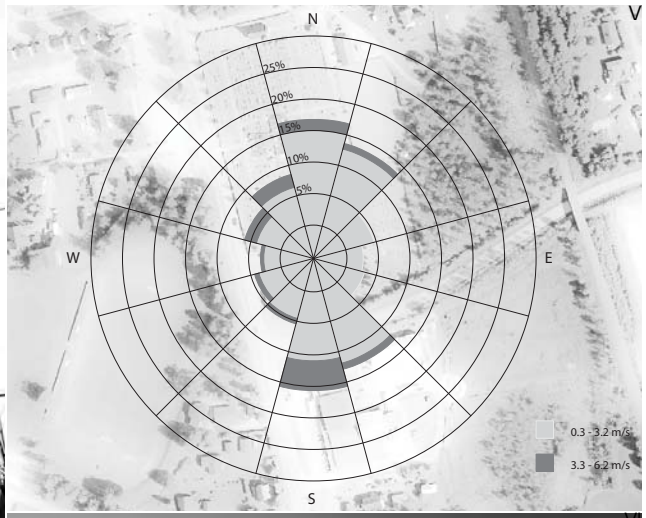
II



III

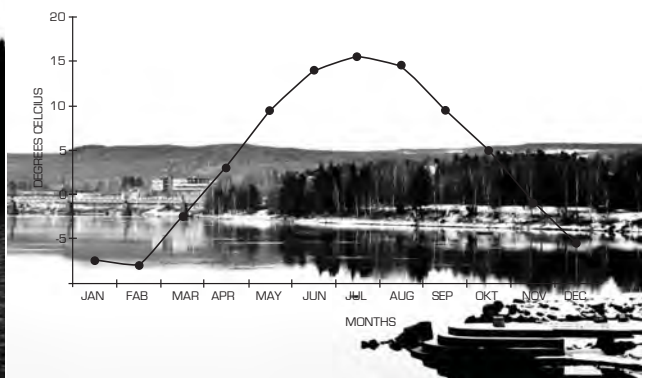
IV

V



VI

VII



POPULATION DEVELOPMENT
VÅLER MUNICIPALITY

As a part of the major focus in the further development of Våler municipality, there is a great focus to actively increase the population of Våler and shape it towards a healthy age distribution. Våler can be seen as a peripheral region in relation to the near context of Oslo, and in regard to that, there has been, through the last years a decreasing of the population. It has a great importance, as the population directly corresponds to what the municipality can offer of services, of both public and private character, due to the incomes from the Norwegian state. In addition, a decreasing of the population will naturally lead towards a less vibrant environment of the village, both when it comes to cultural and social aspects.

Projections produced by SSB (Statistisk Sentralbyrå) shows three presumptive futures of the population in Våler Municipality, and what is striking for the projections, based on a low, average and high projection, is that all the projections displays a minor drop of the population. The worst drop down appeared under the 1980's and 1990's where approximately 20 % of the population migrated.

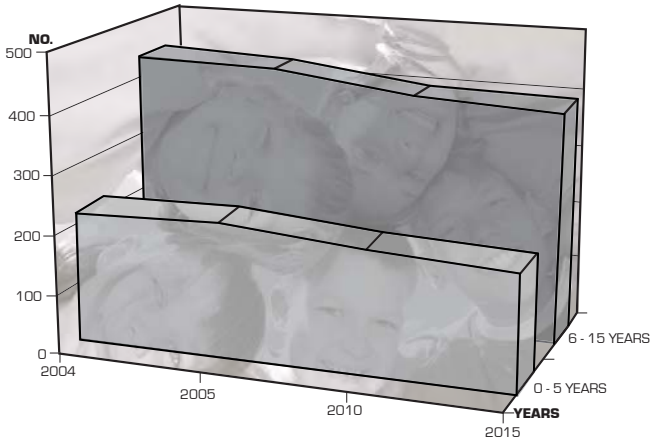
According to the design of the new Våler church, the age distribution has an especial interest according to locating and developing the functions and facilities for the church. The municipality has developed a main strategy to turn the negative projection of the age division, by focussing on better conditions for upbringing children and youth in Våler. The strategy of the municipality is to consolidate the relations from the youth to Våler, to create the best conditions for them to move back, after the studies.

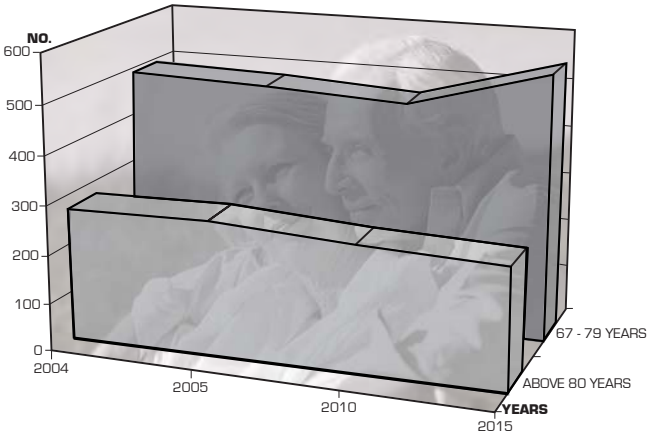
According to the overall age distribution, and as well according to the future projection, population of youth and elderly are equally big, but what becomes the danger is that the numbers of elderly will most likely rise the next 20-30 years. The figure I shows the development of the children and youth, and supports the overall decreasing population tendency. It enhances the needs of the municipality to create relations between the youth and the local community. Figure II displays the ´unfortunate´ tendency of the increasing number of elderly.
Thus, the municipality of Våler wants to create improved conditions for good accommodating possibilities, such as offering great sites, with the nature as the central keyword. With this initiatives, it is the hope of the municipality to turn around the negatively development. [Anon., 2003]

According to the new church building, this gives awareness to create spaces for the whole community. The importance of creating facilities for prayer and also for cultural purposes is evidente, and can be seen as a generator for gather the whole community, improving the feeling of belonging to Våler.

