

**The Royal Danish Academy of Fine Arts
Schools of Architecture, Design &
Conservation**



a case study by:

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Foto: Susan Gregers Jensen

COPENHAGEN

Copenhagen is the capital and the largest city of Denmark with an urban population of about 1,2 million and a metropolitan population of about 1,9 million inhabitants (wikipedia). This is **10,8 times** more than Trondheim´s 173 500 inhabitants.

35 % of Denmarks population lives in Copenhagen. In comparison **3,5 %** of Norways population lives in Trondheim.

After the completion of the transnational Øresund Bridge in 2000, Copenhagen has become the centre of the increasingly integrating Øresund Region. Within this region, Copenhagen and the Swedish city of Malmö are growing into the most important metropolitan area in Scandinavia (wikipedia).



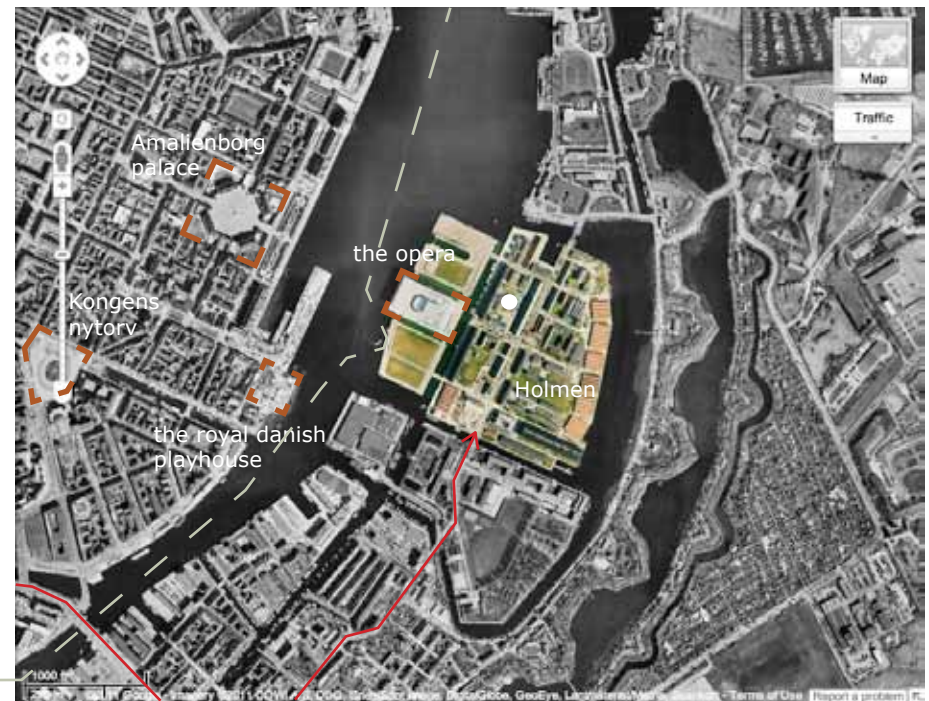
1 km

LOCALIZATION OF CAMPUS

From 1993-1997 the area of Holmen was developed as a university campus area for architecture, film, music and theatre education. Before this Holmen was the headquarter for the Danish marine from 1690-1993 and in all this years Denmarks biggest workplace.

Situated as a cul-de-sac district the area has a quiet and "remote" reputation and feeling. At the same time Holmen is centrally located within the old city fortification walls, put the canal separates it from having direct contact. Holmen is also in close relation to two of the stages of The Royal Danish Theatre: the Royal Danish Playhouse and the Opera.

Before moving in at their current location at Holmen, the School of Architecture were located at Kongens Nytorv.



car / bicycle
route from city
center

passenger
ferry boat

200 m

CAMPUS HOLMEN

Campus Holmen consists of four different schools that all moved in in the period from 1995-1998. All the schools were based on reuse and transformation of the existing structures from the Danish Navy. As all the buildings in the area had one owner they were good taken care of and possible to reuse in a very straight forward way.

The School of Architecture were drawn by Vilhelm Lauritzen Architects while the three others were drawn by CUBO architects, all in the span from 1994-1997. Since then the schools have expanded into other neighbour buildings as they have grown the last 15 years. The Opera house were opened in january 2005 and drawn by architect Henning Larsen.



- The Royal Danish Academy of Fine Arts, Schools of Architecture, Design & Conservation
- The Rhythmic Music Conservatory
- The Danish National School of Theatre and Contemporary Dance
- The National Film School of Denmark



THE FOUR SCHOOLS

1. The National Danish Film School
100 students

2. The Danish National School of Theater
and Contemporary Dance
140 students

3. The Royal Danish Academy of Fine
Arts, Schools of Architecture, Design &
Conservation
980 architecture students + 650 design
students

4. The Rythmic Music Conservatory
200 students

With **79% of the students on Holmen**,
The School of Architecture, Design and
Conservation is by far the largest school
with respect to the amount of students.



1
3

2
4

THE SCHOOL OF ARCHITECTURE

On 2 June 2011, the Royal Danish Academy of Fine Arts, School of Architecture merged with the Danish Design School and The Royal Danish Academy of Fine Arts, School of Conservation to become the *Royal Danish Academy of Fine Arts, Schools of Architecture, Design and Conservation*.

The School of Architecture is one of the two Danish Schools of Architecture and one of the world's oldest schools of architecture as it was founded in 1754.

The architect programme is a five-year programme, comprising a three-year Bachelor programme followed by a two-year Master's programme.

The teaching mainly takes place within nine different study departments. The programme is laid out in a way that lets each of the nine Departments offer students a complete Bachelor programme. The 3rd study year though is characterised by each Department's individual approach and key areas.

Average study time for a master is **5,8 years** (2010).

The School of Architecture had in 2010 about 936 students + 44 Phd students. While the School of Design had about 650 students in 2011.

980 architecture students constitutes **0,018 %** of the total population of Denmark.

755 stipulated future architecture students in Trondheim constitutes **0,015 %** of the total population of Norway.

When the architecture and fine arts students are going to be collocated in Trondheim the stipulated amount of students will be 780 students + 50 Phd students. This means that the new NTNU Architecture and Fine arts school will have about **51 %** of the student mass of Copenhagen School of Architecture and Design (KARCH).



