EXERCISHUSET 2.0
SPACES FOR SPONTANEOUS SPORT

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I became interested in the planned development on Heden and particularly on how the area's long history and identity of being a place for activity and sport can be preserved and strengthen. Today the sport is carried out on large fields (mainly football) and in the old exercise building (mainly ping pong). The fields are accessible to the public when clubs haven't reserved them and the exercise building is devoted almost exclusively to the ping pong club. This means that both the fields and the exercise building is devoted primarily to organized sports. Today research show that people less and less are members of clubs and more and more do sport on their own and with friends, the term for this kind of activities is spontanious sport.

My thesis aim to give spaces for this kind of activity thus broadening the sporting spectra with more flexible spaces for various kinds of sport. If the agenda of the development on Heden is densification, the thesis aims to show an example of how sport can organize itself in denser urban way. The main approach to reach this result is by suggesting an approach where a variation of smaller spaces than the typical sport centre forms a dense cluster for activity. The focus is on creating a public building with low thresholds in the spirit of the trend towards more spontaneous activities.

MARCUS ABRAHAMSSON
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BACKGROUND

HEDEN:

The history of settlement in the area goes back to the 17th century, when the fortified city of Gothenburg was built and a highway was laid to the south gate of the city. During the 18th century there was little building in the area, which was used for military training, as pasture for the livestock of the people of the city and as gardens. The area developed into an area for games, sport and an important public space for events and demonstrations as the military moved out. Since then the space has been devided between sport and parking and today discussions and investigations are made to see how the area can be strengthened and densified.

Heden in a Gothenburg context (1:5000)

Heden in the late 19th century, and open space shaped by everyday life.
HEDEN RESEARCH:

In the process of learning more about Heden, I met with different members of the city planning office and discussed the area, and the upcoming competition.

SELECTED QUOTES FROM THE COMPETITION BRIEF

"To develop and give a clearer identity to Heden as a place of sporting and cultural activity"

"To develop Heden as a resource for Gothenburg as an event city. To develop public transport nodes."

"To create a green lung with many meeting places, safe walks and cycle tracks, interesting places to visit and exciting places for play."

"Heden must also continue to contain areas of a robust character, i.e. durable, attractive and flexible areas for both everyday life and special events."

Images from some of the meetings taken to inform the thesis about Heden specific questions.

A sketch from the meeting with traffic planner Magnus Ståhl, clearly showing the interest in the later chosen site.
**SPORT TODAY:**

Research show that people less and less are members of clubs and more and more do sport on their own and with friends. The term for this is spontaneous sport and a part of this tendence has to do with the fact that people feels that the approach in clubs is to serious.

In architecture today you can see that this trend is starting to rub of on the expression that architecture for sport take.

Today Heden is very much focused on football by having large fields sized and equipped for this purpose. In my approach towards the sporting facilities on Heden I aim to broaden the sporting spectra with more flexible areas for any kind of sport and also focus these areas on smaller spaces more fitted for many smaller groups doing sports together in a more dense way.

Some of the interesting activity architecture that has been built the last years.

Diagrams showing how the shift from organized sport towards spontaneous sport and private gyms can look in percentage.
MATERIAL

PRE-STUDIES:

The thesis had a material prerequisite, I knew I wanted to construct the project in wood, simply because it's a key material towards sustainability. To learn more about wood construction I started in the fall to travel around to a number of seminars and lectures on wood construction all around Sweden. This early choice of material led to a collaboration with a fellow student, Agnes Orstadius, who had decided to look into wooden constructions in her engineer thesis.

We started our thesis period with a study trip to Switzerland to look at some interesting wood architecture and go to institutions working with wood. This collaboration has driven the thesis, as you will discover, in a direction where architectural intent and structural solutions are weaved together to form one response.
**PROJECT LOCATION:**

The west corner of Heden is developing to a node in central Gothenburg. Trams and buses are moved to this point to take some of the pressure from Brunsparken, Gothenburg's most trafficated node for public transport.