I - PROJECTIONS OF THE DEVELOPMENT OF THE YOUTH SECTION OF THE POPULATION

II - PROJECTIONS OF THE DEVELOPMENT OF THE ELDER SECTION OF THE POPULATION


NO.
500
400
300
200
100
0
2004
2005
2010
2015
YEARS
6 - 15 YEARS
0 - 5 YEARS


NO.
600
500
400
300
200
100
0
2004
2005
2010
2015
YEARS
67 - 79 YEARS
ABOVE 80 YEARS

#38 THE SUNSET OVER OSLO FJORD

SITE ANALYSIS
CONCLUSION

Due to the devastating destiny of the old church, the importance of defining a significant storytelling and concept is essential for the design. This clear definition is decisive for the creation of a church with a new contextual belonging, released from the cover of the old.

As described, there are three possible locations for the new church, accordingly to the program. As the site located to north of the cemetery is situated in a highly protected park area and as well is of a great historical significance of Våler, this site is evaluated as out of interest. Thus, the options for the future site are the locations at the old church ruin or, and at the site located east of it.

The spirit of the place defines the conceptual approach, while consolidating the relations to it, and will become the generator for essential connections, enhancing the meaning of the church.

The essential link between earth and sky is given, in nature, by the wood of the trees, interpreted in the birch woods located to east of both sites, with strong connection to the place. Further on, the birches represent a vibrant diversity of tactility, which can be interpreted through a dualistic approach; the refined and sensible surface associated to the use of wood, and the interpretation of use of harsh and raw materials, associated with stone. The dualism will form the idea of opposition, through the environmental use of horizontality and verticality, shaped in the nature.

The Nordic approach to architecture is represented through adaptable architecture that rather appears as an opposition, than a subjection to nature, which will form the design approach and can, for instance be symbolised through the refined and well-articulated shell structures found in nature, which represent a beautiful opposition to the enlarged and harsh woodlands.

In relation to the substantial meaning of being at the place, and to the essential meaning of architecture, the church should grant an identification with the place.

CASE STUDIES

EXPRESSION & FUNCTIONALITY

As an important part of outlining the design parameters, some casestudies have been analysed in order to study the conceptual ideas, aestehtical details, distribution, functionality and faciltities.

The Vaitala Chapel designed by Viljo Revel, Enghøj Church by Henning Larsen Architects and the Chapel of Aalborg South Hopital have been studied, and will be described in the next comming pages.

VATIALA CHAPEL

VILJO REVELL

Vatitala Chapel is designed by the finish Architect Viljo Revell in 1960, making part of a whole cemetary located in Tampere, Finland.

The Chapel is located upon a crest of a pine-clad ridge, where its sculptural body appears as a rigorous and austere element within the landscape.
In the landscape, the Chapel dominates the view line, as the Gothic inspired high Vault raises up, supported by a heavy horisontal base, which symbolicIly lifts up the vault.
The two glass surfaces in each side of the chapel dominate the interior, as the water pool on the exterior reflects the water into the vault, emphasising it. The walls of the patio, where the water mirrors are located, appear as a green hedge, which brings the nature closer to the chapel.

Vatiala Chapel is recognised as one of the most important pieces of religious architecture in Finland. The whole complex consists of one great Chapel, a minor Chapel and the mortuary functions, which are locacated in the basement.

The plan solution is defined within a rational composition, and is expressed through the carefully articulated details, where the main Chapel stands out, through its strive for verticality. [Jetsonen, 2003]

ENGHØJ CHURCH

HENNING LARSEN ARCHITECTS

Standing on the highest point in the landscape, the white church with the distinctive V-shaped section composes the arrival scenery. To the left, the parish facilities are placed in an independent building. To the right is a large hill created from the surplus soil, softens and underscores the formal expression of the scheme. [Open Buildings, n.d.]

The Church is designed as a processional church: a long but simple and rigorous hall, with a clear axis, with seats in both sides of the aisle. The dramatic down-turned roof has the shape of the underside of a hull so that the keel forms a bearing rafter in the ceiling. "The ceiling falls in line with ancient tradition: that a ship is kept in the church to show that the Christian Church is a ship that sails through time and through life." [Ikast-brande, n.d.]

From the Church Hall there is no view to the outside. Light penetrates the room from small openings in the long walls and from a slot between the roof and the wall, giving to the roof a light character, which appears almost floating.

The altar is placed in a niche, illuminated by a gap between the room and the west gable, hidden behind the altar wall.

The parish centre consists of small, low houses tied together by a white wall. The volumes are connected by courtyards, which openings frame the landscape behind. [Larsen, n.d.]

THE CHAPEL OF HOSPITAL SOUTH

FRIIS & MOLTKE

With a simple and clear shape, the building is designed to create an inspiring environment. The Chapel appears as a one-storey building, where the volume of the Chapel Hall stands out, as a white and clean volume. Most of the building is placed underground in order to make a large green area for the Chapel. [Friis & Moltke, n.d.]

The main arrival is made through a courtyard which, through the presence of a large water mirror gives a calm and peaceful atmosphere, creating a transition space before entering the chapel.

