

Reflection

Student:

Shasan Chokshi (4906691)

Project title:

Patterned Grid-shell

Mentors:

Dr MSc Arch. Michela Turrin (main)

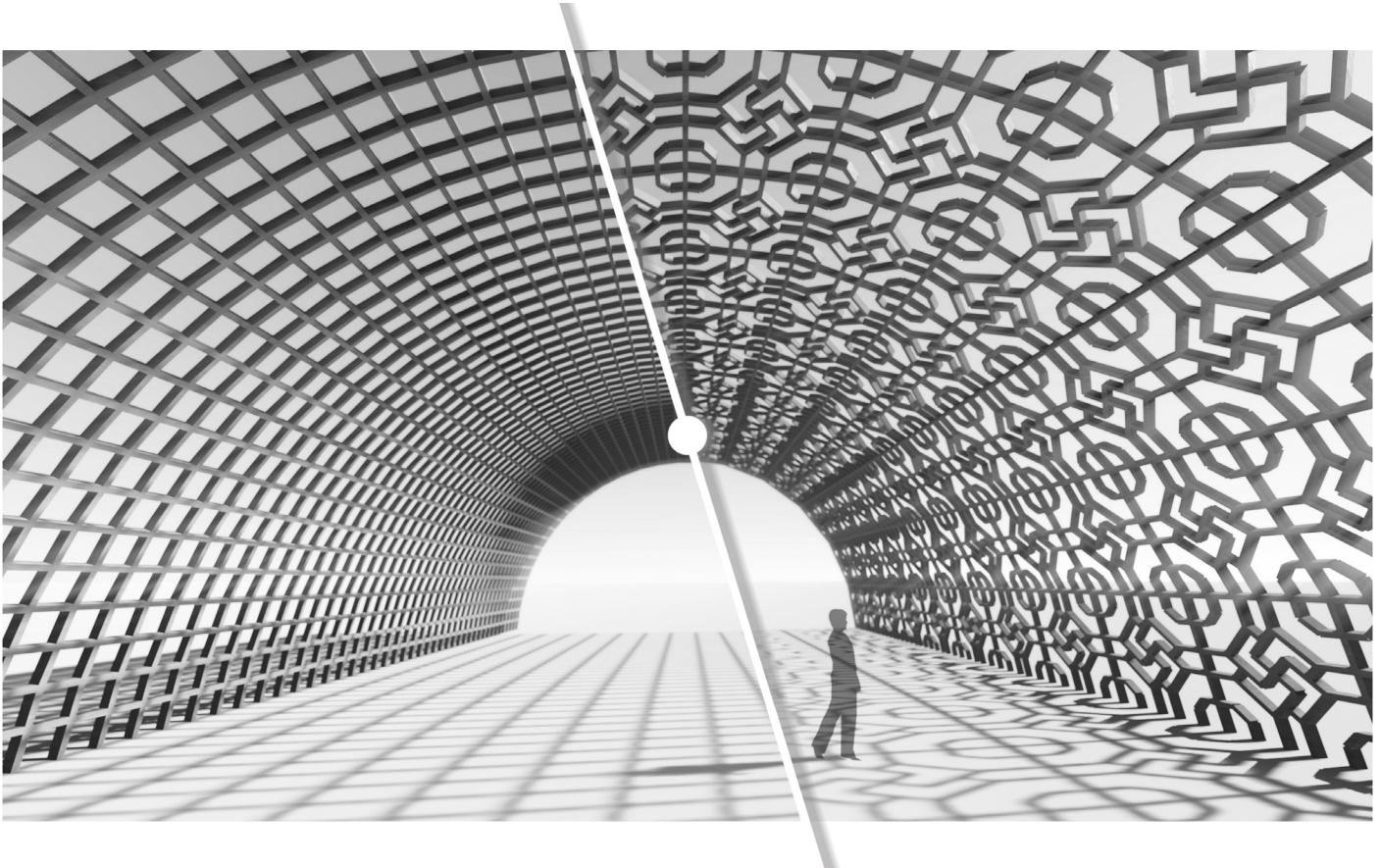
Ir. Peter Eigenraam (secondary)

Research topic:

Designing a method to analyze and compare grid-shells influenced by traditional lattice patterns of north Asia

Delegate Board of Examiners:

Dr. H.T. Remoy



This reflection aim to mark the relevance of this thesis in for current and future innovations in the built environment. It reviews the work from various piratical, social and academic perspectives to understand the relevance of topic and approach. The reflection is written from five different aspects.