Foto: Susan Gregers Jensen

THE SCHOOL OF ARCHITECTURE, DESIGN & CONSERVATION

Study Department 11

Study Department 8
Study Department 10

Daylight laboratory
Wood, metal & fabric
workshops

Games & Interaction Design
Industrial Design
Pottery Design
Furniture Design

Architectural model
workshop

Center for Theory &
Method
Production Design
Textile Design
Clothing Design
Print shop

Center for Design
Research

Study Department 2
Study Department 7

IT department, Tecnical
staff & maintainance

Canteen

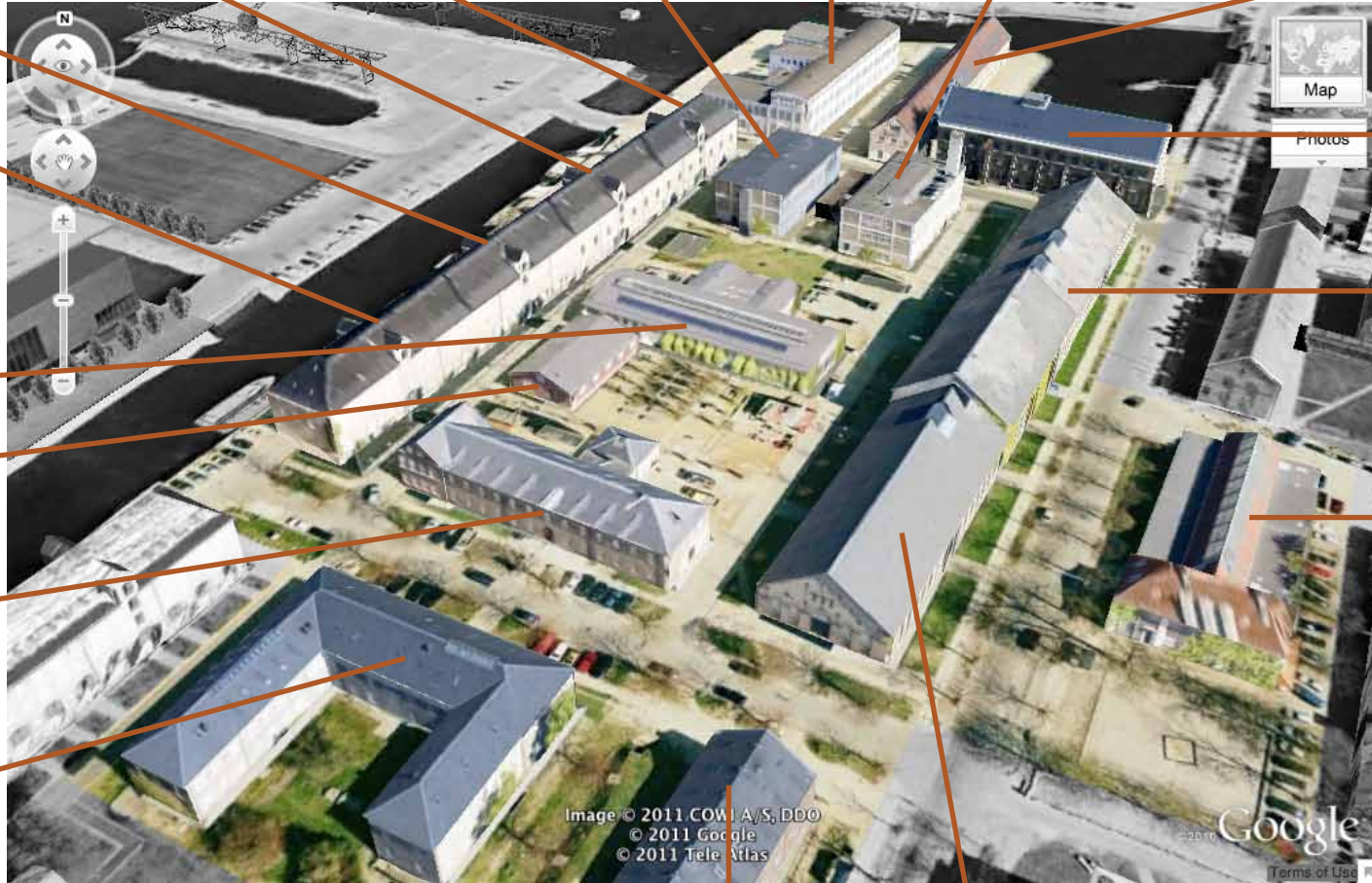
Auditoriums

Student council
Center for applied
innovation

Library for Architecture,
Design & Performing Arts

Reception
Administration
Rectors office

Institute of Building Culture
Institute of Technology
Institute of Planning
Institute of Design and
Communication



Study Department 1
Study Department 3
Study Department 6

Exhibition / Great hall

VOLUMETRIC COMPOSITION

When the School of Architecture moved to Holmen it various departments and functions was dependent on the character and location of the individual buildings. The buildings are placed in a grid, forming outdoor spaces and streets. As the campus is based on reuse of old structures the volumes are closely related to their earlier use and to the available building technology from the time it was built. In this case this means low buildings with loadbearing exterior walls in brick, where some of the volumes have only one floor and high ceilings.

Northern warehouse: 3 floors + attic

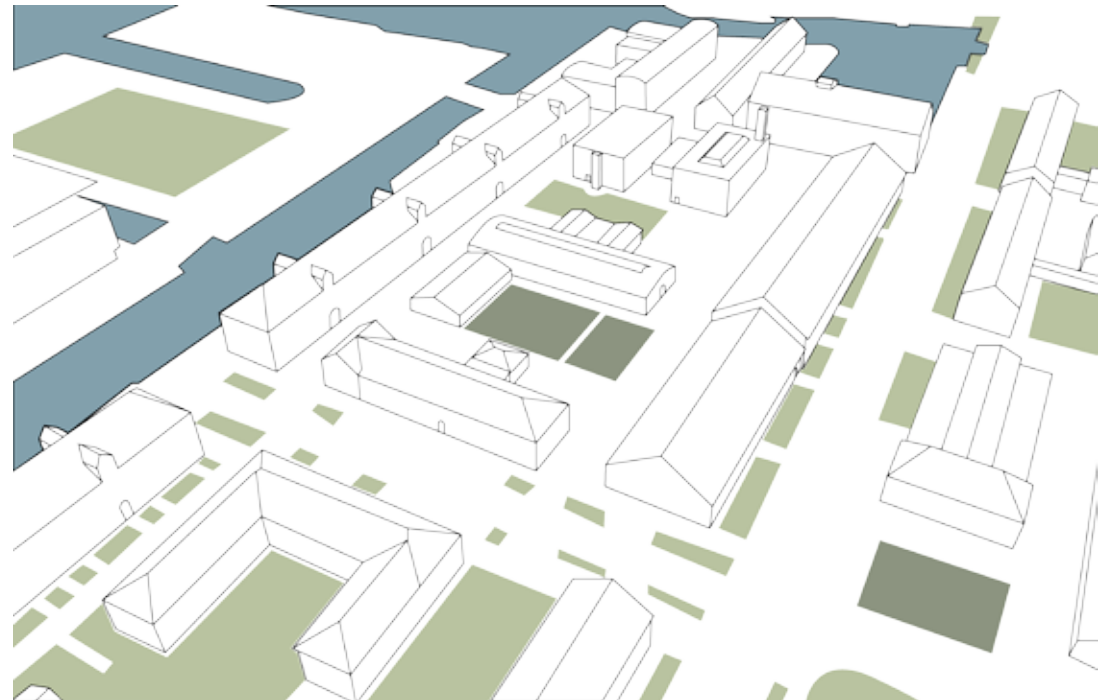
Administration building: 2 floors + attic