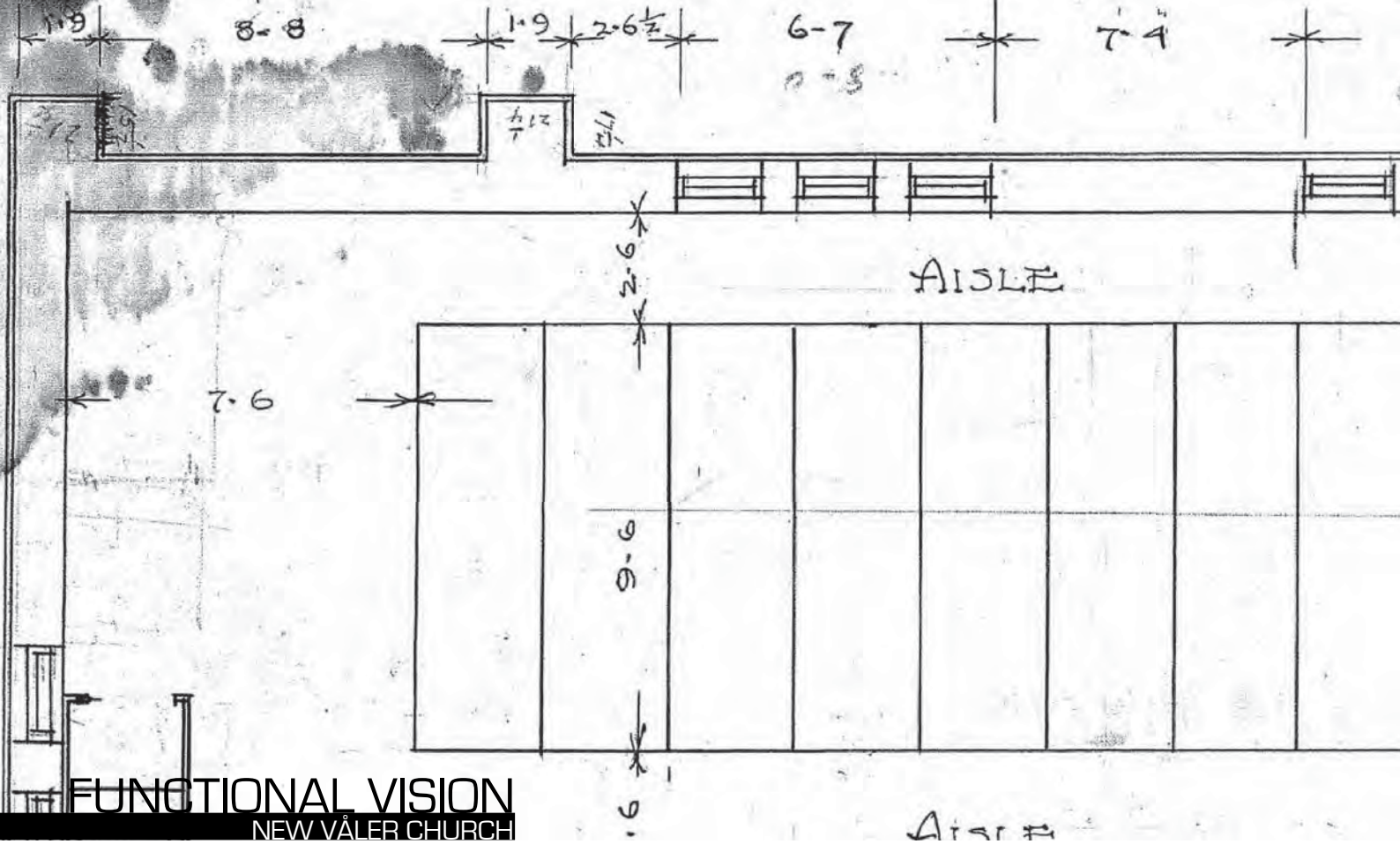
The interiors are simple and with refined details. From the Chapel there is no view towards outside, giving to the space an intimate and reflective atmosphere. One of the long walls of the Chapel is replaced by a long window towards a small patio where a sculpture reflects light into the room. The altar is illuminated from above thought a narrow opening between the altar wall and the ceiling, which light emphasises the clean and austere lines of the space.

DESIGN
PARAMETERS

The next chapter defines the overall design requirements to the new Church of Våler.
The requirements are described through a functional vision, room program, vision and through design parameters.

The vision outlines the design ideas for the church, and acts as the guide throughout the project.
The design parameters are divided and based upon technical and aehstehtical parameters.


MUSSO



FUNCTIONAL VISION

NEW VÅLER CHURCH

The brief for the competition for the New Våler Church defines a set of overall objectives and wishes for the new building, which have been interpreted and will be here presented as design criteria.The new church building should relate to the current legislation (church law), and meet the requirements for technical regulations. The new building must also follow the law of accessibility and discrimination, according to the universal design principles.

The design should set the optimal placement for the new church building, with appropriate access conditions for all road users, as well as pedestrian areas and serve parking. The building has to be placed to a distance of at least 3 meters from the nearest graveyard.

As the current office and maintenance building will be re-integrated in the new building, this additional functions will be added to the original room program given by the brief, and thereby increase the total netto area for the building. After the visit to Enghøj Church by Henning Larsen Architcts, it is chosen to establish an office for each employee positions, decision based upon the experiences of the everyday needs in Enghøj Church. In this case it has been evaluated to create five offices, due to the functionality needs.

Entrance Hall / Church Square

The church entrance is seen as a transition space before enter the church hall and it should contain space for an informal stand. In connection with the entrance hall there must be a toilet and changing room, with facilities for small children. The wardrobe should also be connected with the entrance hall.

Baptism Sacristy

The Baptism Sacristy primary use is for baptism, but it is also to be used in other contexts, such as teaching, small gatherings and meetings. However, the baptism procession should be urged during the stay in this room.

