

WORKS+WORDS 2017 Biennale in Artistic Research in Architecture, KADK, Copenhagen

TITLE: FOLDING AND LINING - Reflections on methodology and meaning at Hammershus Visitor Centre

Introduction

The west-facing slope by the Hammershus rock tomb was identified by Jørn Utzon (1918-2008) in 1971 as a suitable place for the construction of a building that would support the experience of the castle ruins of Hammershus, which was originally built around 1200. It is a dramatic place, but also a vulnerable and exposed location, and a building here would affect the experience and perception of the vast open landscape and the ancient monument. Utzon's project from 1971 formed the basis for an international architectural competition, which I won in 2014 with a project prepared in collaboration with Arkitema Architects.

Folding and Lining is about the aesthetic, technical and meaning-related plans that are revealed in the architectural work Hammershus Visitor Centre.

The presentation contains reflections on how the work's idea relates to the work's effects.

What is the connection between premise, condition and form?

How has the work's specific design developed in the light of external and internal relations, respectively?

What has been of significance and why?

What is the work's relation to existing meaning formation in architecture, and how does the work relate to the role models and associated works that, knowingly or unknowingly, have been used as a starting point?

Folding and Lining consists of this text and two models in scales 1:500 and 1:100, respectively.

Methodology

With reference to the tripartite view that is a fundamental principle in the teaching and research at Cultural Heritage, Transformation and Restoration,¹ the project is described from a technical and a phenomenological point of view.

The description of the work also has as its frame of understanding a view of architecture as an artefact that is inevitably associated with a place, limited to a material, and substantiated by a use.

The historical, the technical and the phenomenological

The architectural competition called for a project that was "rooted in Utzon's project and the architectural and landscape qualities it contains"². After an analytical review of Utzon's thoughts, we concluded that his idea of an articulated building supported by posts contained, on the one hand, a reversible and gentle approach to the terrain's vegetation and characteristic features, while on the other hand, it was unable to meet the programme's requirements for functional content. This called for an area and a functional complexity about four times as extensive as that on which Utzon's project was based.

Jørn Utzon's project suggested a composition of wooden bridges and terrace decks with adjacent, simple timber houses with one-sided, inclined roof surfaces supported by posts. Apparently, Utzon's idea was born during a trip to India where the tentatively offset organisation patterns formed by the boats on the Ganges made a big impression on Utzon as a suitable way of organising the

articulated building at Hammershus. The project's tectonic idea is related to Utzon's thoughts on the modularly structured *Espansiva*.³

Man-made and natural elements have worked together for centuries at the Hammershus castle ruins. The fortification was erected in a conducive meeting between the protruding position of the rock, 75 metres above sea level, and changing times' ability to shape the monument with stone, timber and the terrain elevations as the informant of the form.

In our project for Hammershus Visitor Centre, this story continues. On the edge of the rock tomb, we have read and processed the open landscape's curvatures and drawn a number of geometric features that form the basis for the visitor centre's floor, walls and roof. The terrain's surfaces are offset, folded and lined in a building that frames the visual connection to the castle ruins, the open landscape, the sky and the sea.

While designing the project, we developed the building's overall figure as an elongated one-storey building, which is modularly structured to accommodate the project's requirements on functional organisation and areas, in an interpretation of the meaning and mutual relations of the different functions, including consideration for views from the building, daylight, arrival and escape routes.

The building is being constructed as a structure with foundation, floor and walls cast in situ, and a roof structure made from laminated wood and oak. Doors in steel frames with oak casing, doors and partition walls made from oak plank. Wooden bridge and wooden deck made from oak plank.