Exhibition / Auditoriums: 1 floor with high ceilings

Canteen: 1 floor with high ceilings

Workshops: 3 floors

Library: 1 floor with high ceilings

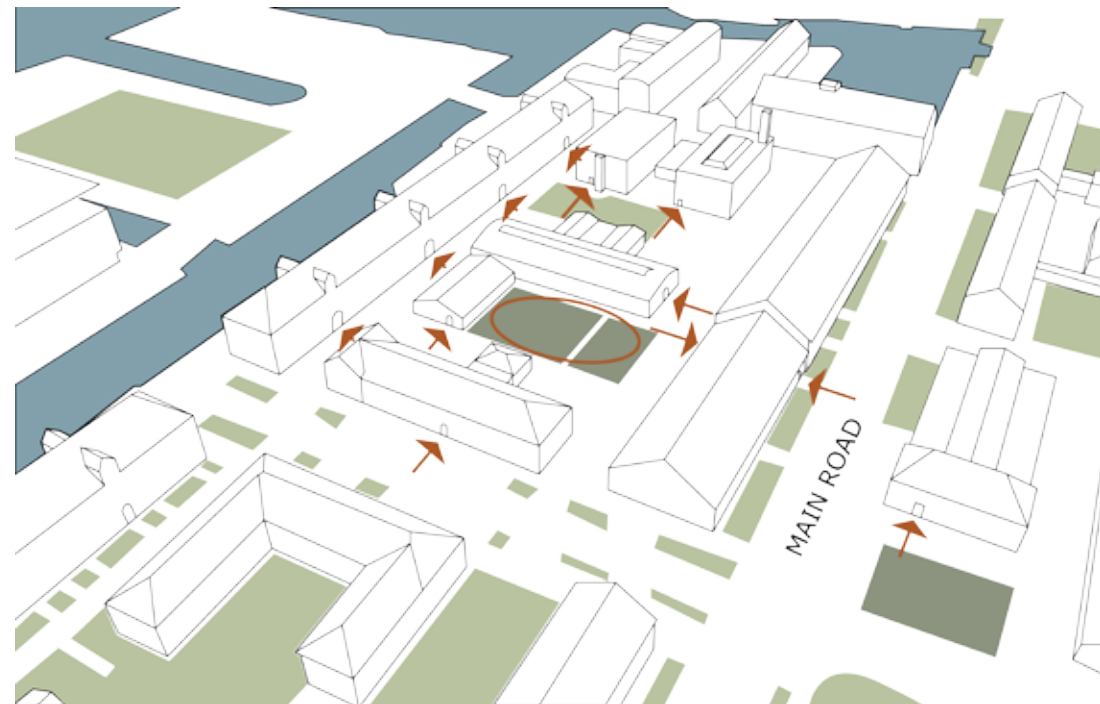


CIRCULATION

The administration building and the exhibition/auditorium building are the first you meet when you arrive at the campus from the city center. The exhibition/auditorium building seeks to attract visitors and people from outside in to the campus area. The administration with the reception is also clearly visible, though it is not possible to pass through and further in.

The new library is also placed along the main road so that it is visible and easy available for the public as well as the students. Further inside the campus the canteen serves as the central point closely connected to outdoor spaces. Almost all the circulation between the buildings pass by the canteen.

All circulation between the buildings takes place outdoors. We should mention that in the neighbour schools, as the Rytmic Music Conservatory, there have been added covered and partly indoor pathways to connect the old buildings.



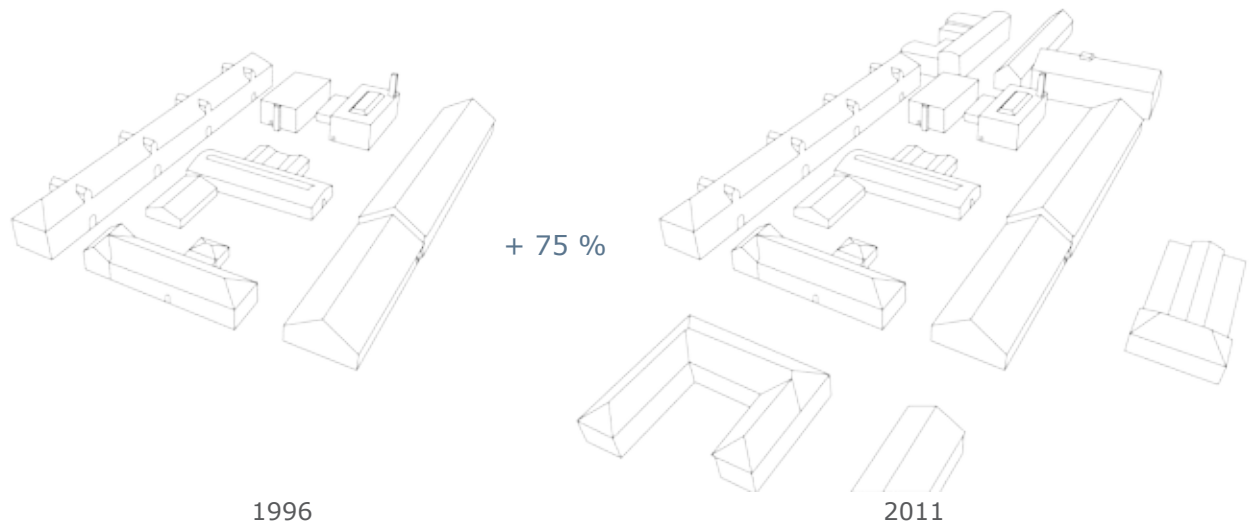
EXPANSION

1996 - The Royal Danish Academy's School of Architecture moves in at its new location at Holmen. The school then consists of 7 buildings at a total **17 000 m²**.

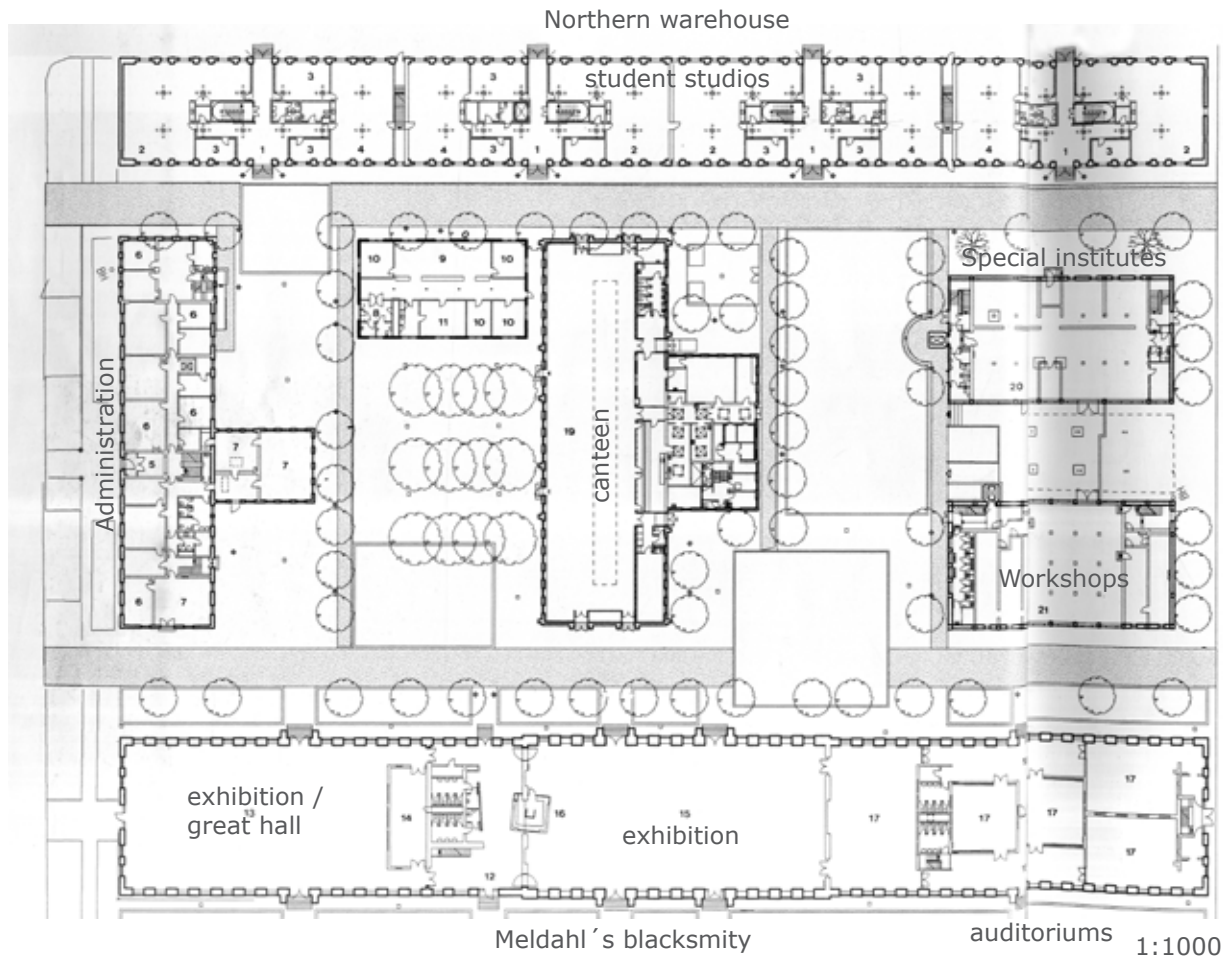
2011 - The Royal Danish Academy of Fine Arts, Schools of Architecture, Design and Conservation now consists of 15 buildings on Holmen.