The room should be placed near the main entrance, with room for 3-4 christening child with family, likely with a view to the central church room. In connection to the baptism sacristy has to be placed a baby-changing room / toilet.

The old baptism font, rescued from the old church shall be used in the new building, integrated in this room.

Church Hall

The church hall is the Church's central space and should emerge with a clear sacred message. It should either have an altarpiece or an artistically designed back wall, towards east. The church area must be prepared for good and functional ceremonies, of different sizes, including weddings, funerals, etc., with a minimum of 350 seats.

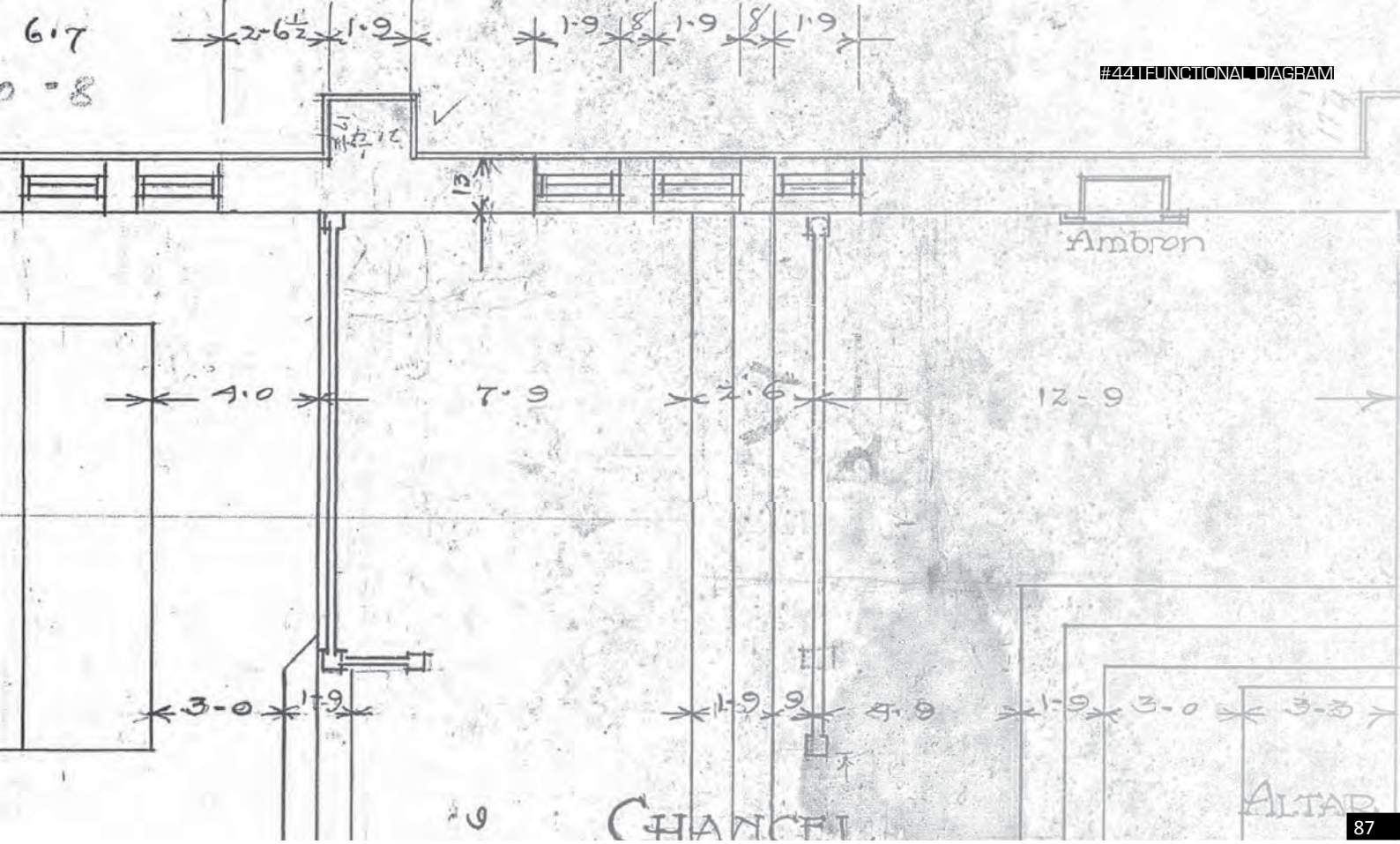
The church room should have a chancel with space for altar (preferably free-standing), pulpit, altar call (preferably flexible) and choir tribune. The organ requires a space of approximately 20 m^2, and in connection to it there should be a technical room for the organist. It should also be in contact with the choir. The choir must have room for a tribune and as well for a grand piano and other instruments.

The church room should have good acoustics, in particular for the overall sound of the organ.

The audiovisual equipment should pursue an integrated placement on a wall or canvas, so that people can follow the program and hymn texts.

Sacristy and work room for the Priesthood

The priest must have a work room in the church and place of preparation for church events. It is normal for all participants in a service to gather in the sacristy before the service to go through the program and check that everything is clear. This room must have a separate entrance from the outside and be prepared for storage of ecclesiastical textiles and as well accom-



modate changing rooms and toilets.

Coffin handling, show room and cool room
Coffin and relatives should be received by a separate entrance. The storage and cold rooms for caskets must be prepared for the catafalque trolley and ensure functional handling and transport. In connection to the cold room has to be established a show room, where the coffin is taken in and their relatives may have viewing and memorial service. The room can also serve as a quiet room.
These rooms should be established so that their use does not affect other activities of the church.