The fact that this is the point closest to the absolute centre of Gothenburg also suggests that it could be developed into the future entrance point to Heden. In this corner lies the only building on Heden protected by the city from demolition, the old exercise building, built in 1876 as a space for sport and still today used for this purpose. How can the future development of Heden relate to this building and can it be extended to hold even more sqm for sporting? If the aim is to maximize the use of Heden by densification, by extending this building you keep its importance and role on Heden as the main building for sport.
URBAN CONTEXT:

NEW EAST WEST TRAMLINE

NEW PEDESTRIAN PATHS created by closing Södra Vägen and new bridges

BUS LINES Commuting Buses from suburbs

FLEXIBLE SPACE FOR EVENTS

STORGATAN a pedestrian axis under development

EAST WEST BICYCLE PATH

KUNGSPORTS AVENYEN Gothenburgs main boulevard

PROJECT LOCATION

LOCATION

FC Flexible space for events

FC Flexible space for events
If the goal is to densify Heden, how does one densify sport?

And more specifically in the extension of Exercishuset, how can I make the shift from organized to spontaneous sport?
**STRATEGIES TO DESIGN FOR DENSE SPONTANEOUS**

**DIVISION FROM LARGE TO SMALL**

1. The project aims to address this question by a strategy where the division of space goes from large to small thus giving better possibilities for people to gather in smaller more spontaneously manageable groups. The same strategy also deals with creating spaces suited for a larger variety of sports going on at the same time.

[Diagram: Division from large to small]

**CREATE SEMI CLIMATIZED SPACES TO PROLONG THE SEASON**

2. In Gothenburg it rains a lot and research shows that the will to go out and do sports drops with low temperatures, heavy rain and windy conditions. To provide better spaces for spontaneous sport the project will be climatized.

[Diagram: Precipitation, Temperature, Wind]

**MAKING CIRCULATION A PART OF A VERTICAL PUBLIC PATH**

3. Low thresholds and accessible inclinations, the spaces should work like a stacked public park, and be a part of an urban pathway, where activities are carried out on surfaces that are not bookable but rather encourage people to interact and use the space freely as public space.

[Diagram: Guggenheim New York, spiraling circulation]

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Left; London Olympics center court. 8 x 15 meter with a minimum of 9 meter ceiling height.
Right; Ping Pong in a basement, not perfect conditions but still as fun. Conclusion, it is important to question the measurement requirements when aiming for a denser result.

The Lanterns project by Atelier Oslo in Sandnes, Norway creates a meeting place and a node in the Sandnes by simple means just giving protection from the rain and light.

Guggenheim New York, a spiraling circulation takes the visitor through all the spaces showing art. The circulation becomes an architectural point of its own.
STRUCTURAL DESIGN CONCEPT:

Circulation, Plans and a Facade are the three functions that the project consists of. The process have very much been focused on bringing these together in a uniformed way, where they are all integrated as one.

The solution became to use the principles of a folded plate structure that hangs in a load bearing facade that stands on the existing buildings brick walls.
**THE UNIT:**

The aim when creating the spaces for activity has been to maximize the interaction and social play between strangers meeting over play and activity.

To do this the unit contains multiple layers of spaces to interact.

The border to the sport surface the oblique surface creates a sittable stair. This is a social zone that every sport surface has, it is attempted to work as a place where people can blend in to activity on the actual surface by first watching and then joining in.

ABOVE; Diagram showing how the oblique surface can work both in giving view out towards Heden and in, looking at the activity.
PROGRAM ANALYSIS:

**TYPE 01**
- SIZE: b3500 d7500 h10000+
- ACTIVITIES: Climbing

**TYPE 02**
- SIZE: b3500 d7500 h3000
- ACTIVITIES: Childrens Play, Dance, PingPong, Weight Lifting

**TYPE 03**
- SIZE: b7500 d10000 h5000
- ACTIVITIES: Ball sports in Smaller groups

**TYPE 04**
- SIZE: b7500 d10000 h7000
- ACTIVITIES: Ball sports in Larger groups, Group Training, Play, Gymnastics

**TYPE 05**
- SIZE: b7500 d10000 h5000
- ACTIVITIES: Ball sports "Half Court", Wrestling, Gymnastics, Play, Dance in large Groups

**PROGRAM:**
- 4 x Space type 01.......100 m²
- 4 x Space type 02.......320 m²
- 1 x Space type 03.......200 m²
- 1 x Space type 04.......120 m²
- Circulation.....................400 m²
- Elevator............................16 m²
- Changing Rooms      120 m²
- Technical Space...............50 m²
- Storage/ Tech Space.....200 m²
- Ground Floor.................580 m²