A qualified guess shows that over the past 15 years the school has **expanded by around 75 %** if you count square meters of buildings.

This has to be seen in the context of the merger between the Royal Danish Academy of Fine Arts, School of Architecture and the Danish Design School and the Royal Danish Academy of Fine Arts, School of Conservation in 2011 which naturally required more space.



THE SCHOOL OF ARCHITECTURE IN 1996



Northern warehouse:

1. entrance
2. drawing studios
3. office
4. teacher / researcher

Administration:

5. entrance
6. office
7. meeting room

Student advisory offices:

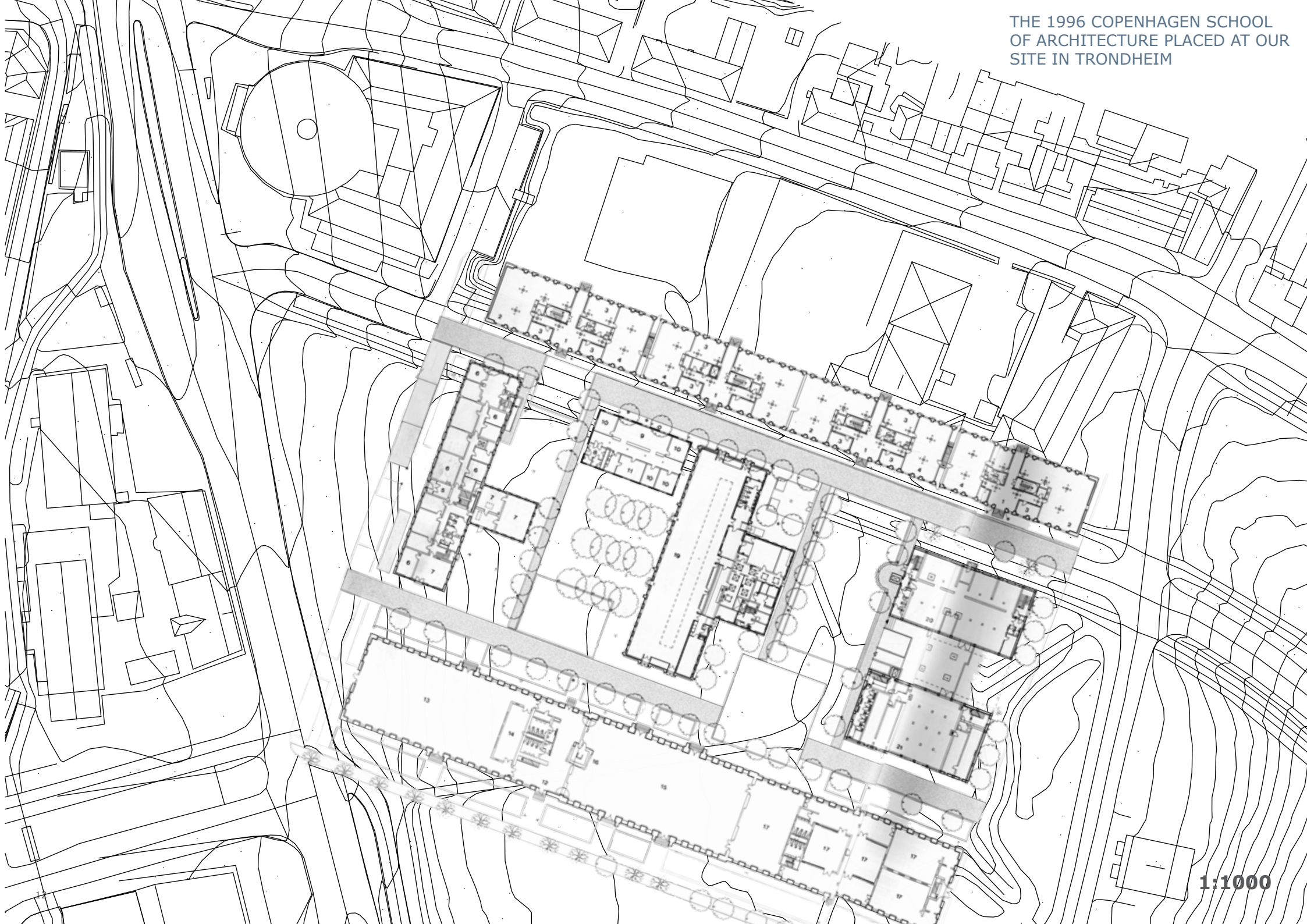
8. entrance
9. information
10. office
11. meeting

Meldahl's blacksmity:

12. main entrance
13. auditorium / great hall
14. chair storage
15. exhibition
16. cafe
17. auditorium
18. foyer

19. **canteen**
20. **special institutes**
21. **workshops**

THE 1996 COPENHAGEN SCHOOL
OF ARCHITECTURE PLACED AT OUR
SITE IN TRONDHEIM



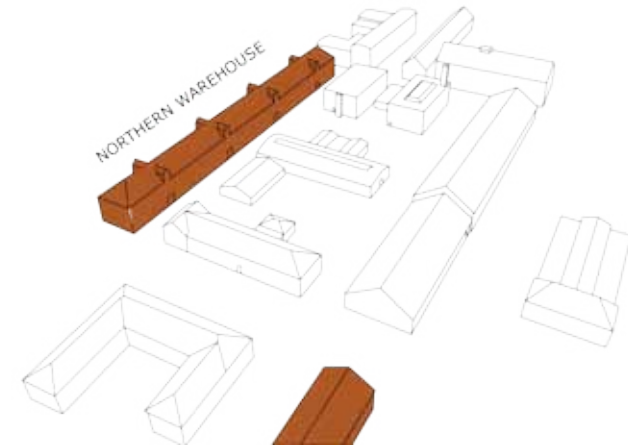
1:1000

STUDENT STUDIOS ARCHITECTURE

The student studios for architecture are today located in three different buildings according to the study department structure:

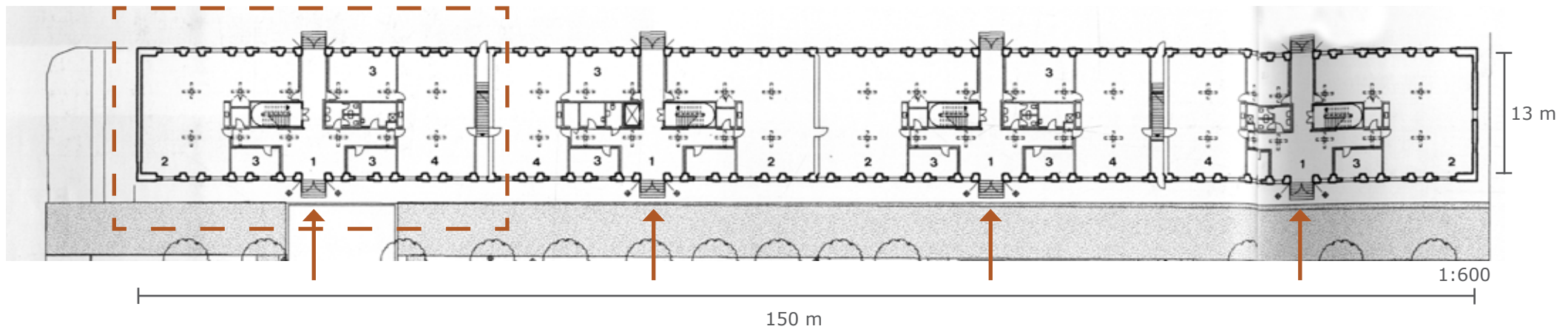
1. The Northern warehouse, where all the study departments originally were situated.
2. A renovated building in the south-west corner of the campus.
3. A newly transformed aircraft hangar which was inaugurated in 2011 about 10 minutes walk north-east of the campus.

The northern warehouse is in total 150 meters long and consists of 4 vertically separated units with one main entrance each. The to plans shows first an overview of the whole building and after a more zoomed in plan of the student studios.



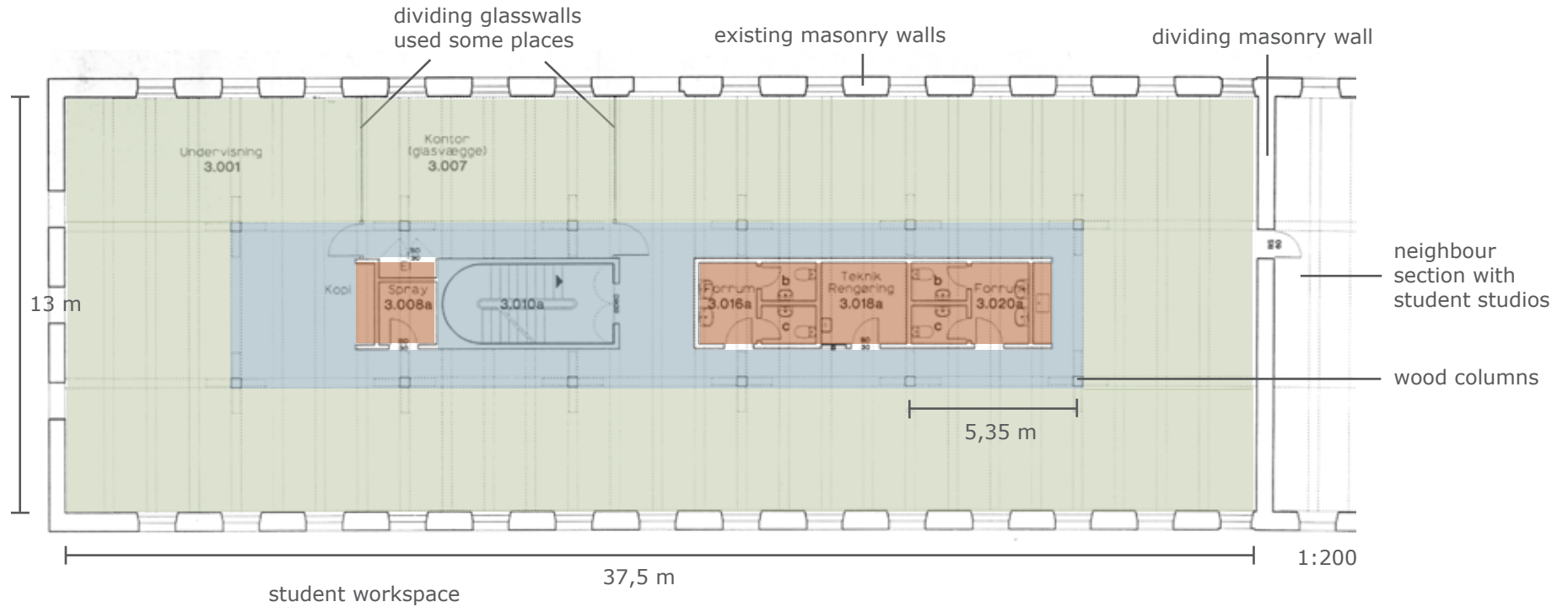
STUDENT STUDIOS ARCHITECTURE
NORTHERN WAREHOUSE

- Overview ground floor



STUDENT STUDIOS ARCHITECTURE
NORTHERN WAREHOUSE

- Detail plan first floor (segment)



- Student workspace = 346 m²
 - Circulation space / stairs = 96 m²
 - Toilets / spary room / storage = 38 m²
 - Total in one studio / at one floor 480 m²
- Total in building = 7800 m²

KARCH:

Brutto / netto factor on this floor: 1,27

NEW NTNU (ARCHITECTURE & ART):

STUDENT STUDIOS ARCHITECTURE NORTHERN WAREHOUSE

- Section

STRUCTURE

Originally this building has been a warehouse and has a very rational construction. Load bearing exterior brick walls, with small openings. The floor construction is in wood or "bindingsverk".

The wood columns stands with about 5,35 m c/c and the space between the columns and the central core divides the space; circulation / studio space.

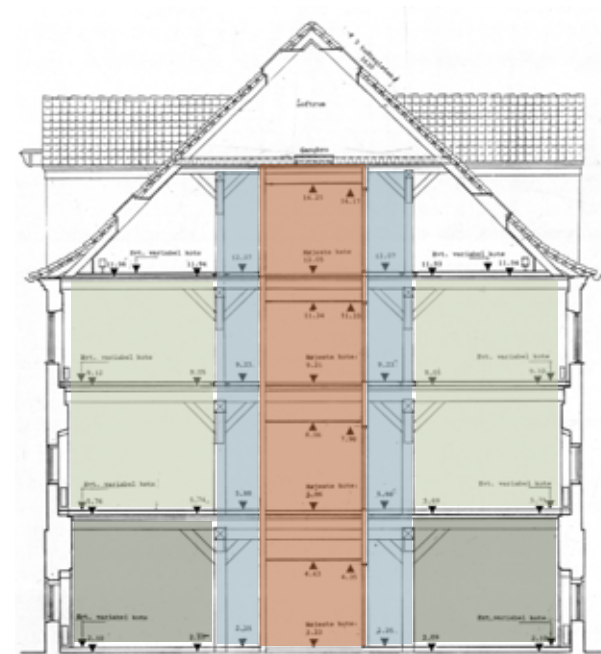
Basically narrow spaces creates good daylight conditions. There have though been some complains about the windows beeing to small for satisfactory lighting.