Maintenance room for verger
There must be storage areas in proximity to the church room for the equipment used in the various services. It is also needed a secure storage for church silver and other assets. The storage capacity can be shared with other rooms.

Service point
This room can serve a variety of activities in the church, and must be equipped with home appliances and cabinet space. It is not aimed for preparation of food.
Several objects were rescued from the old church, which is desirable to integrate in the new church. These objects will help to draw the lines back in history, providing exciting contrasts and creating a sense of stability and continuity.
One of the pieces, the altar of the original St. Mary's Church, dated from 1697, can conceivably be used as a decoration element. Another element saved is the baptism font, which should be part of the new baptism room. The font is made of soapstone in Romanesque style, from approximately 1150. In addition, it is desirable that the preserved door leaf from both the old St. Mary's Church and the burned-down church is integrated in the new building.

Furthermore, the brief states that the architecture should be designed in a dynamic use of art. The interaction between art, architecture and artefacts salvaged after the fire, can create new meeting places, provide inspiration, reflection and impulses in everyday life.
[Våler Kirkelig Fellesråd, 2011]

ROOM TYPOLOGY	NO.	SIZE	M^2	DAYLIGHT FACTOR	MAX. USER LOAD	CHARACTERISTICS
CHURCH HALL - back part of church hall - centre of church hall - front part of church hall - altar	1	350 seats	400	400 - 500 lux	400	
Baptism Sacristy	1		20	-	16	In connection with Church Hall
Working room for priesthood	1		20	200 lux (TEK10)	2	With separated entrance
Storage and maintenance room for verger	1		15	-	-	
Organist - techincal room	1		10	-	-	
Offices	5 or 6		15	200 lux		
Large storage	1 or 2		40	-	-	
AV-room	1		10	-	-	
Entrance Hall / Church Square	1		90	20 lux (TEK10)	400	
Wardrobe and lavatory			40	-	-	In connection with entrance hall
Coffin handling, cool room and Chapel	1	3 catafalque trolley	30	-	-	Easy connection to Church Hall | accessed by separete entrance
Waste disposal, laundry room, broom cup-board			20	-	-	
Maintnance Room for external purposes	1		60	-	-	
Technical room - ventilation - heat-recovery			35	-	-	
Service point	1		15	-	-	
Meeting room	1		30	200 lux	20-30	
TOTAL NETTO AREA			925			

VISION

The church design aims to express a significant story-telling in a straight dialogue with the context, reflecting the Nordic approach of striving for the hidden behind the representative forms, and making it closely compared and related with nature.

The church will frame the fundamental meaning of architecture and believe, through identification with the place, expressing a simplicity inspired in the nature. This simplicity will be expressed through a dualistic design concept between the substantial and the functional, the abstract and tangible, and represented by a contrast of materiality, textures, tactility and shapes. As frame or support, the secondary functions of the church shall be expressed as a solid foundation enhancing the essential simplicity of the form, and representing the horizontality of the connection with the earth. In opposition, the church hall will appear rather organic, inspired by the delicate shell structures of the nature, in a striving for verticality.

As the link found in nature between earth and sky, mundane and divine, the Church Hall shall be shaped in wood, striving to find the sacral essence in a return to the fundamental meaning of worship, making possible for the believer to be connected with the divine.

DESIGN PARAMETERS
AESTHETICAL CONSIDERATIONS

Symbol
The church should appear as a significant image for the community of Våler, symbolising a new future released from the tragic past.

Identification to the place
The building will express a strong connection with the nature in a dialogue with the surrounding context, and through an identification with the place.

Division of functions
The sacred and secondary facilities (offices and storage rooms) should be separated, in order to give a stronger sacred atmosphere to the spaces related with the worship.

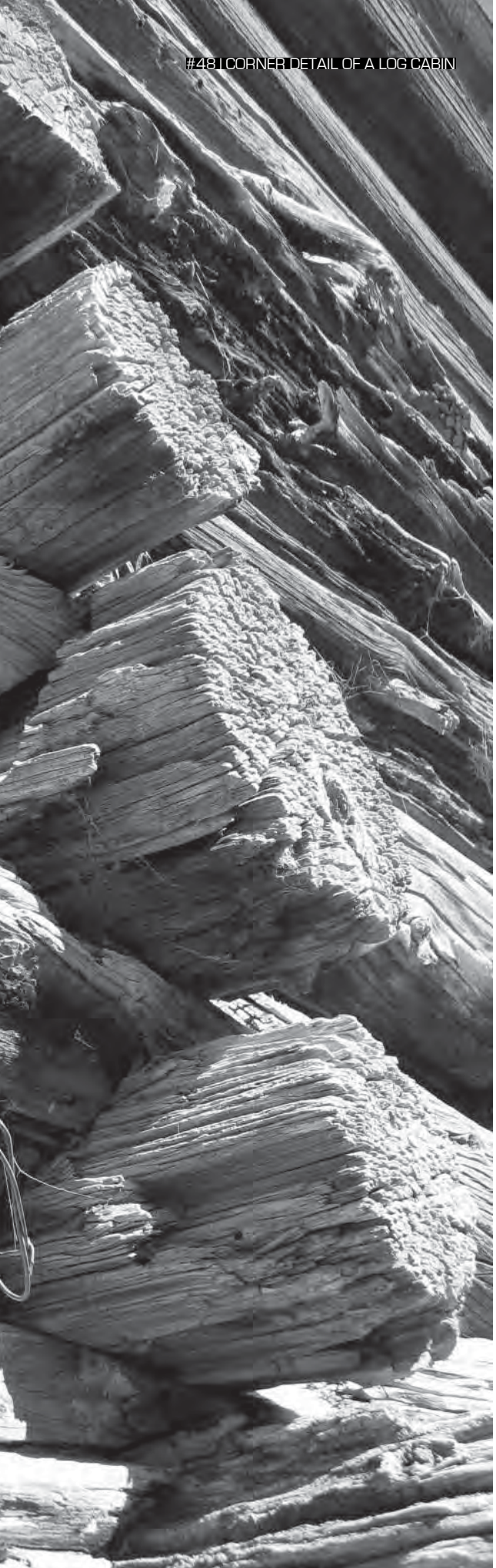
Nature as the aesthetic inspiration
Inspired by the delicate shell structures of the nature, the Church Hall will appear with an organic form, in opposition with a more structured form where the secondary functions are located.