Aspect 1:

The relationship between research and design.

The aim of the project was to design an urban large span structure considering the cultural and social requirement of the location. Therefore, the initial research is to understand the cultural background to derive the project. The plan of graduation is based on the technical issues and to develop a method. Therefore, the initial research does not have a direct relation with the design process, but it helps to justify the scientific method been developed. Later as the plan was decided to work on lattice pattern, the research was more specific to learn various possibilities in line geometry. This has a direct impact as this research provides the data to be investigate from the technical perspective. To develop the workflow, all the research was done to understand the principles and state of the art method. Research to understand the principle of beam structure, grid structure, example parameterization, multi objective optimization, principles of grid shell and designing method together relates while designing the workflow and derive conclusions at different stages of the workflow.

Aspect 2:

Elaboration on research method and approach chosen by the student in relation to the graduation studio methodical line of inquiry, reflecting thereby upon the scientific relevance of the work.

One of the issues in modern architectural practice is the vanishment of native design style, which is the root of this project. Considering it the project to develop a design and urban structure which is grid shell. Developing the grid shell using lattice pattern can be seen from architectural, urban, technical, social and management perspective. The line of inquiry in this graduation studio asks to observe the issue from the technical perspective while developing the project. Considering this in mind the research and design approach is chosen to develop the technical phase of the project. Research sequence is arranged to understand the anticipated approach of designing the workflow. The scientific relevance of such approach (of designing a workflow to develop a design) is that it provides more flexibility in visualization/analysis of design and makes. Though being time consuming at the beginning, the chosen method of developing a workflow provides a detailed analysis of various possible solutions in much faster way.

Aspect 3:

The relationship between your graduation (project) topic, the studio topic (if applicable), your master track (A,U,BT,LA,MBE), and your master program (MSc AUBS).

As the studio is about sustainable design, this project aims to find a sustainable solution in the field of grid shell structure by not only considering the materialistic goal but also the social sustainability. To do so, it takes inspiration from local architecture and aim to use it in modern design techniques. Master track Building technology highly focuses on developing the state-of-the-art methods in a sustainable designing field where computational designing and structural designing are a part of it. The project focuses on these disciplines. MSc AUBS programme aim to explore the future-oriented built environment which is responsible enough to serve the people in their daily life. This project also is driven by social responsibility and tries to find the solution from the technical perspective.

Aspect 4

Elaboration on the relationship between the graduation project and the wider social, professional, and scientific framework, touching upon the transferability of the project results.

Design of a patterned grid shell magnifies the identity of the city and its traditional architecture. It works on social recognition of the citizen. The context of the site is a train station which is one of the gateways to the city. Proposing such concept at this location create a sense of familiarity yet a modern experience. In the professional framework, the project tries to achieve the design solution based on the actual project and requirements which makes it a relevant design method to be applied in contemporary design practice. This method becomes an example for the current practice in architecture to apply the techniques of structural and computational design and create a location-based design. In a scientific framework, the project aims to experiment with the fundamental of grid-shell which is grid geometry. Grid-shell structure itself is very efficient solution for a lightweight shelter. However, changing the grid geometry significantly affects the strength and stability of a grid-shell. This project, therefore, provides an example of possibilities to alter the geometry and make a stable grid shell with an optimum amount of material use.

Aspect 5:

Discuss the ethical issues and dilemmas you may have encountered in (i) doing the research, (ii, if applicable) elaborating the design and (iii) potential applications of the results in practice.

The project is found from the ethical concern to preserve and flourish the native ancient art and architectural element and use it in a modern-day architectural design. Doing the research same ethical problem came across that such geometries have remained a part of old architecture and there are very less artisans carrying this legacy. At the most they are used for additional ornamentations or to preserve historic sites. Having been a part of architecture for a long time, the modern architectural practice has not adapted it enough due to globalization of architectural designs. On the other hand, for the potential application, the use of such patterns would increase the use of material usage to compensate with the native experience in built environment. The traditional grid-shell has a well-developed method of fabrication, while using these patterns may seek more attention to develop a customized fabrication method at the beginning. In summary, this method has a trade-off between material usage and socio-cultural sustainability which a designer can balance.