The ventilation is done through the use of the windows and this causes some difficulties.

- The studio space looks a bit tight to work in bigger groups.

- The orientation after coming up the stairs seems to narrow.

- It could have been interesting to cut more in the structure and create more vertical relations between the floors. It could also have been intresting to contrast the facade with something new and shiney.



1:200

- Student workspace
- Circulation space
- Toilets / storage / stairs
- Department offices / mini exhibition



Student studios
Northern warehouse (1996)



Student studios
Transformed aircraft hangar (2011)

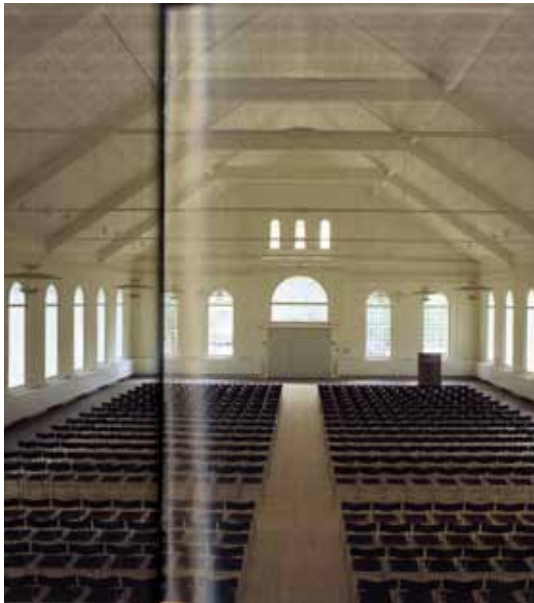
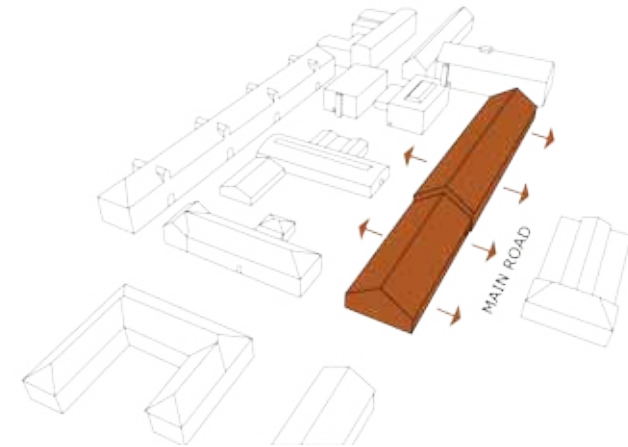
EXHIBITION & AUDITORIUMS MELDAHLS BLACKSMITHY

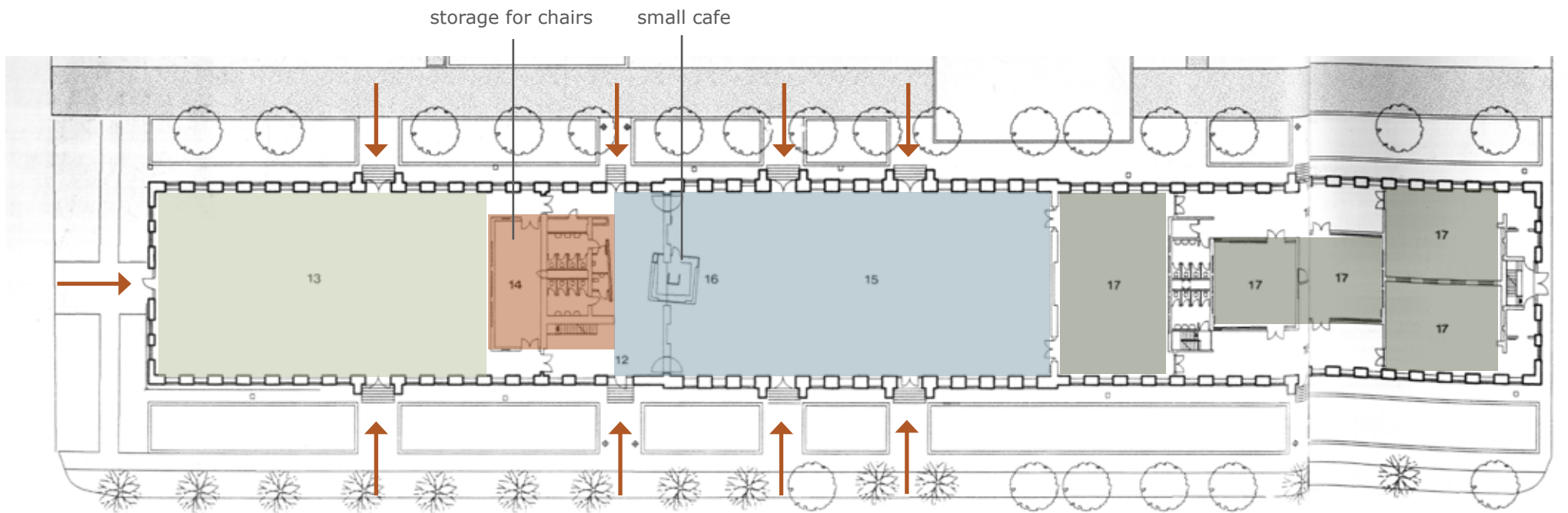
This building was originally a blacksmith with high ceilings.

Being located along the main road, facing the public area, Ferdinand Meldahl's blacksmithy, were programmed with multipurpose spaces, as general exhibition space and auditoriums. The intention was that the building could become a center for cultural activities and conferences.

The exhibition / great hall (nr 13 in the plan, picture to the left) can be an auditorium or an exhibition space depending on the needs. The chairs can be removed and stored.

The flexibility of the space and the good daylight conditions gives possibilities of exhibitions with a great variation and flexibility.





1:600

Exhibition / Great Hall = 690 m² (netto)

Chair storage / wardrobe = 182 m²

Exhibition / small bar = 830 m² (netto)

Auditoriums = 600 m² (netto)

Total in building = 4000 m²

KARCH:

830 m² / (980+650) students = **0,51 m² exhibition space per student**

1430 m² / (980+650) students = **0,88 m² auditorium space per student**

NEW NTNU (ARCHITECTURE & ART):

300 m² / 830 students = **0,36 m² exhibition space per student**

410 m² / 830 students = **0,49 m² auditorium space per student** (does not include "project & seminar rooms")

* For this exercise we count the Exhibition / Great Hall (nr 13) as an auditorium.