Dualism
The conceptual approach is expressed through a dualism between the Church Hall and the secondary facilities, by the use of different materials, textures and shapes. The secondary facilities will be represented by a solid foundation in stone, transmitting a tranquil atmosphere, while the Church Hall will be shaped in wood, creating a warmer atmosphere where the senses are stimulated by the light and the scent.

Transition space
According to White (1988), cited by Roberts (2004), people have to be moved physically before they can be moved spiritually. This enhances the need for a transition space before enter the sacred room, so that people can let behind all what is combined with the everyday life, creating focus on the religious dimension.

Daylight
Light has a fundamental effect on the atmosphere of sacred spaces, determining its spatial qualities. By effectively work with the illumination, specific parts of the sacral room can be enhanced.
The daylight factor in the Church Hall should be at least 400 to 500 lux.

Acoustics
The form of a space, as well as the position of the sound source is the key factor that determines the acoustic quality of it. Thereby is important to consider the acoustic requirements during the design process.



#48 | CORNER DETAIL OF A LOG CABIN

DESIGN PARAMETERS

ENERGY

Geometrical & volumetric optimisation
The volume of the building and as well its distribution in plan should be optimised, in order to reduce the exposed surface area and thereby the overall energy consumption.

Orientation according to climate
Spaces and rooms can be distributed to take advantage of the climate circumstances of the site, benefiting from the passive solar gains and natural ventilation conditions.

Optimisation of building envelope
The building envelope has to be extremely efficient to minimise the thermal bridges, and optimise the energy consumption. According to the Norwegian legislation, for low energy buildings the U-value is recommended to vary from 0,13 W/(m2/K), for the floors, to 0,15 W/(m2/K) for walls and roof (see table p. 41).

Functional optimisation (Zoning)
The functions can be distributed according to their temperature needs, creating zones with different temperature requirements and thereby reducing the energy consumption. For social and administrative functions the operative room temperature should vary between 21º to 25.5ºC, according to TEK10 (Norwegian Building Legislation) (see table p. 42).

Thermal mass
Materials with high thermal mass, as stones, work as eat accumulators during the day, releasing the eat during the night. They help to keep the spaces with a more constant temperature, with fewer fluctuations according to the exterior thermal variations.

Windows orientation
To take advantage of the passive solar gains a major percentage of windows should be orientated to south, and the amount of windows towards north should be reduced.
However it is important to have in mind that big glazing areas towards south can create overheating problems, which can be solved with shading devices.

Daylight
The amount of windows should provide adequate daylight according to the different functions, reducing the need of use of artificial light.

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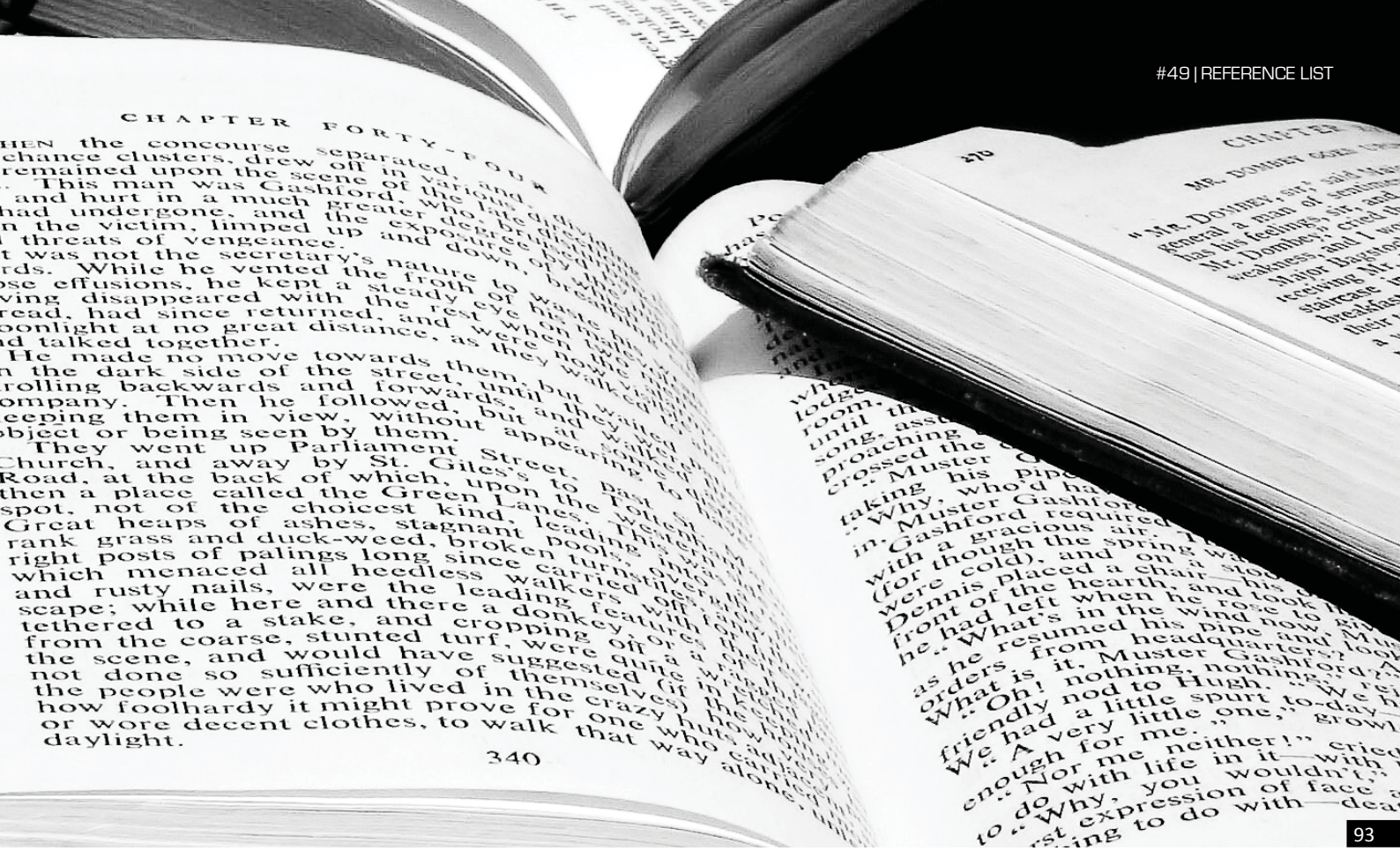