Analysis

The first sketches show a clear-cut orthogonal, oblong building volume with a high degree of repetition, which organises the building into two types of spaces: open spaces with a direct, visual connection to the landscape and the castle ruins, and to which visitors have access, and inwardly - towards the cliff - a series of closed back-up and service rooms, to which visitors only have partial access. The layout follows known principles as seen in both Mies van der Rohe's open plans with closed centres, and in Louis Kahn's thinking, which distinguishes between *the serviced room and the servicing room*.⁴

This highly geometrically affected and modular building form was not easily fitted into the plot of land as a preliminary organisation model, neither technically, as the foundation work would be complex and costly, nor architecturally, as it seemed that no relation could be established to the terrain's morphology and planting.

Experiments with a subdivision of the building into three separate building volumes, inspired by the Utzon Bay View project from 1962 and the Can Lis in Mallorca from 1971, resolved some of the figure's issues with scale and its subordinating adaptation to the terrain, but also inadvertently generated a number of issues concerning the functional distribution and arrival facilities. However, by studying the terrain's elevations and superimposing a simplified presentation of the terrain's morphology against the organisation model, we developed a new, complex plan figure, which used three guiding modular main geometries to follow the terrain's form, securing the foundation, and establishing the necessary orientation from the building's interior towards the view.

Result

Against this stringent, but adapted rhythm, we designed the building's servicing rooms against the cliff by using completely free geometries for the positioning of supporting concrete walls cast in situ. These folded structures created closed rooms, and they were designed as continuous courses of double, insulated external walls and single internal walls, alternating in charged, spatial relations, where there is no distinction between the expression of internal and external walls. The radius for the walls' curvatures was studied, and with reference to Arne Jacobsen's Kayak Club at Bellevue Beach in Klampenborg, the

guiding geometry for inward corners was defined with an external radius of 90 cm.

This dichotomy - which splits the building's geometric whole in two, as the modular *repetition* and the organically shaped *exception*, respectively - contributes to releasing the building's fundamental spatial composition as **serviced and servicing rooms**, respectively. The dichotomy continues in the building's tectonic structure, which consists of two separate, but linked parts, *folding* and *lining*, respectively. Where the *folding* includes the floor and the walls' cast forms, the *lining* is the appliquéd level in the form of roof structure, wooden deck, panel walls and doors. The object of these elements, which are all made from sawcut oak, is to inhabit the folded concrete structure, providing it with the necessary and welcome level of tactile warmth and functionality. Folding appears in the crust of a fabric or material when surplus material or structural offsets in the distribution of the surfaces reach a certain extent. In this project, the folding is seen as an architectural approach that makes the architectural figure stand out in an interplay with the landscape's morphology that is closer than what a building intended as an object in the landscape would normally be able to achieve. The folding shares its obvious reference to the textile with the lining, which would normally denote layers or cladding of protective, warming or decorative materials with clear references to the thinking of both Gottfried Semper and Adolf Loos.⁵

The intention of integrating the building into the landscape is evident in the above-mentioned conditions, but also accentuated by the building's roof being designed as one big wooden deck, which is connected to the new pathway system and car park facilities via a gently rising ramp course. This incorporates the building into a story where the building becomes a condensed course of spaces that emerge as folding and lining in the landscape.

The work fits in with a tradition that can be seen as distinctly Scandinavian, as Gunnar Asplund, Sigurd Lewerentz and Alvar Aalto in particular have paid attention to this way of thinking, while Enric Miralles and Carme Pinós in particular have continued this in the Igualada cemetery. Whereas the Scandinavian references have been of significance to the project's preliminary decisions, Miralles and Pinós' work has been of secondary, but direct significance to the development of the building's in situ cast morphology.

Note 1: Lost and Found, Christoffer Harlang (ed.), Copenhagen 2014, pp 64-72

Note 2: Competition brief for architectural design competition for a new visitor centre at Hammershus, the Danish Nature Agency, April 2014

Note 3: Richard Weston Utzon, p xx

Note 4: Louis Kahn: Between Silence and Light, p xx

Note 5: Gottfried Semper: XX Adolf Loos: Das Prinzip der Bekleidung, p xx