Exhibition
Meldahl's blacksmithy (1996)

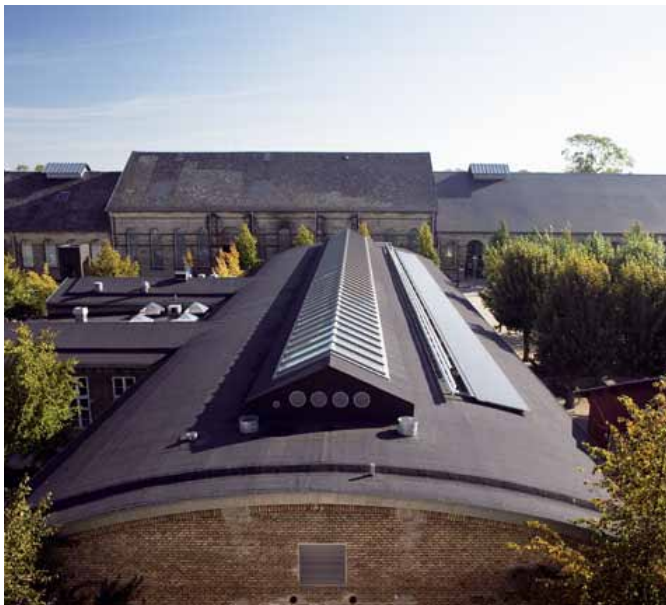
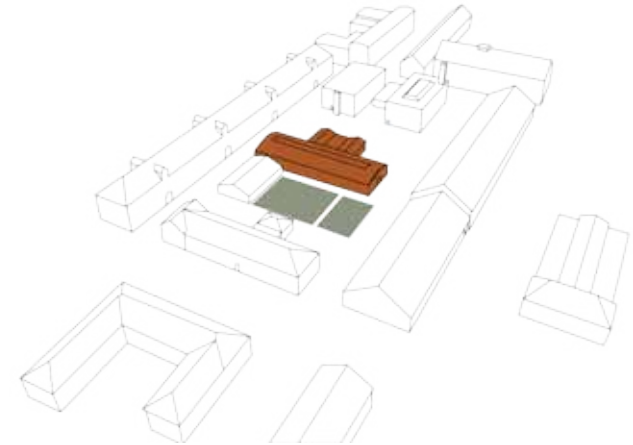
CANTEEN

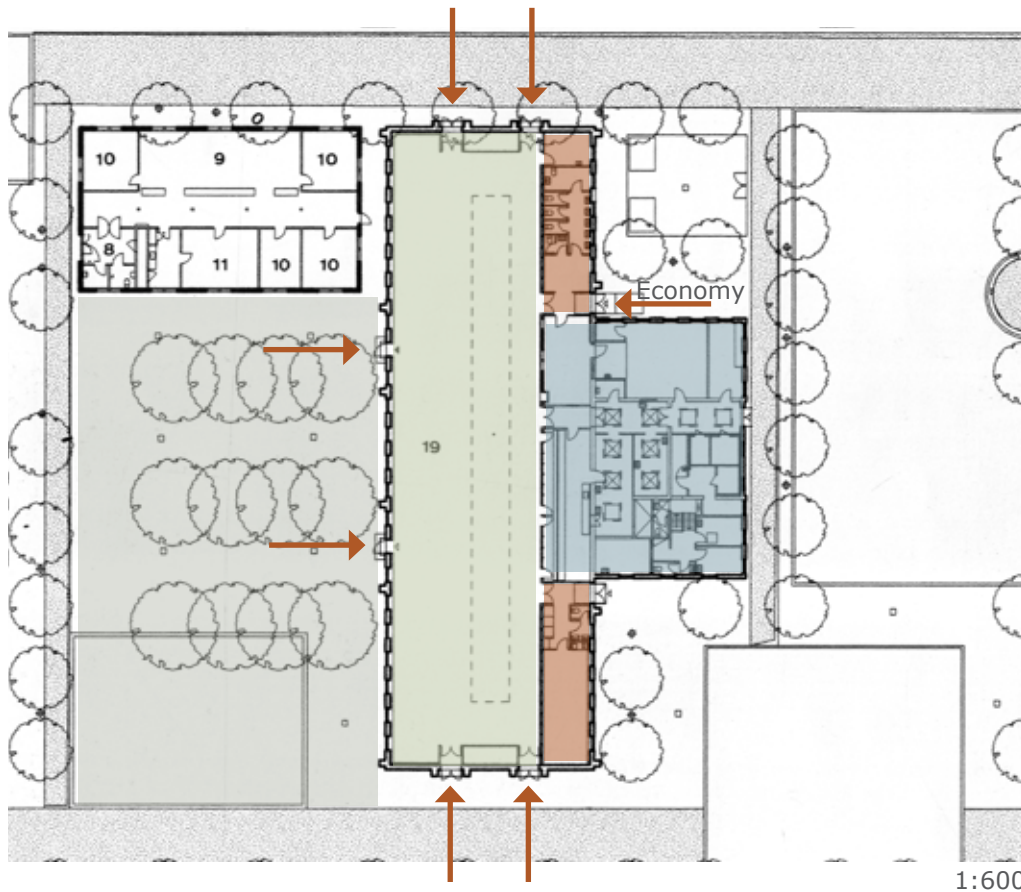
The canteen is the natural gathering point situated in the middle of the school.

The placement of the kitchen makes it possible to keep the building open for other activities outside opening hours.

The building is closely related to the protected outdoor spaces to the south.

The roof construction were renewed with light from above and solar panels on the outside.





KARCH:

590 m² / (980+650) students = **0,36 m² eating space per student**

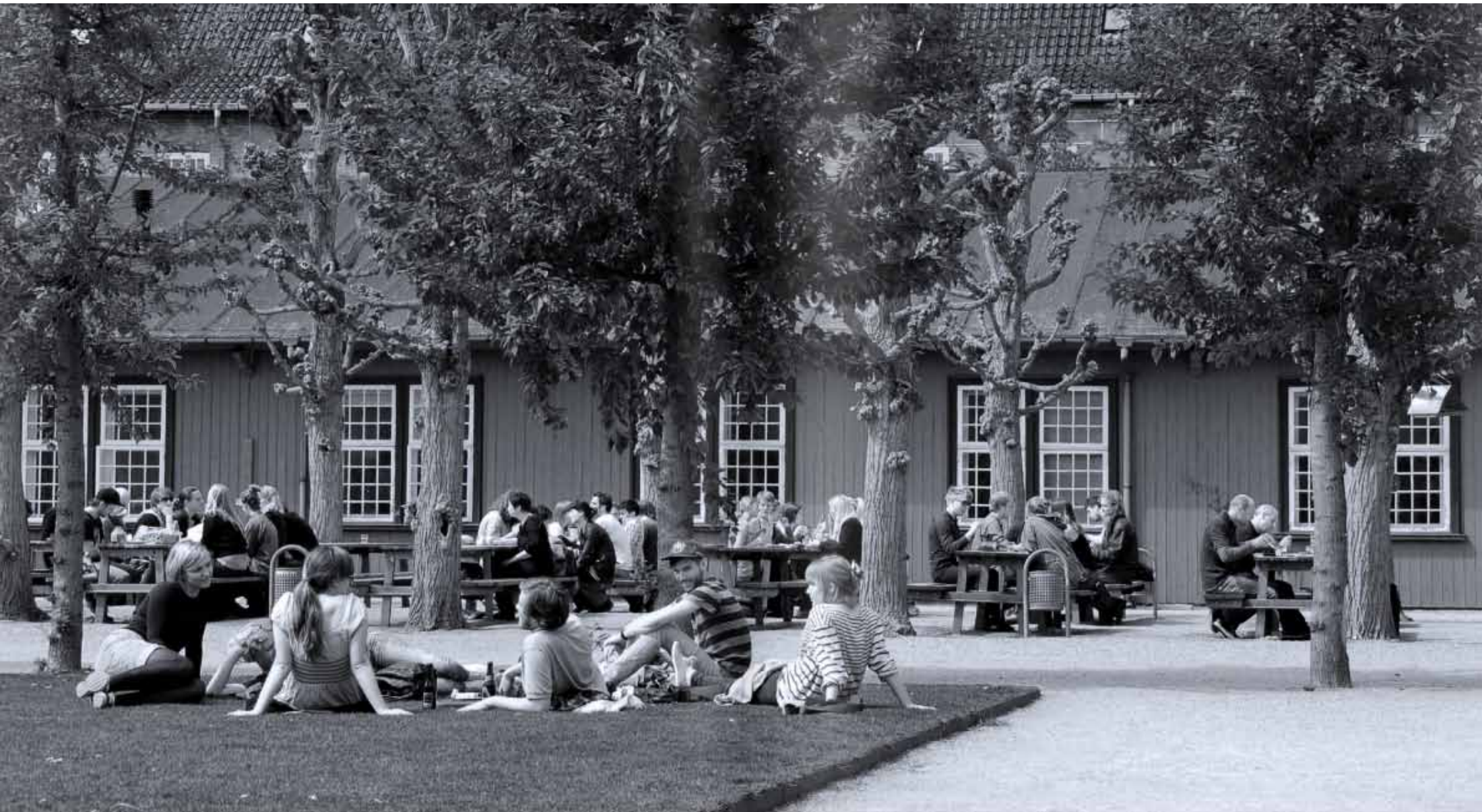
280 m² / (980+650) students = 0,17 m² kitchen per student