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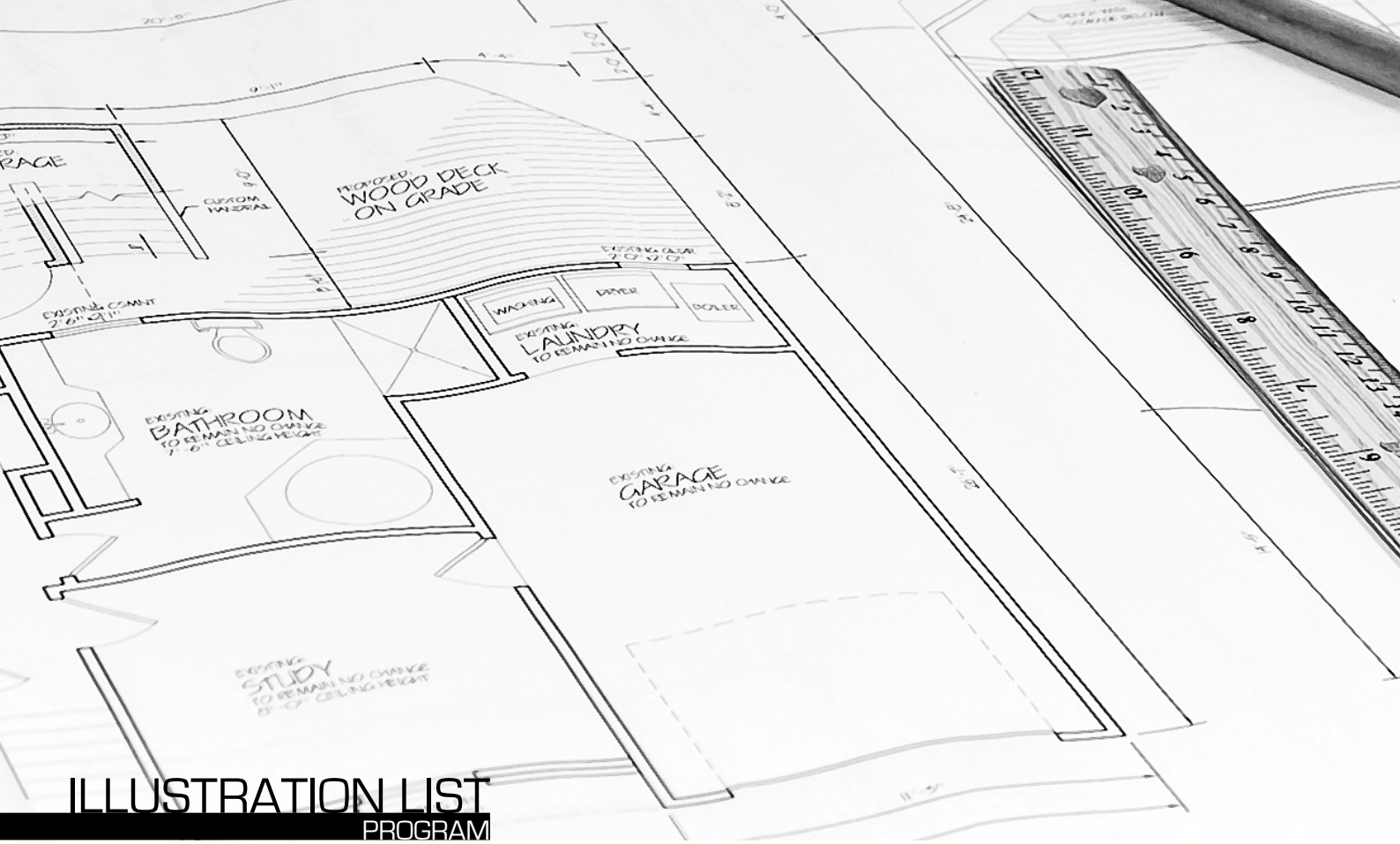

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#26 | The existing chapel of Våler. Own photo

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#28 | Satellite photo of Våler. Attachment to the brief, Åben plan- og designkonkurranse, Ny Våler Kirke.