**FURNISHED COMMON SPACE**
- CHANGING ROOMS
- ELEVATOR
- RAMP 1:20
- RAMP SHORT CUTS 1:6
- GROUND FLOOR OPEN SPACE

**MAIN ENTRY POINTS**
- STORAGE/TECH SPACE
PROGRAMATIC ORGANISATION:

- FURNISHED COMMON SPACE
- CHANGING ROOMS
- ELEVATOR
- RAMP 1:20
- RAMP SHORT CUTS 1:6
- GROUND FLOOR OPEN SPACE
- TYPE 01
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PROJECT LAYERS
**SKIN:**

To be able to see the activity and vice versa the facade is wrapped with a single glass facade with a division reacting to the pattern of the load bearing structure.

The Skin is put on the outside of the bearing wooden facade to protects the wood. As the great Austrian wooden architect Hermann Kaufmann said:

“The bones of your body, is not on the outside for a reason”

Diagram showing the abilities of the glass when applying transparent photo voltaic film.

The skin naturally ventilates the building and the heat from the sun goes in to the photo voltaics.
ROOF:

OPTIMIZED BEAM GRID ROOF

The Roof has the same logic as the facade. It has 6 layers forming a beam grid that thickens as the load carriage increases towards the middle creating a constructional height of 800mm.

Left: The different layers making up the roof beam grid.
**FACADE:**

It in order to use the good compression characteristics of the brick in Exercishuset, the facade carries the load of the extension. It does this by a layered facade of glulam beams. The form a web of structure that starts out intense closest to Exercishuset matching the intensity of the highly ornamented brick facade and dissolves towards the sky.

Top Left, An even facade would be loaded unevenly since the dead load is greatest at the bottom.
Top Right; The gradient from sparse to dense makes the material work more efficiently at the top while still responding to the need for a short buckling length at the bottom.
Mid Left, Locally adding members where the ramps are secured.
Mid Right; The result is maximally useful facade and slender facade.
Above: The long side take the forces down to the facade. The gavels works with horizontal stability and the ramps inside spreads the forces.
**RAMPS & SURFACES:**

Floors: Each playing field functions as a structural frame. The sides reaching across the width of Exercishuset act as beams and carry the load into the walls. They can be thin since they are given structural height from their folds. The sides of the frames that run along the long sides stabilize the building horizontally, carrying shear forces into the gable walls. The ramp: The ramp distributes the loads from the floor linearly along the facade, allowing a more even expression of the facade and additional horizontal stability.
EXERCISHUSET:

The existing building is fairly closed with no insight into the building. To transform it into a more public building the existing openings, one at each side replaced with glass doors. The inside is made open to serve as public space for markets and such.

Above, Diagram showing the changes made to the existing
**SHINGLED GLAS PANELS:**

Single reinforced glas are mounted on the load bearing facade following the same pattern as the diagrid of the facade.

The glass is mounted in three corners leaving the bottom one. This way the result is that now built are shing directly, only through the glass.

Above; Exploded axonometri showing the different parts that makes up the facade and how the glass is connected.
BEAM CONNECTIONS;

SIMPLE & ROBUST CONNECTIONS.

The members of the facade connect at the point where they intersect, simply by being screwed together with a bulldog washer for torsion stability. Where they don’t have direct contact with the member in the layer behind a short glulam beam is used as distance.

Left; Diagram showing how the corner beams meet eachother
Right; Exploded axonometri showing the different parts that connects the glulam beams in the facade and the roof.
SPORT SURFACE:

The whole structure is made by glulam beams in a width of 250 mm and varying heights. However, the actual surface is raised to fit installations,
SHINGLED GLAS PANELS:

USING THE EXISTING AS AND ANCHOR

The extension is anchored in the existing buildings heavy brick facade by tension cables running through the brick pillars and connecting under the building. This way the brick facade is used in its most optimal way as a foundation by using its excellent compression strength and weight.
HEDEN – SOUTH EAST FACADE
PARKGATAN – NORTH WEST FACADE
SÖDRA VÄGEN – SOUTH WEST FACADE

NORTH EAST FACADE 1:200