NEW NTNU (ARCHITECTURE & ART):

420 m² / 830 students = **0,51 m² eating space per student**

115 m² / 830 students = 0,14 m² kitchen per student

- Eating space = 590 m²
- Kitchen / storage / staff = 280 m²
- Entrance / toilets = 85 m²
- Total 955 m²
- Outdoor space = 1000 m²



Outdoor space outside the canteen
Foto: Susan Gregers Jensen

LIBRARY - KASB

The library, as it is today, was formed by the merging of the School of Architecture Library with the Danish Design School Library and the Library of the National School of Theatre and Contemporary Dance in spring 2011.

The joint institution is a public research library as well as a documentation and knowledge centre, covering the fields of architecture, design, theatre and contemporary dance. The library is open and also used by practising architects. It is situated along the main road and therefore easy to spot.

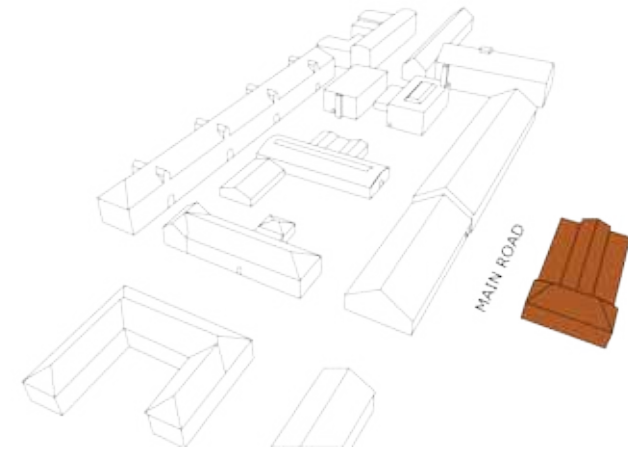
The building is somewhere around 1500 m².

KARCH:

1500 m² / (980+650+200) students =
0,81 m² library space per student

NEW NTNU (ARCHITECTURE & ART):

575 m² / 830 students = **0,59 m² library space per student**





ARCHITECTURAL MODEL WORKSHOP

Ground floor: A wood workshop, which is open 24 hours a day. The workshop is equipped with a limited selection of machines that are easy to use and more safe.

First floor: A metal workshop, welding room, plastic workshop, painting room and a digital workshop.

Second floor: A wood workshop, a conference room and an office.

The Architectural model workshop building is about 1600 m².

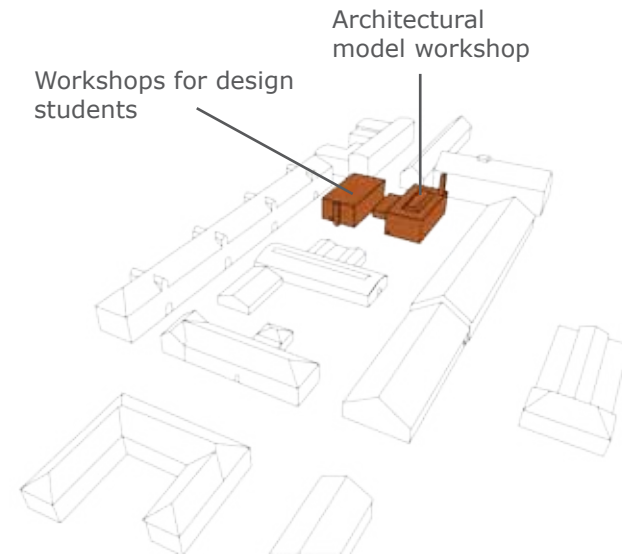
KARCH:

1600 m² / 980 students = **1,63 m² workshop (wood, metal, plastic, paint) space per student**

NEW NTNU (architecture & arts):

1225 m² / 830 students = **1,47 m² workshop (wood, metal, plastic, paint) space per student**

This calculation does not include laboratories as the *Space lab*, *Light lab*, *Intermedia lab*, *Photo lab* & *Graphics lab* at new NTNU.



OUTDOOR SPACE

Before the School of Architecture moved in in 1996, the asphalt areas between the buildings was replaced with raised grass areas, and squares and paths paved with cobblestone or coarse sand. Rows of Linden trees were planted to emphasize the campus atmosphere.



WHAT SHOULD WE CONSIDER TO BRING INTO OUR PROJECTS?

The school appears inviting and exciting for pedestrians and cyclists because almost all the buildings have their most public part at the ground floor. The placement of the library and exhibition space close to the main street seems to communicate with the city outside.

The processing of the many and good outdoor spaces are also something that characterizes Copenhagen in a positive way.

The placement of teacher / professors and students close to each other in each study department has a reputation of creating a good learning environment.

The old buildings are most interesting, as we see it, were there have been installed new contrasting elements.

The reuse of spaces with high ceilings has given a lot of good rooms.

Old, tactile materials as brick, mortar and old wood constructions has obvious qualities that are well taken care of.

WHAT QUESTIONS DOES IT RAISE?

Situated in a large campus situation with other creative schools the Holmen Campus raises the question if it is real advantages of moving different schools together?

As we experience it, there are little or non sharing of functions between the architect school and the three other schools today. Is there possibilities of sharing functions for us? And what does it take to succeed with this?

As we read the buildings today, both from the outside and the inside, we feel that the transformation project of the school in 1996 maybe were a bit to respectful.

Some of the buildings, as the studio spaces in the northern warehouse looks a bit to tight and rigid.

We feel that it would have been more interesting to cut and open the old buildings a bit more for circulation, air and light. And to introduce more moderne elements up against the old brick buildings. At the same time the old buildings possess a lot of spatial qualities.



Student studios
Transformed aircraft hangar (2011)