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#29| Nodes & Pathways - Scale 1:3000. Own Illustration
#30 | View from north east towards the chapel. Own Photo
#31 | Edges & landmarks - Scale 1:3000. Own Illustration

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X - (Online) Available at: <http://skynet3.meld.no/image/meld.no/d/r/j/drjvnpackufdi33bicwy6eonha/33bicwy6eonha.jpg> [Acessed 24.02.2012]
XI - Own photo
XII - (Online) Available at: <http://skynet5.meld.no/image/meld.no/z/b/3/zb3ixwoyrk2qcavgde43gzfjmi/avgde43g-zfjmi.jpg> [Acessed 24.02.2012]
XIII - Own photo
XIV - (Online) Available at: <http://skynet3.meld.no/image/meld.no/s/v/v/svvowrfv3hvtubabea36fvzjt4/babea36fvzjt4.jpg> [Acessed 24.02.2012]
XV - Own photo
XVI - Own photo

p.68-69 SENSING THE PLACE - CHARACTERISTICS & DETAILS

#35 | Characteristics of Våler.
I - Own photo
II - Own photo
III - Own photo
IV - Own photo
V - (Online) Available at: <http://skynet3.meld.no/image/meld.no/a/4/d/a4d5bhey2wkocdnhquax6rkyka/dnh-quax6rkyka.jpg> [Acessed 24.02.2012]
VI - Own photo
VII - Own photo
VIII - Own photo
IX - (Online) Available at: <http://skynet5.meld.no/image/meld.no/y/s/l/ysl63vtadocvxeh5t3xxjo5k2m/eh5t3xx-jo5k2m.jpg> [Acessed 24.02.2012]
X - Own photo

p.70-71 MACRO CLIMATE - WIND & SOLAR STUDIES

#36 | Macro climate.
I - (Online) Available at: <http://skynet1.meld.no/image/meld.no/i/e/z/ieztouh5yvp2ztcur6rc3rttli/tcur6rc3rttli.jpg> [Acessed 24.02.2012]
II - Own illustration, based upon (Online) Available at: <http://www.gaisma.com/en/location/hamar.html> [Acessed 24.02.2012]
III - (Online) Available at: <http://skynet3.meld.no/image/meld.no/r/3/y/r3yxyi2gruaovklb6n2ijlzsjy/klb6n2ijlzsjy.jpg> [Acessed 24.02.2012]

IV - (Online) Available at: <http://skynet5.meld.no/image/meld.no/g/n/m/gnm462juoa443dsysbzfp3uuci/dsysbzfp3uuci.jpg> [Acessed 24.02.2012]
V - Own illustration, based upon (Online) Available at: <www.eklima.met.no> [Acessed 24.02.2012]
VI - Own photo

p.72-73 POPULATION DEVELOPMENT - VÅLER MUNICIPALITY

#37 | Log cabin in Våler. Own photo
I / II - Projections. Anonymous, 2003. Kommuneplan for Våler kommune 2006 - 2017. Våler. Attachment to the brief, Åben plan- og designkonkurranse, Ny Våler Kirke.

p.74-75 SITE ANALYSIS / CONCLUSION

#38 | The sunset over Oslo Fjord. Own photo

p.76-77 CASE STUDIES

#39 | Stockholm Library by Gunnar Asplund. Own photo

p.78-79 VATIALA CHAPEL

#40 | Vatiala Chapel By Viljo Revell. Own photo

p.80-81 ENGHØJ CHURCH

#41 | Engøj Church by Henning Larsen Architects. Own photo

p.82-83 THE CHAPEL OF HOSPITAL SOUTH

#42 | The Chapel of Hospital South Aalborg by Friis & Moltke. (Online) Available at: <http://www.friis-moltke.dk/siteFM/projectdetail.asp?x=&detail=1835> [Acessed 19.05.2012]

p.84-85 DESIGN PARAMETERS

#43 | Stockholm Library by Gunnar Asplund. Own photo

p.86-87 FUNCTIONAL VISION

#44 | Functional Vision. (Online) Available at: <http://d.lib.ncsu.edu/adore-djatoka/resolver?rft_id=aam_RS0114_0004&svc.level=5&svc_id=info%3Alanl-repo%2Fsvc%2FgetRegion&svc_val_fmt=info%3Aofi%2Ffmt%3Akev%3Amtx%3Ajpeg2000&url_ver=Z39.88-2004> [Acessed 14.02.2012]

p.88-89 ROOM PROGRAM

#45 | Room Program.Våler Kirkelige Fællesråd, Architect- og Counsellor Firm Sjåtil & Fornæs AS, in collaboration with the Competition Secretariat in Norske Arkitekters Landsforbund, 2011. Åben plan- og designkonkurranse, Ny Våler Kirke.

#46 | Peter Zumthor Therme Vals. (Online) Available at: <http://static.panoramio.com/photos/original/4085316.jpg> [Acessed 28.02.2012]

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#47 | Peter Zumthor Therme Vals. (Online) Available at: <http://static.panoramio.com/photos/original/4085316.jpg> [Acessed 28.02.2012]

p.92-93 DESIGN PARAMETERS / AESTHETICAL - ENERGY

#48 | Corner detail of a log cabin. (Online) Available at: <http://vrsdesign.files.wordpress.com/2010/09/img_2245.jpg> [Acessed 28.02.2012]

p.94-95 REFERENCE LIST

#49 | Reference list. (Online) Available at: <http://www.annedeppe.com/wp-content/uploads/2011/04/books.jpg> [Acessed 13.02.2012]

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#50 | Illustration list. (Online) Available at: <http://drlill.files.wordpress.com/2008/05/interior-design145x100.jpg> [Acessed 13.02.2012]